



Republic of Rwanda  
Ministry of Education



# TVET LEVEL IV



## SOFTWARE DEVELOPMENT

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### WEBSITE DESIGN

# TRAINEE MANUAL



**RTB** | **RWANDA  
TVET BOARD**

**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

# **Module**

## **WEBSITE DESIGN**

Unit 1: Design simple website layouts

Unit 2: Develop cascading style sheets

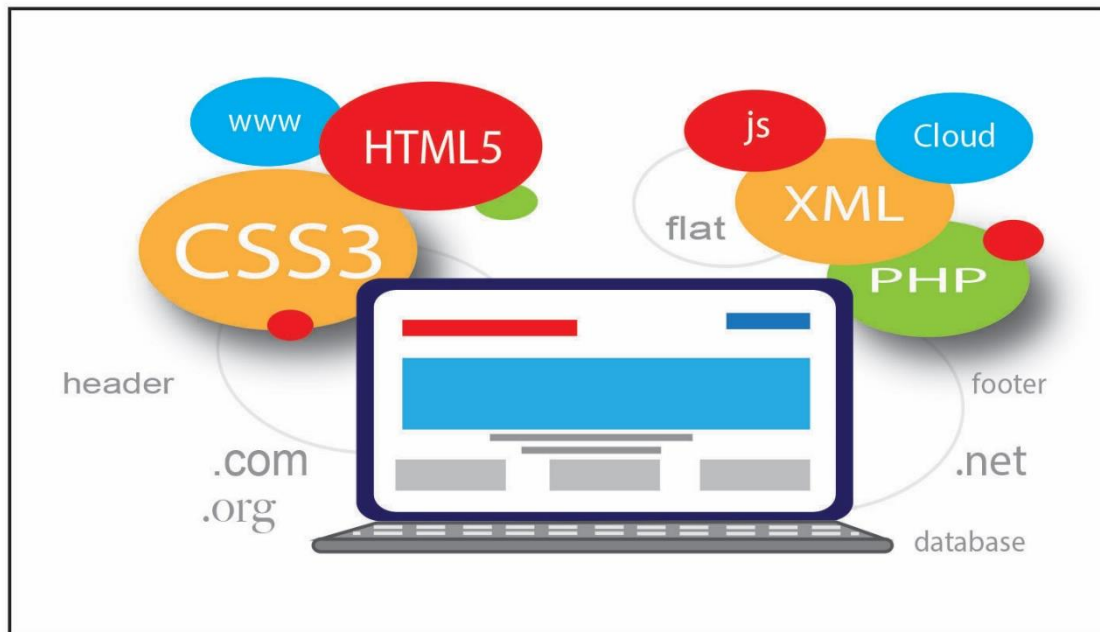
Unit 3: Ensure website content meets technical protocols and standards

Unit 4: Produce interactive web animation

Unit 5: Integrate social web technologies

# Unit 1: Design simple website layouts

Illustration of Learning Unit



The illustration shows tools to use when design layouts

## Picture brief

Please draw a computer displaying layout sections surrounded by circles within it written as CSS, HTML, JS,

Topics

1.1 Identification of the main layout sections

1.2 Designing the web page layout

Unit Summary:

This unit describes skills, knowledge and attitudes required to identify the main layout sections and design web pages layout.

## Self-Assessment: Unit 1

1. Look at the illustration. What is happening? What do you think this unit will be about? What topics might be covered?
2. Fill in the self-assessment below.

There are no rights or wrong ways to answer this survey. It is for your own use during this course. Think about yourself: do you think you can do this? How well? Read the statements across the top. Put a check in column that best represents your situation. At the end of this unit, we'll take this survey again.

<b>My experience</b>	<b>I don't have any experience doing this.</b>	<b>I know a little about this.</b>	<b>I have some experience doing this.</b>	<b>I have a lot of experience with this.</b>	<b>I am confident in my ability to do this.</b>
<b>Knowledge, skills and attitudes</b>					
Identify the main web pages layout					
Identify key terms related to user interface					
Identify types of user interfaces					
Use HTML codes to create new page and layers					
Apply HTML contents					
Use CSS code to perform web page style					

## Topic 1.1: Identification of web pages layout sections

Key Competencies:

Knowledge	Skills	Attitudes
1. Describe web pages layout	1. Identify web pages layout	1. 1. Be Critical thinker
2. Describe key terms related to user interface	2. Identify key terms related to user interface	2. Be Creative
3. Describe types of user interface	3. Identify types of user interface	3. Be Detail-oriented



**Getting Started: What do we know and where are we going?**



**Task: Discuss about website?**



**Activity 1: Problem Solving**



**Task:** The school management wants to build a website. Form small groups to discuss and sketch web pages layout for the required website.

1. What is a web page layout?
2. Identify the key terms related to user interface
3. List web page layout sections

## Key Facts 1.1

### 1. Introduction

A website layout is a pattern (or framework) that defines a website's structure. It has the role of structuring the information present on a site both for the website's owner and for users.

It provides clear paths for navigation within webpages and puts the most important elements of a website front and center

### 2. Types of Web Pages Layouts

#### Best Website Layouts with Proven Success

Below you'll find the most popular and effective website layouts that designers the world over use to make their websites.

- ❑ The Zig-Zag Layout: This layout is based on a widely-known pattern users got used to scan a webpage content: the eyes move along the page following a Z-letter direction.
- ❑ The F Layout: The F-shape layout follows another widely-known scanning behavior, where the eyes move across a page in an F-letter pattern.
- ❑ Full Screen Photo: In this case, the layout implies spreading up content upon a full screen photo/image. Thus, text sections or menu sections are there to support the "living" image.
- ❑ Grid Layout: Information is organized into grids, making it easy to browse, and people can stop to specific topics of interest. Grids allow for an equal distribution of text, photos, videos onto the webpages, letting users decide upon the importance of each unit.
- ❑ One-Column Layout: This layout organizes information into one single column, and it's one of the simplest layouts to put in place. The content (text, photos, videos) is easy to follow, and the need to scan is nothing more than identifying key points of interest into that single column
- ❑ Featured Image Layout: One of the most frequent layouts nowadays implies setting up a featured image representative of each page in the website. The image serves to concentrate attention and interest to a focal point expressive of the page topic. Also, the image stands as the source of meaning that radiates from this very focal point
- ❑ Asymmetrical Layout: The asymmetrical layout plays with the rules of symmetry to the

point of bending them in favor of a unique promise: there is more we have to offer than perfection. The trick is to create active space, and to make white space livelier.

- ❑ Split Screen Layout: This type of layout refers both to vertical split screen, and to horizontal split screen. Generally, a vertical split-screen plays a major role in conveying dual importance to 2 or more distinct areas. The purpose here is to favour quick choices, for better engagement with the website right off the bat.
- ❑ Headline and Thumbnails Gallery Layout: In a more and more visually-focused online world, this layout may work wonders. It is made up of image miniatures leading to full descriptions of those topics, and headlines (+ short presentations) that serve as a guide through the image album.
- ❑ Modular Layout (also known as Card Layout / Block Layout): This layout is tightly related to Material Design, the design protocol launched by Google. It's becoming increasingly popular, due to its flexibility and responsiveness. The modular layout means each unit of content (text, images, videos, buttons) is included in a card, or module, having its own dedicated space.
- ❑ Magazine Layout: The magazine layout, as it is encountered nowadays, tends to be a mishmash of some other layouts, all serving to give a splendor aura to the news.
- ❑ Single Page Layout: Although not so widely spread among common website layouts, we wanted to list this layout here due to its fairly interesting characteristics. It combines multiple actions into one page (e.g. Gmail). Content is loaded dynamically, using JavaScript. And it is built so that it generates unique URLs for each viewpoint
- ❑ Radial Symmetry Layout: Another less common layout type refers to radial symmetry. There's a central point from which radiate correlated items, in a rounded form.

## 2.1. Modular Layouts in Web pages

Is a technique where everything is built using a block grid pattern. Each of the elements of the design fit into the modules in rectangular patterns.

2.1.1. Reading Behavior on the Web: In design, therefore, using an F pattern, or F layout, reflects the typical reading pattern of most Internet users. The process of the F pattern occurs as follows: The user initially scans the horizontal line at the top of the page and glances the first paragraph, creating the first bar of the 'F'.

2.1.2. Adaptive Hypermedia: Adaptive hypermedia, abbreviated as AH, is the next-



generation of hypermedia applications. Where hypermedia serves the same pages and the same set of links to all users, adaptive hypermedia improves the usability of hypermedia by building a model of the preferences and knowledge of an individual user and uses this information to adapt the hypertext to the needs of that particular user

2.1.3. Assistive Technologies: People with certain disabilities use display and input technologies to access online resources. There are several software and hardware solutions that have been adopted, commonly referred to as assistive technologies.

2.1.3.1. Screen readers – used to listen to the content of a webpage.

2.1.3.2. Screen magnification software - used to enlarge screen content to make it easier to read for users with a partial sight impairment.

2.1.3.3. Alternative input devices - an alternative to the typical mouse and keyboard interaction for users with physical or cognitive impairment.

- They include:
- Head pointers
- Motion tracking or eye tracking
- Single switch entry devices
- Large-print and tactile keyboards
- Speech input software

## 2.2. Page Structure and Site Design

- Page headers: A website header sits at the top of each page and serves a few very important purposes. This does more than provide a place for your logo; it is part of a consistent user experience that all good websites share. The design of a header may differ from site to site, but the core features that determine how a site is navigated and experienced remains the same.
- Local Navigation: Is the set of links on a web page that provide a mechanism for visitors to navigate a subset of a larger website. Local navigation is the counterpart to global navigation and can be especially useful for providing an easy and consistent way to access specific pages within a section of a website.
- Global navigation: Is a region of the graphical user interface reserved for buttons,

links, search bars, or any other design element affording movement from one set of content to another

- Search, Banner ads, Contact Information: Are shown to your target audience whenever they are surfing online, but not searching for your product or service. When your customer is online, it's important to keep your brand in front of them as much as possible. Think of your own online behavior.
- Content Area Footer: Is the bottom section of a website, usually appearing on all pages throughout the site. Depending on the focus and design of your website, this area may also include your contact information and links to pages such as an affiliate page, a sponsors page, an advertising page, or even the contact page.

### 3. Key terms related to user interfaces, user interface design and implementation

User interface (UI) design is the process of making interfaces in software or computerized devices with a focus on looks or style. Designers aim to create designs users will find easy to use and pleasurable. UI design typically refers to graphical user interfaces but also includes others, such as voice-controlled ones.

#### 3.1. Terms for UI and UX Designers

##### 3.1.1. User Experience (UX)

A broad term that includes several disciplines that study the effect of design on the ease of use and level of satisfaction with a product, site or system. The term UX was invented by Dr. Donald Norman, a cognitive scientist.

##### 3.1.2. User Experience Design (UXD)

Designing software products and systems to be useful to a set of end users. It is a broad concept applied during the design process. UX design covers the technical use of a product or service and its essential physical interface.

##### 3.1.3. Customer Experience

The feelings of a customer generated by his or her interactions with a supplier's employees, systems, channels or products.

##### 3.1.4. User Interface (UI), or Graphical User Interface (GUI)

What the user sees. This can be a set of commands or menus through which a user communicates with a program. It is also the space where interactions between humans and machines occurs

### 3.1.5. Interaction Design (IXD)

The study of how a user interacts with a page, application or product. IXD facilitates the actions we want to take with any given system.

### 3.1.6. 3-click Rule

The theory that users will abandon a website if they are unable to complete their task within 3 mouse clicks.

Once you know about your user, make sure to consider the following when designing your interface:

- Keep the interface simple. The best interfaces are almost invisible to the user. They avoid unnecessary elements and are clear in the language they use on labels and in messaging.
- Create consistency and use common UI elements. By using common elements in your UI, users feel more comfortable and are able to get things done more quickly.

It is also important to create patterns in language, layout and design throughout the site to help facilitate efficiency. Once a user learns how to do something, they should be able to transfer that skill to other parts of the site.

- Be purposeful in page layout. Consider the spatial relationships between items on the page and structure the page based on importance.

Careful placement of items can help draw attention to the most important pieces of information and can aid scanning and readability.

- Strategically use color and texture. You can direct attention toward or redirect attention away from items using color, light, contrast, and texture to your advantage.
- Use typography to create hierarchy and clarity. Carefully consider how you use typeface. Different sizes, fonts, and arrangement of the text to help increase scanability, legibility and readability.
- Make sure that the system communicates what's happening. Always inform your users of location, actions, changes in state, or errors.

The use of various UI elements to communicate status and, if necessary, next steps can reduce frustration for your user.

- Think about the defaults. By carefully thinking about and anticipating the goals people bring to your site, you can create defaults that reduce the burden on the user.

This becomes particularly important when it comes to form design where you might have an opportunity to have some fields pre-chosen or filled out.

#### 4. Various types of user interfaces

##### 4.1. Graphical user interfaces (GUI) and web-based user interfaces or web user interfaces (WUI)

4.1.1. The graphical user interface: is a form of user interface that allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, instead of text-based user interfaces, typed command labels or text navigation.

4.1.2. Web user interfaces (WUI): The interaction between a user and software running on a Web server. The user interface is the Web browser and the Web page it downloaded and rendered.

4.2. Direct Manipulation Interfaces (Icon interface): Direct manipulation is an interaction style in which the objects of interest in the UI are visible and can be acted upon via physical, reversible, incremental actions that receive immediate feedback.

#### 5. Types of computer users and computer use context

##### 1) ADMINISTRATOR

The “god level” unrestricted user who has the power to install and delete applications, copy and delete files, even cause a massive system crash by messing with the critical system files.

##### 2) STANDARD USER

The regular Joe user who is able to install and delete applications, update the system, but is otherwise unable to mess with the critical system files.

##### 3) GUEST

A restricted user that you can create for allowing a friend to access your computer. Able to run the applications and maybe touch some files, but is otherwise unable to install or delete anything.

##### 4) CHILD

Following up with a slew of “too many violent adult contents”, some operating systems actually adopted the use of parental control or a child account. This user’s actions are usually recorded, and unable to open any application, game, or any content that says “parental guidance is advised”.

#### 5) COMPUTER DUMMY

A complete beginner and someone who is new to the cyber world.

#### 6) COMPUTER USER

The guys who have “used enough” computer and is “good enough” with most of the basics.

#### 7) POWER USER

The guys who have “used too much” computer and have some tech tricks up the sleeve.

#### 8) COMPUTER WIZARD

The almighty tech geeks. Give them a mess of wires, and they can sort it out. Bring them a broken gadget, and they can fix it. Everything bad will turn good in their magic hands.

#### 9) HACKER

Hackers are a different breed from the wizards. While wizards are constructive, hackers usually do the opposite of reverse engineering. They are generally divided into 3 hats:

Black hat – The bad guys who mess with computers to do bad things.

White hat – The good guys who mess with computers with permission, to warn other people of security loopholes.

Grey hat – The naughty guys who break the laws, but don’t do a lot of damage.

#### 10) APPLICATION-ORIENTED USERS

These are the type of users who have been trained to use particular software applications. Their purpose for using a computer, be it for school, work, or play, is to exactly use those applications to complete a task.

#### 11) GOAL ORIENTED USERS

These are the type of users who don’t care about what applications are used, as long as things get done using computers.

#### 12) COMPUTER ORIENTED USERS

The uncommon group of users, where they use computers for the sake of computers. Sounds confusing? Simply put, these people are either hackers or programmers.

#### 13) ENTERTAINMENT

Examples – Gamers, streamers, artists.

The gaming and entertainment industry is huge... It is so common these days to see people glued to the smartphone for gaming or watching videos.

#### 14) ACADEMIC

Examples – Teachers and students.

Gone are the good old days where teachers write on chalkboards. Computers simply offer a better way to teach with slides, images, and videos; Also a better way to learn with illustrations and not a whole bunch of text.

#### 15) SCIENCE

Examples – Researchers and scientists.

To do all kinds of mad scientists calculations and simulations.

#### 16) COMMERCE

Examples – Cashiers, managers, analysts, office workers.

Computer users for the commerce section are so wide these days. To do office work, manage customer orders, generate reports, monthly sales, warehouse management, etc...

#### 17) BANKING & FINANCE

Examples – Bankers and traders.

The people who use computers to keep your money safe in the bank... Or use it to make more money.

#### 18) MANUFACTURING & PRODUCTION

Examples – Publishers, operators, managers.

Hands made with love these days are rare. Factories adopt computers and machines for mass production these days, people use computers to control and manage the production line.

#### 19) MILITARY & LAW ENFORCEMENT

Examples – Intelligence and crime analyst.

How do we know if certain sickos will most likely strike? Welcome to criminal science, where smart people use computers and past data to predict the future.



### **Activity 2: Guided Practice**



**Task: Display web page figure and do the followings:**

1. Identify web page layout sections
2. Identify key terms related to user interface
3. Identify user interface



### Activity 3: Application



**Task: Sketch a web page layout and do the following:**

1. Identify web page layout sections
2. Identify key terms related to user interface
3. Identify user interface



### Points to Remember

- Always follow web pages design update
- Don't forget to concert other's work
- Reduce site loading time with proper design
- Keep layout simple and clean



### Formative Assessment

1. Match the following term in the required field: **Page Headers, Local Navigation, Global Navigation, Split Screen Layout, Magazine Layout, One-Column Layout, Featured Image, Administrator, Guest, Power User, Hacker, Goal Oriented Users**

Page Structure and Site Design	Types of computer users and computer use context	Most Popular And Effective Website Layouts
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2. Fill the blank space with the required word

- a. .... is a pattern (or framework) that defines a website's structure. It has the role of structuring the information present on a site both for the website's owner and for users.
- b. .... can be a set of commands or menus through which a user communicates with a program. It is also the space where interactions between humans and machines occurs



#### Self Reflection

Areas of strength	Areas for improvement	Actions to be taken to improve
1. 2.	1. 2.	1. 2.



## Topic 1.2: Design the web page Layout to match design specifications.

Key Competencies:

Knowledge

Skills

Attitudes

- |  |  |                        |
|--|--|------------------------|
| 1. Describe HTML codes to create new page and layers | 1. Implement HTML code to create new page and layout | 1. Be critical thinker |
| 2. Describe HTML contents                            | 2. Apply HTML contents                               | 2. Be creative         |
| 3. Describe CSS code to perform web page style       | 4. Implement CSS code to perform web page style      | 3. Self-motivated      |

🔄 **Getting Started: What do we know and where are we going?**



**Task:**

- Describe what you see on the page layout above
- List different sections found on the page layout
- Discuss about the above questions



### **Activity 1: Problem Solving**

The school management wants to build a website and they have a problem of website layouts and they need a website designer to handle that problem. Form small groups to design web pages layouts for the required website.



**Task: 1.** Using HTML and CSS code, build web page layout and split it into sections?

## **Key Facts 1.2**

### **1. Introduction**

HTML stands for Hyper Text Markup Language, which is the most widely used language on Web to develop web pages.

- Hypertext refers to the way in which Web pages (HTML documents) are linked together. Thus, the link available on a webpage is called Hypertext.
- As its name suggests, HTML is a Markup Language which means you use HTML to simply "mark-up" a text document with tags that tell a Web browser how to structure it to display.

#### **1.1. Why to Learn HTML**

Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers. Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.

HTML is a MUST for students and working professionals to become a great Software Engineer specially when they are working in Web Development Domain. I will list down some of the key advantages of learning HTML:

- Create Web site - You can create a website or customize an existing web template if you know HTML well.
- Become a web designer - If you want to start a career as a professional web designer, HTML and CSS designing is a must skill.
- Understand web - If you want to optimize your website, to boost its speed and performance, it is good to know HTML to yield best results.
- Learn other languages - Once you understand the basic of HTML then other related technologies like javascript, php, or angular are become easier to understand.

#### **1.2. Applications of HTML**

As mentioned before, HTML is one of the most widely used language over the web. I'm going to list few of them here:

- Web pages development - HTML is used to create pages which are rendered over the web. Almost every page of web is having html tags in it to render its details in browser.
- Internet Navigation - HTML provides tags which are used to navigate from one page to another and is heavily used in internet navigation.
- Responsive UI - HTML pages now-a-days works well on all platform, mobile, tabs, desktop or laptops owing to responsive design strategy.
- Offline support HTML pages once loaded can be made available offline on the machine without any need of internet.
- Game development- HTML5 has native support for rich experience and is now useful in gaming development arena as well.

### 1.3. Audience

This HTML tutorial is designed for the aspiring Web Designers and Developers with a need to understand the HTML in enough detail along with its simple overview, and practical examples. This tutorial will give you enough ingredients to start with HTML from where you can take yourself at higher level of expertise.

