



RQF LEVEL 5



GENQA501 SOFTWARE DEVELOPMENT

Quality Assurance Application

TRAINER'S MANUAL

October, 2024



QUALITY ASSURANCE APPLICATION



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ACRONYMS

- API:** Application Programmable Interface
- CI/CD:** Continuous Integration /Continuous Deployment
- CLI:** Command Line Interface
- CRM:** Customer Relationship Management
- GUI:** Graphical User Interface
- ISO:** International Standards Organisation
- KPIs:** Key Performance Indicator
- PIN:** Project Initiation Notes
- QA:** Quality Assurance
- QC:** Quality Control
- REST:** Representation State Transfer
- RTB:** Rwanda TVET Board
- RTM:** Requirement Traceability Matrix
- SOAP:** Simple Object Access Protocol
- TDP:** Test Delivery Plan
- To R:** Terms of Reference
- TQUM Project:** TVET Quality Management Project
- UAT:** User Acceptance testing

INTRODUCTION

This trainer's manual includes all the methodologies required to effectively deliver the module titled "**Quality Assurance Application**". Trainees enrolled in this module will engage in practical activities designed to develop and enhance their competencies.

The development of this training manual followed the Competency-Based Training and Assessment (CBT/A) approach, offering ample practical opportunities that mirror real-life situations.

The trainer's manual is organized into Learning Outcomes, which is broken down into indicative content that includes both theoretical and practical activities. It provides detailed information on the key competencies required for each learning outcome, along with the objectives to be achieved.

As a trainer, you will begin by asking questions related to the activities to encourage critical thinking and guide trainees toward real-world applications in the labour market. The manual also outlines essential information such as learning hours, didactic materials, and suggested methodologies.

This manual outlines the procedures and methodologies for guiding trainees through various activities as detailed in their respective trainee manuals. The activities included in this training manual are designed to offer students opportunities for both individual and group work. Upon completing all activities, you will assist trainees in conducting a formative assessment known as the end learning outcome assessment. Ensure that trainees review the key reading and the points to remember section.

MODULE CODE AND TITLE: GENQA501 AND QUALITY ASSURANCE APPLICATION

Learning Outcome 1: Perform Requirements Analysis

Learning Outcome 2: Test the System

Learning Outcome 3: Generate Test Documentation

Learning Outcome 1: Perform Requirements Analysis



Indicative contents

1.1 Introduction to Quality Assurance

1.2 Analysing Terms of Reference (ToR)

1.3 Examining requirement specification

1.4 Analysing inception report

Key Competencies for Learning Outcome 1: Perform Requirements Analysis

Knowledge	Skills	Attitudes
<ul style="list-style-type: none">● Description of Quality Assurance(QA)● Identification of tools and techniques● Description of the terms of Reference● Description of inception report	<ul style="list-style-type: none">● Documenting a ToR analysis report● Examining requirement specification● Analysing inception report	<ul style="list-style-type: none">● Having Curiosity in Requirements Analysis● Having Open-mind in Requirements Analysis● Having Attention in Requirements Analysis● Having Collaboration in Requirements Analysis● Having Analytical Thinking in Requirements Analysis● Having Adaptability in Requirements Analysis● Having Critical Thinking in Requirements Analysis● Having Commitment in Requirements Analysis



Duration: 8 hrs

Learning outcome 1 objectives:



By the end of the learning outcome, the trainees will be able to:

1. Describe correctly the Quality Assurance according to industry quality assurance standards.
2. Analyse properly Terms of Reference (ToR) according to industry quality assurance standards.
3. Examine properly requirement specification used in Quality Assurance based on industry standards, project objectives, and stakeholder needs.
4. Analyse properly inception report used in Quality Assurance



Resources

Equipment	Tools	Materials
<ul style="list-style-type: none"> ● Computer 	<ul style="list-style-type: none"> ● Checklist 	<ul style="list-style-type: none"> ● Electricity ● Pen ● Paper ● Internet



Advance Preparation:

Before delivering this learning outcome, you are recommended to:

- Avail the working developed applications



Indicative content 1.1: Introduction to Quality Assurance



Duration: 2 hrs



Theoretical Activity 1.1.1: Description of the Quality Assurance



Notes to the trainer:

- While delivering this content, small groups can be used for describing Quality Assurance.
- Avail prepared checklist
- Avail of sample current quality assurance standards in Software development



Key steps:

While delivering this content pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- i. What do you understand about Quality Assurance?
- ii. What are the stages/Processes of Quality Assurance?
- iii. What are the main types of Quality Assurance?
- iv. Mention the methods used in Quality assurance.
- v. List down the standards used in quality assurance.
- vi. What are the benefits of Quality Assurance?
- vii. Identify Quality Assurance classification.
- viii. Differentiate Quality assurance from Quality control.
- ix. What are tools used in Quality Assurance?
- x. Describe techniques of Quality Assurance?

