



Republic of Rwanda  
Ministry of Education



# TVET LEVEL IV



## SOFTWARE DEVELOPMENT

WEBSITE  
MAINTENANCE

# TRAINEE MANUAL



# **MODULE**

## **WEBSITE MAINTENANCE**

Unit 1: Addition of new website feature

Unit 2: Resolving website errors

Unit 3: Providing customer service support

## Unit 1: Add new website features

Illustration of Learning Unit



Topics

1.1 Identification of new website features

1.2 Analysis of placement and compatibility

1.3 Addition of new website features

## Unit Summary:

This unit describes skills, knowledge and attitudes required to identify the website new features, analyses website new features placement and compatibility, add new website features and test added and full site

## 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 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>					
List out the website features					
Describe the website features					
Identify client's needs					

<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>					
List placement of the feature on website					
Analyze the placement of the feature on website					
Identify the compatibility with current website					
Back up the website to the working place					
Add new features					
Test the website					

## Topic 1.1: Identification of new features

Key Competencies:

Knowledge

List out website features

Describe website features

Describe the client's needs

Skills

Interpret website features

Identify website features

Identify the client's needs

Attitudes

Be Detail-oriented

Skilful

Attentive

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



**Task:**



Observe the above picture and discuss the following:

- What do you think the person on the photo is doing?

b. Is there any relationship with the topic?



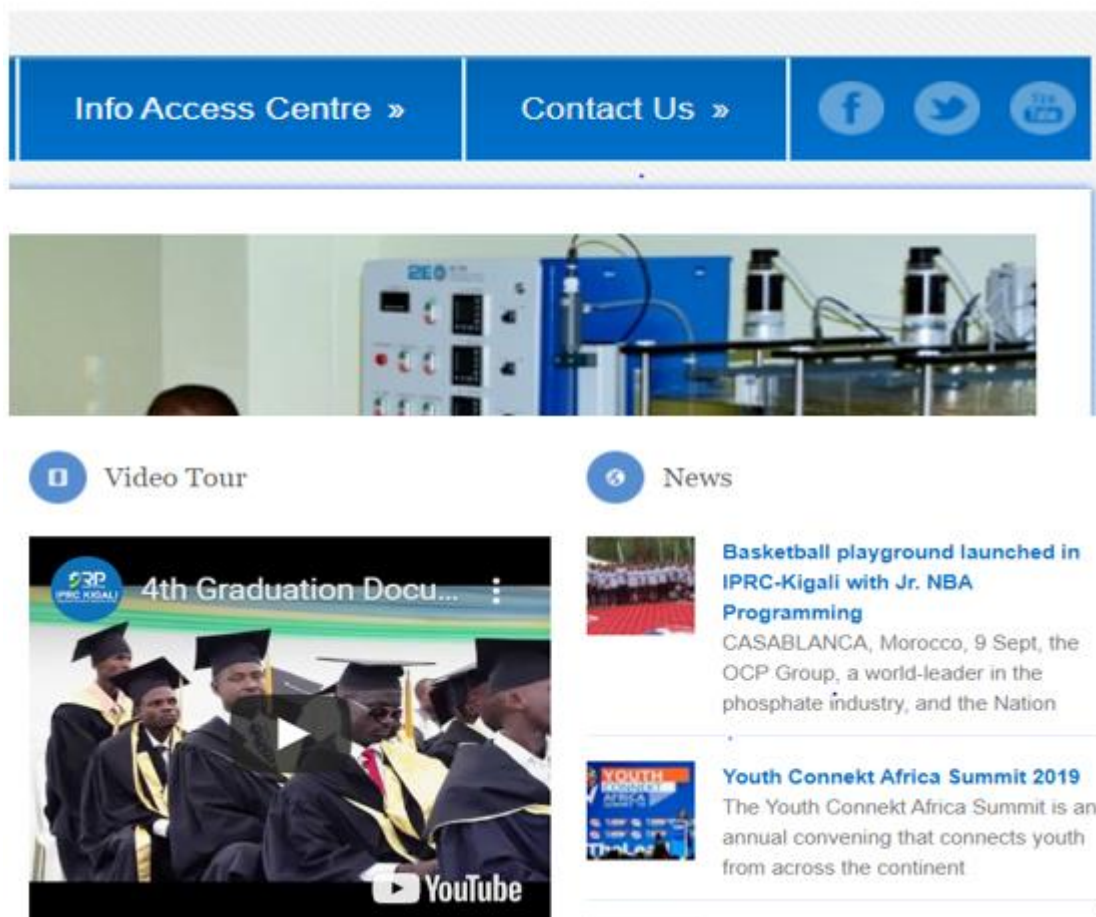
Activity 1: Problem Solving



**Task:**

Read and discuss the scenario” **Be informed** ” and answering question realated to it.

IPRC Kigali is TVET School located in Kicukiro district,Niboye sector,this school has a website which facilitate the school to advitise its activities and working schedule but some people were claiming that some features are not on the website.from a displayed webpage



a. List out the current website features viewed on this site



- b. Identify the new features which can be added so that the school respond to the client's needs

## Key Facts 1.1

### **1 DESCRIPTION OF WEBSITE FEATURES**

#### **1.1 Internet forum/Web forum**

An Internet forum, or message board, is an online discussion site where people can hold conversations in the form of posted messages.

##### **1.1.1 Forum's Features**

- Profile customization
- A powerful text editor
- Private messaging
- Comment signatures
- Achievement systems

##### **1.1.2 Types of forums**

###### **1 The Announcements Forum**

The Announcements Forum is where you will receive all information and updates pertaining to your course.

###### **2 General (class-wide/module) Discussion Forum**

The Class wide Discussion Forums are (mostly) optional resources that can be used to engage with other students as well as your tutor. You can use this platform to learn more about your course or the content and pose any questions you may have.

###### **3 Group Discussion Forum**

The small group discussion forum is a space for students to have engaging discussions about a specific topic or project.

#### **1.2 Social Networking /Media Sites**

A social networking site is an online platform that allows users to create a public profile and interact with other users on the website.

### 1.2.1 Types of Social Networking /Media Sites

#### 1 Social networks

A social networking site is a social media site that allows users to connect and share with people who have similar interests and backgrounds.

#### 2 Bookmarking sites

These sites allow users to save and organize links to any number of online resources and websites. A great feature of these sites is the ability for the users to “tag” links.

#### 3. Social news

A social news site allows its users to post news links and other items to external articles.

#### 4. Media sharing

Media sharing websites allow users to share different types of media, such as pictures and videos.

#### 5. Microblogging.

These are just what they sound like, sites that allow the users to submit their short written entries, which can include links to product and service sites, as well as links to other social media sites.

#### 6. Blog comments and forums

A blog comment site is the same thing except being a little more focused. The comments are usually centered around the specific subject of the attached blog. Google has a popular blogging site aptly titled, Blogger.

### 1.2.1 List of popular social media site

- Facebook
- WhatsApp
- QQ
- WeChat
- QZone
- Tumblr
- Instagram
- Twitter
- Skype

- Viber
- Line
- Snapchat
- LinkedIn
- Telegram

### **1.3 Blog /Weblog**

The term "blog" is short for "weblog," which refers to an online journal. Blogs began as personal mini sites that people used to record their opinions, stories, and other writings as well as photos and videos.

#### **1.3.1 Types of blog**

##### **1. Personal Blog**

The personal blog doesn't focus on a specific topic or audience. Interests. The writer just wants to make a difference and share knowledge or experience.

##### **2. Personal Brand Blog**

This blog focuses on the blogger as the brand. They're used to build credibility for the blogger as a thought-leader, speaker, and teacher within a specific niche.

##### **3. Corporate Blog**

The focus of this blog is the business itself- their own products or services with the purpose of increasing traffic for their business in order to gain customers.

##### **4. Personal Services Blog**

This blog discusses topics around the services that are offered.

##### **5. Repair Services Blog**

This blog discusses topics around the services that are offered. These are great for local repair or maintenance service businesses.

## **6. Artist's Blog**

An artistic blog focuses on any type of art that the artist creates

## **7. The Counter-Culture Blog**

This blog uses a marketing method that is divisive in its approach to content.

## **8. Guest Blogs**

The content for these blogs written by guest writers who are typically experts in the field. This is different from hiring writers. This is bringing in guest bloggers that already have a following of their own in order to grow the audience

## **9. Case Study Blogs**

The case study blog (also, experimental or test blog) tries things out to see what works.

## **10.Podcast**

The content for this blog includes the embedded podcast (usually audio or video or both, from whatever platform it's supplied from) and includes a description, summary, or a transcript of the podcast, and links for the call to action. The posts are episodic. The podcast usually takes the form of a chat, webinars, interviews, training, etc.

## **10.4 Product Catalog**

A product catalog is a detailed list of the inventory of a store. This catalog contains all the data related to the products which include product images, descriptions, specifications, price etc. The product catalog data is viewed by customers before making a purchasing decision

### **1.4 Product catalog software creator**

- ✓ *FlipHTML5 (strongly recommended)*
- ✓ *Catsy*

- ✓ *3D Issue*
- ✓ *Flip Builder*
- ✓ *Zmags*
- ✓ *Dcatalog*
- ✓ *A-PDF*

## 1.5 Media Gallery

### 1.5.1 Picture/image/photo

#### 1. Four sizes of a digital image.

- ✓ Image Size is dimensioned in pixels, which is what determines how the image might be suitably used.
- ✓ Data Size is its uncompressed size in bytes when file is opened into computer memory.
- ✓ File Size is its size in bytes stored in a disk file. Data compression can affect file size drastically, but it is still the same image size in pixels.
- ✓ Print Size is its size when printed on paper (inches or mm). The size of film is also inches or mm. Sensor size or film size must be enlarged to the print or viewing size.

#### 2. Image file format

- ✓ *JPEG* (Joint Photographic Experts Group)
- ✓ *JPEG 2000*
- ✓ The Exif (*Exchangeable image file format*)
- ✓ The TIFF (Tagged Image File Format)
- ✓ The GIF (Graphics Interchange Format)
- ✓ The *BMP file format* (Windows bitmap)
- ✓ The PNG (*Portable Network Graphics*)
- ✓ *WebP*
- ✓ HEIC/HEIF

### 1.5.2 Video

#### Best video format for website

- ✓ MP4 MPEG-4
- ✓ OGV OGG
- ✓ WebM

## ✓ WebVTT

### 1.6 Audio

#### 1.6.1 Web Audio Formats

1. WAV/AIFF (.wav, .aif, .aiff) The WAV and AIFF audio formats are very similar in performance.
- 2 . MP3 (.mp3) MP3's explosion in popularity is nothing short of a phenomenon and has changed the way we use and view the Internet.
- 3 .Apple QuickTime Audio (.mov) Although QuickTime is best known as a video technology, it is also possible to create audio-only QuickTime Movies (.mov).
- 4 .MIDI (.mid) MIDI is a different breed of audio file format. It was originally developed as a standard way for electronic musical instruments to communicate with each other.
5. Flash (.swf) and Shockwave (.dcr) If you want to add short interactive sound effects to a page, such as button rollover noises, consider using a Flash movie (.swf).

#### 1.7 Contact Form

Contact form is a page on a website that allows users to communicate with the site owner. The page has fields for filling in name, address and type of comment.

#### 1.8 E-commerce shopping cart

E-commerce shopping cart is a software resource that functions as an interface for users that buy items from a business online. E-commerce websites use electronic shopping carts to facilitate purchasing by Web users.

#### 1.9 E- learning (Electronic learning)

Electronic learning refers to a broad educational concept primarily characterized by the usage of electronic media and other types of communication technologies. Specific types of electronic learning include internet-based training, online education, computer-based training, to name a few.

- The Types of eLearning
  - ✓ Synchronous E-learning. Set time (phone/Internet classroom sessions)  
Synchronous eLearning is real-time learning
  - ✓ Asynchronous E-learning. Student directed, self-paced learning.  
Asynchronous eLearning is pause-and-resume kind of learning

### 1.10 Event Calendar

Event Calendar is a document, chart, etc., that shows the days, weeks, and months of a year a list or schedule of events or activities that occur at different times throughout the year. A particular system for organizing the days of the year by month.