### 1.4. Prerequisites

Before proceeding with this tutorial you should have a basic working knowledge with Windows or Linux operating system, additionally you must be familiar with –

- Experience with any text editor like notepad, notepad++, or Edit plus etc.
- How to create directories and files on your computer.
- How to navigate through different directories.
- How to type content in a file and save them on a computer.

- Understanding about images in different formats like JPEG, PNG format.

### 1.5. HTML Tags

As told earlier, HTML is a markup language and makes use of various tags to format the content. These tags are enclosed within angle braces <Tag Name>. Except few tags, most of the tags have their corresponding closing tags. For example, <html> has its closing tag </html> and <body> tag has its closing tag </body> tag

Sr.No	Tag & Description
1	<b>&lt;!DOCTYPE...&gt;</b>  This tag defines the document type and HTML version.
2	<b>&lt;html&gt;</b>  This tag encloses the complete HTML document and mainly comprises of document header which is represented by <head>...</head> and document body which is represented by <body>...</body> tags.
3	<b>&lt;head&gt;</b>  This tag represents the document's header which can keep other HTML tags like <title>, <link> etc.
4	<b>&lt;title&gt;</b>  The <title> tag is used inside the <head> tag to mention the document title.
5	<b>&lt;body&gt;</b>  This tag represents the document's body which keeps other HTML tags like <h1>, <div>, <p> etc.

Example

```
<!DOCTYPE html>
```

```

<html>
<head>
<title>Page Title</title>
</head>
<body>
<h1>This is a Heading</h1>
<p>This is a paragraph.</p>
</body>
</html>

```

## 2. Apply HTML contents

### 2.1. HTML Headings

HTML headings are defined with the <h1> to <h6> tags.

<h1> defines the most important heading. <h6> defines the least important heading:

Example

```

<h1>This is heading 1</h1>
<h2>This is heading 2</h2>
<h3>This is heading 3</h3>

```

### 2.2. HTML Paragraphs

HTML paragraphs are defined with the <p> tag:

Example

```

<p>This is a paragraph.</p>
<p>This is another paragraph.</p>

```

### 2.3. HTML Links

HTML links are defined with the <a> tag:

Example

`<a href="https://www.w3schools.com">This is a link</a>`

## 2.4. HTML Images

HTML images are defined with the `<img>` tag.

The source file (src), alternative text (alt), width, and height are provided as attributes:

Example

```

```

## 2.5. HTML Elements

An HTML element usually consists of a start tag and an end tag, with the content inserted in between:

```
<tagname>Content goes here...</tagname>
```

The HTML element is everything from the start tag to the end tag:

```
<p>My first paragraph.</p>
```

## 2.6. HTML Comment Tags

You can add comments to your HTML source by using the following syntax:

```
<!-- Write your comments here -->
```

Notice that there is an exclamation point (!) in the opening tag, but not in the closing tag.

Note: Comments are not displayed by the browser, but they can help document your HTML source code.

## 2.7. HTML Images

In HTML, images are defined with the `<img>` tag.

The `<img>` tag is empty, it contains attributes only, and does not have a closing tag.

The src attribute specifies the URL (web address) of the image:

```

```

## 2.8. HTML Audio

Before HTML5, audio files could only be played in a browser with a plug-in (like flash).

The HTML5 `<audio>` element specifies a standard way to embed audio in a web page.

### Example

```
<audio controls>
```

```
<source src="horse.ogg" type="audio/ogg">
```

```
<source src="horse.mp3" type="audio/mpeg">
```

Your browser does not support the audio element.

```
</audio>
```

### HTML Audio - How It Works

The `controls` attribute adds audio controls, like play, pause, and volume.

The `<source>` element allows you to specify alternative audio files which the browser may choose from. The browser will use the first recognized format.

The text between the `<audio>` and `</audio>` tags will only be displayed in browsers that do not support the `<audio>` element.

## 2.9. HTML video

To show a video in HTML, use the `<video>` element:

### Example

```
<video width="320" height="240" controls>
```

```
<source src="movie.mp4" type="video/mp4">
```

```
<source src="movie.ogv" type="video/ogg">
```

Your browser does not support the video tag.

```
</video>
```

### How it Works

The `controls` attribute adds video controls, like play, pause, and volume.



It is a good idea to always include `width` and `height` attributes. If height and width are not set, the page might flicker while the video loads.

The `<source>` element allows you to specify alternative video files which the browser may choose from. The browser will use the first recognized format.

The text between the `<video>` and `</video>` tags will only be displayed in browsers that do not support the `<video>` element.

### HTML `<video>` Autoplay

To start a video automatically use the `autoplay` attribute:

Example

```
<video width="320" height="240" autoplay>
  <source src="movie.mp4" type="video/mp4">
  <source src="movie.ogg" type="video/ogg">
```

Your browser does not support the video tag.

```
</video>
```

## 3. Use CSS code to perform web page style

### 3.1. Introduction to CSS

- ☐ CSS stands for Cascading Style Sheets.
- ☐ CSS describes how HTML elements are to be displayed on screen, paper, or in other media.
- ☐ CSS saves a lot of work. It can control the layout of multiple web pages all at once.
- ☐ CSS can be added to HTML elements in 3 ways:
  - Inline - by using the style attribute in HTML elements
  - Internal - by using a `<style>` element in the `<head>` section
  - External - by using an external CSS file

### 3.2. Positioning: Is CSS code that can helps you to position your HTML element. You can put any HTML element at whatever location you like. You can specify whether you want the element positioned relative to its

natural position in the page or absolute based on its parent element.

### 3.3. Positioning

There are five types of positioning values:

- static
- relative
- fixed
- absolute
- sticky

#### A. Static

HTML elements are positioned static by default and the element is positioned according to the normal flow of the document; static positioned elements are not affected by the top, bottom, left, and right properties. An element with position: static; is not positioned in any special way.

#### B. Relative

The element is positioned according to the normal flow of the document is positioned relative to its normal position, and then offset relative to itself based on the values of top, right, bottom, and left.

The offset does not affect the position of any other elements; thus, the space given for the element in the page layout is the same as if position were static.

Setting the top, right, bottom, and left properties of a relatively-positioned element will cause it to be adjusted away from its normal position. Other content will not be adjusted to fit into any gap left by the element.

#### C. Absolute

The element is removed from the normal document flow, and, in the page layout, no space is created for the element.

The element is positioned relative to the closest positioned ancestor, if there is any; otherwise, it is placed relative to the initial containing block and its final position is determined by the values of top, right, bottom, and left.

#### D. Fixed

The element it is removed from the normal document flow, and, in the page layout, there is no space created for the element. The element is positioned relative to its initial

containing block established by the viewport and its final position is determined by the values top, right, bottom, and left. This value always creates a new stacking context.

The CSS used for setting the position to fixed looks like this:

```
position: fixed;
```

An element with `position: fixed;` is positioned relative to the viewport, which means it always remain in the same place even if the page is scrolled. The top, right, bottom, and left properties are used to position the element.

#### E. Sticky

The element is positioned corresponding to the normal flow of the document, and then offset relative to its closest ascending block-level, including table-related elements, according to the values of top, right, bottom, and left. The offset does not affect the position of any other elements.

This value always creates a new stacking context. Note that a sticky element "sticks" to its nearest ancestor that has a "scrolling mechanism even if that ancestor isn't the nearest actually scrolling ancestor.

The CSS used for setting the position to sticky is:

```
position: sticky;
```

### 3.4. Web page Style elements

Here are seven key elements of modern web design:

- A Strong, but Limited, Color Palette.
- Plenty of White Space.
- Relevant Calls-to-Action.
- Clean Backend Coding.
- Design for the User First.
- SEO-Boosting Elements.
- Speed Optimization



#### **Activity 2: Guided Practice**



**Task: Display web page figure and ask trainees to do the followings:**

- A. Implement web page layout sections**

- B. Describe HTML contents
- C. Build web user interface



### Activity 3: Application



**Task: Sketch a web page layout and do the following:**

- A. Implement web page layout sections
- B. Describe HTML contents
- C. Build simple web user interface containing all possible sections



### Points to Remember

- Always follow web pages design update
- Don't forget to concert other's work
- Reduce site loading time with proper design
- Keep layout simple and clean



### Formative Assessment

1. Fill the following blank space:

- A. .... refers to the way in which Web pages (HTML documents) are linked together. Thus, the link available on a webpage
- B. HTML is a ..... which means you use HTML to simply "mark-up" a text document with tags that tell a Web browser how to structure it to display.
- C. .... Is CSS code that can helps you to position your HTML element. You can put any HTML element at whatever location you like. You can specify whether you want the element positioned relative to its natural position in the page or absolute based on its parent element.

2. Match the following terms according to the required field: **Create Web site , Web pages development , Become a web designer , Internet Navigation , Understand web , Responsive UI , Offline support , Game development, Learn other languages**

Applications of HTML

the key advantages of learning HTML

3. Fill the following table

Sr.No	Tag	Description
1		This tag defines the document type and HTML version.
2		This tag encloses the complete document and mainly comprises of document header which is represented by <head>...</head> and document body which is represented by <body>...</body> tags.
3		This tag represents the document's header which can keep other HTML tags like <title>, <link> etc.
4	<title>	
5		This tag represents the document's body which keeps other HTML tags like <h1>, <div>, <p> etc.

4. Write the HTML code to perform/ add video called **“tekno malewa.mp4”** on a website and the video must have **400px** of width and **300px** of height. The video must have control like play, pause and volume.
5. Write down what is HTML and CSS stands for?
6. List five types of positioning values



## Self Reflection

Areas of strength	Areas for improvement	Actions to be taken to improve
1.	1.	1.
2.	2.	2.

## Unit 2: Develop cascading style sheets (CSS)

Illustration of Learning Unit



### Picture brief

Draw two fingers typing on computer where on computer screen there is CSS Sheet with background of CSS code as above picture shows then (Draw a picture of someone touching on laptop computer keyboard and the screen displaying the photo above)

## Topics

2.1 Using format, style and layout of the elements on web page

2.2 Testing and validating web pages

Unit Summary: This unit describes skills, knowledge and attitudes required to Use format, style and layout of the elements on web page and Test and validate web pages

## Self-Assessment: Unit 2

1. Look at the illustration. What is happening? What do you think this unit will be about? What topics might be covered?
2. Fill in the self assessment below.

There is no right or wrong ways to answer this survey. It is for your own use during this course. Think about yourself: do you think you can do this? How well? Read the statements across the top. Put a check in column that best represents your situation. At the end of this unit, we'll take this survey again.

<b>My experience</b>	<b>I don't have any experience doing this.</b>	<b>I know a little about this.</b>	<b>I have some experience doing this.</b>	<b>I have a lot of experience with this.</b>	<b>I am confident in my ability to do this.</b>
<b>Knowledge, skills and attitudes</b>					
Identify style and layout of the elements on web page					
Use format, style and layout of the elements on web page					
Test and validating web pages					
Test Website with various browsers					
Upload Files to website					
Validate Web pages					

### Topic 2.1: Using format, style and layout of the elements on web page

## Key Competencies:

### Knowledge

1. Describe style and layout of the elements on web page
2. Use format, style and layout of the elements on web page
3. Describe CSS Syntax

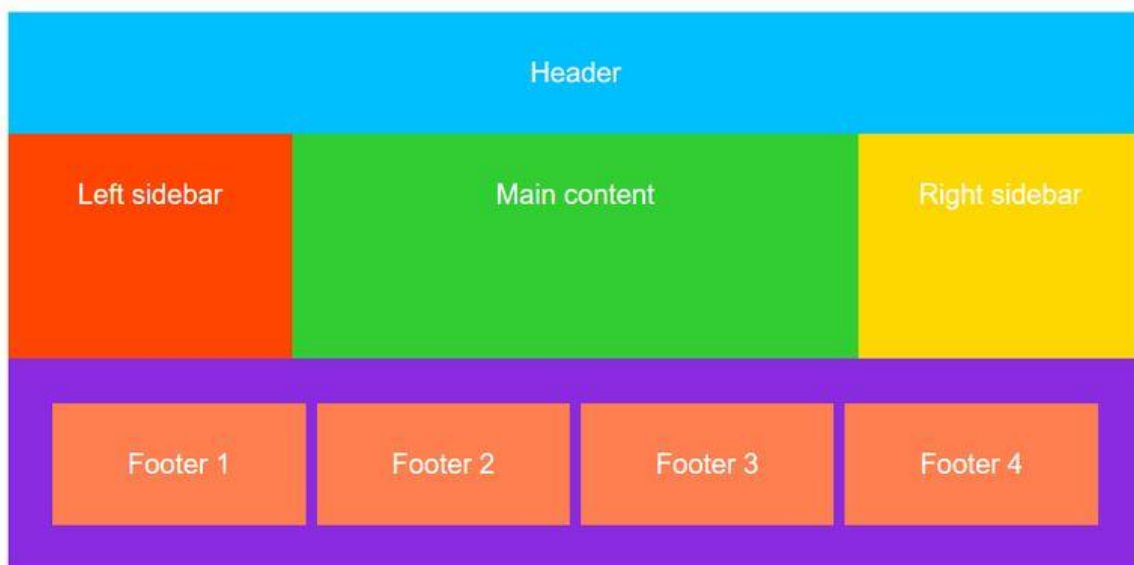
### Skills

1. Identify style and layout of the elements on web page
2. Implement key terms related to user interface
3. Implement CSS syntax

### Attitudes

1. Be Critical thinker
2. Be Creative
3. Team work spirit

🔄 **Getting Started: observe the following figure and answer the following questions**



- A. What do you think the interface is showing?
- B. Are there any relationship between the picture and the topic?



**Task: Discuss about the above diagram?**



## Activity 1: Problem Solving





**Task:** Rwanda Telecommunication network wants to build web pages layouts interfaces for their website and they have a problem of designing registration form for the job applicants. With small groups to discuss and build a registration using CSS code for the required website interface.

1. Describe style and layout of the elements on web page
2. Describe a bout format needed for designing a required registration form

## Key Facts 2.1

### 1. Introduction to CSS

CSS is used to control the style of a web document in a simple and easy way.

#### 1.1. Importance of CSS

Cascading Style Sheets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.

- Create Stunning Web site - CSS handles the look and feel part of a web page. Using CSS, you can control the color of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colors are used, layout designs, variations in display for different devices and screen sizes as well as a variety of other effects.
- Become a web designer - If you want to start a career as a professional web designer, HTML and CSS designing is a must skill.
- Control web - CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document. Most commonly, CSS is combined with the markup languages HTML or XHTML.
- Learn other languages - Once you understands the basic of HTML and CSS then other related technologies like javascript, php, or angular are become easier to understand.

#### 1.2. Applications of CSS

CSS is one of the most widely used style language over the web.

- CSS saves time - You can write CSS once and then reuse same sheet in multiple HTML pages. You can define a style for each HTML element and apply it to as many Web pages as you want.
- Pages load faster - If you are using CSS, you do not need to write HTML tag attributes every time. Just write one CSS rule of a tag and apply it to all the occurrences of that tag. So less code means faster download times.

- Easy maintenance - To make a global change, simply change the style, and all elements in all the web pages will be updated automatically.
- Superior styles to HTML - CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.
- Multiple Device Compatibility - Style sheets allow content to be optimized for more than one type of device. By using the same HTML document, different versions of a website can be presented for handheld devices such as PDAs and cell phones or for printing.
- Global web standards - Now HTML attributes are being deprecated and it is being recommended to use CSS. So it is a good idea to start using CSS in all the HTML pages to make them compatible to future browsers.

## 2. Layout and style web pages with CSS

There are four ways to associate styles with your HTML document. Most commonly used methods are inline CSS and External CSS.

### 2.1. Internal/Embedded CSS - The <style> Element

You can put your CSS rules into an HTML document using the <style> element. This tag is placed inside the <head>...</head> tags. Rules defined using this syntax will be applied to all the elements available in the document. Here is the generic syntax –

```
<!DOCTYPE html>
<html>
  <head>
    <style type = "text/css" media = "all">
      body {
        background-color: linen;
      }
      h1 {
        color: maroon;
```

```
        margin-left: 40px;
    }
</style>
</head>
<body>
    <h1>This is a heading</h1>
    <p>This is a paragraph.</p>
</body>
</html>
```

## 2.2. Inline CSS - The style Attribute

You can use style attribute of any HTML element to define style rules. These rules will be applied to that element only. Here is the generic syntax –

```
<element style = "...style rules....">
```

### Attributes

Attribute	Value	Description
Style	style rules	The value of <i>style</i> attribute is a combination of style declarations separated by semicolon (;).

### Example

Following is the example of inline CSS based on the above syntax

```
<html>
  <head>
  </head>

  <body>
```

```
<h1 style = "color:#36C;">
  This is inline CSS
</h1>
</body>
</html>
```

### 2.3. External CSS - The <link> Element

The <link> element can be used to include an external stylesheet file in your HTML document.

An external style sheet is a separate text file with .css extension. You define all the Style rules within this text file and then you can include this file in any HTML document using <link> element.

Here is the generic syntax of including external CSS file –

```
<head>
  <link type = "text/css" href = "... " media = "... " />
</head>
```

#### Attributes

Attributes associated with <style> elements are:

Attribute	Value	Description
Type	text css	Specifies the style sheet language as a content-type (MIME type). This attribute is required.
Href	URL	Specifies the style sheet file having Style rules. This attribute is a required.

#### Example

Consider a simple style sheet file with a name *mystyle.css* having the following rules:

```
h1, h2, h3 {  
  color: #36C;  
  font-weight: normal;  
  letter-spacing: .4em;  
  margin-bottom: 1em;  
  text-transform: lowercase;  
}
```

Now you can include this file *mystyle.css* in any HTML document as follows:

```
<head>  
  <link type = "text/css" href = "mystyle.css" media = "all" />  
</head>
```

## 2.4. Imported CSS - @import Rule

@import is used to import an external stylesheet in a manner similar to the <link> element. Here is the generic syntax of @import rule.

```
<head>  
  <@import "URL";  
</head>
```

Here URL is the URL of the style sheet file having style rules. You can use another syntax as well

```
<head>  
  <@import url("URL");  
</head>
```

### Example

Following is the example showing you how to import a style sheet file into HTML document –

```
<head>
  @import "mystyle.css";
</head>
```

## 2.5. CSS Rules Overriding

We have discussed four ways to include style sheet rules in a an HTML document. Here is the rule to override any Style Sheet Rule.

- Any inline style sheet takes highest priority. So, it will override any rule defined in `<style>...</style>` tags or rules defined in any external style sheet file.
- Any rule defined in `<style>...</style>` tags will override rules defined in any external style sheet file.
- Any rule defined in external style sheet file takes lowest priority, and rules defined in this file will be applied only when above two rules are not applicable.
- 

## 2.6. Handling old Browsers

There are still many old browsers who do not support CSS. So, we should take care while writing our Embedded CSS in an HTML document. The following snippet shows how you can use comment tags to hide CSS from older browsers –

```
<style type = "text/css">
  <!--
    body, td {
      color: blue;
    }
  -->
</style>
```

## 2.7. CSS Comments

Many times, you may need to put additional comments in your style sheet blocks. So, it is

very easy to comment any part in style sheet. You can simple put your comments inside `/*.....this is a comment in style sheet.....*/`.

You can use `/* ....*/` to comment multi-line blocks in similar way you do in C and C++ programming languages.

### Example

```
<!DOCTYPE html>
<html>
  <head>
    <style>
      p {
        color: red;
        /* This is a single-line comment */
        text-align: center;
      }
      /* This is a multi-line comment */
    </style>
  </head>

  <body>
    <p>Hello World!</p>
  </body>
</html>
```

### 3. Apply CSS Syntax

A CSS comprises of style rules that are interpreted by the browser and then applied to the corresponding elements in your document. A style rule is made of three parts:

- Selector – A selector is an HTML tag at which a style will be applied. This could be any tag like `<h1>` or `<table>` etc.
- Property – A property is a type of attribute of HTML tag. Put simply, all the HTML

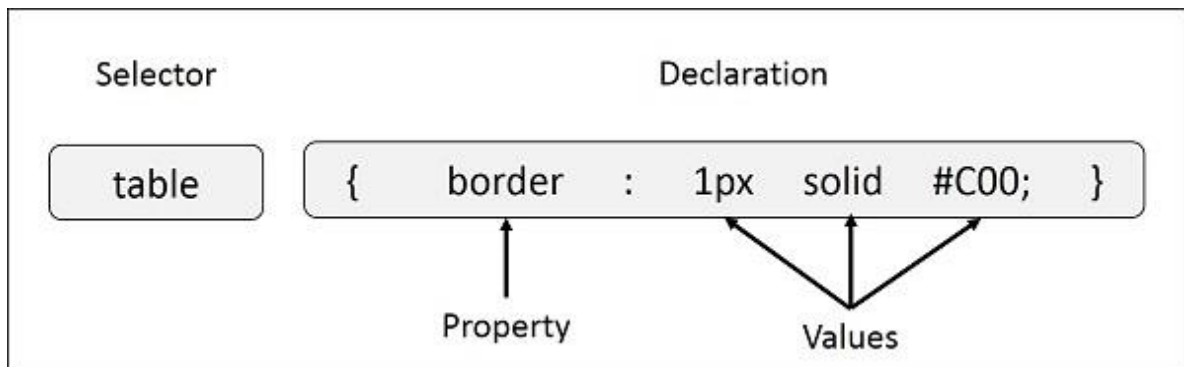


attributes are converted into CSS properties. They could be *color*, *border* etc.