Step 2: Ask trainees to write answers on flipchart/paper.

Step 3: Engage trainees to present their findings.

Step 4: Provide expert view and clarify ideas.

Step 5: Address any questions or concerns if any. Ask trainees to read the key readings 1.1.1 in the trainee manual.



Points to Remember

- Quality assurance (QA) is a crucial (systematic) process for ensuring that a product or service meets the desired level of quality (Krawczyk, 2022).
- There are differences between quality control and quality assurance where Quality control is the focus of QC is to identify defects in the developed software by paying attention to testing processes and Quality assurance is The focus of QA is to prevent defects in the developing software by paying attention to processes.
- In quality assurance we have different types which include Internal Quality Assurance, External Quality Assurance, Process Quality Assurance, Product Quality Assurance, Service Quality Assurance, Supplier Quality Assurance (Lambda, 2024).



Indicative content 1.2: Analysing Terms of Reference (ToR)



Duration: 2hrs



Theoretical Activity 1.2.1: Description of Terms of Reference



Notes to the trainer:

- While delivering this content, a small group can be used for describing Terms of Reference.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask the trainees to answer the following questions:

- What do you understand by “terms of reference”?
- Give the reason why the Terms of reference is necessary in Quality Assurance.
- Outline the elements of Terms of reference.
- What is the importance of Terms of reference?
- What is test case in terms of reference?
- Describe document analysis report in terms of reference.

Step 2: Ask trainees to write answers on flipchart/paper.

Step 3: Engage trainees to present their findings

Step 4: Provide expert view and clarify ideas.

Step 5: Address any questions or concerns if any.

Step 6: Ask trainees to read the key readings 1.2.1 in the trainee manual



Points to Remember

- Terms of Reference is a formal document that outlines the objectives, scope, deliverables, roles, and responsibilities for a specific project, task, or engagement (MORKOVICH, 2023).

- In Terms of Reference (ToR), there are Elements which are: Background, Objectives, Scope, Methodology, Timeline, Deliverables, Resources, Roles and Responsibilities, Reporting Requirements, Evaluation Criteria (ABBAS, 2023).
- We use the Terms of Reference (ToR) for the following Purposes:
- Clarifies Scope, Establishes Objectives, Provides Guidelines, Allocates Responsibilities, Sets Deadlines, Defines Deliverables, Facilitates Communication (ABBAS, 2023).



Practical Activity 1.2.2: Analyse Terms of Reference (ToR) document



Notes to the trainer

- As a trainer guide learner on how to make a ToR analysis report. This activity should take place in a computer Lab where the trainees should make the ToR analysis report.
- Avail sample of ToR for a developed system
- Avail of developed checklist



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 1.2.2

Task: As software developer, you asked to analyse ToR document according to the requirement specification.

Step 2: Provide instruction to the trainees

Step 3: Demonstrate how to analyse ToR document, while demonstrate explain the steps to follow

Step 4: Ask trainees to analyse the provided ToR document and make a report, then monitor the activity

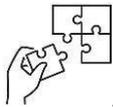
Step 5: Verify whether the ToR analysis report is properly done

Step 6: Assign the trainees to perform the application of learning 1.2 to improve skills at this Indicative Content



Points to Remember

- **Steps to analyze the ToR in software development:**
 1. Understand the Scope and Objectives
 2. Analyze Stakeholders' Roles and Responsibilities
 3. Examine Deliverables and Milestones
 4. Assess the Project Timeline and Phases
 5. Review the Technical Specifications
 6. Check Risk Management and Contingency Plans
 7. Understand the Quality Assurance (QA) Strategy
 8. Evaluate the Budget and Resources
 9. Analyze the Communication Plan
 10. Legal and Compliance Requirements
 11. Analyze Success Criteria



Application of learning 1.2.