#### 2. List of possible website features

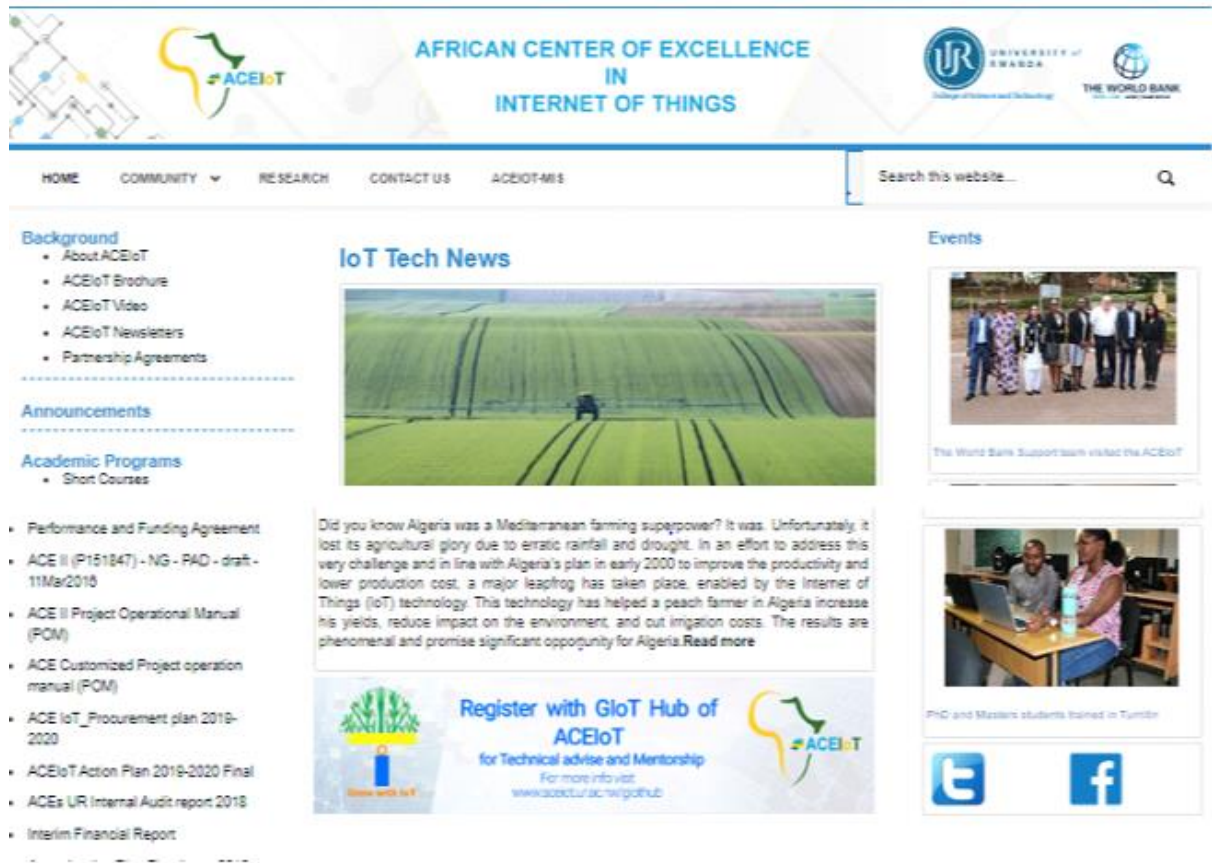
- ✓ Audio slide show
- ✓ Blog (with or without comments)
- ✓ Contact form
- ✓ E-commerce shopping cart
- ✓ E-learning (online courses)
- ✓ Event calendar
- ✓ Forum
- ✓ Ads
- ✓ Google site map generator
- ✓ Image gallery
- ✓ Mobile browsing (for cell phones)
- ✓ Online chat
- ✓ Polls for visitor voting
- ✓ Video
- ✓ Web stats with reports



## Activity 2: Guided Practice



### Task:



From a given picture of website home page form small group do the following:

1. Identify the current website features on this website
2. Describe the website feature
3. Identify the new website features to be added to the website in order to meet the client's need



## Activity 3: Application

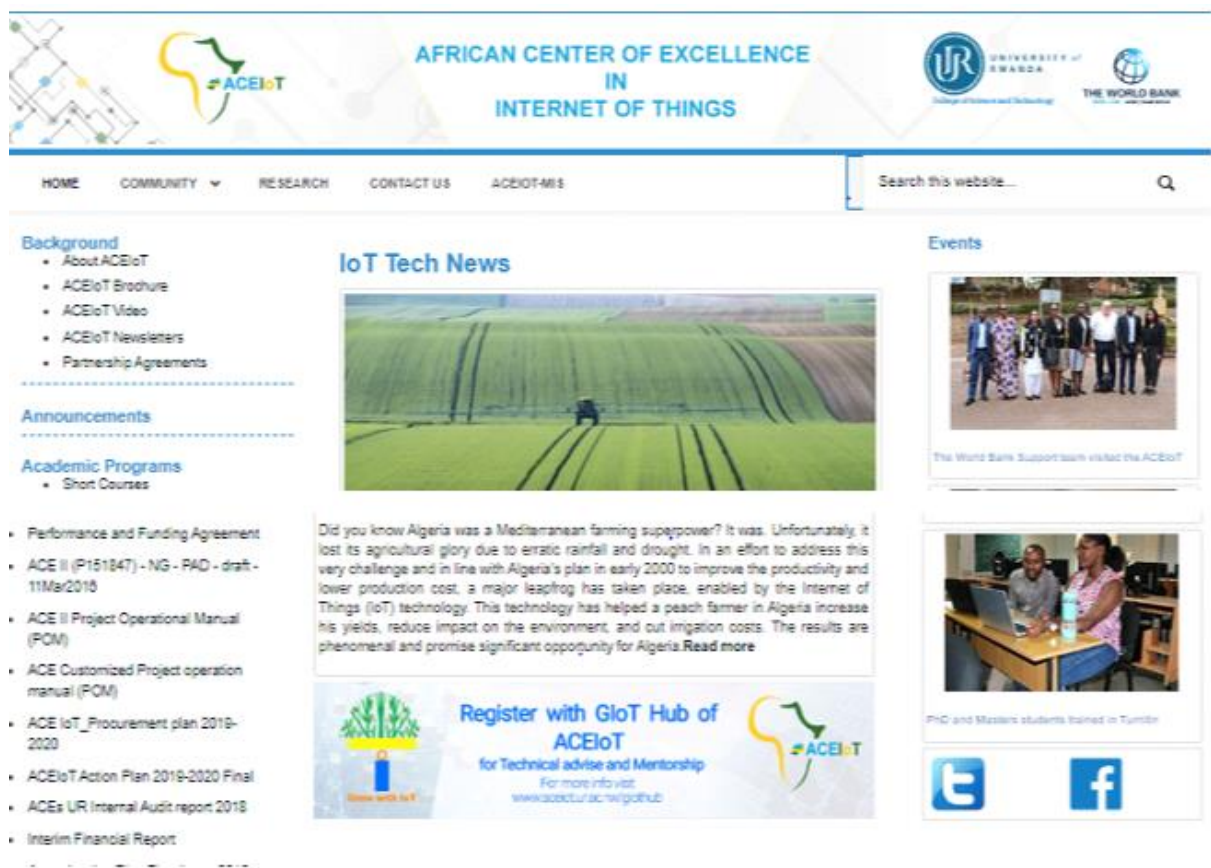




## Task:

NDUKO is a Managing Director of OAY Ltd Company; during the staff meeting He requested to maintain the company website because some customers were claiming that there are some services which are not accessible to the site. It was in this context that He called Pius, a web designer at CraneApp Ltd to conduct that activity.

As a professional, Pius tried to access the web company and he got the following message on the home page



From a given picture of website home page work individually and do the following:

1. Identify the current website features on this website
2. Describe the website feature
3. Identify the new website features to be added to the website in order to meet the client's need



### Points to Remember

- Keep updated for new features
- Take the customer request serious
- Meet the requirement agreement



### Formative Assessment

- 1 **Match the following term in the required field:** The TIFF (Tagged Image File Format), Achievement systems ,Social networks, Profile customization , *JPEG* (Joint Photographic Experts Group), *WebP*, *Bookmarking* sites, Social news, Media sharing, Private messaging

**Types of Social  
Networking**

**Factures of Forum**

Image file format

**2.  
Fill**

**the blank space with the required term or word** (product catalog, Website compatibility and forum)

a. .... is a detailed list of the inventory of a store. This catalog contains all the data related to the products which include product images, descriptions, specifications, price etc. The product catalog data is viewed by customers before making a purchasing decision

b. ...., is an online discussion site where people can hold conversations in the form of posted messages. They differ from chat rooms in that messages are often longer than one line of text, and are at least temporarily archived.

c.....is the manner in which a web page looks in different web browsers.In other words, Chrome will render a website Differently than Firefox or Internet Explorer will. It is important to

ensure that your website is compatible across different browsers because not all.

**3.** From the listed image format select any five best for website

- ✓ GIF
- ✓ BMP
- ✓ JPEG
- ✓ PNG
- ✓ JPEG 2000
- ✓ WEBP
- ✓ HEIC/HEIF

**4.** Chose four Benefits of using contact form on your website

- ✓ Keep track of your messages
- ✓ Safer shopping
- ✓ Convenient shopping
- ✓ An official storefront for your business
- ✓ Easy payments
- ✓ Simpler for your customers
- ✓ Get all the information you need
- ✓ A single hub for data management

## **Topic 1.2: Analysis of placement and compatibility**

Key Competencies:

Knowledge	Skills	Attitudes
1. List placement of feature on website	1. Identify placement of feature on website	Attentive
2. Describe Placement of feature on website	2. Choose placement of feature on website	Skilful

3. Explain the compatibility with the current website

3. Check compatibility with the current website

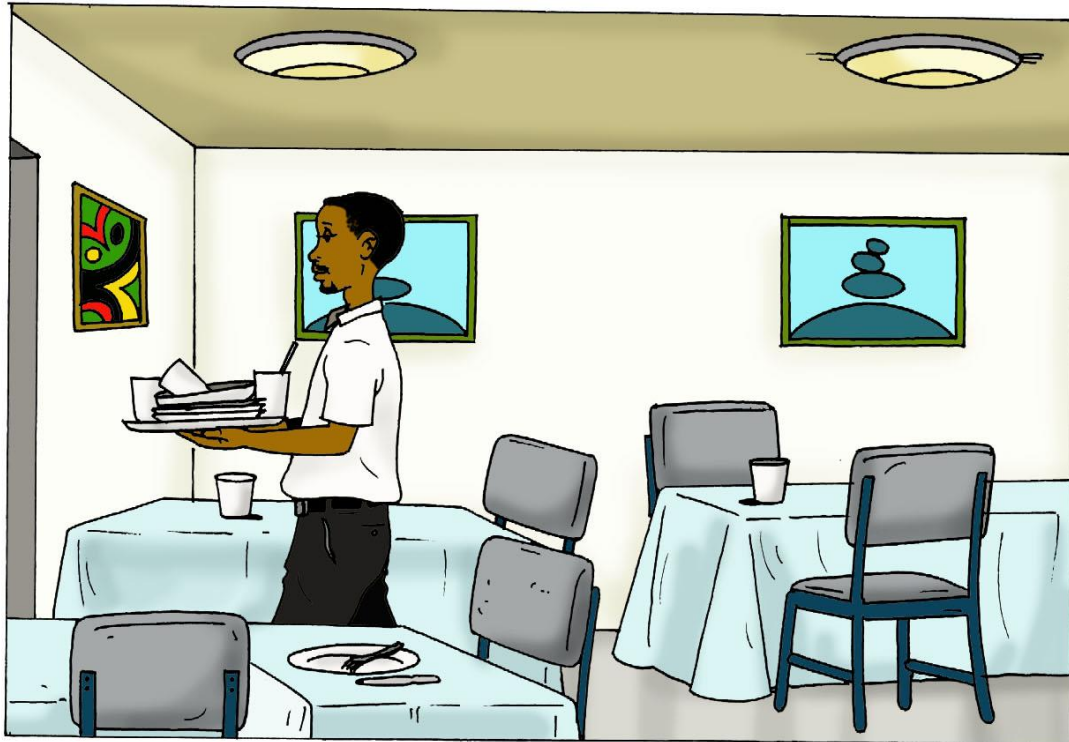
Be Detail-oriented



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



**Task:**



**Figure: 1.1a**

Observe the above picture and discuss the following:

1. What do you think the person on the photo is doing?
2. Is there any relationship with the topic?



Activity 1: Problem Solving



**Task: Scenario: webpage sketch**

KAYENZI is a TVET School located at Kamonyi District. this school has a problem of website to be used by advertising the school activities. As a web designer you are called by the Head teacher to analyze the website features placement to its appropriate location on webpage