- Value – Values are assigned to properties. For example, *color* property can have value either *red* or *#F1F1F1* etc.

You can put CSS Style Rule Syntax as follows –

selector { property: value }



Example – You can define a table border as follows:

```
table{ border :1px solid #C00; }
```

Here table is a selector and border is a property and given value *1px solid #C00* is the value of that property.

You can define selectors in various simple ways based on your comfort. Let me put these selectors one by one.

### 3.1. The Type Selectors

This is the same selector we have seen above. Again, one more example to give a color to all level 1 headings –

```
h1 {  
  color: #36CFFF;  
}
```

#### 3.1.1. The Universal Selectors

Rather than selecting elements of a specific type, the universal selector quite simply matches the name of any element type:

```
* {  
  color: #000000;  
}
```

This rule renders the content of every element in our document in black.

### 3.1.2. The Descendant Selectors

Suppose you want to apply a style rule to a particular element only when it lies inside a particular element. As given in the following example, style rule will apply to `<em>` element only when it lies inside `<ul>` tag.

```
ul em {  
  color: #000000;  
}
```

### 3.1.3. The Class Selectors

You can define style rules based on the class attribute of the elements. All the elements having that class will be formatted according to the defined rule.

```
.black {  
  color: #000000;  
}
```

This rule renders the content in black for every element with class attribute set to *black* in our document. You can make it a bit more particular. For example –

```
h1.black {  
  color: #000000;  
}
```

This rule renders the content in black for only `<h1>` elements with class attribute set to *black*.

You can apply more than one class selectors to given element. Consider the following example –

```
<p class = "center bold">
```

This para will be styled by the classes *center* and *bold*.

```
</p>
```

### 3.1.4. The ID Selectors

You can define style rules based on the *id* attribute of the elements. All the elements having that *id* will be formatted according to the defined rule.

```
#black {  
  color: #000000;  
}
```

This rule renders the content in black for every element with *id* attribute set to *black* in our document. You can make it a bit more particular. For example

```
h1#black {  
  color: #000000;  
}
```

This rule renders the content in black for only `<h1>` elements with *id* attribute set to *black*.

The true power of *id* selectors is when they are used as the foundation for descendant selectors, For example

```
#black h2 {  
  color: #000000;  
}
```

In this example all level 2 headings will be displayed in black color when those headings will lie with in tags having *id* attribute set to *black*.

### 3.1.5. The Child Selectors

You have seen the descendant selectors. There is one more type of selector, which is very similar to descendants but have different functionality. Consider the following example

```
body > p {  
  color: #000000;  
}
```

This rule will render all the paragraphs in black if they are direct child of <body> element. Other paragraphs put inside other elements like <div> or <td> would not have any effect of this rule.

### 3.1.6. The Attribute Selectors

You can also apply styles to HTML elements with particular attributes. The style rule below will match all the input elements having a type attribute with a value of *text*

```
input[type = "text"] {  
  color: #000000;  
}
```

The advantage to this method is that the <input type = "submit" /> element is unaffected, and the color applied only to the desired text fields.

There are following rules applied to attribute selector.

- p[lang] – Selects all paragraph elements with a *lang* attribute.
- p[lang="fr"] – Selects all paragraph elements whose *lang* attribute has a value of exactly "fr".
- p[lang~="fr"] – Selects all paragraph elements whose *lang* attribute contains the word "fr".
- p[lang|="en"] – Selects all paragraph elements whose *lang* attribute contains values that are exactly "en", or begin with "en-".

## 3.2. Multiple Style Rules

You may need to define multiple style rules for a single element. You can define these

rules to combine multiple properties and corresponding values into a single block as defined in the following example –

```
h1 {  
  color: #36C;  
  font-weight: normal;  
  letter-spacing: .4em;  
  margin-bottom: 1em;  
  text-transform: lowercase;  
}
```

Here all the property and value pairs are separated by a semicolon (;). You can keep them in a single line or multiple lines. For better readability, we keep them in separate lines.

For a while, don't bother about the properties mentioned in the above block. These properties will be explained in the coming chapters and you can find complete detail about properties in CSS References

### 3.3. Grouping Selectors

You can apply a style to many selectors if you like. Just separate the selectors with a comma, as given in the following example

```
h1, h2, h3 {  
  color: #36C;  
  font-weight: normal;  
  letter-spacing: .4em;  
  margin-bottom: 1em;  
  text-transform: lowercase;  
}
```

This define style rule will be applicable to h1, h2 and h3 element as well. The order of the list is irrelevant. All the elements in the selector will have the corresponding declarations applied to them.

You can combine the various *id* selectors together as shown below

```
#content, #footer, #supplement {
    position: absolute;
    left: 510px;
    width: 200px;
}
```

#### 4. CSS measurement Units

CSS supports a number of measurements including absolute units such as inches, centimeters, points, and so on, as well as relative measures such as percentages and em units. You need these values while specifying various measurements in your Style rules e.g. border = "1px solid red".

All the CSS Measurement Units along with proper Examples –

Unit	Description	Example
%	Defines a measurement as a percentage relative to another value, typically an enclosing element.	p {font-size: 16pt; line-height: 125%;}
Cm	Defines a measurement in centimeters.	div {margin-bottom: 2cm;}
Em	A relative measurement for the height of a font in em spaces. Because an em unit is equivalent to the size of a given font, if you assign a font to 12pt, each "em" unit would be 12pt; thus, 2em would be 24pt.	p {letter-spacing: 7em;}
Ex	This value defines a measurement relative to a font's x-height. The x-height is determined by the height of the font's lowercase letter x.	p {font-size: 24pt; line-height: 3ex;}

<b>In</b>	Defines a measurement in inches.	p {word-spacing: .15in;}
<b>mm</b>	Defines a measurement in millimeters.	p {word-spacing: 15mm;}
<b>Pc</b>	Defines a measurement in picas. A pica is equivalent to 12 points; thus, there are 6 picas per inch.	p {font-size: 20pc;}
<b>Pt</b>	Defines a measurement in points. A point is defined as 1/72nd of an inch.	body {font-size: 18pt;}
<b>Px</b>	Defines a measurement in screen pixels.	p {padding: 25px;}

## 5. CSS Colors

CSS uses color values to specify a color. Typically, these are used to set a color either for the foreground of an element (i.e., its text) or else for the background of the element. They can also be used to affect the color of borders and other decorative effects.

You can specify your color values in various formats. Following table lists all the possible formats –

Format	Syntax	Example
<b>Hex Code</b>	#RRGGBB	p{color:#FF0000;}
<b>Short Hex Code</b>	#RGB	p{color:#6A7;}

<b>RGB %</b>	rgb(rrr%,ggg%,bbb%)	p{color:rgb(50%,50%,50%);}
<b>RGB Absolute</b>	rgb(rrr,ggg,bbb)	p{color:rgb(0,0,255);}
<b>Keyword</b>	aqua, black, etc.	p{color:teal;}

## 6. CSS Background

You can set the following background properties of an element –

- The background-color property is used to set the background color of an element.
- The background-image property is used to set the background image of an element.
- The background-repeat property is used to control the repetition of an image in the background.
- The background-position property is used to control the position of an image in the background.
- The background-attachment property is used to control the scrolling of an image in the background.
- The background property is used as shorthand to specify a number of other background properties.

### Set the Background Color

Following is the example which demonstrates how to set the background color for an element.

```
<html>
<head>
</head>
```



```
<body>
  <p style = "background-color:yellow;">
    This text has a yellow background color.
  </p>
</body>
</html>
```

## 7. CSS Fonts

You can set following font properties of an element

- The font-family property is used to change the face of a font.
- The font-style property is used to make a font italic or oblique.
- The font-variant property is used to create a small-caps effect.
- The font-weight property is used to increase or decrease how bold or light a font appears.
- The font-size property is used to increase or decrease the size of a font.
- The font property is used as shorthand to specify a number of other font properties.

## 8. CSS Text

You can set following text properties of an element –

- The color property is used to set the color of a text.
- The direction property is used to set the text direction.
- The letter-spacing property is used to add or subtract space between the letters that make up a word.
- The word-spacing property is used to add or subtract space between the words of a sentence.
- The text-indent property is used to indent the text of a paragraph.
- The text-align property is used to align the text of a document.

- The text-decoration property is used to underline, over line, and strikethrough text.
- The text-transform property is used to capitalize text or convert text to uppercase or lowercase letters.
- The white-space property is used to control the flow and formatting of text.
- The text-shadow property is used to set the text shadow around a text.

## 9. CSS Images

CSS plays a good role to control image display. You can set the following image properties using CSS.

- The border property is used to set the width of an image border.
- The height property is used to set the height of an image.
- The width property is used to set the width of an image.
- The -moz-opacity property is used to set the opacity of an image.

## 10. CSS Links

You can set following properties of a hyper link –

We will revisit the same properties when we will discuss Pseudo-Classes of CSS.

- The: link signifies unvisited hyperlinks.
- The: visited signifies visited hyperlinks.
- The: hover signifies an element that currently has the user's mouse pointer hovering over it.
- The: active signifies an element on which the user is currently clicking.

Usually, all these properties are kept in the header part of the HTML document.

Remember a: hover MUST come after a: link and a: visited in the CSS definition in order to be effective.

## 11. CSS Tables

You can set following properties of a table –

- The `border-collapse` specifies whether the browser should control the appearance of the adjacent borders that touch each other or whether each cell should maintain its style.
- The `border-spacing` specifies the width that should appear between table cells.
- The caption-side captions are presented in the `<caption>` element. By default, these are rendered above the table in the document. You use the *caption-side* property to control the placement of the table caption.
- The `empty-cells` specifies whether the border should be shown if a cell is empty.
- The `table-layout` allows browsers to speed up layout of a table by using the first width properties it comes across for the rest of a column rather than having to load the whole table before rendering it.

## 12. CSS Border

The *border* properties allow you to specify how the border of the box representing an element should look. There are three properties of a border you can change

- The `border-color` specifies the color of a border.
- The `border-style` specifies whether a border should be solid, dashed line, double line, or one of the other possible values.
- The `border-width` specifies the width of a border.

## 13. CSS Margins

The values of the margin property are not inherited by the child elements. Remember that the adjacent vertical margins (top and bottom margins) will collapse into each other so that the distance between the blocks is not the sum of the margins, but only the greater of the two margins or the same size as one margin if both are equal.

We have the following properties to set an element margin.

- The `margin` specifies a shorthand property for setting the margin properties in one declaration.

- The margin-bottom specifies the bottom margin of an element.
- The margin-top specifies the top margin of an element.
- The margin-left specifies the left margin of an element.
- The margin-right specifies the right margin of an element.

#### 14. CSS Lists

Lists are very helpful in conveying a set of either numbered or bullet points. This chapter teaches you how to control list type, position, style, etc., using CSS.

We have the following five CSS properties, which can be used to control lists –

- The list-style-type allows you to control the shape or appearance of the marker.
- The list-style-position specifies whether a long point that wraps to a second line should align with the first line or start underneath the start of the marker.
- The list-style-image specifies an image for the marker rather than a bullet point or number.
- The list-style serves as shorthand for the preceding properties.
- The marker-offset specifies the distance between a marker and the text in the list.

#### 15. CSS Padding

The following CSS properties can be used to control lists. You can also set different values for the padding on each side of the box using the following properties

- The padding-bottom specifies the bottom padding of an element.
- The padding-top specifies the top padding of an element.
- The padding-left specifies the left padding of an element.
- The padding-right specifies the right padding of an element.
- The padding serves as shorthand for the preceding properties.

#### 16. CSS Cursors

One good usage of this property is in using images for submit buttons on forms. By

default, when a cursor hovers over a link, the cursor changes from a pointer to a hand. However, it does not change form for a submit button on a form. Therefore, whenever someone hovers over an image that is a submit button, it provides a visual clue that the image is clickable.

Description: Auto, Crosshair, Default, Pointer, Move, e-resize, ne-resize, nw-resize, n-resize, se-resize, sw-resize, s-resize, w-resize, text, wait, help

### 1.7. CSS Outlines

Outlines are very similar to borders, but there are few major differences as well –

- An outline does not take up space.
- Outlines do not have to be rectangular.
- Outline is always the same on all sides; you cannot specify different values for different sides of an element.

NOTE – The outline properties are not supported by IE 6 or Netscape 7.

You can set the following outline properties using CSS.

- The outline-width property is used to set the width of the outline.
- The outline-style property is used to set the line style for the outline.
- The outline-color property is used to set the color of the outline.
- The outline property is used to set all the above three properties in a single statement.

### 1.8. The Height and Width Properties

We have the following properties that allow you to control the dimensions of a box.

- The height property is used to set the height of a box.
- The width property is used to set the width of a box.
- The line-height property is used to set the height of a line of text.
- The max-height property is used to set a maximum height that a box can be.

- The min-height property is used to set the minimum height that a box can be.
- The max-width property is used to set the maximum width that a box can be.
- The min-width property is used to set the minimum width that a box can be.

The *height* and *width* properties allow you to set the height and width for boxes. They can take values of a length, a percentage, or the keyword auto.

## 19. CSS Scroll

CSS provides a property called *overflow* which tells the browser what to do if the box's contents is larger than the box itself. This property can take one of the following values –

Sr.No.	Value & Description
1	<b>Visible</b>  Allows the content to overflow the borders of its containing element.
2	<b>Hidden</b>  The content of the nested element is simply cut off at the border of the containing element and no scrollbars is visible.
3	<b>Scroll</b>  The size of the containing element does not change, but the scrollbars are added to allow the user to scroll to see the content.
4	<b>Auto</b>  The purpose is the same as scroll, but the scrollbar will be shown only if the content does overflow.



## Activity 2: Guided Practice

**Display web page layout and do the followings:**



**Task:** Rwanda Telecommunication network wants to build web pages layouts interfaces for their website. Within small groups, discuss and build a registration using CSS code for the required website interface.

- A. Describe style and layout of the elements needed to build this web pages
- B. Use style and layout of the elements to design the required registration form web page



## Activity 3: Application

**MAGAZIN SPORT CLASS** is a sport shop located at Kigali city where they sell sport cloths and shoes, They want a website designer to design all interfaces needed to perform the work. As a website design, you are requested to do this task.



**Task:** Use HTML and CSS code to design all required forms, table and other website content



## Points to Remember

- Always follow web pages design update
- Always think about sharing ideas with others
- Do not forget that a good interface must have not greater than 3 colors
- Reduce site loading time with proper design



## Formative Assessment

1. Fill the following blank space

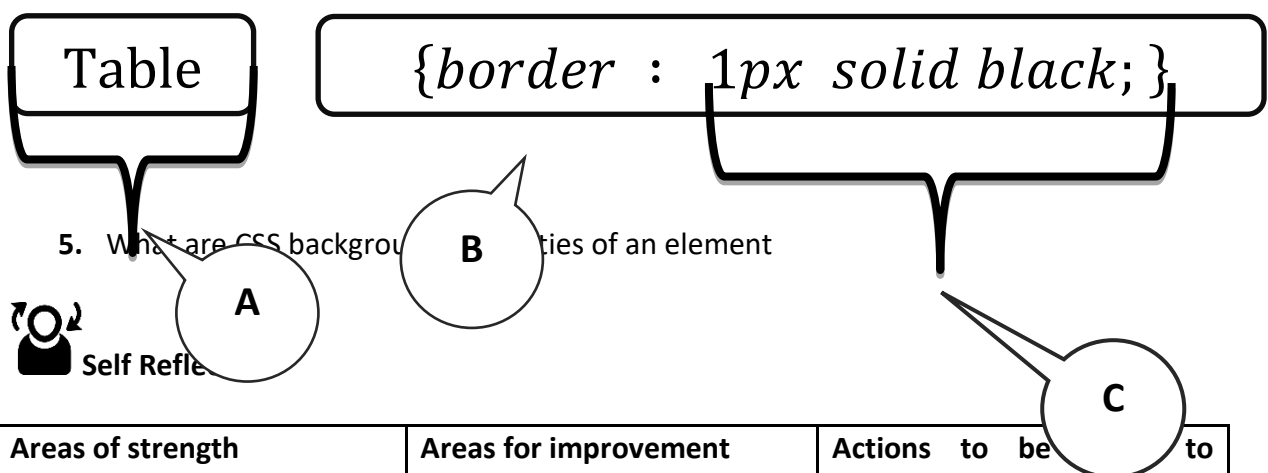
a. .... fondly referred to as ....., is a simple design language intended to simplify the process of making web pages presentable.

2. Using the following words, Fill the table below according to the application of CSS: **CSS saves time, Global web standards, Superior styles to HTML, Pages load faster, Multiple Device Compatibility, Easy maintenance**

No	Column1	Column2
1	.....	If you are using CSS, you do not need to write HTML tag attributes every time.
2	.....	Style sheets allow content to be optimized for more than one type of device.
3	.....	To make a global change, simply change the style, and all elements in all the web pages will be updated automatically
4	.....	HTML attributes are being deprecated and it is being recommended to use CSS.

3. List the types of Layout and style web pages with CSS

4. Complete the diagram below





## Topic 2.2: Test and validate the layout

Key Competencies:

Knowledge

Skills

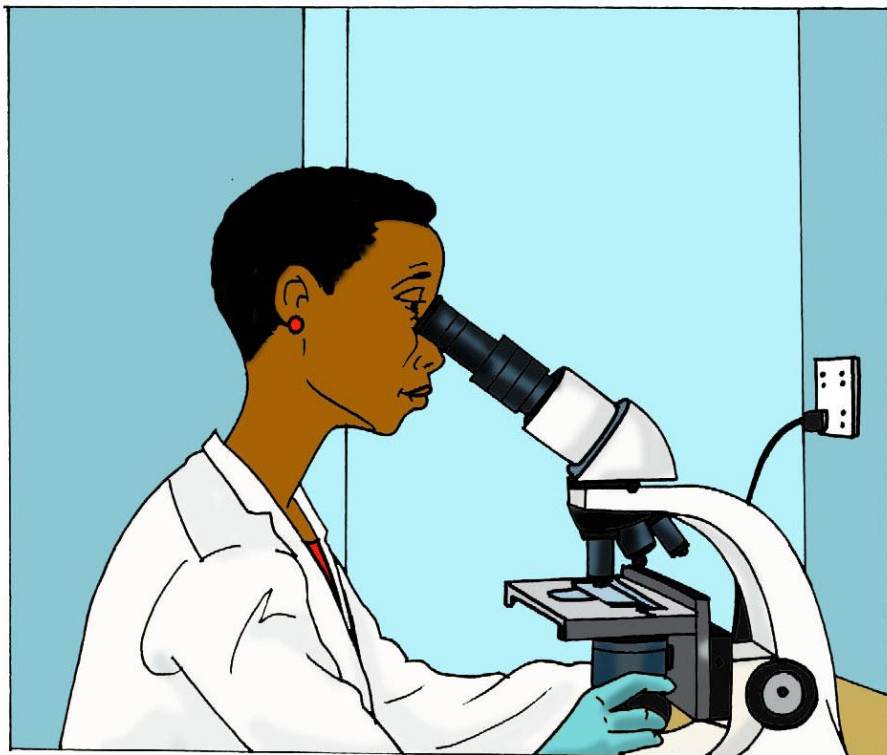
Attitudes

- |   |                                       |                       |
|---|---------------------------------------|-----------------------|
| 1. Describe Website tests with various browsers | 1. Test Website with various browsers | 1. Be Detail-oriented |
| 2. Explain steps to upload files on website     | 2. Upload files on website            | 2. Self-motivated     |
| 3. Describe Web pages validation                | 3. Validate web pages                 | 3. Team Work spirit   |

🔄 **Getting Started: What do we know and where are we going?**



Figure 2.2.