ABA company develop an application to their clients. They created a new system for a local bank in Rwanda but they have a problem of ensuring that the project aligns with the client's expectations and requirements. They want someone to analyze a Terms of Reference (ToR) document for that created application. As the one of the software development team, you are hired to perform this task.

Checklist:

SN	Criteria	Indicator	Observation	
			Yes	No
1	ToR Document is properly analysed	1.1. the Scope and Objectives are reviewed		
		1.2. Stakeholders' Roles and Responsibilities are analysed		

		1.3. Deliverables and Milestones are examined		
		1.4. Project Timeline and Phases are assessed		
		1.5. Technical Specifications are reviewed		
		1.6. Risk Management and Contingency Plans are checked		
		1.7 Budget and Resource are evaluated		
		1.7.Success Criteria are analyzed		



Indicative content 1.3: Examining Requirement Specification



Duration: 2hrs



Theoretical Activity 1.3.1: Description of requirement specification



Notes to the trainer:

- While delivering this content, small groups can be used for Describing requirement specification documents



Key steps:

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and ask trainees to answer the following questions:
- i.What are the components of requirement specification document?
 - ii.Describe functional and non-functional requirements for stakeholder.
 - iii.Differentiate consistency and completeness requirement specification.
 - iv.Identify dependencies and interactions in requirement specification.
- Step 2:** Ask trainees to write answers on flipchart/paper.
- Step 3:** Engage trainees to present their findings.
- Step 4:** Provide expert view and clarify ideas.
- Step 5:** Address any questions or concerns if any.
- Step 6:** Ask trainees to read the key readings 1.3.1 in the trainee manual.



Points to Remember

- Description of functional and Non-functional requirements in requirement specification (GeeksforGeeks, 2024).
- Verifying consistency and completeness in requirement specifications.
- Identifying dependencies and interactions in requirement specifications (GeeksforGeeks, 2024).



Practical Activity 1.3.2: Generating findings document



Notes to the trainer

- As a trainer guide learner on how to generate findings document. This activity should take place in a computer Lab where the trainees should generate findings document.
- Avail of working software



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 1.3.2

Task: As a software developer, you are asked to generate findings document according to the requirement specifications.

Step 2: Provide instruction to the trainees

Step 3: Demonstrate how to generate findings document, while demonstrate explain the steps to follow

Step 4: Ask trainees to generate findings document and then monitor the activity

Step 5: Verify whether the Findings document are properly generated.

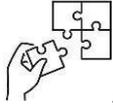
Step 6: Assign the trainees to perform the application of learning 1.3 to improve skills at this Indicative Content



Points to Remember

- While Generating a Findings Document pass through the following steps:
 1. Review the Entire Document
 2. Analyze Stakeholder Requirements
 3. Verify Consistency and Completeness
 4. Identify Dependencies and Interactions
 5. Conduct a gap Analysis
 6. Assess Feasibility

7. Identify Potential Risks
8. Gather Feedback
9. Organize Findings



Application of learning 1.3.

XY team has completed a major phase of their project, which involves building a cloud-based inventory management system for a retail company. After conducting reviews on the system's functionality and performance. As the one of the team, you are tasked for generating a findings document.

Checklist:

SN	Criteria	Indicator	observation	
			Yes	No
1	Requirement specification is properly examined	1.1. the entire document is Reviewed		
		1.2. stakeholder requirements are analysed		
		1.3. consistency and completeness are Verified		
		1.4. Dependencies and interactions are Identified		
		1.5 gap Analysis is conducted		
		1.6 Feasibility is assessed		
		1.7 Potential Risks are identified		
		1.8 Findings are organized		



Indicative content 1.4: Analysing Inception Report



Duration: 2 hrs



Theoretical Activity 1.4.1: Description of inception report



Notes to the trainer:

- While delivering this content, small groups can be used for Describing the inception report.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- What is inception report?
- What is document review in inception report?
- What do you understand by " stakeholder expectations"?
- What is the clarity and completeness in inception report?
- What is the feasibility and risks?
- Describe document assumptions and constraints
- Describe Document analysis findings

Step 2: Ask trainees to write answers provided on flipchart/paper.

Step 3: Provide expert view and clarifies ideas.

Step 4: Address any questions or concerns.

Step 5: Ask trainees to read the key reading 1.4.1 in the trainee manual.