Here is the given information

**Website placement**

- ✓ Header
- ✓ Footer
- ✓ Left sidebar
- ✓ Right sidebar
- ✓ Center

**Webpage sketch**

- A. Refer to the above information analyze the website features Placement

- B. Place the website features to its appropriate location on the webpage sketch

## Key Facts 1.2

### 1. Website features placement

- ✓ Header
- ✓ Footer
- ✓ Left sidebar
- ✓ Right sidebar
- ✓ Center

### 2. Description of website features placement

#### 2.1 Header

- ✓ Contact
- ✓ Address and Link to Map
- ✓ Phone and Fax numbers
- ✓ Navigation
- ✓ Social Icons
- ✓ Login
- ✓ Site Search Tool
- ✓ Images

#### 2.2 Footer

- ✓ Copyright
- ✓ Sitemap
- ✓ Privacy Policy

- ✓ Terms of Use
- ✓ Contact
- ✓ Address and Link to Map
- ✓ Phone and Fax numbers
- ✓ Navigation
- ✓ Social Icons
- ✓ Social Media Widgets
- ✓ Email Signup
- ✓ Login
- ✓ Site Search Tool
- ✓ Images
- ✓ Mini Gallery
- ✓ Branding
- ✓ Keywords for Search Engine
- ✓ Awards and Certifications
- ✓ Association Memberships
- ✓ Testimonials
- ✓ Latest Articles
- ✓ Upcoming Events
- ✓ Video
- ✓ Audio

### **2.3 Sidebar (Right & Left)**

- ✓ Sitemap
- ✓ Contact
- ✓ Address and Link to Map

- ✓ Phone and Fax numbers
- ✓ Navigation
- ✓ Social Media Widgets
- ✓ Email Signup
- ✓ Login
- ✓ Site Search Tool
- ✓ Images
- ✓ Mini Gallery
- ✓ Branding
- ✓ Testimonials
- ✓ Latest Articles
- ✓ Upcoming Events
- ✓ Video
- ✓ Audio

#### 2.4 Center

- ✓ Address and Link to Map
- ✓ Login
- ✓ Site Search Tool
- ✓ Images
- ✓ Mini Gallery
- ✓ Branding
- ✓ Keywords for Search Engine
- ✓ Awards and Certifications
- ✓ Association Memberships
- ✓ Testimonials
- ✓ Latest Articles



- ✓ Upcoming Events
- ✓ Video
- ✓ Audio

### 3 Website compatibility

Website compatibility is the manner in which a web page looks in different web browsers. In other words, Chrome will render a website Differently than Firefox or Internet Explorer will. It is important to ensure that your website is compatible across different browsers because not all people use the same browser

#### a. Checking browser compatibility with your web page

##### 3.1.1 From the browser compatibility tab

In the results panel, click the green arrow button in the upper-left corner and choose check browser compatibility from the drop-down menu.

##### 3.1.2 Depending on the number of found issues

The report might take a few minutes to generate. Be patient. Like the other tabs in the results panel, the results for this tool display in a list at the bottom of the results panel with an error, warning, or message icon next to each issue found. In addition, this panel displays detailed results about each found issue along the right side of the panel.

#### 3.2 Compatibility of web browser with operating system

Chome	Safari	Internet explorer	Edge	Firefox	opera
-------	--------	----------------------	------	---------	-------

Android	Supported	Unsupported	Supported	Supported	Supported	Supported
Windows	Supported	supported	Supported	Supported	Supported	Supported
iOS	Supported	Supported	Unsupported	Supported	Supported	Supported
Linux	Supported	Unsupported	Supported	Supported	Supported	Supported

### 3.3 Compatibility checking

Compatibility checking looks after the compatibility of a website on multiple variants of browsers, OS, network, hardware, software, devices and many such elements, which are needed in the functioning of a website.

#### 3.3.1 Database checking

Concerns with the veracity, integrity, consistency, accuracy of the diverse range of data stored at backend of the website.

#### 3.3.2 Security checking

Ensures that no loopholes or security glitches left undetected in the website

#### 3.3.3 Website Downtime

can be caused by a local problem, such as a software glitch in a workstation, or it can be due to a major event.

4.4 Website no downtime in reality means that customers will not pay for downtime and providers will do everything possible to keep your data accessible and your applications up and running 24x7x365.

4.5 Unplanned Downtime is any unforeseen event that reduces return on investment by causing disruptions in quality, cost and cycle time

4.6 Slow Website

If there is an issue with the server, this will take longer than normal. The cause of slow servers usually lays with the web host.

#### 4.7 No server crash

When someone tries to access a website and due to certain reasons the site doesn't get displayed then we say it has servers crash, also known as server down.



#### Activity 2: Guided Practice



#### **Task: Scenario: vive TVET system**

KALINDA is a manager of TVET School; during the meeting with parents last month he was requested to maintain the school website in order to facilitate students and parents to get all information related to school activities. It was within this context that he called UWASE, a web designer at KONIBE Ltd to conduct that activity.

As a professional, UWASE asked Kalinda to collect all information related to the school services they want to be on its website services.

The following is the information provided by school manager (Kalinda):

- Facebook, Instagram
- Meeting schedule
- Dos:0788231542
- Images
- School cultural troop dancing

As trained web designer you are requested to help UWASE by doing the following:

1. Sketch the web page
2. Choose the information provided by KALINDA the school manager on the web page.

### 3. Check the compatibility with the existing website



#### Activity 3: Application



#### **Task: Scenario: Saving culture**

HABUMUGISHA is a Manager of SACCO ICYOGERE; during staff meeting he was requested to maintain the SACCO ICYOGERE in order to facilitate customers to access bank information related daily activities. It was within this context that he called NTIRANTA, a web designer at SYNERTECH Ltd to conduct that activity.

As a professional, NTIRANTA asked HABUMUGISHA to collect all information related to the bank services they want to be on its website services.

The following is the information provided by bank manager (HABUMUGISHA):

- Facebook
- Working hours
- Manager:0730672340
- Saccoicyogere@gmail.com
- Images
- Instagram
- Twitter

As trained web designer you are requested to help NTIRANTA by doing the following:

1. Sketch the web page
2. Place the information provided by HABUMUGISHA the SACCO manager on the web page.
3. Check the compatibility with the existing website



#### **Points to Remember**

- Meet the web designer ethics

- Obey the feature placement rules
- Meet customer requirement request



### **Formative Assessment**

#### **1. From a given list of website features placement:**

Sitemap, Contact ,Privacy Policy, Terms of Use, Copyright, Address and Link to Map ,Phone and fax numbers, Navigation, Social Media Widgets Images, Mini Gallery, Branding, Keywords for Search Engine, Upcoming Events, Video and Audio

#### **Identify:**

##### **A. Five features to be placed to the webpage header**

1. ....
2. ....
3. ....
4. ....
5. ....

##### **B. Five features to be placed to the webpage footer**

1. ....
2. ....
3. ....
4. ....
5. ....

##### **C. Five features to be placed to the sidebar on webpage**

1. ....

2. ....
3. ....
4. ....

2. Match the following browser with compatible operating system

Browsers	Operating system
Firefox	Windows
Chrome	Android
Internet explorer	Linux
Edge	iOS
Opera	

3. Chose the right answer

A. The following are website features placement (Chose two)

- ✓ Outside
- ✓ Footer
- ✓ Inside
- ✓ Sidebar
- ✓ Top

B. The following are elements of header (Chose two)

Video

Audio

Contact

Login

Browser

### Topic 1.3: Addition of new features

Key Competencies:

Knowledge	Skills	Attitudes
List website testing types	Identify website testing types	Detail oriented
Explain the steps of adding features to the website	Follow the steps of adding features to the website	attentive
Select new features	Addition of new website features	Detail oriented



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



**Task:**



**Figure: 2.1b**

Observe the above picture and discuss the following:



1. What do you think the person on the photo is doing?
2. Is there any relationship with the topic?



#### Activity 1: Problem Solving



#### **Task: Scenario: features sketch**

MUGISHA Ltd is a Blanding company loacted at Nyarugenge district,the Managing Director wants the photo and video which show the campany activities on the website but the website doen't have the button which can help him to put that photo and video.

As a web designer we are requested to describe the steps though which the managing Director will pass to add the photo and video .

## 1.3 Key Facts

### 1. Websites features addition

#### 1.1 Forum

Step 1: Drag and drop the HTML Code Widget from Widgets > Popular onto your page.

Step 2: Paste the code into the HTML Editor dialog box that opens up.

Step 3: Click on "Save" and your forum will be added to your page.

#### 1.2 Social media

Step 1: Link to your networks from your site

Step 2: Pull your social content into your website

Step 3: Make your content easy to share on social media

#### 1.3 Blog

Step 1: From the Dashboard, choose Pages→Add New

Step 2: Type a name for the page in the text box toward the top of the page

Step 3: Leave the text box blank.

Step 4: Click the Publish button

Step 5 : Choose Settings Reading

Step 6: From the Posts Page drop-down list, choose the page you just created.

Step 7: In the Blog Pages Show at Most section, type the number of posts you want to display in the Posts text box.

Step 8: Click the Save Changes button

#### 1.4 Catalog

Step 1: Create a page of product catalog

Step 2: Enter the product catalog table short code

Step 3: Decide which columns to display in the product catalog

Step 5: Add product quick view to your tables

### 1.5 Image/Picture/photo

Step 1: Use the HTML <img> element to define an image.

Step 2: Use the HTML src attribute to define the URL of the image.

Step 3: Use the HTML alt attribute to define an alternate text for an image, if it cannot be displayed.

Step 4: Use the HTML width and height attributes to define the size of the image

### 1.6 Advertisement

Step 1 : Choosing online display ad builders

Step 2 : Choosing the ad size

Step 3 : choose your ad placement

Step 4 : Publish your ads

### 1.7 Event calendar

Step 1: On a computer, open Google Calendar. ...

Step 1: On a public calendar, create or edit an event.

Step 1: Click more actions Publish event.

Step 1: In the "Publish event" window, copy the HTML code displayed.

Step 1: Open your website editor, then paste this code where you want the event button to display.

### 1.8 eLearning

Step 1: Choose an authoring tool that is right for you.

Step 2: Research your eLearning audience and subject matter beforehand.

Step 3: Create an eLearning template or use an existing one.

Step 4: Choose a cloud-based learning management system.

Step 5: Use links to add multimedia and resources.

Step 6: Keep video, audio, and graphic elements simple and straightforward

### 1.9 E-commerce shopping cart

Step 1: Pick the site's theme before you add e-commerce.

Step 2: Choose the products you want to sell.

Step 3: Use independent page URLs.

Step 4 : Use independent meta descriptions for text and images

Step 5 : Test and test some more.

Step 6 : Set up social sharing icons for your e-commerce site

Steps 7: Add product reviews.

## 2 Website Features Testing

### 2.1 Functionality Testing :

This is used to check if your product is as per the specifications you intended for it as well as the functional requirements you charted out for it in your developmental documentation

- ✓ Test links in your webpages are working correctly and make sure there are no broken links:
  - Outgoing links
  - Internal links
  - Anchor Links
  - MailTo Links
- ✓ Test Forms
  - Scripting checks on the form are working as expected
  - Check default values are being populated
  - Once submitted, the data in the forms is submitted to a live database or is linked to a working email address

- Forms are optimally formatted for better readability
- ✓ Test Cookies
  - Testing cookies (sessions) are deleted either when cache is cleared or when they reach their expiry.
  - Delete cookies (sessions) and test that login credentials are asked for when you next visit the site.
- ✓ Test HTML and CSS
  - Checking for Syntax Errors
  - Readable Color Schemas
- ✓ Test business workflow
  - Testing your end - to - end workflow.
  - Test negative scenarios

## 2.2 Security Testing

*Security Testing* is vital for e-commerce website that store sensitive customer information like credit cards. Testing Activities will include:

- ✓ Test unauthorized access to secure pages should not be permitted
- ✓ Restricted files should not be downloadable without appropriate access
- ✓ Check sessions are automatically killed after prolonged user inactivity
- ✓ On use of SSL certificates, website should re-direct to encrypted SSL pages.

## 2.3 Compatibility testing

The purpose of Compatibility testing is to evaluate how well software performs in a particular browser, Operating Systems, hardware or software.

- ✓ Test the website in different browsers (IE, Firefox, Chrome, Safari and Opera) and ensure the website is displaying properly.
- ✓ Test the HTML version being used is compatible with appropriate browser versions.
- ✓ Test the images display correctly in different browsers.
- ✓ Test the fonts are usable in different browsers.
- ✓ Test the java script code is usable in different browsers.
- ✓ Test the Animated GIF's across different browsers.