**Illustration:** Draw the picture of someone who is testing and validate (make decision from the results)

**Observe the picture above and discuss the following:**

1. What do you think the person is doing?
2. Are there any relationship between the picture and the topic?



### Activity 1: Problem Solving



#### Task: Scenario: At cyber cafe

**MUKUNDENTE Tony Diane** wants to buy a house online through real estate website. She filled all required information but when she tried to crick on “submit” button, the interface appeared as follow:

REGISTRARING HERE

MUKUNDENTE Tony Diane

12345 0788888888

Level3 \$4000 - \$10000

Submit

! Please include an '@' in the email address. '12345' is missing an '@'.

- A. Describe the problem happen on above diagram
- B. List all steps needed to solve the problem happen on the email field

## Key Facts 2.2

1. Files upload to website

## 1.1. Form Validation UX in HTML and CSS

### 1.1.2. Make the label look like a placeholder

First: **always use real** `<label for="correct_input"> elements`. Just that alone is a UX consideration all too many forms fail on. Placeholders are suggestions for valid input.

EXAMPLE:

```
<form action="#0" method="post">

  <div>
    <input type="text" id="first_name" name="first_name">
    <label for="first_name">First Name</label>
  </div>

  <!-- ... -->

</form>
```

### 1.1.2. Make certain inputs required

Perhaps the easiest possible validation on a form you can do is use the required attribute to require a field. No faster way to catch an error than letting the browser does it if it can! Example

```
<input required type="text" id="first_name" name="first_name">
```

### 1.1.3. Positively indicate valid input values

Let users know a field has been entered correctly. The browser can give us this information through the `:valid` CSS selector. Example

```
// show success!  
&:valid {  
  background: url(images/check.svg);  
  background-size: 20px;  
  background-repeat: no-repeat;  
  background-position: 20px 20px;
```

`:valid`, in this case, is ensuring the required condition is met, but that selector is also useful for validating the type of input.

#### 1.1.4. Show reminders about validation of type

You can also require an input's value to be of a certain type, like email or number. That input is both required and required to be a valid email address format. Let's do this for the UX:

1. Tell the user about the requirements when the field is focused
2. Remind them the field doesn't have a valid value otherwise

#### 1.1.5. Create robust validations

It's not just required or `type="email"` (and the like), you can also client-side validate things like length (e.g. minimum password length or maximum characters in bio textarea) and even go full-on regex.

Say you wanted password requirements like

- At least 6 characters
- At least 1 uppercase character
- At least 1 lowercase character
- At least 1 number

Example:

```
<input pattern="(?!.*\d)(?!.*[a-z])(?!.*[A-Z]).{6,}" type="password" id="password" name="password"
```

### 1.1.6. Demo

I'm leaving in the `:placeholder-shown` stuff here, which makes this not work great in Firefox and IE.

```
<form action="#">
  <div>
    <input type="text" id="first_name" name="first_name" required placeholder " " />
    <label for="first_name"></label>
  </div>
  <div>
    <input type="password" id="password" name="password" required placeholder " "
    pattern="(?!.*\d)(?!.*[a-z])(?!.*[A-Z]).{6,}" />
    <label for="password"></label>
    <div class="requirements">
    </div>
  </div>
  <input type="submit" value="Sign Up" />
</form>
```

## 1.2. Platform-Specific HTML

This difference is most clear with regard to fonts and font sizes. In the Windows world, you have fonts such as Times New Roman and Courier New. Slight variations of these fonts appear on the Macintosh and Linux/UNIX platforms; they are called Times and Courier. It doesn't end there—the font sizes all are displayed differently.

### 1.3. Form submission and getting results

The action attribute defines the action to be performed when the form is submitted. Normally, the form data is sent to a web page on the server when the user clicks on the submit button.

## 2. Files upload to website

In short, to upload a website you can follow these 6 simple steps:

---

Step 1: Pick a reliable website host

Step 2: Choose your website upload method

Step 3: Upload the site archive and extract it

Step 4: Make sure all files are in public html

Step 5: Import the MySQL database

Step 6: Check if the website works

Before you begin this guide you'll need the following:

- Access to the **control panel** of your hosting account.
- Your **website's files** (preferably in .zip or .tar.gz archive) and **database** (if used).
- An FTP client such as FileZilla and the FTP login details (optional).

## 3. Web pages validation against industry standards

Markup validation is an important step towards ensuring the technical quality of web pages. W3C validation is the process of checking a websites code to determine if it follows the formatting standards.



### Activity 2: Guided Practice



**Task:** Saint Joseph Integrated Technical College wants to create a new page that will help students to make their online registration including these information: Registration

number, Names, Faculty, Department, Class, Phone, Address, Email, bank slip number and Upload passport photo. They want that if students fill all necessary information, the form will test that the information provided is valid or not according to the field filled. This Job opportunity is open to students of Level 4 software development.

- A. Build this registration form and test all required input
- B. Upload the photo to make sure that the upload field is functioning



### Activity 3: Application



#### Task: Observe the following scenario and answer the related questions

MOTIVE Hotel is located at Nyamirambo, they want to facilitate their clients to make an online ordering through their website. The information needed for ordering are as follows: **Names, email, Address, Phone number, Item needed, Quantity, Quality, Time.** They want to hire a website designer to add another page for the ordering form. As a website designer, you are requested to perform this task.

Use HTML and CSS code to perform the required task



#### Points to Remember

- Always follow web pages design update
- Don't forget to correct other's work
- Reduce site loading time with proper design
- Keep layout simple and clean



#### Formative Assessment

1. Write down All steps for uploading a website
2. Write HTML code to make a certain inputs required
3. Write HTML and CSS code to build the following interface


### Contact Form

Full Name

Email Address

Telephone

Message

 Please fill out this field.



### Self Reflection

Areas of strength	Areas for improvement	Actions to be taken to improve
1.	1.	1.
2.	2.	2.



## Unit 3: Ensure website content meets technical protocols & standards

### Illustration of Learning Unit



Draw a person showing its hand only, holding a card and on the card, it is displayed a picture of the person on the left side of the hand. Verifying that the real person is the same as the one, on the card.

### Topics

3.1. Verify and validate the web

3.2. Test the content

### Self-Assessment: Unit 3

Unit Summary: This unit describes skills, knowledge and attitudes required to verify, test and validate the web content as per standards.

3. Look at the illustration. What is happening? What do you think this unit will be about? What topics might be covered?

4. Fill in the self assessment below.

There is no right or wrong ways to answer this survey. It is for your own use during this course. Think about yourself: do you think you can do this? How well? Read the statements across the top. Put a check in column that best represents your situation. At the end of this unit, we'll take this survey again.

My experience	I don't have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Apply website validation					
Identify website validation tools					
Apply website validator					
Identify test parameters for website content					
Use website testing methods					
Correct tested website design					

My experience	I don't have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					

### Topic 3.1: Verify and validate the web content

#### Knowledge

1. Describe the process of validate website content

2. Name website validation tools

3. Describe a website validator

#### Skills

1. Analyse the process of validate website content

2. Identify website validation tools

3. Use website validator

#### Attitudes

1. Be self-motivated

2. Innovative

3. Be Creative

🔄 **Getting Started:** Discuss about the below diagram and answer the following questions?



**Illustrator:** Draw a diagram shows someone verifying something using a loop and after he validates what he have seen as true using the green tick

3. What do you think the person is doing?
4. Are there any relationship between the picture and the topic?



## Activity 1: Problem Solving



**Task:** Rwanda Polytechnic has a website that have been developed by their website designer and they want to host it on the live server. But, before hosting it ,they want someone to verify and validate that the website meets standards . As a website developer you are required to perform this task.

1. Describe the process to use for validation of this website
2. List validator tools to be used while doing this task
3. Describe all types of validator that will be used for this validation

## Key Facts

### 1. Introduction

- 1.1. Definition: Validating a website is the process of ensuring that the pages on the website conform to the norms or standards defined by various organizations.

In simple terms, validation ensures that your website complies with the standards accepted by most web designers.

### 1.2. Why is website validation important?

#### 1.2.1. Compatibility

If you are running an un-validated website you cannot be certain that your website's design is rendering correctly (or uniformly) in different browsers.

Example: Internet Explorer is more forgiving than many other browsers and may ignore unclosed tags that could otherwise cause a page to display incorrectly.

#### 1.2.2. SEO

By validating you are making your code behind the website as clean and uncluttered as possible. Cleaner code is easier for search engines to 'read through' and will increase the chances of being read the whole way.

This will, in turn, allow them to extract more information about your website, understand your services better and perhaps see your website as being more authoritative than others.

The more authoritative websites command higher search engine positions.

### 1.2.3. Accessibility

Validating your website means you are being made to use many techniques that aid the accessibility (catering for users with a disability) of your site.

As a very basic example, a validated website will not allow an image without an ALT attribute and ALT attributes are important for use with screen readers (which a user with a visionary impairment may use to 'read out' a website to them).

### 1.3. Website Validation Tools

- W3C markup validation service
- CSS validator
- Checklink
- Feed
- Mobile checker
- HTML Validator
- Dr. Watson's site validation check:

List of checks :

- Page load time check
  - Syntax and style analysis
  - Word counts
  - Spelling checks
  - Link checking
  - Search Engine Optimization check
  - Incoming links check
  - Source code
- XML well checker and validator
- Robots checker
- URL checker
- Web accessibility checker
- Browser Shots
- Webpage analyzer

## 2. Validation of web content

4.1. HTML/XHTML validation: This validator checks the markup validity of web documents in HTML, XHTML, SMIL, MathML

**4.1.1.** W3C Validation: W3C validation is the process of checking a websites code to determine if it follows the formatting standards.

**4.1.2.** Importance of Validate a Site on W3C

- Help Improve Rankings in Search Engines: W3C validation helps you to get better rankings in search engines.
- Validation helps teach best practices: Having standards-compliant code is the best practice for web design. It also teaches and encourages best practices for web design.
- Improved Website User Experience: W3C validated websites will be easily accessed by people with modern browsers.
- Make Website Browsers Friendly: Making website browsers friendly is one of the biggest reasons why W3C code validation was introduced. Websites that are not validated may display correctly in one browser but not in other browsers.
- Multiple Device Accessibility: With the recent boom in smartphones and tablets more people will be accessing the Internet from mobile devices than desktop computers.
- Validation help for easy Coding and Maintenance: Websites or web pages that validate using W3C website validation have code formatted efficiently and are easy to edit and it helps website owners to create a new page or another new website with similar formatting.
- Validation as a debugging tool: Validators tell you where you have errors in your code. If your page isn't displaying as expected a validator might very well point you to the cause of the display problems.

4.2. CSS validation: This validator checks the CSS validity of web documents in HTML, XHTML

4.3. Section 508 standards validation (accessibility): is a federal law mandating that all electronic and information technology developed, procured,

maintained, or used by the federal government be accessible to people with disabilities.

4.4. WAI standards validation (accessibility): The Web Accessibility Initiative (WAI) develops standards and support materials to help you understand and implement accessibility.

4.5. Links (check for dead links) validation: make the process of tracking links to other internal or external pages, PDFs, images, and other elements easier, Common Spot enables link validation during page creation, and optionally at other times.

4.6. Feeds validation: is used to test an RSS document (also called an RSS feed) to check your code for errors. If the validator finds any problems with your feed, it will highlight where the problem occurs to help you fix it

**5. All steps followed when validating a website**

- ✓ Go to the W3C validator website.
- ✓ Type in your website address.
- ✓ Click to Check.
- ✓ Look at the results! If it gives you a green 'success' page then well done, if not then you will need to do a little work.



**Activity 2: Guided Practice**

**Display web page layout and do the followings:**



**Task:** Rwanda Polytechnic has a website that have been developed by their website designer and they want to host it on the live server. But, before hosting it ,they want someone to verify and validate that the website meets standards . As a website developer you are required to to perform this task.

- A. Analyse the validation process to be used
- B. Identify validation tools to be used while doing this task
- C. Use any type of Website validator to validate this website





### Activity 3: Application

BERWA SHOP is a shop of shoes and clothers located in Western province, Rubavu district. The shopkeeper (Someone who owns or manages a shop) uses a web application to record and manage their data. He has a problem of non-efficient security, accessibility and integrity of information about the stock-in and stock-out.

- A. Analyse the validation process to be used
- B. Identify validation tools to be used while doing this task
- C. Use any type of Website validator to validate this website



### Points to Remember

- Always test and validate your website to identify the errors
- Remember that a website isn't all about how it looks
- An HTML page is made to present data, not visual graphics
- Always write your data correctly to ensure it's readable by a wide spectrum of people who use the web.



### Formative Assessment

1. Fill the following blank spaces
  - A. ....is the process of ensuring that the pages on the website conform to the norms or standards defined by various organizations.
  - B. ....is used to test an RSS document (also called an RSS feed) to check your code for errors. If the validator finds any problems with your feed, it will highlight where the problem occurs to help you fix it
2. Why is website validation important?
3. What are website validation tools?
4. What are the Importance of Validate a Site on W3C?
5. List all steps followed when validating a website



## Self Reflection

Areas of strength	Areas for improvement	Actions to be taken to improve
1. 2.	1. 2.	1. 2.

## Topic 3.2: Test the content

Key Competencies:

Knowledge

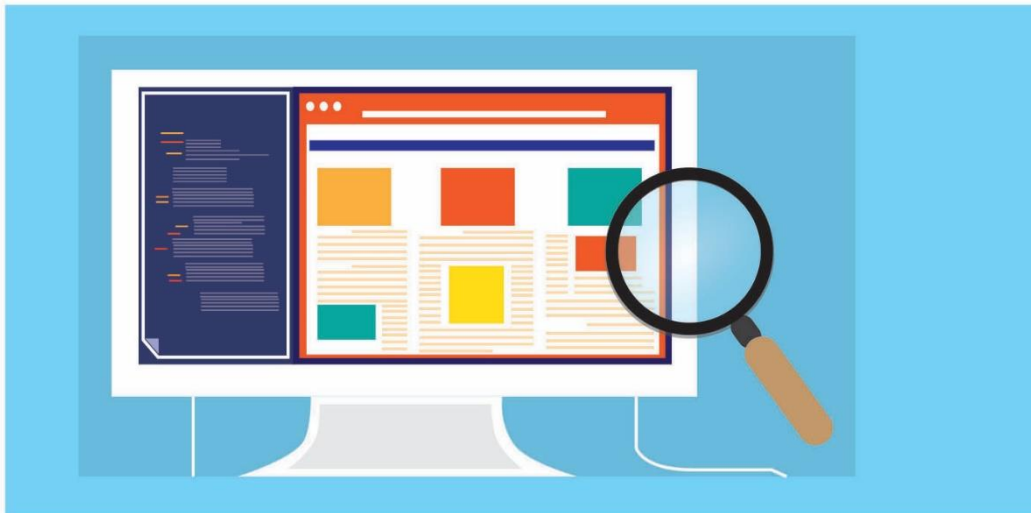
Skills

Attitudes

- |   |   |                       |
|---|---|-----------------------|
| 1. Describe test parameters for website content     | 1. Identify test parameters for website content | 1. Be Detail-oriented |
| 2. List website testing methods                     | 2. Use website testing methods                  | 2. Self-motivated     |
| 3. Describe corrective measures for website content | 3. Correct tested website design                | 3. Team Work spirit   |

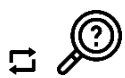
### Getting Started:

1. Form small groups of two to four, and Observe the picture below answer the question related to it:



**Illustration:** The picture shows a website that is viewed on many platforms. Draw the picture that show a website opened on Desktop computer and is viewed using loop

- A. What does the above picture shows?
- B. Ask trainees the relationship between the picture and the topic



### Activity 1: Problem Solving



### Task: Scenario:

SJITC Nyamirambo had a website which was not readable and not navigable. They want to build a new website which will look well, navigable and responsive. As a website developer, help them to test the new website so that it will look well

- A. Describe all techniques needed to test the new website
- B. List all website testing methodologies

## Key Facts 3.2

1. Website content test: Web content testing is a software testing practice to test websites or web applications for potential bugs. It's a complete testing of web-based applications before making live.

Example of website testing methodology



- 1.1. Readability: Readability refers to the ease with which a person can understand a passage of text. And it depends of the complexity of your content, as well as the typographic elements used on your site.

### 1.1.1. Characteristic of good readable website

- ✓ Ease of comprehension
- ✓ Legibility
- ✓ Reading enjoyment

- 1.2. Site navigability: Site navigability site navigability refers to the degree to which a visitor can follow a Web site's hyperlink structure to successfully find information with efficiency and ease.

### 1.2.1. Characteristic of site navigation

- ✓ Information architecture

- ✓ Find ability
- ✓ Efficiency of navigation

1.3. Accessibility: Web accessibility is the inclusive practice of ensuring there are no barriers that prevent interaction with, or access to, websites on the World Wide Web by people with physical disabilities, situational disabilities, and socio-economic restrictions on bandwidth and speed.

1.3.1. Cross-browser: Cross browser testing is the practice of making sure that the web sites and web apps you create work across an acceptable number of web browsers. As a web developer, it is your responsibility to make sure that not only do your projects work, but they work for all your users, no matter what browser, device, or additional assistive tools they are using.

1.3.2. Cross-platform: Cross-platform refers to interoperability or platform-independence; the ability for devices or software applications to work with more than one hardware platform or operating system.

1.4. Compatibility: Compatibility is the manner in which a web page looks in different web browsers.

1.4.1. Things to consider to make your website compatible

- ✓ Semantic HTML markup
- ✓ Color choice
- ✓ Use of HTML Accessibility

2. Website speed test

2.1. Elements that define website speed

- ✓ Web page response time
- ✓ Web page size
- ✓ Code quality
- ✓ User experience
- ✓ Fulfillment
- ✓ Enjoyment
- ✓ Positive emotions

3. Validity of content / content is accurate

- ✓ Wrong information
- ✓ Inaccurate graphs or displays
- ✓ Errors in spelling or grammar
- ✓ Graphics/Illustrations
- ✓ Look for clarity in visuals
- ✓ verify that the current size is appropriate
- ✓ Check that key content is not covered in small print captions



### **Activity 2: Guided Practice**



**Task:** Ecole Secondaire Saint Joseph le Travailleur wants to create a new page that will help students to make their online registration including this information: Registration number, Names, Faculty, Department, Class, Phone, Address, Email, bank slip number and Upload passport photo.

- A. Identify website parameters for website content?**
- B. Use website methodologies to test if the registration form is readable and responsive**



### **Activity 3: Application**



**Task:** Heart Land hotel is located at Nyamirambo, they have an events of kick boxing games that will be take place in two weeks, and they want to publish the event through their website by creating another page called "Our events" this page must have Pictures, Videos and text.

- A. Use all required methodologies to test this page**
- B. Use website methodologies to test if the registration form is readable and responsive**



### **Points to Remember**

- Website must be searchable, easy to learn & use
- The fonts in website must be properly aligned and visible easily.
- Applications must give the messages like for Thanks, save, delete message



### Formative Assessment

2. Define :
  - a. Website content test
  - b. Website Readability
  - c. Site navigability
  - d. Website Accessibility
  - e. Website Compatibility
2. List all website testing methodology
3. What are the characteristic of good readable website?
4. What are the characteristics of site navigation?
5. Differentiate website cross-browser from website cross-platform?
6. What are the elements that define website speed



### Self Reflection

Areas of strength	Areas for improvement	Actions to be taken to improve
1.	1.	1.
2.	2.	2.

## **Unit 4: Production of interactive web animations**

### Illustration of Learning Unit

The illustration should have a Play Button in the center, where the following elements are turning around it:

1. Video
2. Image
3. Sound note (Note de musique)
4. JavaScript logo/piece of code
5. CSS Logo/piece of code
6. GIF

The above illustration will be as if it comes out from a laptop screen on which typing hands are shown.

### Topics

4.1. Analyzing website requirements.

4.2. Designing web animations.

4.3. Publishing animations.

### Unit Summary:

The purpose of this unit is to equip the trainee with the capacity of analyzing website requirement regarding web animations, their design and publication.



## Self-Assessment: Unit 4

6. Look at the illustration. What is happening? What do you think this unit will be about? What topics might be covered?
7. Fill in the self-assessment below.

There are no right or wrong ways to answer this survey. It is for your own use during this course. Think about yourself: do you think you can do this? How well? Read the statements across the top. Put a check in column that best represents your situation. At the end of this unit, we'll take this survey again.