Points to Remember

- An inception report is an initial document prepared at the start of a project to outline the approach, scope, and planning details (Dayton, 2020).
- In Inception Report, there are Key Components which are: Document Review, Stakeholder Expectations, Clarity and Completeness, Feasibility and Risks, Assumptions and Constraints, Analysis Findings (Dayton, 2020).



Practical Activity 1.4.2: Analysing inception report



Notes to the trainer

- As a trainer guide learner on how to Analyse inception report. This activity should take place in a computer Lab.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 1.4.2

Task: As a software developer, you asked to analyse the inception report

Step 2: Provide instruction to the trainees

Step 3: Demonstrate how to analyse the inception report, while demonstrate explain the steps to follow

Step 4: Ask trainees to analyse the inception report and then monitor the activity

Step 5: Verify whether the inception report is properly analysed.

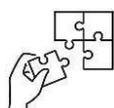
Step 6: Assign the trainees to perform the application of learning 1.4 to improve skills at this Indicative Content



Points to Remember

- **Steps of analysing inception report are:**
 1. Understand the Project Context and Objectives
 2. Examine the Scope of the Project
 3. Analyse the Methodology
 4. Assess the Work Plan and Timeline
 5. Evaluate Stakeholder Engagement and Roles
 6. Check Resource Allocation

7. Risk Assessment and Mitigation Strategies
8. Analyse the Monitoring and Evaluation Plan
9. Review the Legal and Compliance Requirements
10. Examine Assumptions and Dependencies
11. Ensure Alignment with Project Goals and Vision
12. Feedback and Validation



Application of learning 1.4.

XZ Company is planning to launch a new educational program focused on learning software for working professionals. The program aims to offer flexible, high-quality courses in various fields. XZ company's administration has a prepared inception report. As a trainee, you are tasked to analyse this inception report to ensure that the program is viable, aligned with stakeholder expectations, and free of significant risks before proceeding.

Checklist:

SN	Criteria	Indicator	Observation	
			YES	NO
1	Inception report is properly analysed	1.1.Perform Document Review is performed		
		1.2.Clarity and Completeness are assessed		
		1.3.Evaluate Feasibility and Risks are evaluated		
		1.4.Assumptions and Constraints are properly documented		
		1.5.Document Analysis Findings are properly documented		



Learning outcome 1 end assessment

Written assessment

Q1. Read the Following statement and answer by true if correct or false otherwise

1. QA is solely responsible for finding defects in software.

Answer: False

2. QA should be performed only after development is complete.

Answer: False.

3. A high defect rate indicates poor software quality.

Answer: False

4. QA teams are responsible for writing requirements and specifications.

Answer: False

5. QA teams should always strive for zero defects.

Answer: False

6. QA is only concerned with functional correctness.

Answer: False

7. Automated testing tools can completely replace manual testing.

Answer: False

8. QA teams should be isolated from development teams to avoid conflicts of interest.

Answer: False

9. Quality Assurance (QA) is primarily focused on preventing defects in a product or service.

Answer: True

10. The main stages of the Quality Assurance process include planning, assurance, and control.

Answer: True

11. Quality Control (QC) is a proactive process, while Quality Assurance (QA) is reactive.

Answer: False

12. ISO 9001 is a widely recognized standard for Quality Management Systems.

Answer: True

13. One of the main benefits of Quality Assurance is improved customer satisfaction.

Answer: True

14. Statistical process control (SPC) is a tool used in Quality Control, not in Quality Assurance.

Answer: False

15. Quality Assurance involves the use of methods like audits and process evaluations.

Answer: True

16. Lean methodology is an example of a Quality Assurance standard.

Answer: False

Q2. Circle the letter corresponding with the correct answer

i. Which of the following is NOT an example of industry-specific QA?

- a. Software QA
- b. Healthcare QA
- c. Financial QA
- d. Retail QA

Answer: d (Retail QA)

ii. Which of the following is a benefit of manual testing?

- a. Faster test execution
- b. Higher test coverage
- c. Ability to detect subtle defects
- d. Lower cost

Answer: c (Ability to detect subtle defects)

iii. The main objective of quality assurance is:

- a. Proof of fitness product
- b. Inspection of quality of product
- c. Quality conformance
- d. Customer satisfaction

Answer: a (Proof of fitness product)

iv. The primary goal of analyzing an inception report is to:

- a. Assess the project's feasibility and risks
- b. Review the project's documentation
- c. Identify stakeholders
- d. All of the above

Answer: d (All of the above)

v. What is the purpose of documenting assumptions and constraints in an inception report analysis?