## 2.4 Database testing

Functional testing is to verify whether your product meets the intended functional specifications mentioned in your development documentation.

- ✓ Verify the database name: The database name should match with the specifications.
- ✓ Verify the Tables, columns, column types and defaults: All things should match with the specifications.
- ✓ Verify whether the column allows a null or not.
- ✓ Verify the Primary and foreign key of each table.
- ✓ Verify the data if the DML operations are performed
- ✓ Verify the data if the DDL operations are performed

## 2.5 Usability testing

To ensure user-friendliness features of a website.

- ✓ Check for broken links and images
- ✓ Check the site on different resolutions (640 x 480, 600x800,...)
- ✓ Check the end user can run the system without frustration

- ✓ Check the tab should work properly
- ✓ Check if Scroll bar appear only if required
- ✓ Check if the Title should display on each web page
- ✓ Check all fields (Textbox, dropdown, radio button,...) and buttons should be accessible by keyboard shortcuts and the user should be able to perform all operations by using keyboard.
- ✓ Check if the dropdown data is not truncated due to the field size and also check whether the data is hardcoded or managed via administrator.
- ✓ Home link should be there on every single page

## 2.6 Performance testing

- ✓ To determine the performance, stability and scalability of an application under different load conditions.
- ✓ To determine if the current architecture can support the application at peak user levels.
- ✓ To determine which configuration sizing provides the best performance level.
- ✓ To identify application and infrastructure bottlenecks.
- ✓ To determine if the new version of the software adversely had an impact on response time.
- ✓ To evaluate product and/or hardware to determine if it can handle projected load volumes



### Activity 2: Guided Practice



### **Task: Scenario: TVET YACU**

SHEMA is Head Teacher of TVET School; during the meeting with parents last month he was requested to maintain the school website in order to facilitate students and parents to get all information related to school activities. It was within this context that he called you, to conduct that activity.

As a professional, you asked to collect all information related to the school services they want to be on its website services.

The following is the information provided by Head Teacher (SHEMA):

- Facebook, Twitter
- Meeting schedule
- Dos:0788231542
- Images
- School cultural troop dancing

You are requested to do the following:

1. Back up the website to the working place
2. Select new features
3. Test the website



#### Activity 3: Application



#### **Task: Scenario: Saving is good practice**

BUCYANA is a Manager of KASIRO Cooperative; during staff meeting he was requested to maintain the KASIRO Cooperative website in order to facilitate customers to access cooperative information related daily activities. It was in this line that he contacted GAFARANGA, a web designer at Net@i Ltd to maintain this website.

GAFARANGA as expert, asked BUCYANA to collect all information related to the cooperative services they want on its website.

The following is the information provided by Manager:

- Facebook
- Working hours
- Manager:0730672200
- neti@gmail.com



- Images
- Instagram
- WhatsApp contact

As trained web designer you are requested perform the same activity as GAFARANGA

- a. Back up the website to the working place
- b. Select new features
- c. Test the website



### **Points to Remember**

- Add required website features
- Place the website features at a convenient places
- Test after adding



### **Formative Assessment**

1. List down the steps to add the following website features :

- ✓ Forum
- ✓ Blog
- ✓ Social networking tools

2. Match the following activity with corresponding website test

Activity

Website test

1. Verify the data if the DML operations are performed

A. Usability testing

2. Check the tab are working properly

B. Database testing

3. Delete cookies (sessions)

C. Test Cookies

4. Check for broken links and images

D. Compatibility testing

5. Test the website in different browsers

E. Performance testing

F.

G.

3. Choose the right answer

C. The following are elements of links testing (Chose two)

- ✓ Footer
- ✓ Internal links
- ✓ Inside
- ✓ Outgoing links

D. The following are the types of website testing (Chose two)

- Outgoing links
- Unity testing
- Compatibility testing
- Google testing
- Mobile testing



## Self Reflection

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

## Unit 2: Resolve website errors

Illustration of Learning Unit



### Topics

- 2.1 Identification of website errors and root causes
- 2.2 Identification of website errors solutions
- 2.3 Test a website

### Unit Summary:

This unit describes skills, knowledge and attitudes required to identify the website errors and root causes, identify website errors possible solutions and test a website.

### 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 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 website errors					
Identify website errors root causes					
Classify common website errors					
Analyze the possible solutions					
Keep the best practice					
Test the full site to local environment					
Redeploy the site to online environment					

<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>					
Test the full site to online environment					

## Topic 2.1: Identification of website errors and root causes

Key Competencies:

Knowledge	Skills	Attitudes
1. Describe Website errors	1. Identify Website errors	1. Be Detail-oriented
2. Describe website errors root causes	2. Analyze of website errors root causes	2. Be Detail-oriented
3. Describe website errors appearance	3. Identify websites errors appearance	3. Attentive



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



**Task:**



**Figure: 1.1 xs**

Observe the above picture and discuss the following:

- What do you think the person on the photo is doing?

d. Is there any relationship with the topic?



#### Activity 1: Problem Solving



#### Task: Scenario: “motive”

KABADUGA Cooperative is a saving and credit cooperative located at kabare village, this cooperative has a website which facilitates the cooperative to advertise its activities and working schedule but some of the members were claiming that the site is not accessible and when they try to access it they get the following message on the home page.

Resolve the problems by answering the questions below



- Identify the name of this website error
- What is the root cause of this website error ?
- What are the different variations of this website error ?



## Key Facts 2.1

### WEBSITE ERRORS

This is a list of Hypertext Transfer Protocol (HTTP) response status codes. Status codes are issued by a server in response to a client's request made to the server. It includes codes from IETF Request for Comments, other specifications, and some additional codes used in some common applications of the Hypertext Transfer Protocol (HTTP).

All HTTP response status codes are separated into five classes (or categories). The first digit of the status code defines the class of response. The last two digits do not have any class or categorization role

#### 1. CATEGORIES OF WEBSITE ERRORS

- ❖ 1xx (Informational): The request was received, continuing process
- ❖ 2xx (Successful): The request was successfully received, understood and accepted
- ❖ 3xx (Redirection): Further action needs to be taken in order to complete the request
- ❖ 4xx (Client Error): The request contains bad syntax or cannot be fulfilled
- ❖ 5xx (Server Error): The server failed to fulfill an apparently valid request

##### 1.1 Information response(1XX)

An informational response indicates that the request was received and understood. It is issued on a provisional basis while request processing continues. It alerts the client to wait for a final response

##### a. 100 - Continue

The server has received the request headers and the client should proceed to send the request body (in the case of a request for which a body needs to be sent).

##### b. 101 - Switching Protocols

The requester has asked the server to switch protocols and the server has agreed to do so

c. 102 - Processing

A WebDAV request may contain many sub requests involving file operations, requiring a long time to complete the request. This code indicates that the server has received and is processing the request, but no response is available yet.

d. 103 - Early Hints

Used to return some response headers before final HTTP message.

## 1.2 Success (2XX)

This class of status codes indicates the action requested by the client was received, understood and accepted.

a. 200 - OK

Standard response for successful HTTP requests. The actual response will depend on the request method used. In a GET request, the response will contain an entity corresponding to the requested resource. In a POST request, the response will contain an entity describing or containing the result of the action.

b. 201 - Created

The request has been fulfilled, resulting in the creation of a new resource.

c. 202 - Accepted

The request has been accepted for processing, but the processing has not been completed. The request might or might not be eventually acted upon, and may be disallowed when processing occurs.

d. 203 - Non Authoritative Information

The server is a transforming proxy that received a 200 OK from its origin, but is returning a modified version of the origin's response.

e. 204 - No Content

The server successfully processed the request and is not returning any content.

f. 205 - Reset Content

The server successfully processed the request, but is not returning any content. Unlike a 204 response, this response requires that the requester reset the document view

g. 206 - Partial Content

The server is delivering only part of the resource (byte serving) due to a range header sent by the client. The range header is used by HTTP clients to enable resuming of interrupted downloads, or split a download into multiple simultaneous streams.

h. 207 - Multi-Status

The message body that follows is by default an XML message and can contain a number of separate response codes, depending on how many sub-requests were made.

i. 208 - Already Reported

The members of a DAV binding have already been enumerated in a preceding part of the (multistatus) response, and are not being included again.

j. 226 - IM Used

The server has fulfilled a request for the resource, and the response is a representation of the result of one or more instance-manipulations applied to the current instance.

### 1.3 Redirection (3xx)

This class of status code indicates the client must take additional action to complete the request. Many of these status codes are used in URL redirection.

a. 300 - Multiple Choices

Indicates multiple options for the resource from which the client may choose.

b. 301 - Moved Permanently

This and all future requests should be directed to the given URI

c. 302 - Found (Previously "Moved temporarily")

Tells the client to look at (browse to) another URL. 302 has been superseded by 303 and 307. This is an example of industry practice contradicting the standard.

d. 303 - See Other

The response to the request can be found under another URI using the GET method. When received in response to a POST (or PUT/DELETE), the client should presume that the server has received the data and should issue a new GET request to the given URI.

e. 304 - Not Modified

Indicates that the resource has not been modified since the version specified by the request headers if-modified-since or if-none-match. In such case, there is no need to retransmit the resource since the client still has a previously-downloaded copy.

f. 305 - Use Proxy

The requested resource is available only through a proxy, the address for which is provided in the response. For security reasons, many HTTP clients (such as Mozilla Firefox and Internet Explorer) do not obey this status code.

g. 306 - Switch Proxy

No longer used. Originally meant "Subsequent requests should use the specified proxy."

h. 2.3.8 307 - Temporary Redirect

In this case, the request should be repeated with another URI; however, future requests should still use the original URI.

i. 308 - Permanent Redirect

The request and all future requests should be repeated using another URI. 307 and 308 parallel the behaviors of 302 and 301, but do not allow the HTTP method to change.

## 1.4 Client Errors(4xx)

This class of status code is intended for situations in which the error seems to have been caused by the client. Except when responding to a head request, the server should include an entity containing an explanation of the error situation, and whether it is a temporary or permanent condition

The clients' sides' errors are the followings:

- 400 – Bad Request
- 401 – Authorization Required
- 403 – Forbidden
- 404 – Not Found
- 408 – Request Time-Out
- 410 – Gone

**a. 400 – Bad Request**

Whenever the client sends a request the server is unable to understand, the 400 Bad Request error page shows up.

This error can appear in multiple variations:

- 400 Bad Request
- Bad Request.
- Bad Request – Invalid URL
- HTTP Error 400 – Bad Request

- Bad Request: Error 400
- HTTP Error 400 – The request hostname is invalid.

#### **Causes HTTP Error 400 Bad Request**

- Type a URL into a search bar incorrectly
- Bad request
- Corrupted request
- Size too large
- Malformed request syntax

#### **b. 401- Unauthorized**

Similar to 403 Forbidden, but specifically for use when authentication is required and has failed or has not yet been provided

**This error can appear in multiple variations :**

- 401 Unauthorized
- Authorization Required
- HTTP Error 401 – Unauthorized

#### **Causes HTTP Error 403 Unauthorized**

You're seeing this error because some aspect of your login credentials are incorrect (ID or email and password)

#### **c. 403 – Forbidden**

The request contained valid data and was understood by the server, but the server is refusing action

It can appear in many ways:

- 403 Forbidden
- HTTP 403
- Forbidden
- Forbidden
- Error 403
- HTTP Error 403.14 – Forbidden
- Error 403 – Forbidden
- HTTP Error 403 – Forbidden

#### **Causes HTTP Error 403 Forbidden**

- 403 errors are almost always caused by issues where you're trying to access something that you don't have access to
- This error occurs when the server is able to understand the request but it refuses to accept due to some reason
- The common reason for this error is the site owner does not allow the browser to have access to the file directory structure of the site.

#### **d. 404 - Not Found**

The requested resource could not be found but may be available in the future. Subsequent requests by the client are permissible

This HTTP error shows itself in many ways:

- 404 Error
- 404 Not Found
- Error 404
- The requested URL was not found on this server.
- HTTP 404
- Error 404 Not Found
- 404 File or Directory Not Found
- HTTP 404 Not Found
- 404 Page Not Found

#### **Causes HTTP Error 404 Not Found**

There are two main reasons for this error is

- Either the URL is typed wrongly
- The permalink structure of the site is changed.