<b>My experience</b>	<b>I don't have any experience doing this.</b>	<b>I know a little about this.</b>	<b>I have some experience doing this.</b>	<b>I have a lot of experience with this.</b>	<b>I am confident in my ability to do this.</b>
<b>Knowledge, skills and attitudes</b>					
Identify dynamic functionality of the animation to be included inside the web document.					
Identify language and tools to achieve dynamic functionality of the animation.					
Identify requirements for online advertising with major agencies and websites.					
Select technologies to create web animation					
Create animations for web interface.					
Create animated advertisement for website advertisement.					
Identify web animation formats.					
Convert web animation from one format to another.					
Integrate web animation into pages.					

## Topic 4.1: Analyzing website requirements

Key Competencies:

Knowledge

1. Describe animation technologies.
2. Describe tools to create web animations.
3. Describe online advertising with major agencies and websites.

Skills

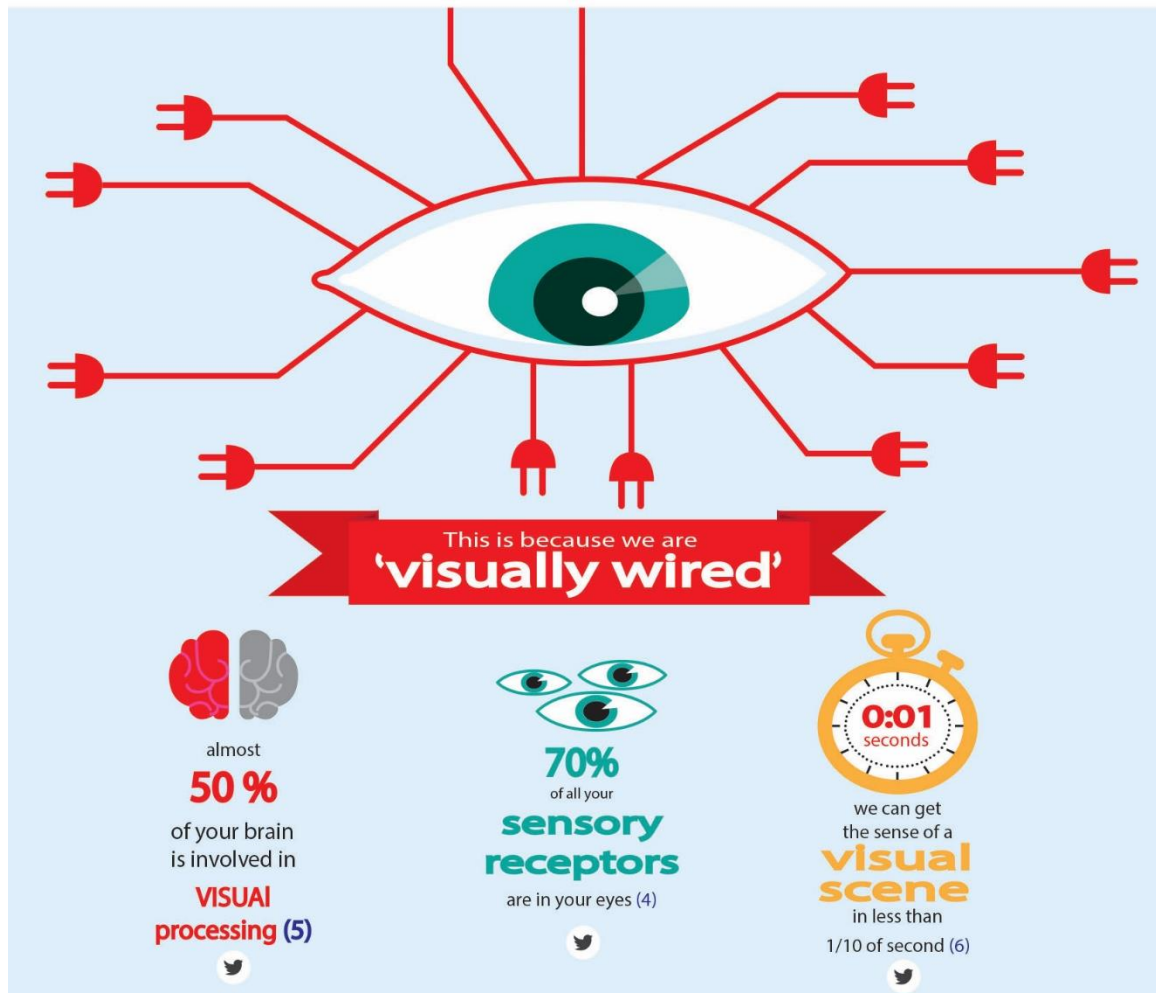
4. Identify website requirements.
5. Chose tools/language to create web animations.
6. Identify requirements for online advertising with major agencies and websites.

Attitudes

4. Be attentive.
5. Be detail-oriented.
6. Be critical thinker.



Getting Started: What do we know and where are we going?



Task:

In your groups observe the image above.

- a) Explain what you see on the image

b) What is the relationship does it have with this topic?



### Activity 1: Problem Solving

In groups make a research on the internet to do the following tasks:



#### Task:

Before hiring a web developer, a customer needs to know what are the web animations used on the most popular websites and which are the most frequently used web ad sizes. These findings will help him to decide which ones to use on his own.

1) Browse the following popular website on the internet and perform the following tasks:

- Google.com
- Facebook.com
- aliexpress.com
- alibaba.com
- amazon.com

a) Show different animation types you see.

b) For each animation type try to guess which technology is used to create it.

2) Browse the internet and provide website having different ad size.

## Key Facts 4.1

### Web animation

The word “Animation” derives from an ancient Latin word “Anima” what means “Soul”  
Literally to add animation to a web is to make it alive?

An animation is a simulation of movement created by displaying a series of pictures, or frames. That illusion of motion, when applied correctly, is what tells the users that they have actually done something; they have successfully interacted with the interface, and have caused something to change.

### Web animation types

- **Interface Element Animation**

This is the animation that lets your users know that their action (clicking, for example) has been registered. Their click was the catalyst needed to make something happen, whether that be navigating to another page, opening a sidebar or modal window, or sending an e-mail from your contact form, etc.

- **Waiting Animations**

These are the animations that you’ll show to the user when something’s happening in the background, and you don’t want them to freak out.

- **Story-Telling Animations**

This is the animation that lets your user understand a story. You can use for example key data in survey to alert users about that subject.

- **Purely Decorative Animations**

For better or worse, some people put animation on their site that serves no purpose other than to be seen. Is it worth it? Yes, and no...  
It should typically be avoided because it’s distracting.

- **Animation In Advertising**

Add animation to an ad, and boom! The eyes are drawn to it against their will. Animation is very efficient in advertising.

- **Tooltip**

A tooltip is often used to specify extra information about something when the user moves the mouse pointer over an element.

### Tools to create web Animation

1. **IDE**

There are animations that are created with codes (mostly CSS, JavaScript, Bootstrap framework). To create these types of animations, often interface animation, you use your preferred IDE.

## 2. Image editor

All image animations are created by image editor like Photoshop, Illustrator, and Adobe Animate. There are plenty of image editors that create animations, just use your preferred one.

## 3. Video editor

Videos are created by video editors like Adobe Premiere. There are plenty of video editors that create video animations, just use your preferred one.

## Web Animation Technologies

### 1. CSS Animations:

CSS animations make it possible to animate transitions from one CSS style configuration to another. Animations consist of two components, a style describing the CSS animation and a set of keyframes that indicate the start and end states of the animation's style, as well as possible intermediate waypoints.

### 2. JavaScript animations:

JavaScript animations are done by programming gradual changes in an element's style. The changes are called by a timer. When the timer interval is small, the animation looks continuous.

### 3. Bootstrap animations:

Bootstrap is a CSS framework. Bootstrap animations are illusions of motions for web elements.

### 4. SVG Animations:

SVG stands for Scalable Vector Graphics (SVG) is an XML-based vector image format for two-dimensional graphics with support for interactivity and animation. The SVG specification is an open standard developed by the World Wide Web Consortium (W3C) since 1999. SVG images and their behaviors are defined in XML text files.

### 5. Canvas animations:

Canvas is a new standard in HTML 5, bundled with numerous new elements and attributes, which provides APIs that allow you to dynamically generate and render graphics, charts, images and animation.

## 6. WebGL :

WebGL stands for Web Graphics Library is a JavaScript API for rendering interactive 2D and 3D graphics within any compatible web browser without the use of any plugins. WebGL is fully integrated with other web standards.

## 7. GIF:

GIF stands for Graphic Interchange Format, bit-mapped graphics file format used by the World Wide Web. An animated GIF is an image that's been encoded using the Graphic Interchange Format where it has multiple frames encoded into a single image file and a web browser or other softwares will play those images back in animated sequence automatically.

## 8. WebP:

WebP is an image format employing both lossy and lossless compression. It is currently developed by Google, based on technology acquired with the purchase of On2 Technologies. As a derivative of the VP8 video format, it is sister project to the WebM multimedia container format.

Using WebP, webmasters and web developers can create smaller, richer images that make the web faster. WebP lossless images are 25%-35% smaller in size compared to other image formats like JPG, PNG and GIF.

## 9. Video:

Video is an electronic medium for the recording, copying, playback, broadcasting, and display of moving visual media.

### Commonly web ad size

1. Square 250x250
2. Small Square 200x200
3. Full Banner 468x60
4. Leaderboard 728x90
5. Inline Rectangle 300x250
6. Large Rectangle 336x280
7. Skyscraper 160x600
8. Wide Skyscraper 160x600
9. Small Skyscraper 120x240
10. Fat Skyscraper 240x400
11. Half-Page Ad 300x600
12. Large Leaderboard 970x90



### **Activity 2: Guided Practice**



### Task:

Browse the internet to perform the following tasks:

a) Identify website with the following animation technologies:

1. CSS Animations
2. JavaScript animations
3. SVG Animations
4. Canvas animations
5. WebGL (Web Graphics Library)
6. GIF
7. WebP
8. Video

b) Identify website with different ad size.



### Activity 3: Application



### Task:

Individually sketch web pages and place the following:

4. 5 animation types in effective way.
5. Indicate the technology you would use on each animation type.
6. Place on them 2 advertisements with different size.



### Points to Remember

- Always update yourself on animation technology
- Always think out of the box, let your inspiration and creativity play freely.



### Formative Assessment

1. Match animation technologies to the tools used for them

Technologies

Tools

- 1) CSS Animations
- 2) JavaScript animations
- 3) Bootstrap animations
- 4) SVG Animations
- 5) Canvas animations
- 6) WebGL (Web Graphics Library)
- 7) GIF
- 8) WebP

- a) IDE
- b) Image editor
- c) Video editor

- 9) Video
2. True or False
  - a) To create an animated ad, the best technology to use is JavaScript?
  - b) To create animated button you can use CSS and/or JavaScript?
  - c) Tooltip is not an animation?
3. A drop down menu can it be done with web animation? If yes what web animation technologies can be used on it?
4. Give three examples where animations should not be used.



### Self Reflection

Areas of strength	Areas for improvement	Actions to be taken to improve
1.	1.	1.
2.	2.	2.

## Topic 4.2: Designing web animations

Key Competencies:

Knowledge	Skills	Attitudes
1. Describe technologies	1. Create web interface with animations using different technologies	1. Be detail-oriented
2. List out parts of language used in animation	2. Create web animated ads using different technologies	2. Being Creative
3. Describe bootstrap features and uses	3. Identify technologies	3. Being Innovative



### Getting Started: What do we know and where are we going?

An ecommerce website owner is complaining about how he has a big audience which is not converting in sells. The problem is not his prices because he is very competitive. He thinks he found is that his visitors are telling him that they don't see which action to take for buying items. And even when they succeed to perform an action, nothing is showing that any action is taking place.



### Task:

- a. What can we advise him to change/add on his website to drive more sells?



- b. What is the relationship of this situation with the topic we are going to learn?



### **Activity 1: Problem Solving**

An NGO, Humura Kibondo, have an old website. That website has been developed by an intern freshly graduated. The website has plenty of animations; unfortunately all of them are image base and make the website load very slowly.



#### **Task:**

1. Make for them a lighter menu, but still animated, using another technique.
2. Make for them a new animated “Donate” button, not based on image, but using another method.
3. Create for them an animated banner of 250 x 250 px.

## Key Facts 4.2

Technology used to create web animations

### 0. CSS Animations

CSS allows animation of HTML elements without using JavaScript or Flash!

#### 0.0. CSS Animation properties:

- ✓ **@keyframes**
- ✓ **animation-name**
- ✓ **animation-duration**
- ✓ **animation-delay**
- ✓ **animation-iteration-count**
- ✓ **animation-direction**
- ✓ **animation-timing-function**
- ✓ **animation-fill-mode**
- ✓ **animation**

#### ➤ CSS Animations

An animation lets an element gradually change from one style to another.

You can change as many CSS properties you want, as many times you want.

To use CSS animation, you must first specify some keyframes for the animation.

Keyframes hold what styles the element will have at certain times.

#### ○ The @keyframes Rule

When you specify CSS styles inside the **@keyframes** rule, the animation will gradually change from the current style to the new style at certain times.

To get an animation to work, you must bind the animation to an element.

The **animation-duration** property defines how long time an animation should take to complete. If the **animation-duration** property is not specified, no animation will occur, because the default value is 0s (0 seconds).

**Sample code**

```
/* The animation code */
@keyframes example {
  from {background-color: red;}
  to {background-color: yellow;}
}

/* The element to apply the animation to */
div {
  width: 100px;
  height: 100px;
  background-color: red;
  animation-name: example;
  animation-duration: 4s;
}
```

In the example above we have specified when the style will change by using the keywords "from" and "to" (which represents 0% (start) and 100% (complete)).

It is also possible to use percent. By using percent, you can add as many style changes as you like.

The following example will change both the background-color and the position of the <div> element when the animation is 25% complete, 50% complete, and again when the animation is 100% complete:

**Sample Code**

```
/* The animation code */
@keyframes example {
  0% {background-color:red; left:0px; top:0px;}
  25% {background-color:yellow; left:200px; top:0px;}
  50% {background-color:blue; left:200px; top:200px;}
  75% {background-color:green; left:0px; top:200px;}
  100% {background-color:red; left:0px; top:0px;}
}

/* The element to apply the animation to */
div {
  width: 100px;
  height: 100px;
  position: relative;
  background-color: red;
  animation-name: example;
```

```
animation-duration: 4s;
}
```

- **Delay an Animation**

The `animation-delay` property specifies a delay for the start of an animation.

The following example has a 2 seconds delay before starting the animation:

*Sample Code*

```
div {
  width: 100px;
  height: 100px;
  position: relative;
  background-color: red;
  animation-name: example;
  animation-duration: 4s;
  animation-delay: 2s;
}
```

Negative values are also allowed. If using negative values, the animation will start as if it had already been playing for *N* seconds.

In the following example, the animation will start as if it had already been playing for 2 seconds:

*Sample Code*

```
div {
  width: 100px;
  height: 100px;
  position: relative;
  background-color: red;
  animation-name: example;
  animation-duration: 4s;
  animation-delay: -2s;
}
```

- **Set How Many Times an Animation Should Run**

The `animation-iteration-count` property specifies the number of times an animation should run.

The following example will run the animation 3 times before it stops:

### Sample Code

```
div {  
  width: 100px;  
  height: 100px;  
  position: relative;  
  background-color: red;  
  animation-name: example;  
  animation-duration: 4s;  
  animation-iteration-count: 3;  
}
```

The following example uses the value "infinite" to make the animation continue forever:

### Sample Code

```
div {  
  width: 100px;  
  height: 100px;  
  position: relative;  
  background-color: red;  
  animation-name: example;  
  animation-duration: 4s;  
  animation-iteration-count: infinite;  
}
```

#### ○ Run Animation in Reverse Direction or Alternate Cycles

The **animation-direction** property specifies whether an animation should be played forwards, backwards or in alternate cycles.

The animation-direction property can have the following values:

- **normal** - The animation is played as normal (forwards). This is default
- **reverse** - The animation is played in reverse direction (backwards)
- **alternate** - The animation is played forwards first, then backwards
- **alternate-reverse** - The animation is played backwards first, then forwards

The following example will run the animation in reverse direction (backwards):

### Sample Code

```
div {  
  width: 100px;  
  height: 100px;  
  position: relative;
```

```
background-color: red;
animation-name: example;
animation-duration: 4s;
animation-direction: reverse;
}
```

The following example uses the value "alternate" to make the animation run forwards first, then backwards:

#### *Sample Code*

```
div {
width: 100px;
height: 100px;
position: relative;
background-color: red;
animation-name: example;
animation-duration: 4s;
animation-iteration-count: 2;
animation-direction: alternate;
}
```

The following example uses the value "alternate-reverse" to make the animation run backwards first, then forwards:

#### *Sample Code*

```
div {
width: 100px;
height: 100px;
position: relative;
background-color: red;
animation-name: example;
animation-duration: 4s;
animation-iteration-count: 2;
animation-direction: alternate-reverse;
}
```

- **Specify the Speed Curve of the Animation**

The **animation-timing-function** property specifies the speed curve of the animation.

The animation-timing-function property can have the following values:

- `ease` - Specifies an animation with a slow start, then fast, then end slowly (this is default)
- `linear` - Specifies an animation with the same speed from start to end
- `ease-in` - Specifies an animation with a slow start
- `ease-out` - Specifies an animation with a slow end
- `ease-in-out` - Specifies an animation with a slow start and end
- `cubic-bezier(n, n, n, n)` - Lets you define your own values in a cubic-bezier function

The following example shows the some of the different speed curves that can be used:

#### *Sample Code*

```
#div1 {animation-timing-function: linear;}
#div2 {animation-timing-function: ease;}
#div3 {animation-timing-function: ease-in;}
#div4 {animation-timing-function: ease-out;}
#div5 {animation-timing-function: ease-in-out;}
```

#### ○ **Specify the fill-mode For an Animation**

CSS animations do not affect an element before the first keyframe is played or after the last keyframe is played. The `animation-fill-mode` property can override this behavior.

The `animation-fill-mode` property specifies a style for the target element when the animation is not playing (before it starts, after it ends, or both).