- a. To identify potential risks
- b. To clarify project scope
- c. To ensure project feasibility
- d. All of the above

Answer: d (All of the above)

vi. The findings from an inception report analysis are used to:

- a. Develop a project plan
- b. Identify potential risks
- c. Communicate project goals to stakeholders
- d. All of the above

Answer: d (All of the above)

Q3. What is Quality Assurance (QA) in software development?

Answer:

Quality Assurance (QA) in software development is the process of systematically monitoring and evaluating various aspects of the project to ensure that the software meets the required quality standards.

Q4. What is the main difference between Quality Assurance (QA) and Quality Control (QC)?

Answer:

The main difference between QA and QC is that QA is process-oriented while QC is product-oriented. QA focuses on improving processes to prevent defects, whereas QC focuses on identifying defects in the final product through testing and inspection.

Q5. Below there are incomplete sentences about quality assurance and quality control. Choose and fill in the blank space with the appropriate words from the provided ones in the following given box.

1.....is part of quality management focussed on providing confidence that quality requirements will be fulfilled.

Quality management

Quality

Quality assurance

Updating

Answer: Quality assurance

2. Fill The first step in analyzing an inception report is to perform a

document review

stakeholder expectations

document analysis findings

Answer: document review

Q6. What is the difference between functional and non-functional requirements?

Answer:

Functional Requirements specify what the system should do. They define the core functionalities, behaviors, and interactions of the system. Examples include user login, data retrieval, and transaction processing.

Non-Functional Requirements specify how the system should perform its functions, focusing on quality attributes like performance, security, scalability, and usability. Examples include response time, uptime, and security standards.

Practical assessment

XYZ company, is embarking on a new software development project to launch an advanced customer relationship management (CRM) system. The company wants to ensure the quality of the software. The Quality Assurance (QA) team is responsible for ensuring the product meets both functional and non-functional requirements while adhering to industry standards.

The QA team is tasked with

1. Implementing quality assurance processes,
2. Analysing the Terms of Reference (ToR),
3. Reviewing the requirement specifications,
4. Assessing the project's inception report.

Checklist:

SN	Criteria	Indicator	Observation	
			Yes	No
1	Terms of Reference (ToR) are properly Analysed	1.1 Elements of ToR are Assessed		
		1.2 ToR analysis report is generated		
2.	Requirement Specification is well Examined	2.1 Entire requirements document is Reviewed		
		2.2 Stakeholder requirements is performed		
		2.3 Consistency and completeness are verified		
		2.4 Dependencies and interactions are identified		
		2.5 Findings document are generated		
3	Inception Report is properly analysed	3.1 Document review is performed		
		3.2 Stakeholder expectations are Understood		
		3.3 Clarity and completeness is assessed		
		3.4 Feasibility and risks are evaluated		
		3.5 Assumptions and constraints are documented		
		3.6 Inception report is generated		

END



Further information to the trainer

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Learning Outcome 2: Test the System



Indicative contents

- 2.1 Preparation of Test Plan**
- 2.2 Preparation of Testing Environment**
- 2.3 Perform Testing**

Key Competencies for Learning Outcome 2: Test the System

Knowledge	Skills	Attitudes
<ul style="list-style-type: none"> ● Description of Test plan. ● Identification of tools. ● Identification of techniques ● Identification of test cases. ● Identification of test criteria. ● Preparation of Test Execution Scripts ● Identification of key components of a Testing Environment ● Description of performing test ● Identification of testing tools ● Description of test delivery plan 	<ul style="list-style-type: none"> ● Preparing Test Data ● Scheduling test delivery plan ● Selecting test techniques ● Selecting software testing tools ● Setting up and Configuring testing environment ● Performing Test 	<ul style="list-style-type: none"> ● Having Curiosity in System testing ● Having Open-mind in System testing ● Having Attention in System testing ● Having Collaboration in System testing ● Having Analytical Thinking in System testing ● Having Critical Thinking in System testing ● Having Commitment in System testing



Duration: 17 hrs

Learning outcome 2 objectives:



By the end of the learning outcome, the trainees will be able to:

1. Test clearly plan used in software system Testing.
2. Test properly Environment used in software system Testing
3. perform correctly Testing in software system Testing