#### **e. 2.4.5 408 - Request Timeout**

The server timed out waiting for the request. According to HTTP specifications

Causes HTTP Error 408

- Incorrect URL
- Slow connection or connectivity issues



**f. 410 - Gone**

Indicates that the resource requested is no longer available and will not be available again

This HTTP error shows itself in many ways:

- 410 Gone
- Gone
- Error 410
- HTTP Status 410

**Causes HTTP error 410**

- Wrong URL
- Application or Platform Changes
- Investigate the Logs
- 410 Gone Redirects

## **1.5 Servers Side Error (5xx)**

Response status codes beginning with the digit "5" indicate cases in which the server is aware that it has encountered an error or is otherwise incapable of performing the request.

**a. 500 - Internal Server Error**

This code means something has gone wrong on the website's server, but the server is unsure of what actually happened.

There are several ways this code might present itself:

- 500 Internal Server Error
- HTTP 500 – Internal Server Error
- Temporary Error (500)
- Internal Server Error
- HTTP 500 Internal Error

- 500 Error
- HTTP Error 500
- 500. That's an error.

#### **Causes HTTP Error 500 Internal Server**

- This error happens when the server faces an unexpected condition that prevents it from fulfilling the request.
- This error code is returned when no other server-side 5XX error codes can be used

#### **b. 501 - Not Implemented**

The server either does not recognize the request method, or it lacks the ability to fulfil the request

#### **Causes HTTP Error 501 Not Implemented**

- Web server is experiencing an overload
- The server is out of date
- That the server is incapable of properly responding to your browser's request.

#### **c. 502 - Bad Gateway**

The server was acting as a gateway or proxy and received an invalid response from the upstream server

This one might show up in multiple different ways:

- Error 502
- Temporary Error (502)
- 502 Service Temporarily Overloaded
- 502 Proxy Error
- 502 Server Error

- HTTP Error 502 – Bad Gateway
- 502. That's an error
- Bad Gateway
- 502 Bad Gateway

#### Cause HTTP Error 502 Bad Gateway

- Miscommunication between one server and another
- The client connects to a server acting as a gateway
- Proxy that needs to access an upstream server that provides additional service to it

#### **d. 503 - Service Temporarily Unavailable**

A 503 Service Unavailable Error is an HTTP response status code indicating that a server is temporarily unable to handle the request

You might see this error in one of the following variations:

- 503 Service Unavailable
- HTTP 503
- 503 Error
- Error 503 Service Unavailable
- Service Unavailable – DNS Failure
- 503 Service Temporarily Unavailable

#### **Causes HTTP Error 503**

- The server which is overloaded
- Someone or something is performing maintenance

### e. 504 - Gateway Time-Out

The 504 Gateway Timeout error is an HTTP status code that means that one server did not receive a timely response from another server that it was accessing while attempting to load the web page or fill another request by the browser

### Causes HTTP Error 504

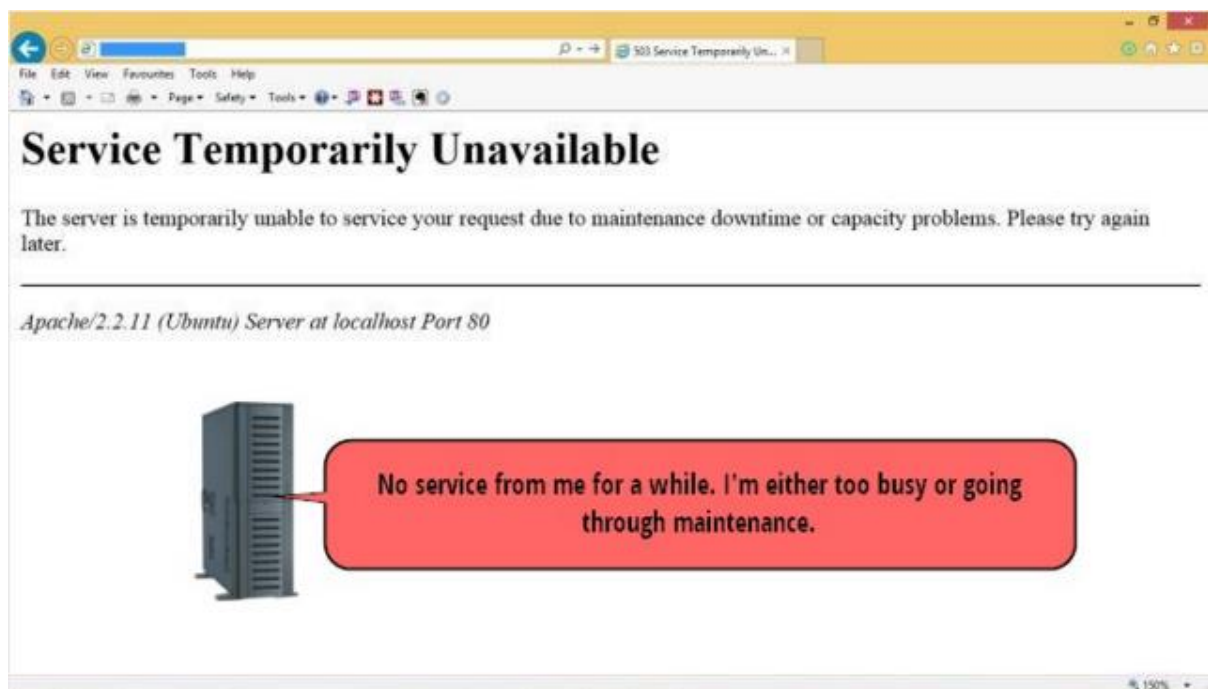
- Higher level server that serves to send the data to the server of the client.
- The lower level server does not receive a timely response from the upstream server.
- The higher end server is completely down.



#### Activity 2: Guided Practice



#### Task:



From a picture displayed above you are requested to form small groups and do the following:

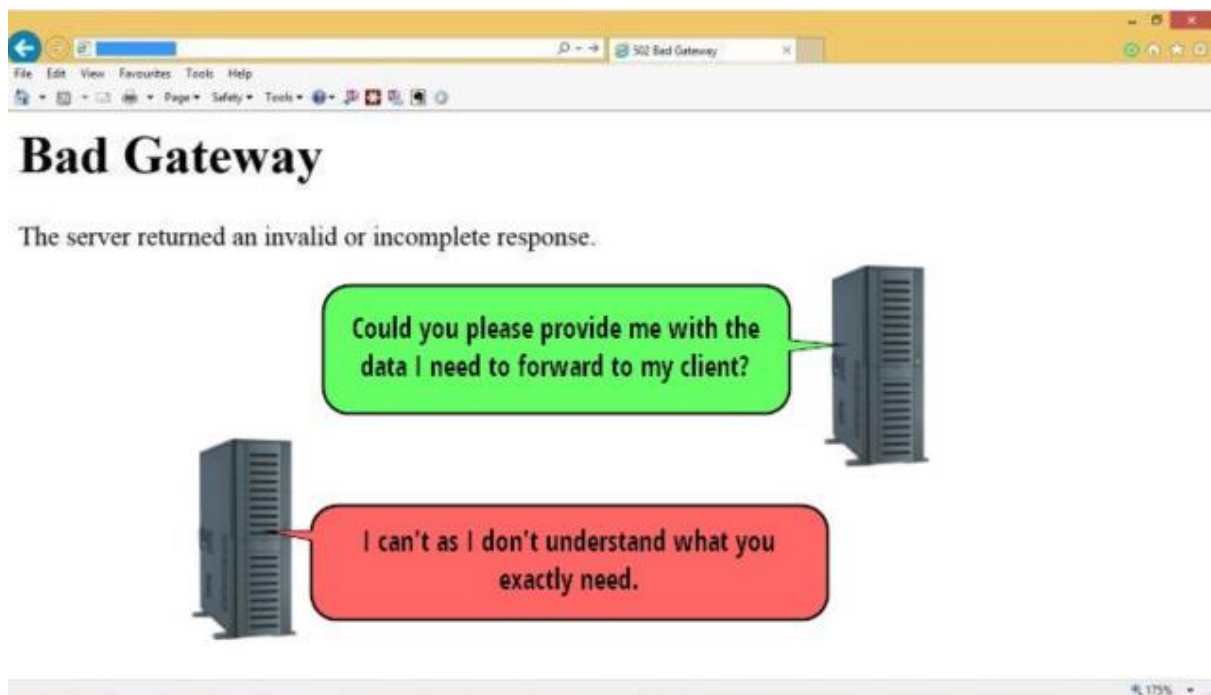
- Identify the code of this website error
- Identify the different variation form of this website error
- Identify the root cause of this website error



### Activity 3: Application



### Task:



From a picture displayed above you are requested to work individually and do the following

- Identify the code of this website error
- Identify the different variation form of this website error
- Identify the root cause of this website error



### Points to Remember

- Keep linking the website errors with its root causes
- Take the customer claim serious
- Make sure to know possible variation of website errors



## Formative Assessment

### 1. From a given list of website errors:

Continue, Switching Protocols, Created, Accepted, Non Authoritative Information, Not Modified, Use Proxy, Bad Request, Forbidden, Request Time-Out, Bad Request – Invalid URL, Bad Request: Error 400, HTTP 404, Already Reported and Permanent Redirect

### Identify:

#### A. Informational errors (1XX)

.....

.....

.....

.....

.....

#### B. Client Errors (4XX)

.....

.....

.....

.....

.....

### C. Redirection errors (3XX)

.....

.....

.....

.....

### 2. Match the following website errors with corresponding root causes

#### Website Errors

1. 400 Bad Request

1. 403 Forbidden

2. Error 502

4. Service Unavailable  
– DNS Failure

5. HTTP 503

#### Root Causes

A. Malformed request syntax

B. Site owner does not allow the browser to have access to the file directory structure of the site

C. Size too large

D. The client connects to a server acting as a gateway

E. The server which is overloaded

F.

### 6. Chose the right answer

#### A. The following are categories of website errors (Chose two)

- Informational
- Not found

- Bad request
- Client errors

**B. The following are the root cause of 404 Not found Error(Chose two)**

- Either the URL is typed wrongly
- Web server is experiencing an overload
- The higher end server is completely down
- The permalink structure of the site is changed

**C. The following are different form of bad request errors (Chose two)**

- HTTP Error 400
- HTTP 403
- 404 Not Found
- Bad Request – Invalid URL

**Topic 2.2: Identification of solutions for website errors**

Key Competencies:

Knowledge	Skills	Attitudes
1. Describe Website common errors	1. classify Website common errors	1. Be Detail-oriented
2. Describe website errors best solutions	2. Analyze website errors best solutions	2.Be Detail-oriented
3. Explain best solutions	3. keep the best practice/solutions	3. Attentive



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





**Task:**



**Figure: 1.1k**

Observe the above picture and discuss the following:

- What do you think the person on the photo is doing?
- Is there any relationship with the topic?



Activity 1: Problem Solving



**Task: Scenario: “Errors”**

COPENYA is a saving and credit cooperative located at Ntango village, this cooperative has a website which facilitates the cooperative to advertise cooperative activities and working schedule but some of the members were claiming that the site is not accessible and when they try to access it they get the following message on the home page



- a. Identify possible solutions for this website error
- b. Analyze the best solutions for this website error

## **Key Facts2.1**

### **1. CLIENT ERRORS (4XX)**

#### **a) 400 – Bad Request**

##### **To Fix HTTP Error 400 Bad Request**

- Check your URL
- Clear cookies
- Upload smaller files
- Sign out and sign in again
- Check common software packages on the server
- Troubleshoot your server
- Reset your browser

#### **b) 401 - Unauthorized**

##### **To Fix HTTP Error 401 Unauthorized**

- To fix a 401 unauthorized error, check for errors in the URL of the web page you are trying to open. It's possible it was typed incorrectly.
- If that's not the issue, double check to make sure the login credentials you entered were keyed in without any mistakes.
- If you still encounter the 401 error with the correct URL and login information, this is the time to contact your webmaster to take a closer look at the issue.

#### **c) 403 - Forbidden**

##### **To Fix HTTP Error 403**

- As always, make sure you are entering the correct page URL. If that doesn't work, try clearing your browser cache and cookies.
- When that doesn't work, this means it could be a problem for a webmaster to handle, your ISP is experiencing issues, or your IP address has been blocked by this particular website.
- If it turns out none of these issues are the root of the problem, you might just want to try coming back to the website later. The problem may resolve itself.