The `animation-fill-mode` property can have the following values:

- `none` - Default value. Animation will not apply any styles to the element before or after it is executing
- `forwards` - The element will retain the style values that is set by the last keyframe (depends on animation-direction and animation-iteration-count)
- `backwards` - The element will get the style values that is set by the first keyframe (depends on animation-direction), and retain this during the animation-delay period
- `both` - The animation will follow the rules for both forwards and backwards, extending the animation properties in both directions

The following example lets the <div> element retain the style values from the last keyframe when the animation ends:

#### *Sample Code*

```
div {
```

```
width: 100px;
height: 100px;
background: red;
position: relative;
animation-name: example;
animation-duration: 3s;
animation-fill-mode: forwards;
}
```

The following example lets the <div> element get the style values set by the first keyframe before the animation starts (during the animation-delay period):

#### *Sample Code*

```
div {
width: 100px;
height: 100px;
background: red;
position: relative;
animation-name: example;
animation-duration: 3s;
animation-delay: 2s;
animation-fill-mode: backwards;
}
```

The following example lets the <div> element get the style values set by the first keyframe before the animation starts, and retain the style values from the last keyframe when the animation ends:

#### *Sample Code*

```
div {
width: 100px;
height: 100px;
background: red;
position: relative;
animation-name: example;
animation-duration: 3s;
animation-delay: 2s;
animation-fill-mode: both;
}
```

- Animation Shorthand Property

The Sample Code below uses six of the animation properties:



### *Sample Code*

```
div {  
  animation-name: example;  
  animation-duration: 5s;  
  animation-timing-function: linear;  
  animation-delay: 2s;  
  animation-iteration-count: infinite;  
  animation-direction: alternate;  
}
```

The same animation effect as above can be achieved by using the shorthand **animation** property:

### *Sample Code*

```
div {  
  animation: example 5s linear 2s infinite alternate;  
}
```

- **CSS Tooltip**

A tooltip is often used to specify extra information about something when the user moves the mouse pointer over an element

### *Sample Code*

```
<!DOCTYPE html>  
<html>  
<style>  
.tooltip {  
  position: relative;  
  display: inline-block;  
  border-bottom: 1px dotted black;  
}  
  
.tooltip .tooltiptext {
```

```
visibility: hidden;
width: 120px;
background-color: black;
color: #fff;
text-align: center;
border-radius: 6px;
padding: 5px 0;
position: absolute;
z-index: 1;
bottom: 150%;
left: 50%;
margin-left: -60px;
}

.tooltip .tooltiptext::after {
content: "";
position: absolute;
top: 100%;
left: 50%;
margin-left: -5px;
border-width: 5px;
border-style: solid;
border-color: black transparent transparent transparent;
}

.tooltip:hover .tooltiptext {
visibility: visible;
}

</style>
```

```
<body style="text-align:center;">

<h2>Top Tooltip w/ Bottom Arrow</h2>

<div class="tooltip">Hover over me
  <span class="tooltiptext">Tooltip text</span>
</div>

</body>
</html>
```

### 1. JavaScript animations

- **JavaScript HTML Animations**

#### **Create the Animation Using JavaScript**

##### ***Sample Code***

```
<!DOCTYPE html>
<html>
<style>
#myContainer {
  width: 400px;
  height: 400px;
  position: relative;
  background: yellow;
}
#myAnimation {
  width: 50px;
  height: 50px;
  position: absolute;
  background-color: red;
```

```
}  
</style>  
<body>  
  
<p>  
<button onclick="myMove()">Click Me</button>  
</p>  
  
<div id="myContainer">  
<div id="myAnimation"></div>  
</div>  
  
<script>  
function myMove() {  
  var elem = document.getElementById("myAnimation");  
  var pos = 0;  
  var id = setInterval(frame, 10);  
  function frame() {  
    if (pos == 350) {  
      clearInterval(id);  
    } else {  
      pos++;  
      elem.style.top = pos + 'px';  
      elem.style.left = pos + 'px';  
    }  
  }  
}  
}  
</script>
```

</body>

</html>

- JavaScript animation libraries

- a) Three JS
- b) Anime JS
- c) Particles JS
- d) ScrollReveal JS
- e) Velocity JS
- f) Popmotion JS
- g) Mo JS
- h) Vivus JS
- i) GreenSock JS
- j) AOS

➤ Introduction to Bootstrap 4.0

- **What is Bootstrap?**
  - Bootstrap is a free front-end framework for faster and easier web development
  - Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins
  - Bootstrap also gives you the ability to easily create responsive designs

*Sample Code*

```
<div class="jumbotron text-center">  
  <h1>My First Bootstrap Page</h1>  
  <p>Resize this responsive page to see the effect!</p>  
</div>
```

```
<div class="container">  
  <div class="row">  
    <div class="col-sm-4">  
      <h3>Column 1</h3>  
      <p>Lorem ipsum dolor..</p>  
    </div>  
    <div class="col-sm-4">  
      <h3>Column 2</h3>  
      <p>Lorem ipsum dolor..</p>  
    </div>
```

```
<div class="col-sm-4">
  <h3>Column 3</h3>
  <p>Lorem ipsum dolor..</p>
</div>
</div>
</div>
```

- **Bootstrap 3 vs. Bootstrap 4**

Bootstrap 4 is the newest version of Bootstrap; with new components, faster stylesheet and more responsiveness.

Bootstrap 4 supports the latest, stable releases of all major browsers and platforms. However, Internet Explorer 9 and down is not supported.

**If you require IE8-9 support, use [Bootstrap 3](#).** It is the most stable version of Bootstrap, and it is still supported by the team for critical bugfixes and documentation changes. However, no new features will be added to it.

**Dropped icon support:** Bootstrap 4 does not support BS3 Glyphicons. Use Font-Awesome or other icon libraries instead.

- **Why Use Bootstrap?**

Advantages of Bootstrap:

- **Easy to use:** Anybody with just basic knowledge of HTML and CSS can start using Bootstrap
- **Responsive features:** Bootstrap's responsive CSS adjusts to phones, tablets, and desktops
- **Mobile-first approach:** In Bootstrap, mobile-first styles are part of the core framework
- **Browser compatibility:** Bootstrap 4 is compatible with all modern browsers (Chrome, Firefox, Internet Explorer 10+, Edge, Safari, and Opera)

- **Where to Get Bootstrap 4?**

There are two ways to start using Bootstrap 4 on your own web site.

You can:

- Include Bootstrap 4 from a CDN
- Download Bootstrap 4 from [getbootstrap.com](https://getbootstrap.com)

## Bootstrap 4 CDN

If you don't want to download and host Bootstrap 4 yourself, you can include it from a CDN (Content Delivery Network).

MaxCDN provides CDN support for Bootstrap's CSS and JavaScript. You must also include jQuery:

*MaxCDN:*

```
<!-- Latest compiled and minified CSS -->
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css">

<!-- jQuery library -->
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>

<!-- Popper JS -->
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.js"></script>

<!-- Latest compiled JavaScript -->
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.js"></script>
```

One advantage of using the Bootstrap 4 CDN:

Many users already have downloaded Bootstrap 4 from MaxCDN when visiting another site. As a result, it will be loaded from cache when they visit your site, which leads to faster loading time. Also, most CDN's will make sure that once a user requests a file from it, it will be served from the server closest to them, which also leads to faster loading time.

### jQuery and Popper?

Bootstrap 4 use jQuery and Popper.js for JavaScript components (like modals, tooltips, popovers etc). However, if you just use the CSS part of Bootstrap, you don't need them.

Show components that require jQuery »

## Downloading Bootstrap 4

If you want to download and host Bootstrap 4 yourself, go to <https://getbootstrap.com/>, and follow the instructions there.

- **Create First Web Page With Bootstrap 4**

## 1. Add the HTML5 doctype

Bootstrap 4 uses HTML elements and CSS properties that require the HTML5 doctype.

Always include the HTML5 doctype at the beginning of the page, along with the lang attribute and the correct character set:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
  </head>
</html>
```

## 2. Bootstrap 4 is mobile-first

Bootstrap 4 is designed to be responsive to mobile devices. Mobile-first styles are part of the core framework.

To ensure proper rendering and touch zooming, add the following `<meta>` tag inside the `<head>` element:

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```

The `width=device-width` part sets the width of the page to follow the screen-width of the device (which will vary depending on the device).

The `initial-scale=1` part sets the initial zoom level when the page is first loaded by the browser.

## 3. Containers

Bootstrap 4 also requires a containing element to wrap site contents.

There are two container classes to choose from:

1. The `.container` class provides a responsive **fixed width container**
2. The `.container-fluid` class provides a **full width container**, spanning the entire width of the viewport

`.container`

`.container-fluid`

- **Two Basic Bootstrap 4 Pages**



The following example shows the code for a basic Bootstrap 4 page (with a responsive fixed width container):

### **Sample Code**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap 4 Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.js">
</script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.js"></script>
</head>
<body>

<div class="container">
  <h1>My First Bootstrap Page</h1>
  <p>This is some text.</p>
</div>

</body>
</html>
```

The following example shows the code for a basic Bootstrap 4 page (with a full width container):

### **Container Fluid Sample Code**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap 4 Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.js">
</script>
```

```

<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.js"></script>
</head>
<body>

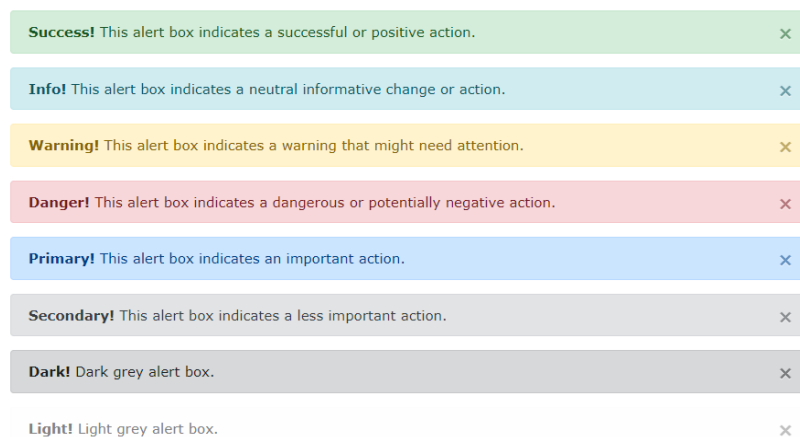
<div class="container-fluid">
  <h1>My First Bootstrap Page</h1>
  <p>This is some text.</p>
</div>

</body>
</html>

```

### ○ Bootstrap 4 Alerts

Bootstrap 4 provides an easy way to create predefined alert messages:



Alerts are created with the `.alert` class, followed by one of the contextual classes `.alert-success`, `.alert-info`, `.alert-warning`, `.alert-danger`, `.alert-primary`, `.alert-secondary`, `.alert-light` or `.alert-dark`:

### Sample Code

```

<div class="alert alert-success">
  <strong>Success!</strong> Indicates a successful or positive action.
</div>

```

### Alert Links

Add the `alert-link` class to any links inside the alert box to create "matching colored links":

### Sample Code

```
<div class="alert alert-success">
  <strong>Success!</strong> You should <a href="#" class="alert-link">read this
message</a>.
</div>
```

### Closing Alerts

To close the alert message, add a `.alert-dismissible` class to the alert container. Then add `class="close"` and `data-dismiss="alert"` to a link or a button element (when you click on this the alert box will disappear).

### Sample Codes

```
<div class="alert alert-success alert-dismissible">
  <button type="button" class="close" data-dismiss="alert">&times;</button>
  <strong>Success!</strong> Indicates a successful or positive action.
</div>
```

**Tip:** `&times;` (x) is an HTML entity that is the preferred icon for close buttons, rather than the letter "x".

### Animated Alerts

The `.fade` and `.show` classes adds a fading effect when closing the alert message:

### Sample Code

```
<div class="alert alert-danger alert-dismissible fade show">
```

## Button Styles

Bootstrap 4 provides different styles of buttons:

Basic   Primary   Secondary   Success   Info   Warning   Danger   Dark   Light   Link

### Sample Code

```
<button type="button" class="btn">Basic</button>
<button type="button" class="btn btn-primary">Primary</button>
<button type="button" class="btn btn-secondary">Secondary</button>
<button type="button" class="btn btn-success">Success</button>
<button type="button" class="btn btn-info">Info</button>
<button type="button" class="btn btn-warning">Warning</button>
<button type="button" class="btn btn-danger">Danger</button>
<button type="button" class="btn btn-dark">Dark</button>
<button type="button" class="btn btn-light">Light</button>
<button type="button" class="btn btn-link">Link</button>
```

The button classes can be used on `<a>`, `<button>`, or `<input>` elements:

### Sample Code

```
<a href="#" class="btn btn-info" role="button">Link Button</a>
<button type="button" class="btn btn-info">Button</button>
<input type="button" class="btn btn-info" value="Input Button">
<input type="submit" class="btn btn-info" value="Submit Button">
```

### Button Outline

Bootstrap 4 provides eight outline/bordered buttons:

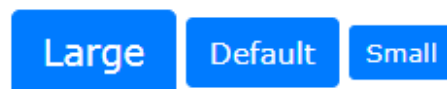


### Sample Code

```
<button type="button" class="btn btn-outline-primary">Primary</button>
<button type="button" class="btn btn-outline-secondary">Secondary</button>
<button type="button" class="btn btn-outline-success">Success</button>
<button type="button" class="btn btn-outline-info">Info</button>
<button type="button" class="btn btn-outline-warning">Warning</button>
<button type="button" class="btn btn-outline-danger">Danger</button>
<button type="button" class="btn btn-outline-dark">Dark</button>
<button type="button" class="btn btn-outline-light text-dark">Light</button>
```

### Button Sizes

Use the `.btn-lg` class for large buttons or `.btn-sm` class for small buttons:



### Sample Code

```
<button type="button" class="btn btn-primary btn-lg">Large</button>
<button type="button" class="btn btn-primary">Default</button>
<button type="button" class="btn btn-primary btn-sm">Small</button>
```

### Block Level Buttons

Add class `.btn-block` to create a block level button that spans the entire width of the parent element.

Full-Width Button

### Sample Code

```
<button type="button" class="btn btn-primary btn-block">Full-Width Button</button>
```

---

### Active/Disabled Buttons

A button can be set to an active (appear pressed) or a disabled (unclickable) state:



The class `.active` makes a button appear pressed, and the `disabled` attribute makes a button unclickable. Note that `<a>` elements do not support the disabled attribute and must therefore use the `.disabled` class to make it visually appear disabled.

### Sample Code

```
<button type="button" class="btn btn-primary active">Active Primary</button>
<button type="button" class="btn btn-primary" disabled>Disabled Primary</button>
<a href="#" class="btn btn-primary disabled">Disabled Link</a>
```

---

### Spinner Buttons

You can also add "spinners" to a button:



### Sample Code

```
<button class="btn btn-primary">
  <span class="spinner-border spinner-border-sm"></span>
</button>

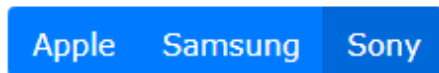
<button class="btn btn-primary">
  <span class="spinner-border spinner-border-sm"></span>
  Loading..
</button>

<button class="btn btn-primary" disabled>
  <span class="spinner-border spinner-border-sm"></span>
  Loading..
</button>
```

```
<button class="btn btn-primary" disabled>
  <span class="spinner-grow spinner-grow-sm"></span>
  Loading..
</button>
```

## Button Groups

Bootstrap 4 allows you to group a series of buttons together (on a single line) in a button group:



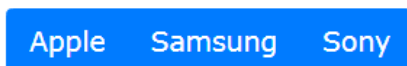
Use a `<div>` element with class `.btn-group` to create a button group:

### Example

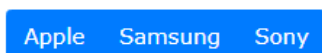
```
<div class="btn-group">
  <button type="button" class="btn btn-primary">Apple</button>
  <button type="button" class="btn btn-primary">Samsung</button>
  <button type="button" class="btn btn-primary">Sony</button>
</div>
```

**Tip:** Instead of applying button sizes to every button in a group, use class `.btn-group-lg` for a large button group or the `.btn-group-sm` for a small button group:

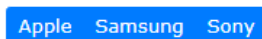
Large Buttons:



Default Buttons:



Small Buttons:

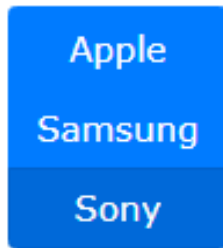


### Sample Code

```
<div class="btn-group btn-group-lg">
  <button type="button" class="btn btn-primary">Apple</button>
  <button type="button" class="btn btn-primary">Samsung</button>
  <button type="button" class="btn btn-primary">Sony</button>
</div>
```

## Vertical Button Groups

Bootstrap 4 also supports vertical button groups:

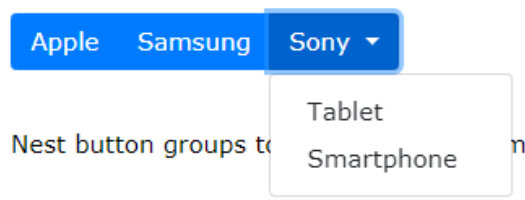


Use the class `.btn-group-vertical` to create a vertical button group:

### Sample Code

```
<div class="btn-group-vertical">
  <button type="button" class="btn btn-primary">Apple</button>
  <button type="button" class="btn btn-primary">Samsung</button>
  <button type="button" class="btn btn-primary">Sony</button>
</div>
```

### Nesting Button Groups & Dropdown Menus



Nest button groups to create dropdown menus (you will learn more about dropdowns in a later chapter):

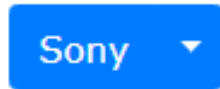
### Sample Code

```
<div class="btn-group">
  <button type="button" class="btn btn-primary">Apple</button>
  <button type="button" class="btn btn-primary">Samsung</button>
  <div class="btn-group">
    <button type="button" class="btn btn-primary dropdown-toggle" data-
toggle="dropdown">
      Sony
    </button>
    <div class="dropdown-menu">
      <a class="dropdown-item" href="#">Tablet</a>
      <a class="dropdown-item" href="#">Smartphone</a>
    </div>
  </div>
</div>
```

</div>

---

### Split Button Dropdowns

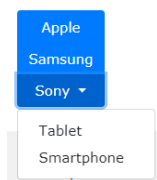


#### Sample Code

```
<div class="btn-group">
  <button type="button" class="btn btn-primary">Sony</button>
  <button type="button" class="btn btn-primary dropdown-toggle dropdown-toggle-split" data-toggle="dropdown">
    <span class="caret"></span>
  </button>
  <div class="dropdown-menu">
    <a class="dropdown-item" href="#">Tablet</a>
    <a class="dropdown-item" href="#">Smartphone</a>
  </div>
</div>
```

---

### Vertical Button Group w/ Dropdown



#### Example

```
<div class="btn-group-vertical">
  <button type="button" class="btn btn-primary">Apple</button>
  <button type="button" class="btn btn-primary">Samsung</button>
  <div class="btn-group">
    <button type="button" class="btn btn-primary dropdown-toggle" data-toggle="dropdown">
      Sony
    </button>
    <div class="dropdown-menu">
      <a class="dropdown-item" href="#">Tablet</a>
      <a class="dropdown-item" href="#">Smartphone</a>
    </div>
  </div>
</div>
```



## Button Groups Side by Side

Button groups are "inline" by default, which makes them appear side by side when you have multiple groups:



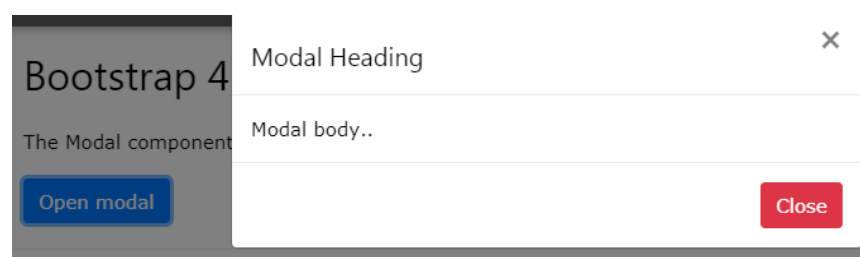
### Sample Code

```
<div class="btn-group">
  <button type="button" class="btn btn-primary">Apple</button>
  <button type="button" class="btn btn-primary">Samsung</button>
  <button type="button" class="btn btn-primary">Sony</button>
</div>

<div class="btn-group">
  <button type="button" class="btn btn-primary">BMW</button>
  <button type="button" class="btn btn-primary">Mercedes</button>
  <button type="button" class="btn btn-primary">Volvo</button>
</div>
```

### ○ Bootstrap 4 Modal

The Modal component is a dialog box/popup window that is displayed on top of the current page:



## How To Create a Modal

The following example shows how to create a basic modal:

### Sample Code

```
<!-- Button to Open the Modal -->
<button type="button" class="btn btn-primary" data-toggle="modal" data-
target="#myModal">
  Open modal
```

```

</button>

<!-- The Modal -->
<div class="modal" id="myModal">
  <div class="modal-dialog">
    <div class="modal-content">

      <!-- Modal Header -->
      <div class="modal-header">
        <h4 class="modal-title">Modal Heading</h4>
        <button type="button" class="close" data-dismiss="modal">&times;</button>
      </div>

      <!-- Modal body -->
      <div class="modal-body">
        Modal body..
      </div>

      <!-- Modal footer -->
      <div class="modal-footer">
        <button type="button" class="btn btn-danger" data-dismiss="modal">Close</button>
      </div>

    </div>
  </div>
</div>

```

### Add animation

Use the `.fade` class to add a fading effect when opening and closing the modal:

### Sample Code

```

<!-- Fading modal -->
<div class="modal fade"></div>

<!-- Modal without animation -->
<div class="modal"></div>

```

### Modal Size

Change the size of the modal by adding the `.modal-sm` class for small modals, `.modal-lg` class for large modals, or `.modal-xl` for extra large modals.

Add the size class to the `<div>` element with class `.modal-dialog`:

### Small Modal

```
<div class="modal-dialog modal-sm">
```

### Large Modal

```
<div class="modal-dialog modal-lg">
```

### Extra Large Modal

```
<div class="modal-dialog modal-xl">
```

By default, modals are "medium" in size.

### Centered Modal

Center the modal vertically and horizontally within the page, with the `.modal-dialog-centered` class:

#### Sample Code

```
<div class="modal-dialog modal-dialog-centered">
```

### Scrolling Modal

When you have a lot of content inside the modal, a scrollbar is added to the page. See the examples below to understand it:

#### Sample Code

```
<div class="modal-dialog">
```

However, it is possible to only scroll inside the modal, instead of the page itself, by adding `.modal-dialog-scrollable` to `.modal-dialog`:

#### Sample Code

```
<div class="modal-dialog modal-dialog-scrollable">
```

---

### ○ Bootstrap 4 Icons

Bootstrap 4 does not have its own icon library (Glyphicons from Bootstrap 3 are not supported in BS4). However, there are many free icon libraries to choose from, such as Font Awesome and Google Material Design Icons.

To use Font Awesome icons, add the following to your HTML page (No downloading or installation is required):

```
<link rel="stylesheet" href="https://use.fontawesome.com/releases/v5.7.0/css/all.css" integrity="sha384-IZN37f5QGtY3VHgisS14W3ExzMWZxybE1SJSEsQp9S+oqd12jhcu+A56Ebc1zFSJ" crossorigin="
```

anonymous">

Then, add the name of the icon class to any inline HTML element (like `<i>` or `<span>`):

### **Sample Code**

```
<i class="fas fa-cloud"></i>
<i class="fas fa-coffee"></i>
<i class="fas fa-car"></i>
<i class="fas fa-file"></i>
<i class="fas fa-bars"></i>
```

The list of all Font Awesome icons can be found  
here: <https://www.w3schools.com/icons/default.asp>

- Bootstrap 4 Carousel



The Carousel is a slideshow for cycling through elements.

### **How To Create a Carousel**

The following example shows how to create a basic carousel with indicators and controls:

#### *Example*

```
<div id="demo" class="carousel slide" data-ride="carousel">

  <!-- Indicators -->
  <ul class="carousel-indicators">
    <li data-target="#demo" data-slide-to="0" class="active"></li>
    <li data-target="#demo" data-slide-to="1"></li>
    <li data-target="#demo" data-slide-to="2"></li>
  </ul>

  <!-- The slideshow -->
  <div class="carousel-inner">
```

```

<div class="carousel-item active">
  
</div>
<div class="carousel-item">
  
</div>
<div class="carousel-item">
  
</div>
</div>

<!-- Left and right controls -->
<a class="carousel-control-prev" href="#demo" data-slide="prev">
  <span class="carousel-control-prev-icon"></span>
</a>
<a class="carousel-control-next" href="#demo" data-slide="next">
  <span class="carousel-control-next-icon"></span>
</a>

</div>

```

### Sample Code

A description of what each class from the example above do:

Class	Description
<code>.carousel</code>	Creates a carousel
<code>.carousel-indicators</code>	Adds indicators for the carousel. These are the little dots at the bottom of each slide (which indicates how many slides there are in the carousel, and which slide the user are currently viewing)
<code>.carousel-inner</code>	Adds slides to the carousel

`.carousel-item`

Specifies the content of each slide

`.carousel-control-prev`

Adds a left (previous) button to the carousel, which allows the user to go back between the slides

`.carousel-control-next`

Adds a right (next) button to the carousel, which allows the user to go forward between the slides

`.carousel-control-prev-icon`

Used together with `.carousel-control-prev` to create a "previous" button

`.carousel-control-next-icon`

Used together with `.carousel-control-next` to create a "next" button

`.slide`

Adds a CSS transition and animation effect when sliding from one item to the next. Remove this class if you do not want this effect

---

### Add Captions to Slides



Add elements inside `<div class="carousel-caption">` within each `<div class="carousel-item">` to

create a caption for each slide:

#### Sample Code

```
<div class="carousel-item">
  
  <div class="carousel-caption">
    <h3>Los Angeles</h3>
    <p>We had such a great time in LA!</p>
  </div>
</div>
```



### Activity 2: Guided Practice

In small groups work on the following:

A knowledge website igawumve.com needs to drive more attention to its tutorial page. To achieve that goal they decided to add web animations to it with the help of a team of web designers. Your group is hired to do the job.

For that, perform the following tasks:



#### Task:

- Create a tutorial page, where visitors will select which tutorial they will take among many other.
- Select the technologies to create "Take This Tutorial" button, an animated button to each tutorial.
- Using an image editor, create an animated web ad (square 300 x 600) promoting their latest tutorial.
- Using Bootstrap create tooltips describing in short each tutorial.



### Activity 3: Application

**Individually, on your computer perform the following tasks:**

Jisho Ltd is a design company, they need a website to mark their presence online. They appoint you as their web animation designer, perform the following tasks:



#### Task:

- Develop a homepage with all web animation types you think they are pertinents.**
- Add to that homepage an animated ad of 300 x 250. On this ad they need to display the visual importance using the following facts: Almost 50% of your brain is involved in

visual processing, 70% of all your sensory receptors are in your eyes, we can get the sense of a visual scene in less than 1/10 of a second.

- c. Add tooltips and modal using Bootstrap.



### Points to Remember

- Always update yourself on animation technology
- Always think out of the box, let your inspiration and creativity play freely.



### Formative Assessment

1. Complete the following piece of code:

```
<!DOCTYPE html>

<html>

<style>

#myContainer {

    width: 400px;

    height: 400px;

    position: relative;

    background: yellow;

}

#myAnimation {

    width: 50px;

    height: 50px;

    position: absolute;

    background-color: red;

}

</style>

<body>

<p>

<button onclick="myMove()">Click Me</button>
```



</p>

<div id = ".....">

<div id = "....."></div>

</div>

<script>

function myMove() {

var elem = document.getElementById(".....");

var pos = 0;

var id = setInterval(frame, 10);

function frame() {

if (pos == 350) {

clearInterval(id);

} else {

pos++;

elem.style.top = pos + 'px';

elem.style.left = pos + 'px';

}

}

}

</script>

</body>

</html>

2. Create a basic modal using Bootstrap. This modal should have the following message  
“WARNING: None is allowed to publish fake news!”
3. Sharama is a local banana wine producer. Create for them a large skyscraper animated web ad.
4. Using CSS create an horizontal menu with some submenu.



Self Reflection

Areas of strength	Areas for improvement	Actions to be taken to improve
1.	1.	1.
2.	2.	2.

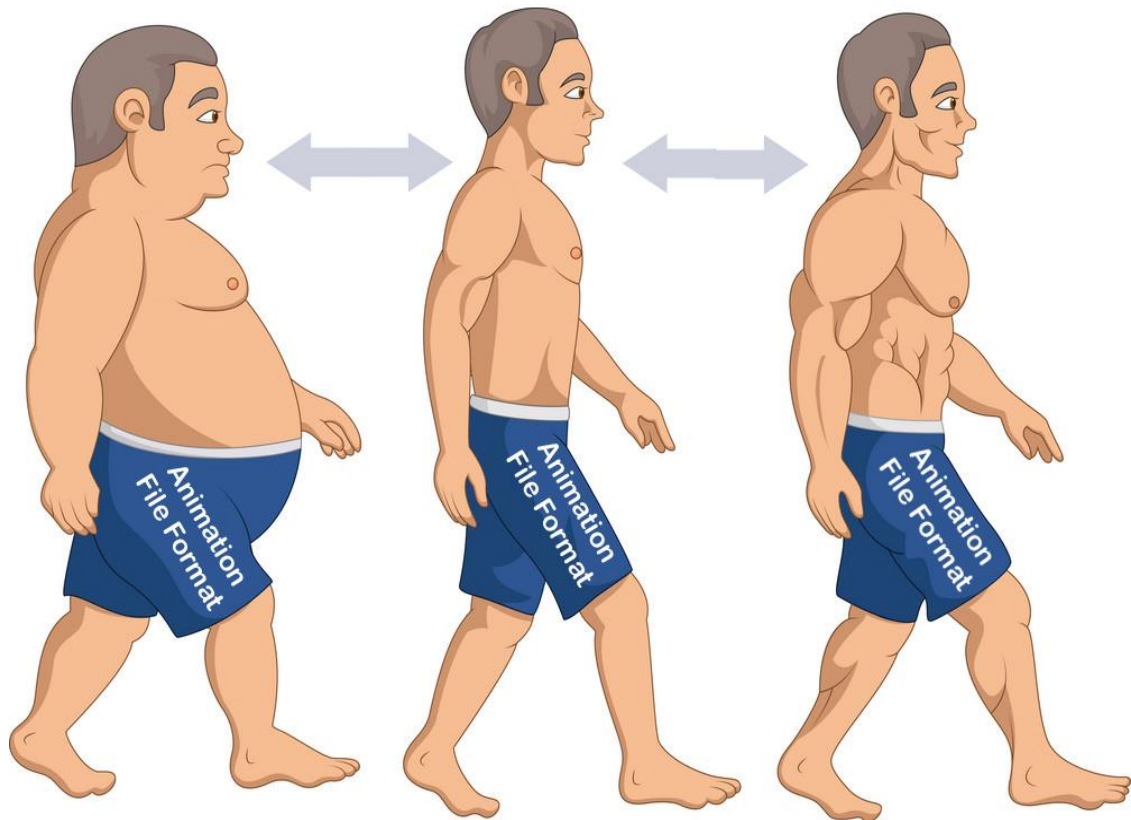
### Topic 4.3: Publishing Web Animations

Key Competencies:

Knowledge	Skills	Attitudes
1. Describe web animation formats.	1. Identify web animation formats.	1. Be detail-oriented
2. Explain the procedures or steps de convert web animation	2. Convert web animation from one format to another.	2. Being Pragmatic
3. Describe web animation integration.	3. Integrate web animation into pages.	2. Being Accurate

#### Getting Started: What do we know and where are we going?

Form small groups, and observe the image attentively to perform the tasks:



#### Task:

- a. In the image above, what do you see?
- b. What is the relationship of this image with our topic?



#### Activity 1: Problem Solving

On the internet ask trainee's groups to work on the following:

The management of <https://www.igihe.com/>, wish to improve its loading speed. They are convinced a better site speed will improve users experience, thus increase their audience. To help them, they need a team specialized in web design. Your group decided to help them by working on the following tasks:



#### Task:

- a) Identify all web animations on igihe.com with their formats.
- b) To improve the website performance and save visitor's data, find out in which format the identified animations should be in.
- c) Convert some of the identified files into the format you recommended.
- d) Is there any missing animation you would advise them to add on igihe.com? If yes how would you integrate it to the website?

## Key Facts 4.3

### Animation Formats

*There are plenty of file format that web animations can made in. But not all format performs the same way or serve the same purpose. Every file format or technic has its advantages (Pros) and disadvantages (Cons). Here below are some file formats and technics with their pros and cons. Remember this list is not exhaustive, but has the main animation files formats and technics (You can do your own research for others you don't find here).*

Animation File formats & Technics	Pros	Cons
GIF	It is simple and available to everyone. No browser plugin required. It enables picture sequence animation, It can be video-like.	The size of animated gif files can be huge. Opacity control is non-existent, there is no alpha channel. It has low compression. It can be pixelated.
APNG	Supports alpha channel.	Not supported in most web browsers.
Flash	The exported swf file can be quite small. It's fast, can be interactive, and it uses vector animation.	No longer supported on most platforms.
HTML5/ CSS3	Simple and easy to learn. Good for transitions and transformations. HTML/CSS3 animations run well on mobile devices. It allows vector or pixel animation. Can also manipulate scalable vector graphics (SVG).	Not all SVG properties can be animated with CSS. It has limited possibilities for animation and often requires use of JavaScript or a SMIL. It cannot respond to new inputs or a changing environment (dynamic animation).

Bootstrap	<p>Saves Time</p> <p>Bootstrap Encourages Consistency</p> <p>Better Teamwork</p> <p>Bootstrap Offers an Excellent Grid System</p> <p>Responsiveness</p>	<p>Every Bootstrap Website Looks Similar</p> <p>Has a Learning Curve</p> <p>Can be Heavy</p>
JavaScript	<p>Makes web animation easy when using an SVG animation library that generates an image sequence (.png sequence)</p>	<p>Doesn't preserve SVG when embedded as an image.</p>

## Converting animation file format

You may need to convert a web animation files from one format to another for some reasons, like to reduce the file size to improve the speed of the web page.

### ➤ Converting tools

To convert files there are tons of online and desktop based tools, you can do your own search. Here below are some of them:

1. Format Factory (Desktop)
2. <https://ezgif.com/> (Online)
3. <https://www.img2go.com/> (Online)
4. <https://www.online-convert.com/> (Online)

### ➤ Steps to convert files

Even there is a multitude of tools, they have generally the same steps to convert files. There is few differences in steps between desktop and online tools.

- Steps to convert files with online tools

1. Select and open in a browser appropriate tool based on the files formats it can convert to meet your need.
2. Upload the file you need to convert.
3. Select the file format in which you need to convert your file.
4. Convert by clicking the button Convert
5. Download your converted file

○ Steps to convert files with desktop tools

1. Select appropriate tool based on the files formats it can convert to meet your need.
2. Install the selected tool on your computer.
3. Upload the file you need to convert.
4. Select the file format in which you need to convert your file.
5. Select the location you need to save the converted file.
6. Convert by clicking the button Convert.
7. Locate your converted file where you saved it.

## Web animation integration into html page

➤ Integrate animated CSS and JavaScript

This is a prerequisite; you learnt it in other modules. The way you integrate usually CSS is the same way you integrate animated CSS and the same way you integrate usually JavaScript is the same way you integrate animated JavaScript.

➤ Integrate animated file

To integrate web animation file into HTML you will use the <embed> tag (This tag exist only since HTML 5).

The <embed> tag defines a container for an external application or interactive content (a plug-in). It works in all browsers.

○ **<embed> Attributes**

Attribute	Value	Description
<a href="#">height</a>	<i>pixels</i>	Specifies the height of the embedded content

<a href="#">src</a>	<i>URL</i>	Specifies the address of the external file to embed
<a href="#">type</a>	<i>media_type</i>	Specifies the media type of the embedded content
<a href="#">width</a>	<i>pixels</i>	Specifies the width of the embedded content

○ Code Structure