#### **d) 404 - Not Found**

##### **To Fix HTTP Error 404**

- First, try to reload the page. Sometimes simply refreshing a page solves the problem right away. If this doesn't work, check the URL you entered into the search bar for mistakes.
- If this doesn't work, try searching for the page on Google, rather than entering it directly into the address bar. The website may have changed the slug without redirecting to the new address.
- If this doesn't work, try clearing your browser cache and cookies. If the problem continues, contact the website directly and explain the issue, it really may boil down to the fact that they forget to enter in a redirection and many visitors are experiencing the same problem you are.
- If this doesn't work, try to disable the proxy

- If this doesn't work, try to change hosts files

#### **e) 408 - Request Timeout**

##### **To Fix HTTP Error 408**

- Double Check the URL
- Check your Internet Connection
- Try Reloading the Page
- Rollback Recent Upgrades
- Check your Web Server's Timeout Settings
- Check the Logs

#### **f) 410 - Gone**

##### **To Fix HTTP Error 410**

- First, try to reload the page
- If this doesn't work, check the URL you entered into the search bar for mistakes
- Restart your device
- Try switching your data network to see whether if it's working
- Uninstall updates from the settings menu or the YouTube app that should fix it.
- Update to the newest available version of the YouTube app.
  - Uninstall and reinstall the YouTube app.

## **2. SERVERS SIDE ERROR (5XX)**

### **a. 500 - Internal Server Error**

#### **To Fix HTTP Error 500**

- Try refreshing the page, occasionally a simple reload will solve the conundrum.
- If this doesn't work, try clearing your browser cookies and cache

- Restart your browser or switch to another browser
- Restart your router
- Check Your Server Logs
- Check Your Plugins and Themes

**b. 501 - Not Implemented**

**To Fix HTTP Error 501**

This is not an error that you can fix on your own. Contact your webmaster.

**c. 502 - Bad Gateway**

**To Fix HTTP Error 502**

- Try reloading the page,
- starting a new session in a new window
- Clearing your browser cache and cookies
- Try running your browser in Safe Mode
- Try using a different browser
- Restart your computer and your networking equipment
- When none of this works, contact the webmaster of the site directly, your internet service provider, or simply just try visiting the webpage at a later date.

**d. 503 - Service Temporarily Unavailable**

**To Fix HTTP Error 503**

- Try reloading the page

- Restart your networking system
- Restart your computer or phone
- Contact the webmaster directly for assistance

**e. 504 - Gateway Time-Out**

**To Fix HTTP Error 504**

- 504 Error can be solved only by the people who have access to the network as it happens in the backend.
- Refreshing the page after some time if the host providers are working on the same on the other side.



## Activity 2: Guided Practice



### Task:



From a picture displayed above you are requested to form small groups and do the following

- Classify common website error
- Analyze the best solutions for this website error
- keep the best practice for this website error

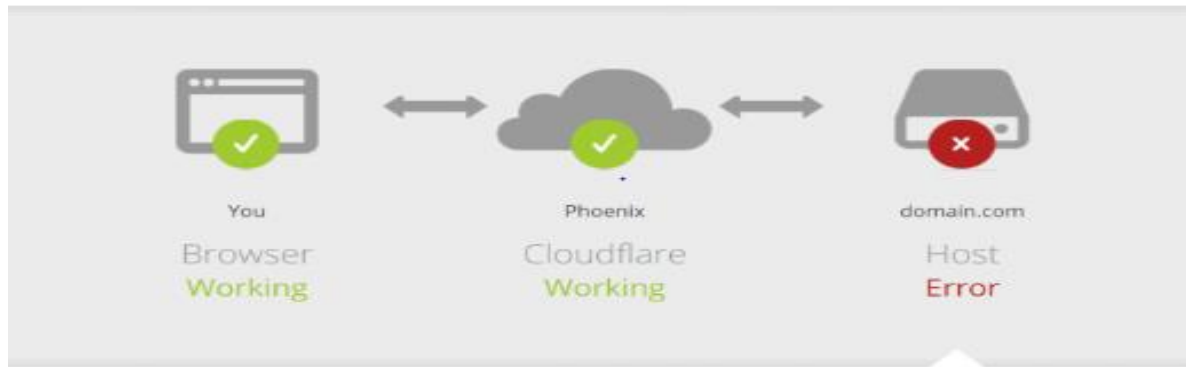


## Activity 3: Application



### Task:





What happened?

What can I do?

From a picture displayed above you are requested to work individually and do the following:

- Identify possible solutions for this website error
- Analyze the best solutions for this website error
- Choose the best practice for this website error



### Points to Remember

- Mind yourself the website errors with its best practice solutions
- Take the customers claim serious to help you while finding solutions
- Try more solutions when some get fails while fixing the website issues



### Formative Assessment

#### 1. Match the following website errors with corresponding solutions

##### Website Errors

- 400 Bad Request
- 504 - Gateway Time-Out
- Error 502

##### Website errors solutions

- Try using a different browser
- The higher end server is completely down
- Try reloading the page

- |   |                                   |
|---|-----------------------------------|
| 4. Service Unavailable<br>– DNS Failure | D. Check your URL                 |
| 5. HTTP 503                             | E. Restart your networking system |
|   | F.                                |
|   | G.                                |

## 2. Chose the right answer

### A. The following are different ways to fix website errors 400 “Not Found” (Chose two)

- Informational
- Upload smaller files
- Bad request
- Sign out and sign in again

### B. The following are different ways to fix website errors 408 “Request Timeout” (Chose two)

- Either the URL is typed wrongly
- Double Check the URL
- Check your Internet Connection
- Web server is experiencing an overload

### C. The following are different ways to fix website errors 408 “Request Timeout” (Chose two)

- HTTP Error 400
- Try reloading the page

- Restart your networking system
- Bad Request – Invalid URL

### 3. From a displayed image of the website page



- a. Identify the issues that prevent the customer to access the server
- b. Provide the possible ways to solve this problem

## Topic 2.3: Test a website

Key Competencies:

Knowledge

1. Describe Website testing techniques

2. Describe website deployment

3. Explain testing steps

Skills

1. Apply Website testing techniques

2. Analyze website deployment

3. follow the testing steps

Attitudes

1. Skilful

2. Be Detail-oriented

3. Attentive



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



**Task:**



**Figure: 3.1a**

Observe the above picture and discuss the following:

1. What do you think the person on the photo is doing?
2. Is there any relationship with the topic?

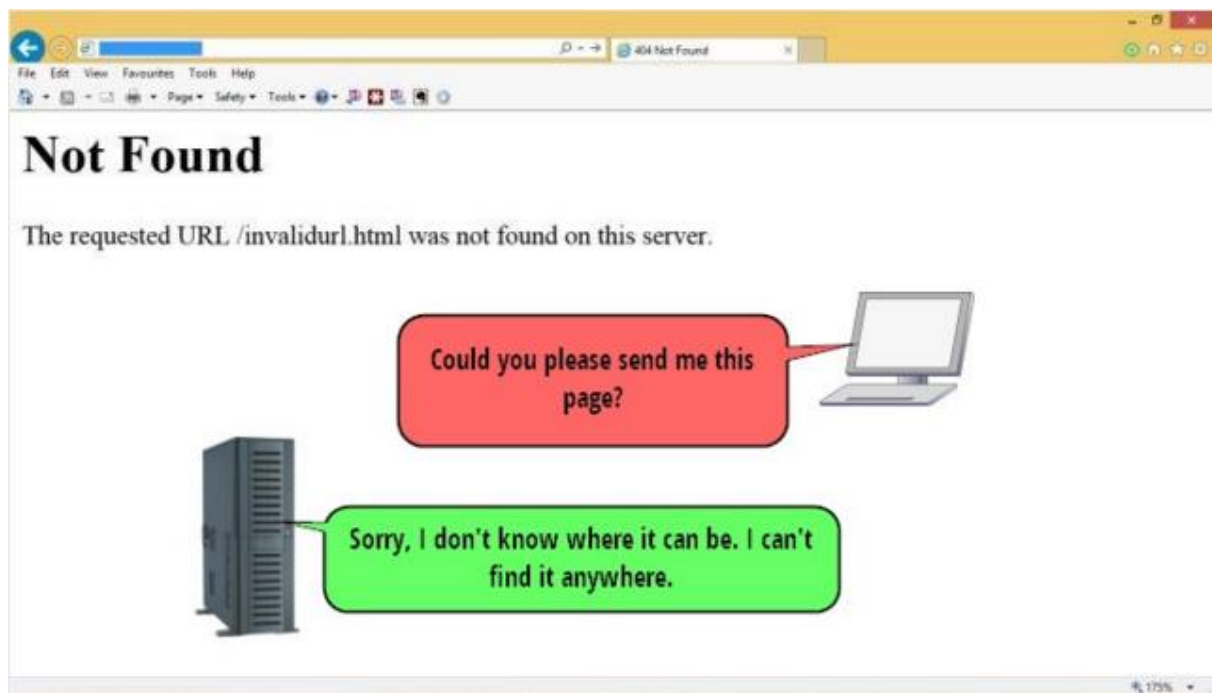


## Activity 1: Problem Solving



### Task: Scenario « test one »

MUSISI COLLEGE is a TVET school located at RWEYA village, this school has a website which facilitates the school to advertise the school activities, but last night the parents were claiming that the site is not accessible and when they try to access it they get the following message on the home page



1. Which category of website error this site is showing ?
2. Explain the test to be conducted so that you may know really the problem this site is facing

## Key Facts 2.3

### 1. Website Testing

#### 1.1 Functionality Testing :

This is used to check if your product is as per the specifications you intended for it as well as the functional requirements you charted out for it in your developmental documentation

- ✓ Test links in your webpages are working correctly and make sure there are no broken links:
  - Outgoing links
  - Internal links
  - Anchor Links
  - Mail to Links
- ✓ Test Forms
  - Scripting checks on the form are working as expected
  - Check default values are being populated
  - Once submitted, the data in the forms is submitted to a live database or is linked to a working email address
  - Forms are optimally formatted for better readability
- ✓ Test Cookies
  - Testing cookies (sessions) are deleted either when cache is cleared or when they reach their expiry.
  - Delete cookies (sessions) and test that login credentials are asked for when you next visit the site.
- ✓ Test HTML and CSS
  - Checking for Syntax Errors
  - Readable Color Schemas
- ✓ Test business workflow

- Testing your end - to - end workflow.
- Test negative scenarios

#### a. Security Testing

*Security Testing* is vital for e-commerce website that store sensitive customer information like credit cards. Testing Activities will include:

- ✓ Test unauthorized access to secure pages should not be permitted
- ✓ Restricted files should not be downloadable without appropriate access
- ✓ Check sessions are automatically killed after prolonged user inactivity
- ✓ On use of SSL certificates, website should re-direct to encrypted SSL pages.

#### b. Compatibility testing

The purpose of Compatibility testing is to evaluate how well software performs in a particular browser, Operating Systems, hardware or software.

- ✓ Test the website in different browsers (IE, Firefox, Chrome, Safari and Opera) and ensure the website is displaying properly.
- ✓ Test the HTML version being used is compatible with appropriate browser versions.
- ✓ Test the images display correctly in different browsers.
- ✓ Test the fonts are usable in different browsers.
- ✓ Test the java script code is usable in different browsers.
- ✓ Test the Animated GIF's across different browsers.

#### c. Database testing

Functional testing is to verify whether your product meets the intended functional specifications mentioned in your development documentation.

- ✓ Verify the database name: The database name should match with the specifications.
- ✓ Verify the Tables, columns, column types and defaults: All things should match with the specifications.
- ✓ Verify whether the column allows a null or not.
- ✓ Verify the Primary and foreign key of each table.
- ✓ Verify the data if the DML operations are performed
- ✓ Verify the data if the DDL operations are performed

d. Usability testing

To ensure user-friendliness features of a website.

- ✓ Check for broken links and images
- ✓ Check the site on different resolutions (640 x 480, 600x800,...)
- ✓ Check the end user can run the system without frustration
- ✓ Check the tab should work properly
- ✓ Check if Scroll bar appear only if required
- ✓ Check if the Title should display on each web page
- ✓ Check all fields (Textbox, dropdown, radio button,...) and buttons should be accessible by keyboard shortcuts and the user should be able to perform all operations by using keyboard.
- ✓ Check if the dropdown data is not truncated due to the field size and also check whether the data is hardcoded or managed via administrator.
- ✓ Home link should be there on every single page

e. Performance testing

- ✓ To determine the performance, stability and scalability of an application under different load conditions.



- ✓ To determine if the current architecture can support the application at peak user levels.
- ✓ To determine which configuration sizing provides the best performance level.
- ✓ To identify application and infrastructure bottlenecks.
- ✓ To determine if the new version of the software adversely had an impact on response time.
- ✓ To evaluate product and/or hardware to determine if it can handle projected load volumes



## Activity 2: Guided Practice



### Task:

**Internal Server Error**

The server encountered an internal error or misconfiguration and was unable to complete your request.

Please contact the server administrator, [webmaster@localhost](mailto:webmaster@localhost) and inform them of the time the error occurred, and anything you might have done that may have caused the error.

More information about this error may be available in the server error log.

---

*Apache/2.2.11 (Ubuntu) Server at localhost Port 80*

I don't know what may have happened, but I can't serve any of my clients.

From a picture displayed above you are requested to form small groups and do the following

- a. Chose the website testing to be use in order to fix the problem
- b. Fix the issue and test if the problem is fixed



### Activity 3: Application



### Task: Scenaio: "Job creation"

BURANDA is a Manager of IT company; during the staff meeting a he requested to maintain the company website because some customers were claiming that the site is not accessible online. It was in this line that he called you, a web designer at SUNTER Ltd to conduct that activity.

As a professional, you tried to access the web company and you got the following message on the home page



As a professional web designer

- a. Chose the website testing to be use in order to fix the problem
- b. Fix the issue and test if the problem is fixed



### Points to Remember

- Keep testing systematically
- Use appropriate testing tools
- When testing consider all information found
- Ask support if necessary



### Formative Assessment

1. Match the following activity with corresponding website test

#### Activity

1. Verify the data if the DML operations are performed

3. Check the tab are working properly

4. Delete cookies (sessions)

5. Check for broken links and images

6. Test the website in different browsers

#### Website test

A. Usability testing

B. Database testing

C. Test Cookies

D. Compatibility testing

E. Performance testing

2. Chose the right answer

**A. The following are different activities to go through when testing cookies (Chose two)**

- Checking for Syntax Errors
- Testing your end - to - end workflow.
- Test negative scenarios
- Readable Color Schemas

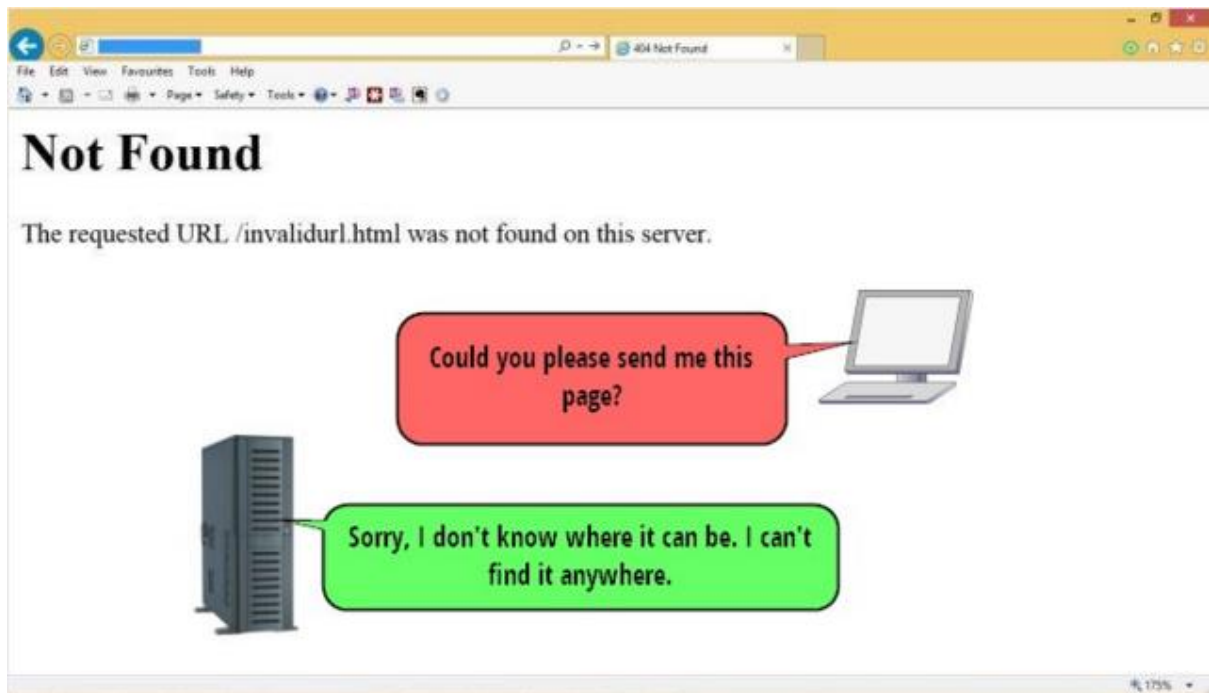
**B. The following are different website test (Chose two)**

- Check your Internet Connection
- HTML and CSS test
- Cookies test
- Web server is experiencing an overload

**C. The following are different activities for security testing (Chose two)**

- Test unauthorized access to secure pages should not be permitted
- Test the images display correctly in different browsers.
- Test the fonts are usable in different browsers
- Restricted files should not be downloadable without appropriate access

**3. From the image below**



- Which website test will you use to identify the real cause of the problem
- Test and find out the solution to fix this problem

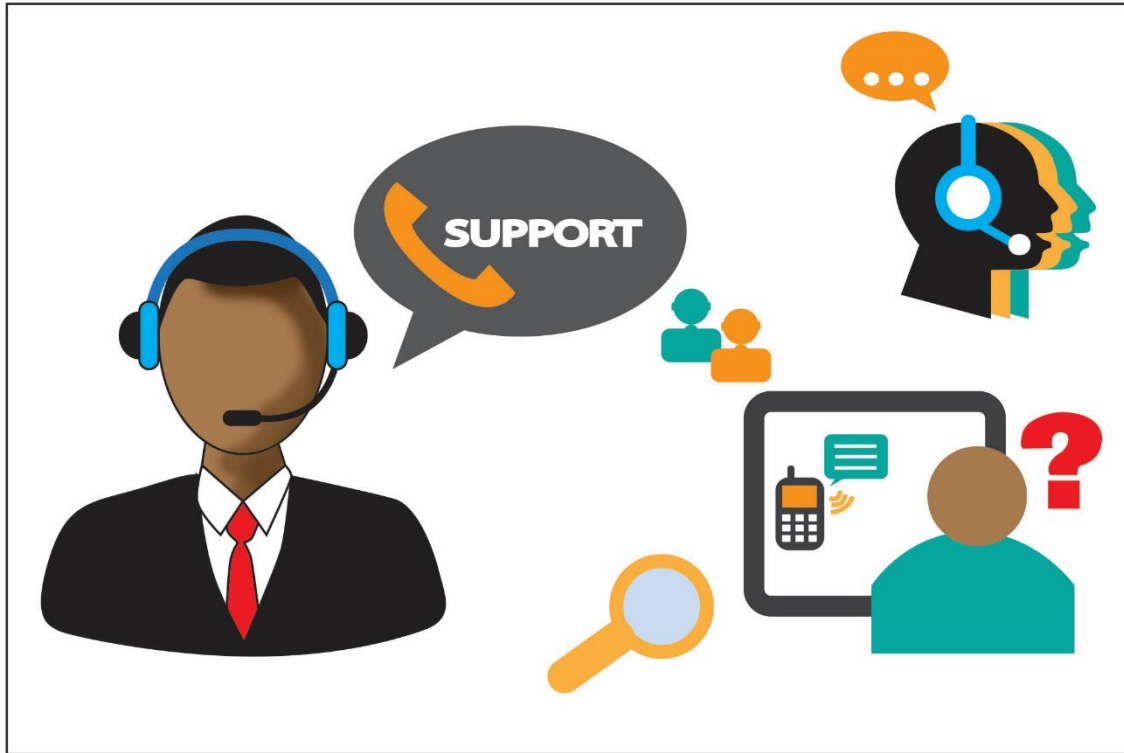


### Self Reflection

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

## Learning Unit 3: Provide customer service support

### Illustration of Learning Unit



### Topics

3.1 Identify customer's website issues

3.2 Identify all possible solutions to resolve the problem

### Unit Summary:

This unit describes skills, knowledge and attitudes required to identify the customer's website issues and Identify all possible solutions to resolve the problem

### Self-Assessment: Unit 3

- ✓ Look at the illustration. What is happening? What do you think this unit will be about? What topics might be covered?
- ✓ 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>					
Estimate and negotiate the website cost					
Identify steps of customer communication to explain the issue					
Set a timeframe to work on the issue					
Listing of all possible solutions					
Analyzing the best solution					
Choosing the best practices					

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					
Communicate solution to customer					



### Topic 3.1: Identify customer's website issues

Key Competencies:

#### Knowledge

1. Describe steps of customer communication to explain the issue
2. Describe a timeframe to work on the issue
3. Describe factors needed to negotiate website cost

#### Skills

1. Identify steps of customer communication to explain the issue
2. Set a timeframe to work on the issue
3. Estimate and negotiate the website cost

#### Attitudes

1. Be Critical thinker
2. Be Responsible
3. Be Flexible

📌 Getting Started: Look the picture below and answer the following questions.



**Illustration:** Draw the group of people discusses about something (issues) to handle something

- a. What do you think those persons are doing?
- b. Are they relationship between the picture and the topic?



### Activity 1: Problem Solving



#### **Task:**

Mr. NTIRANTA has to maintain a website by adding a new page called "Gallery" to DEA Ltd (Design, Engineering and Architecture) and he want to deliver it to his client (DEA Ltd). Form small groups to discuss the following questions.

1. Describe steps of customer communication to explain the issue
2. Give timeframe needed to accomplish this task?
3. Describe the factors needed to negotiate the new added part?

## **Key Facts 3.1**

### **1. Communication with customer to explain the issue**

#### **1.1 Ways to communicate with a customer**

- Patience is a must
- Accuracy of information is key
- Proactive approach always delights customers
- Attentiveness helps
- Avoid interrupting
- Know your product/service offered inside out
- Honesty works every time
- Active Listening and acknowledgements do wonders
- Analogies help in getting your message across
- Don't take short cuts

#### **1.2 Methods of communication**

- Text/Chart
- Email
- Social media
- Phone conversations
- Verbal communication

### **2. The most common website problems**

#### **A. Messy code**

Messy code is the first reason that often slows page loading down. White spaces, empty new lines or unnecessary comments can make the style sheet of the website larger in size.

## **B. No Security**

Most businesses are reasonably concerned about their website security. No wonder, given the high profile data hacks that take place now. Many sites owners still use HTTP and don't know that switching to HTTPS can provide better security.

## **c. Broken links**

A broken link or dead link is a link on a web page that no longer works because the website is encountering one or more of the reasons below. An improper URL entered for the link by the website owner. The destination website removed the linked web page

## **d. Poor user experience on mobile devices**

More than ever, now most users are using their mobile devices to browse websites since it's more convenient and faster. Because of their small sizes, a web page looks different on a smartphone than it does on a bigger screen.

## **E. Outdated website design**

Web design trends change often enough. If your website has not been touched for years, it will look outdated and unprofessional. This sets your chances of attracting new customers to zero. Nobody will trust you if your website is difficult to navigate or find any information

## **F. Slow load web page speed**

It often occurs that our customer has a website that takes a long time to load

To correct this problem:

1. You need first find out what exactly is slowing your site down by using website speed testing tools.
2. The first and most common cause of slow website response is server overload. Check the server if is not overloaded

3. This issue may also hide too many unnecessary images. Unlikely as it may seem, high resolution images are of little value. Check unnecessary images
4. On the contrary, they can negatively influence the website load speed. This is a bit of a task, but you should find time to evaluate all the images on your website. Entrusting this task to the professionals of our team is the best option. They check if there are any of your images that should be compressed, deleted or updated, as well as solve server problems and ultimately improve the speed of your site.

#### **g. Outdated content**

Most businesses pay great attention to the reliability and relevance of the content provided on their sites. This is what tells your visitors who you are, what you do, and how you can help them. It is frustrating for users if they go to the website and don't find what they are looking for. A lack of useful content, sales focused content, or old inaccurate content usually pushes them to go somewhere else to find their answer.

#### **h. Lack of Search Engine Optimization (SEO)**

Users are well aware that the search engine is a reliable aid in any situation. It helps them to find the necessary information on the Internet. Usually, people trust the sources that are at the top of the search. Low positions and, consequently, low traffic are a big problem for any site. The reason for this may be the lack of SEO optimization.

#### **i. No contacts**

If you want customers to find you, make sure your address, phone number and office hours are clearly visible on your site.