```

<!DOCTYPE html>

<html>

<body><embed src="url of your file location">

</body>

</html>

```



### Activity 2: Guided Practice

The Ministry of ICT in Rwanda wishes to perform a study on overall performance of Rwandan websites. They have decided to start by web animations as they play an important role in user experience. The assignment is given to schools:



#### Task:

- Chose 2 websites as case studies. One bad performer and the other good performer.
- Compare the 2 website's animations file formats, provide your ideas on which format they should be to improve the bad performer and the good performer if there is room to do so.
- Convert the animations in the proposed format where the solution is conversion.
- To improve user experience, which animation you would advise them to add on both websites? How would you integrate the proposed animations to the websites?



### Activity 3: Application

You are about to launch an e-commerce that you would like to be competitive here in Rwanda. But before designing yours you need to make sure you make the best decisions for your animations compared to your competitors. To do that you have decided to investigate

e-commerce websites to know their weaknesses concerning animations and users experience. To do that, perform the following tasks:



#### **Task:**

- a) Identify some of web animations you find on Rwandan e-commerce.
- b) Convert the web animations files you found in a better file format to improve the performance of the website.
- c) Integrate the converted web animations files in an HTML mockup you created of your e-commerce website.
- d) Integrate the necessary web animations to drive sells (such as menu, button, tooltips, etc...) in the HTML mockup of your e-commerce website, while keeping good user experience.



#### **Points to Remember**

Always update yourself on animation technology



#### **Formative Assessment**

- A. Answer by True or False
  1. GIF is smaller format than WebP?
  2. You can convert web JavaScript animation into GIF format?
  3. WebP is a format developed by Google?
  4. `<embed>` tag can work in HTML 4?
- A. What are the cons of using Flash animation?

#### **Answers**

- A. 1. False, 2. False, 3. True
- B. Flash is no longer supported on most platforms.



## Unit 5: Integration of social media technologies to website

### Illustration of Learning Unit



The illustration should look like the above, but with more social media icons, with at least the following:

1. Twitter
2. Facebook
3. LinkedIn
4. Google+
5. YouTube
6. Pinterest
7. Instagram
8. Tumblr
9. WhatsApp

### Topics

- 5.1. Identifying social media to be integrated with website
- 5.2. Developing code and documentation of the integration

### Unit Summary:

The purpose of this unit is to equip the trainee with the capacity to identify and develop

code of social media integration in website.

### Self-Assessment: Unit 5

1. Look at the illustration. What is happening? What do you think this unit will be about? What topics might be covered?
2. Fill in the self assessment below.

There are no right or wrong ways to answer this survey. It is for your own use during this course. Think about yourself: do you think you can do this? How well? Read the statements across the top. Put a check in column that best represents your situation. At the end of this unit, we'll take this survey again.

<b>My experience</b>	<b>I don't have any experience doing this.</b>	<b>I know a little about this.</b>	<b>I have some experience doing this.</b>	<b>I have a lot of experience with this.</b>	<b>I am confident in my ability to do this.</b>
<b>Knowledge, skills and attitudes</b>					
1. Identify different popular social network to integrate in website.					
2. Maximize benefits of social network integration in websites.					
3. Minimize negative aspects of social network.					
4. Generate code of social media's widget and API to integrate.					
5. Use generated code of social media integration.					
6. Test integrated social media's widgets and API.					

## Topic 5.1: Identifying social media to be integrated with website

Key Competencies:

Knowledge	Skills	Attitudes
1. List popular social network.	1. Identify different popular social network to integrate in website.	1. Be Pragmatic
2. Describe benefits of social network integration in websites.	2. Use benefits of social network integration in websites.	2. Be Safety oriented
3. Describe negative aspects of social network..	3. Use negative aspects of social network.	3. Be critical thinker

### Getting Started: What do we know and where are we going?

Form small groups and performs the following tasks:



### Task:

Observe the image above carefully.

- What do you see on the image above?
- What the image inspires you?
- What the relationship does it have with this topic?

### Activity 1: Problem Solving

A group of people is discussing energetically, almost fighting, about the impact of Social Media on the society. One group is arguing that they have a positive impact, the other is saying they have a negative one. Each group is giving arguments supporting its position.

In your group mimic this scene with role playing by forming 2 parties. To do so perform the following tasks:

- a) One group support with arguments that Social Media have positive impact on the society.
- b) Another group support with arguments that Social Media have negative impact on the society.
- c) Make a conclusion.

## Key Facts 5.1

### Social Media

Social media is an umbrella term that describes websites that (1) connect people and (2) involve user-generated content. User-generated content is the hallmark of a social media site versus a traditional website. This model contrasts with the *editorially controlled* style of old media. Social media is sometimes called Web 2.0.

The variety of stand-alone and built-in social media services currently available introduces challenges of definition; however, there are some common features:

1. Social media are interactive Web 2.0 Internet-based applications.
2. User-generated content, such as text posts or comments, digital photos or videos, and data generated through all online interactions, is the lifeblood of social media.
3. Users create service-specific profiles and identities for the website or app that are designed and maintained by the social media organization.
4. Social media facilitate the development of online social networks by connecting a user's profile with those of other individuals or groups.

#### ➤ Popular Social Media

- Facebook is a popular free social networking website that allows registered users to create profiles, upload photos and video, send messages and keep in touch with friends, family and colleagues.
- Twitter is a free microblogging service that allows registered members to broadcast short posts called tweets. Twitter members can broadcast tweets and follow other users' tweets by using multiple platforms and devices.
- Google+ (pronounced *Google plus*) was Google's social networking project, designed to replicate the way people interact offline more closely than is the case in other social networking services. This website is no longer offered to new users and plans to shut down remaining accounts in 2019.
- Wikipedia is a free, open content online encyclopedia created through the collaborative effort of a community of users known as Wikipedians. Anyone registered on the site can create an article for publication; however, registration is not required to edit articles. Wikipedia was founded in January of 2001.
- LinkedIn is a social networking site designed specifically for the business community.

The goal of the site is to allow registered members to establish and document networks of people they know and trust professionally.

- Pinterest is a social curation website for sharing and categorizing images found online. Pinterest requires brief descriptions but the main focus of the site is visual. Clicking on an image will take you to the original source. For example, clicking on a picture of a pair of shoes might redirect users to a purchasing site and an image of blueberry pancakes might redirect to the recipe.
- YouTube is a free video sharing website that lets people upload, view, and share videos. Videos can be rated with a like or dislike, you can also subscribe to channels that you like.
- Instagram is a photo and video sharing social networking service owned by Facebook Inc in 2012. Similar to Facebook or Twitter, everyone who creates an Instagram account has a profile and a news feed. It was created by Kevin Systrom and Mike Krieger and launched in October 2010.

➤ Types of Social Media and their uses

1. Social networks

**Examples:** Facebook, Twitter, LinkedIn

**Use:** To connect with people (and brands) online.

**Benefits:** Market research, brand awareness, lead generation, relationship building, customer service... the list is pretty much endless.

Social networks, sometimes called “relationship networks,” help people and organizations connect online to share information and ideas.

2. Media sharing networks

**Examples:** Instagram, Snapchat, YouTube

**Use:** To find and share photos, video, live video, and other media online.

**Benefits:** Like the major relationship networks, these sites are invaluable for brand awareness, lead generation, audience engagement, and most of your other social

marketing goals.

Media sharing networks give people and brands a place to find and share media online, including photos, video, and live video.

The lines between media sharing networks and social networks are blurring these days as social relationship networks like Facebook and Twitter add live video, augmented reality, and other multimedia services to their platforms. However, what distinguishes media sharing networks is that the sharing of media is their defining and primary purpose.

### 3. Discussion forums

**Examples:** reddit, Quora, Digg

**Use:** To find, discuss, and share news, information, and opinions.

**Benefits:** These networks can be excellent resources for market research. Done right, you can also advertise on them, though you'll need to be careful to keep your ads and posts separate.

Discussion forums are one of the oldest types of social media.

### 4. Bookmarking and content curation networks

**Examples:** Pinterest, Flipboard

**Use:** To discover, save, share, and discuss new and trending content and media.

**Benefits:** These networks can be highly effective for driving brand awareness, customer engagement, and website traffic.

Bookmarking and content curation networks help people discover, save, share, and discuss new and trending content and media.

These networks are a hotbed of creativity and inspiration for people seeking information and ideas, and by adding them to your social media marketing plan, you'll open up new channels for building brand awareness and engaging with your audience and customers.

### 5. Consumer review networks

**Examples:** Yelp, Zomato, TripAdvisor

**Use:** To find, review, and share information about brands, products, and services, as well as restaurants, travel destinations, and more.

**Benefits:** Positive reviews bring social proof to your claims. Handled well, you can resolve issues with unhappy customers.

Consumer review networks give people a place to review brands, businesses, products, services, travel spots, and just about anything else.

## 6. Blogging and publishing networks

**Examples:** WordPress, Tumblr, Medium

**Use:** To publish, discover, and comment on content online.

**Benefits:** Content marketing can be a highly effective way to engage with your audience, build your brand, and generate leads and sales.

Blogging and publishing networks give people and brands tools to publish content online in formats that encourage discovery, sharing, and commenting. These networks range from more traditional blogging platforms like WordPress and Blogger to microblogging services like Tumblr and interactive social publishing platforms like Medium.

## 7. Social shopping networks

**Examples:** Polyvore, Etsy, Fancy

**Use:** To spot trends, follow brands, share great finds, and make purchases.

**Benefits:** Brands can build awareness, increase engagement, and sell products via new channels.

Social shopping networks make ecommerce engaging by adding a social element.

Of course, elements of ecommerce appear in many other types of social networks—for example, Pinterest features Buyable Pins, and Instagram provides call-to-action tools in the form of “shop now” and “install now” buttons. Social shopping networks take it one step further by building their site around a focused integration between the social experience and the shopping experience.

## 8. Interest-based networks

**Examples:** Goodreads, Houzz, Last.fm

**Use:** To connect with others around a shared interest or hobby.

**Benefits:** If there’s a network devoted to the kind of products or services you provide,



these networks can be a great place to engage with your audience and build brand awareness.

Interest-based networks take a more targeted approach than the big social networks do by focusing solely on a single subject, such as books, music, or home design.

#### 9. 'Sharing economy' networks

**Examples:** Airbnb, Uber, Taskrabbit

**Use:** To advertise, find, share, buy, sell, and trade products and services between peers.

**Benefits:** If you happen to offer the kind of products or services traded here, these networks can be another channel for bringing in business. (For example, if you operate a bed-and-breakfast, Airbnb could help you find customers.)

"Sharing economy" networks, also called "collaborative economy networks," connect people online for the purpose of advertising, finding, sharing, buying, selling, and trading products and services.

#### 10. Anonymous social networks

**Examples:** Whisper, Ask.fm, After School

**Use:** To gossip, vent, snoop, and sometimes bully.

**Benefits:**

These networks might sound like a fun place to blow off steam (for example, if you're a teen and want to complain about your parents, teachers, boyfriend, and so on).

However, they've been shown to provide a consequence-free forum for cyberbullying and have been linked to teen suicides.

- Negative impacts of social media.



### **1) Anxiety and depression**

If you are spending more time on social media than you are supposed to, then there might be chances that you will suffer from anxiety and depression pretty soon. Too much use of these social media sites can harm the mental health of a person.

So, how exactly can you stop these mental problems? Well, we would suggest that you set a particular time limit for being active on social media.

### **2) Irregular sleep**

Does it happen most of the times that you go to sleep and suddenly you are tempted to check on your Facebook account? Well, we all know that after you log in, you won't be looking at the time. Most people have complaints that too much use of social media has affected their sleeping patterns as well.

All these irregularities will definitely have its effect on the health of the person. Lack of proper sleep is also one of the reasons why people have stress problems. So, you need to stay away from that mobile phone of yours if you want to sleep peacefully.

### **3) Cyberbullying**

When it comes to cybercrimes, they have only increased a lot in the past few years. It is one of the most common problems that children have to face these days. It can be quite risky as well.

### **4) FOMO or Fear Of Missing Out**

The meaning of the term is that the more you are active on social media, the more you will experience Fear of Missing Out.

This is also a type of anxiety issue that people have when they are scared that they would miss some important event that is being conducted. This can be a huge issue for the children of today as they might even have depression due to that.

### **5) Negative Image**

In a world of social media, everyone is concerned about the way they look. There are always different profiles of celebrities who wear expensive clothing and always look nice in the pictures. Body image can be a great issue for the youth, both male and female.

So, seeing all these pictures with amazing people looking beautiful and appealing might create a certain negative image in the minds of the youth. They might feel like they are never going to be as beautiful as these celebrities. This can also be another negative impact of Social Media that causes depression in the youth.

### **6) Unrealistic Expectations**

It is probably not a surprise to you, but it is true that social media plays a great role in building unrealistic expectations for the people. There is no online authenticity in websites such as Instagram, Facebook, and others.

In a world where everyone is obsessed with how many followers they have or how many likes they got, unrealistic expectations are a very common thing, to be honest. So, how does one avoid it? Well, of course, you need to make sure that you are completely honest with these platforms.

### **7) General Addiction**

Even research would agree when we say this that social media can be very addictive, even more than smoking and drinking. Some of the platforms of social media networking such as Instagram, Facebook, and Twitter are the biggest culprits of this.

If you cannot go even a single day without checking on the phone or your social media accounts then it means that you are completely addicted to using social media. Once you are addicted, it is really hard to let go. However, you can try and limit your use of social media.

### **8) Privacy Settings**

Privacy is one of the most important things for people, even in the world of social media. However, with all these frequent updates about security, it can be really difficult to keep up with the pace. As a result, people often tend to ignore the security updates that come every single time.

However, that is a great mistake. If you do not update your accounts for security, then there might be chances that your accounts will get hacked.

Also, another thing that can be seen as an issue of privacy breach is tagging someone else in the pictures. Some people might not want to be seen on social media and tagging them

without asking is certainly not good for privacy reasons.

- **Other Problems and Concerns**

While the above studies show actual correlations between social networking and negative consequences, others argue that many other negative consequences may exist that have not yet been studied. Some of the harmful effects people suggest social networking has that have not yet yielded conclusive study results include:

- Encouraging poor grammar and spelling
- Allowing the spread of misinformation that may be perceived as fact even in light of evidence to the contrary
- Exposing children to online predators
- Creating a culture in which a single mistake such as a racy picture or poorly thought-out comment can cause irreparable harm to someone's reputation
- Decreasing productivity as workers habitually check social networking sites when they should be working
- Providing information that increases the risk of identity theft
- Creating a platform for cyber bullying

- Minimizing negative impacts of social media

It is the responsibility of the individual to use social networking constructively, and parents must be especially careful to monitor their children's use of social media to minimize the potential for negative outcomes. To minimize the potential risk of negative social network use, consider the following tips.

- Always use maximum privacy settings.
- Be cautious about what you share on social networking sites.
- Minimize the time you and other you are responsible of spend social networking.
- Monitor children's social networking use and friend lists.
- Make household rules about social networking and enforce them.
- Educate children about the potential hazards of social networking.
- Do not allow strangers to be your friends on social networks.
- Remind yourself that Facebook is not an accurate representation of reality.
- Build online networks of people you also interact with face-to-face and encourage

children to do the same.

- Stay connected with family with online photos and posts.



### Activity 2: Guided Practice

A local ecommerce owner is complaining about the negative impacts of social media on the health of his staff and himself. He noticed that it is because of the big number of social media integrated to his website, even not so useful ones. To let them breath while maintaining almost the same performance of the website, he decided to reduce the number of integrated social media to 5, which he think it is a reasonable minimum. They decided to hire a group of specialists in social media.

Your group is hired to help them, perform the following tasks:



#### Task:

- a. Make a research on the internet to list the top 10 most used social media websites in Rwanda.
- b. Among the 10, select 5 most useful social media the ecommerce website should remain integrated with. Support your recommendation with arguments and facts.
- c. Prepare a presentation by presenting your findings to the rest of the class.



### Activity 3: Application

A social media advertising agency in Rwanda is looking to widen its advertising platform by adding unused social media to its network. But before that, they need to conduct a research to identify which social media are not used, why they are not used and which ones they should add on their network?



#### Task:

To perform that research, you are assigned individually to perform the following tasks:

- a. Browse Rwandan websites and list the social media integrated with the websites.
- b. List 10 social media which are not integrated with Rwandan websites.
- c. Provide top 3 not used social media the advertising agency should add to their network. Support your propositions with arguments.



### Points to Remember

- Always read the social media terms of use because they are keep changing.
- Always follow the trends in social media for successful integration the best option.
- Remember to select carefully the social media to integrate because not all social media are useful in any case.



### Formative Assessment

#### 1. Match social media with the types they belong in

Technologies		Social Media Types
1) Instagram 2) Tumblr 3) TripAdvisor 4) Twitter 5) Uber 6) After School 7) Quora 8) YouTube 9) Facebook 10) Yelp 11) WordPress 12) LinkedIn 13) Airbnb 14) Reddit 15) Snapchat 16) Etsy 17) Goodreads 18) Pinterest		<b>1. Social networks</b>  2. Media sharing networks  3. Discussion forums  4. Bookmarking and content curation networks  <b>5. Consumer review networks</b>  6. Blogging and publishing networks  7. Social shopping networks  8. Interest-based networks  <b>9. 'Sharing economy' networks</b>  <b>10. Anonymous social networks</b>

#### 2. True or False

- Instagram is owned by Facebook Inc?
  - Pinterest and Flipboard belong to the same social media type?
  - FOMO or Fear Of Missing Out is an advantage of social media?
- List and describe 5 negative impacts of social media.
  - What is the social media that is designed specifically for the business community, having the goal of the site is to allow registered members to establish and document networks of people they know and trust professionally.
  - What is the social media type that connects people online for the purpose of advertising, finding, sharing, buying, selling, and trading products and services?



### Self Reflection

Areas of strength	Areas for improvement	Actions to be taken to
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		improve
1.	1.	1.
2.	2.	2.

## Topic 5.2: Developing of the code and documentation of the integration requirements

Key Competencies:

Knowledge	Skills	Attitudes
4. Describe social media's widget and API to integrate.	4. Identify social media's widget and API to integrate.	4. Be Pragmatic
5. Describe how to generate code of social media's widgets to integrate.	5. Use code of social media's widgets to integrate.	5. Be Safety oriented
6. Describe how to integrate social media's widgets into web page	6. Test integrated social media's widgets and API.	6. Be critical thinker

  **Getting Started: What do we know and where are we going?**



**Task:**

Observe the image above carefully, perform the following tasks:

- d) What do you see? Describe.
- e) What the policeman is doing?
- f) How the image above do you think is related to this topic?



### Activity 1: Problem Solving

1. Ask trainees to form a group of 2 and work on the following:

Your school has a website and active social media. But the administration feel those tools are not working for them as one unit, they need to integrate social media to the website so that website visitors can share content and see what is going on to the schools social media.





### **Task:**

In your group perform the following tasks:

- d) Create a simple web page.
- e) Generate code for Facebook share button.
- f) Generate code for Twitter news feed.
- g) Integrate the Facebook share button and the Twitter news feed into the page you have created.
- h) Test if they are working as expected.

## Key Facts 5.1

### ➤ Benefits of Integrating Social Media on Website

Social media presents a plethora of opportunities for businesses that can hugely benefit the brands financially and non-financially. We have brought together with 10 most crucial benefits of integrating social media on website.

- Reach a wider audience with extended exposure.
- Amplify your website's interaction and engagement capabilities.
- Gain insights into consumers' social behavior.
- Channelize traffic by integrating social media on website and vice-versa.
- Enhance your website vibrancy through creative visual social content.
- Build brand image & reputation through communications.
- Build social proof by promoting User-generated content from social media.
- Increase your conversions and sales.
- Deliver a superlative consumer experience.

### ➤ Ways to Integrate Social Media Into Your Website

Employ the following tactics in order to increase traffic amongst platforms, strengthen brand awareness and affinity, encourage communication with customers, and improve sales and revenue.

#### 1. Social Media Icons Link



The first and the most obvious step on the road to integration includes **placing visible social media buttons on your website**, linking to your various social media profiles.

Naturally, you would like your website's visitors to also visit these profiles and consume the messages posted there. The best way to ensure this is to publish social media buttons on your website landing pages, this gives visitors the ability to start following your accounts immediately, without even leaving your website.

#### 2. Social Share Buttons

## Share This

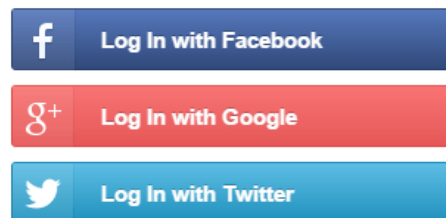
Share this post with your friends!



Regardless of whether your website is pushing out content or featuring products, **you want you're content to be shareable** so that visitors can easily post to their own social media accounts directly from your website.

This not only increases the number of eyeballs on your content, but promotes your overall brand image and improves sale rates. It also allows customers—existing and prospective—to more easily affiliate with your brand and products.

### 3. Social Login Plugins



Incorporate a social sign-in to allow your visitors to sign into your website through one of their social media accounts. Research has shown that **users prefer to bypass the need to create a separate account** for a website and sign in with a social login instead.

Reducing the registration process **saves time for the customers, encourages users along the sales process, and enables brands to quickly capture customers' information** and engage them.

### 4. Social Media Feeds

Social media feeds allow you to display your live activity from Facebook, Twitter,



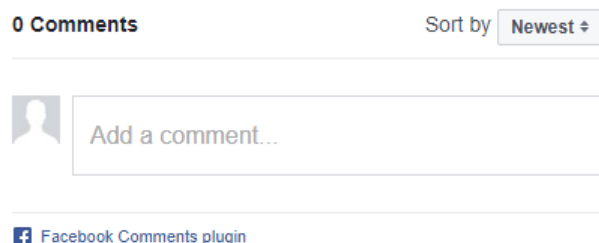
Instagram, YouTube, or other social media accounts directly on your website. So, instead of merely linking to these social media channels, you can **show your current and recent social activity**, so your visitors can see, follow, and otherwise engage without leaving your website.

These feeds can make your website **feel less like a sales pitch and more human**. It also makes the entire brand experience more integrated, and increases the likelihood that someone will begin following your social media accounts while visiting your website.

Most social media platforms have widgets that allow you to easily customize settings, grab the code, paste and publish it directly onto a website.

### 5. Social Media Commenting

Commenting tools encourage conversations and allow for human-to-human interaction thus creating a strong authenticity and reliability of the information.



A social-based commenting system, such as Facebook Comments is a robust way of integrating the experience of commenting and initiating conversations among people. Social conversations are always engaging. These 'commenting systems' are designed in a way that requires commenters to sync one of their social media accounts for commenting. This way only a genuine profile is linked to your identity as a commenter and it helps reduce the presence of trolls and spams online.

## 6. Showcase Social Media Reviews

There's a powerful subjective element called social proof. It is simply a practice which makes online users, people like you and us believe or buy something when we see another person recommending it, sharing positive reviews about it or perhaps buying it right before us.

Showcasing social proof is simply integrating social reviews and recommendations of your former customers on your website for your potential buyers and website visitors to see. Social proof has been said to be trusted by 79% of customers and it also helps augment sales and website conversions.

A potent way to display social proof is by using one of Facebook's social widgets, such as the 'Like Box' or Facebook Comments too. This feature shows to your visitors that you're a credible source, the number of 'likes' your Facebook page holds and that you're a genuine product or brand. Above all, you'll also be able to increase your Facebook likes through social media integration on website.

- Embed social media

All social media have a way to generate codes of widgets they offer. Here bellow are explained how to get the widget's codes of the major social media.

After getting the code, copy it and paste it to your website where you need it to be.

## **Facebook**

Unlike other social media sites, Facebook provides a plug-in generator (<https://developers.facebook.com/docs/plugins>) for embedding your profile or feed on your website. Creating a page plug-in is as simple as inputting your Facebook Page URL, setting the width and height, and toggling the display options.

Click Get Code, and Facebook provides JavaScript and HTML code for you to input on your website.

## **Instagram**

Instagram doesn't provide users with a plug-in generator like Facebook. In fact, Instagram only offers instructions for users on embedding an individual post. If you're looking to embed an entire Instagram profile or feed, you may have to work with a third party.

Luckily, there are a few free tools to help you include your Instagram feed on your website. InstaWidget (<https://instawidget.net/generate>), for example, is one of many resources small business owners can use. It works like Facebook's plug-in generator: Input your Instagram username, toggle the features and sizing, and copy and embed the code. In addition to InstaWidget, there are other solutions like LightWidget (<https://lightwidget.com/>) and Stadget (<https://www.stadget.com/>). Regardless of which tool you use, including your Instagram feed on your website can help drive sales.

"We link Facebook and Instagram, and have found Instagram to be the most useful for traffic and sales," Fyffe said.

## **Twitter**

Creating a widget here <https://publish.twitter.com/>.

Twitter will then ask if you want to create a widget that embeds a profile, list, collection, search or likes. Depending on what you click, enter the twitter URL and follow the instructions on the screen. Click Copy Code to add the widget to your website.

## Pinterest

Pinterest provides users with a widget builder here

<https://developers.pinterest.com/tools/widget-builder>, so you can follow the site's instructions to get code for your business's website. You have the option to create a save or follow button, pin, board or profile. Once you input your Pinterest board URL and adjust the size, the proper code will be ready for your website.

## Other solutions

The above explained social media are not the only one you can embed, even others can be integrated. In general all of them have a way to generate codes for widget they offer. So just do a search on the internet to localize the widget generator.

After getting the code, copy it and paste it to your website where you need it to be.



### Activity 2: Guided Practice

These days young people use social media allot, students are not apart. That is why your school has decided to integrate deeply social media in its website. This is because the administration feels that they have very active social media which are not working with the website as one unit.

The administration gives the students the task to integrate social media to the website so that website visitors can create accounts and login with Facebook and Twitter, share content, comment with Facebook and see news feeds of the schools social media.

To be sure that the students are capable to do the job, the school's administration organize an exam.



### Task:

In your group perform the following tasks:

- a) Create a simple web page.
- b) Generate code for Facebook and Twitter share button.
- c) Generate code for Twitter news feed and Facebook like box with news feed.
- d) Generate code for Facebook comment.
- e) Generate Facebook and Twitter login.
- f) Integrate all the generated codes into the page you have created.
- g) Test if all of them are working as expected.



### Activity 3: Application

After the school's administration exam you did with to integrate social media in their website, you find it very interesting and exciting. You decided to do it for yourself, your own web page on which you integrate your own social media. To do so perform the following tasks:



#### Task:

- d. Create a simple web page.
- e. Generate code for Facebook and Twitter share button of your Facebook page and Twitter profile.
- f. Generate code for Twitter news feed and Facebook like box with news feed.
- g. Generate code for Facebook comment.
- h. Generate Facebook and Twitter login.
- i. Integrate all the generated codes into the page you have created.
- j. Test if all of them are working as expected.



#### Points to Remember

- Always read the social media terms of use because they are keep changing.
- Always follow the trends in social media for successful integration the best option.
- Remember to select carefully the social media to integrate because not all social media are useful in any case.



#### Formative Assessment

6. List 5 ways you can integrate social media on your website.
7. True or False
  - d) To create social media widgets you always have to write code yourself?
  - e) Pinterest provides a comment widget?
8. Generally describe how to generate social media's widget.
9. Describe in general how to integrate social media's widget?



## Self Reflection

Areas of strength	Areas for improvement	Actions to be taken to improve
1.	1.	1.
2.	2.	2.