#### **✓ Setting a timeframe to work on the issue**

**A typical project timeline of tasks done before and after a website's launch is as follows:**

### **3.1 Planning And Discovery**

The importance of this initial stage must not be underestimated, as it is the project's foundation for success. This stage usually lasts from 2-10 weeks and often consists of the following elements:

- Research
- Requirements and/or definitions document
- Creative brief
- Technical briefs
- Discovery sessions
- Detailed architecture briefs and site architecture documents
- Sitemap
- Wireframe (a skeletal design diagram that provides a brief overview of the intended site functionality)

### **3.2 Design**

Once the research and planning are done, the project is ready to move on to the design stage. A major part of this stage is the creation of mockups that are presented to the client for approval.

The goal of this stage is to establish a look for the website that the client is happy with and to determine the functionality that the client needs. The design stage typically lasts from 4 to 12 weeks. A mockup, which is a visual representation presented to the client in order to demonstrate the website's intended look, usually includes the following items:

- Homepage design
- Internal page designs
- Desktop and Mobile views

### **3.3 Content Creation and SEO**

Not only is it important for a website to have appealing style and functionality, but it is crucial for it to have great content that will appeal to the intended

audience and perform well on search engines. This stage can be time-consuming if it is a large site, taking an average of 5 to 15 weeks, often overlapping with other stages. However, the effort is well worth it.

**Website content consists of the following elements:**

- Key messages
- Calls to action
- Content migrated over from existing sites
- Effective page titles and headings
- Search engine optimization: keywords optimally placed within content, titles, headings and image tags

### **3.4 Development and Coding**

Once the design is approved and all the content is ready to be placed, the task of building the actual website can begin. Although there is little to no involvement of the client at this stage, it still takes up a significant portion of the overall project timeline, from 6 to 15 weeks on average.

### **3.5 Beta Testing**

Once all the developing of the website is complete and it is fully functional, it must go through a period of testing before launch. The beta testing phase typically takes 2-6 weeks and should accomplish the following objectives:

- Review and receive feedback from intended audience and investors.
- Ensure proper functioning across multiple devices, screen sizes, and web browsers.
- Make sure the site looks and functions as per the specifications of the client.

### **3.6 Launch**

Once all parameters of the beta testing are fulfilled, the site is ready for its official launch. Since all the work of developing and testing is done, this major milestone should be simple and quick, taking only one day. If the website is extremely complex, involving a variety of apps and components it can take a bit longer.

### **3.7 Ongoing Improvements**

The work of creating a website should not stop at launch. There are plenty of opportunities for the client to gain more from the website by performing maintenance and providing updates.

In order to stay competitive in search engine results, new content should be added on a regular basis, and as time goes by, a website may benefit from design tweaks that keep the site's style current with rapidly changing internet trends.

✓ **Ability to negotiate website cost**

**Element to take into consideration while Negotiate website cost are the following :**

- A. **Complexity of idea:** This one is only applicable when you are getting a web app made. Then the algorithms, features and many other things come into play.
- B. **Design & Assets:** Sometimes you can get a website designed by a designer and developed by someone else. Usually this is done in larger projects where you need UX involved. Development cost is lower but design + development combined usually end up higher.

Also what creative work (images, logos, typesets, thumbnails, textures) needs to be done from the agency, that will be a deciding factor in the cost.

- c. **Size:** Many companies charge on the basis of number of pages you want in your navigation. After a fixed cost, for each page you pay an amount. I personally don't prefer this as a UX person number is pages is not really a metric for your user. Though if it works to figure out a right costing, never hurts.
- D. **Hosting & Support:** Who is hosting the site, how long they will be giving the support. What kind of support is provided? All this fine details also comes into play while deciding price. Generally you pay more for better support.



Activity 2: Guided Practice





### **Task:**

IPRC Kigali wants to maintain their website by adding another page that will be used by their students for registration, Publishing results and finance.

1. Identify steps of customer communication to explain the issue
2. Set a timeframe to work on the issues
3. Estimate and negotiate the website cost according to timeframe and the issues



### **Activity 3: Application**



### **Task:**

SJITC wants to integrate the website of school and website of the sjitc engineering company so that will be accessed under single domain name. Those two website have the same link that will be merged to form one page and to create about color.

1. Analyze and set the timeframe of maintaining and integrating this website
2. Estimate the price needed for this integration



### **Points to Remember**

- Make the right impression
- Keep your visitors coming back
- Boost your search engine traffic
- Protect your visitors from the bad guys
- Keep up with technology changes



### **Formative Assessment**

1. What are the most common website problems?
2. List the steps followed when fix website security issues

3. Give a typical project timeline of tasks done before and after a website's launch?
4. What can we consider when negotiating a website development cost?

### Topic 3.2: Use solutions to resolve the problem

Key Competencies:

Knowledge	Skills	Attitudes
1. Describe possible solutions	1. Identify possible solutions	1. Be Detail-oriented
2. Choose possible solutions	2. Analyze possible solutions	2. Be Detail-oriented
3. Propose customer solutions	3. Communicate customer's solutions	3. Attentive


 Getting Started: Look the picture below and answer the following questions



Figure: 1.1k

Observe the above picture and discuss the following:

- a. What do you think the person on the photo is doing?
- b. Is there any relationship with the topic?



#### Activity 1: Problem Solving



#### **Task: Scenario: "Customer First"**

SAMUDUHA College is a TVET school located at Rubirizi village, this school has a website which facilitates the parents and students to advertise its activities and working schedule but some of the parents were claiming that there are links which are not working. As a web designer you are requested to do the following :

- a. Identify the problem this website is facing
- b. List out all possible solutions to solve the problem
- c. Communicate the chosen solution to the parents

### **Key Fact 3-2**

#### 1. Solution of Most Common Website Problems

##### Fix Messy code

By removing those unnecessary elements, your code may become much cleaner and files as compact as possible. This will improve your overall website speed. For this purpose, there are helpful online tools that can be used to minify JavaScript, CSS, and HTML codes.

#### 1.2 No Security

##### Fix web security issues

Step 1: Host with a dedicated IP address.

Step 2: Buy a Certificate

Step 3: Activate the certificate

Step 4: Install the certificate

Step 5: Update your site to use HTTPS

### 1.3 Broken links

It is important to ensure internally that all links are working, so update those you think may have recently changed, or remove any that may be linking to a deleted page. You can remove all invalid links on your website using a special program, or contact the web master.

### 1.4 Poor user experience on mobile devices fixing

In this case, responsive design matters and your site must display and work perfectly on all kinds of devices, including tablets, smartphone, laptops and desktop computers.

Faced with such problems, our clients lost many potential customers. That is why you should invest in mobile responsive design so your visitors have a better user experience. With it, they will be more likely to stay on your website for longer

### 1.4 Outdated website design

Therefore, you need to adhere to modern web design standards on your site if you want to convert visitors into customers. At Internet devels, we also specialize in creating professionally designed web projects according to the latest web design trends.

### 1.5 Slow load web page speed

To correct this problem, you need first find out what exactly is slowing your site down by using website speed testing tools. The first and most common cause of slow website response is server overload. This issue may also hide too many unnecessary images. Unlikely as it may seem, high resolution images are of little value. On the contrary, they can negatively influence the website load speed. This is a bit of a task, but you should find time to evaluate all the images on your website. Entrusting this task to the professionals of our team is the best option. They check if there are any of your images that should be compressed, deleted or updated, as well as solve server problems and ultimately improve the speed of your site.

### 1.7 Outdated content

Your site's content should be provided with useful improvements and updates to be of current interest and attractive to customers.

### 1.8 Lack of Search Engine Optimization (SEO)

In fact, this is a very effective way to promote a site in the result pages of various search engines. But remember that site can only be optimized by a specialist in SEO optimization.

### 1.9 No contacts

Apart from making these contact details obvious and easy to get to, you can use a live chat option. This can be a great way to quickly convert requests into sales. The quicker you detect any big or small issues on your website, the less

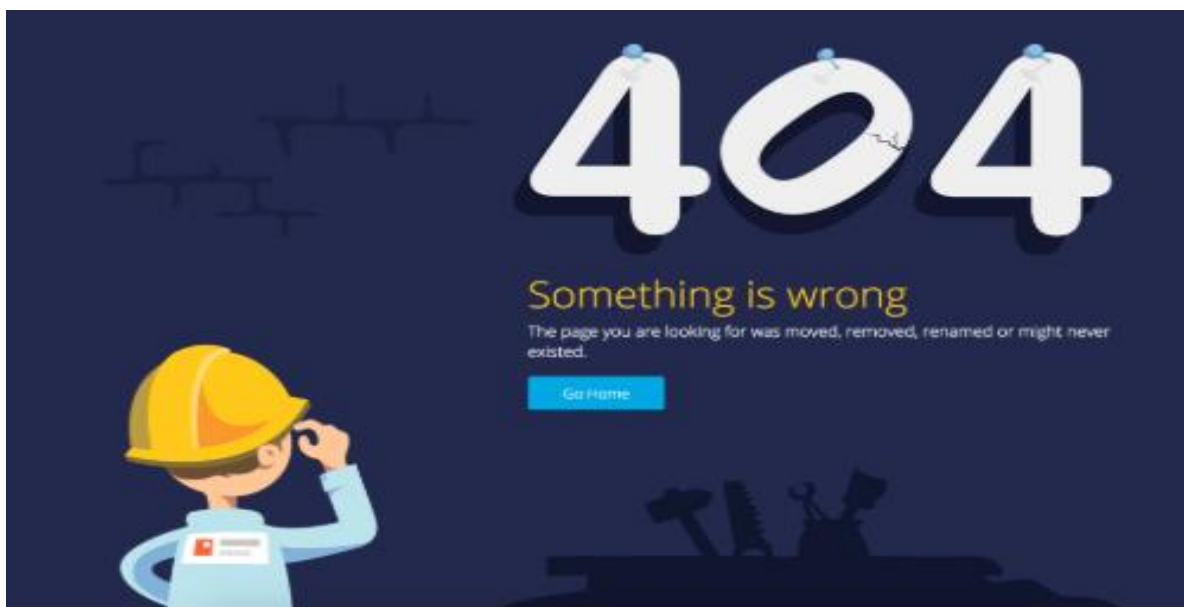
time and energy you will need remedy this situation and make everything work well. It is always a good idea to refresh your website now and then and realize all your cool business ideas



#### Activity 2: Guided Practice



#### Task:



From a picture displayed above you are requested to form small groups and do the following:

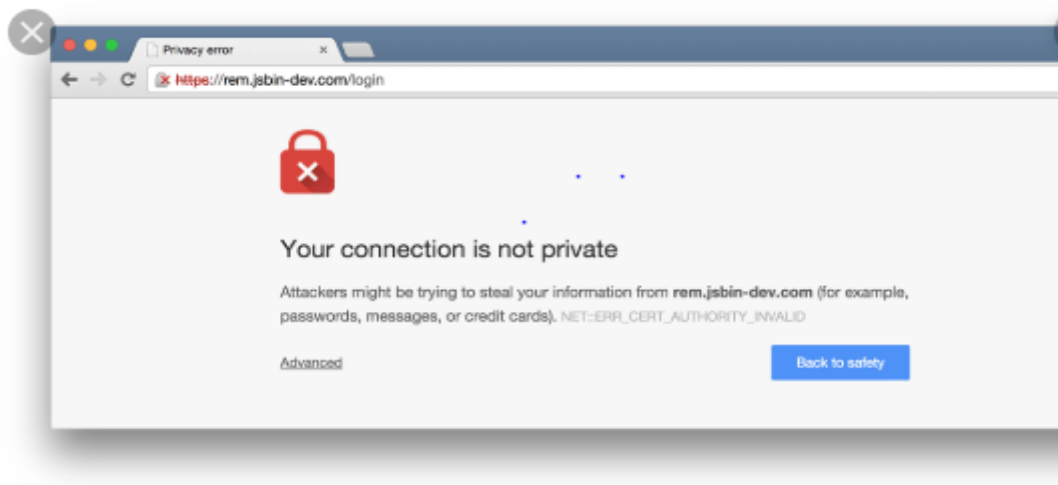
- Analyze Possible solutions to fix the problem of the above figure
- Choose best solution
- Communicate the chosen solution to customer



#### Activity 3: Application



#### Task:



From a picture displayed above you are requested to work individually and do the following:

- a. Analyze Possible solutions to fix the problem of the above figure
- b. Choose best solution
- c. Communicate the chosen solution to customer



### Points to Remember

- Take the customer claim serious
- React even quicker on social media
- Take customers' privacy seriously
- Use third-party customer-service software



### Formative Assessment

1. List out the steps to fix the security issue of the website
2. What are the common website customer's issues?
3. How to fix the slow load web page speed?



## Self Reflection

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