Resources

Equipment	Tools	Materials
<ul style="list-style-type: none"> ● Computer ● Smartphone ● Tablet 	<ul style="list-style-type: none"> ● Microsoft Visio ● LucidChart ● Draw IO 	<ul style="list-style-type: none"> ● Pen ● Notebook



Advance Preparation:

Before delivering this learning outcome, you are recommended to:

- Have a computer
- Have the developed applications
- Have setup of Microsoft Visio or Draw IO



Indicative content 2.1: Preparation of Test Plan



Duration: 6 hrs



Theoretical Activity 2.1.1: Description of test plan



Notes to the trainer:

- Trainer may use small group for describing test plan, types of test plan, Components of test plan, identifying test tools, identifying test techniques, identifying test cases, identifying test criteria, allocate resources, prepare test data, prepare test, execution scripts, identify the components of test delivery plan.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- i. What do you understand by "test plan"?
- ii. What are types of test plan?
- iii. What are the components of test plan?
- iv. Mention tools used for testing the system?
- v. Identify test criteria to consider during testing system.
- vi. Identify test techniques used for testing the system?
- vii. Describe Test cases in testing system.
- viii. Describe Allocate resources in test plan.
- ix. What is test data in system testing.
- x. Describe types of test data used in testing system.
- xi. Give the importance of test data.
- xii. Describe test execution scripts.
- xiii. What are components of test delivery plan?

Step 2: Monitor the activity.

Step 3: Ask trainees to present their findings.

Step 4: Process and Provide the clarification on the trainee's response.

Step 5: Ask trainees to read more in trainee manual in key reading (Refer to activity 2.1.1)



Points to Remember

- Test plan: It is a formal document that outlines the overall strategy, objectives, resources, and scope of testing activities for a software development project (Lambdatest, 2024).
- There is Types of test plan which are : Master Test Plan , Test Phase Plan, Specific Test Plans (Lambdatest, 2024).
- There are the Components of test plan which are: Scope, Schedule, Resource Allocation, Environment, Tools, Defect Management, Risk Management. (Lambdatest, 2024).
- In Test plan there are software testing tools used in software development which are: Test Management tools, Automated Testing tools, Performance Testing tools, Cross-browser Testing tools, Integration Testing tools ,Unit Testing tools ,Mobile Testing tools ,GUI Testing tools ,Bug Tracking tools ,Security Testing tools and hardware testing tools (Singh, 2024)
- There are software test techniques used in software development which are:
Unit Testing, Integration Testing, Functional Testing, System Testing, Acceptance Testing, Performance Testing, Regression Testing, Security Testing, Usability Testing, Smoke Testing, Exploratory Testing, Static Testing, Dynamic Testing (Singh, 2024).
- In test plan there are the Benefits of test data which are: Offers the ability to identify coding errors, provides a foundation for additional testing, identifies redundancy or unnecessary duplication, Provides flexibility in managing applications.
- In description of Test Execution Scripts, There are Key Components which are: Test Case ID, Test Case Description, Test Steps, Expected Results, Actual Results, Status and Comments (Singh, 2024).



Practical Activity 2.1.2.: Schedule test delivery plan



Notes to the trainer

- As a trainer guide learner on how to Schedule test delivery plan.
- This activity should take place in a computer Lab where the trainees should Schedule test delivery plan

- Avail of working software project.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 2.1.2

Task: As software developer, you are asked to Schedule test delivery plan

Step 2: Provide instruction to the trainees.

Step 3: Demonstrate how to Schedule test delivery plan, while demonstrate explain the steps to follow.

Step 4: Ask trainees to Schedule test delivery plan and then monitor the activity.

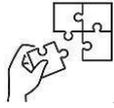
Step 5: Verify whether the Scheduled test delivery plan is properly done.

Step 6: Assign the trainees to perform the application of learning 2.1 to improve skills at this Indicative Content



Points to Remember

- **While scheduling test plan, follow these Steps to Create a Test Delivery Plan which are:**
 1. Define Testing Objectives
 2. Identify Testing Scope
 3. Develop Test Strategy
 4. Create Test Plan
 5. Allocate Resources
 6. Define Test Environment
 7. Develop Test Data
 8. Establish Test Metrics
 9. Schedule Test Activities
 10. Risk Management
 11. Communication Plan.



Application of learning 2.1.

XYZ Company is a software development company that specializes in software development and tech gadgets. With a rapidly growing user base and an expanding product catalog, it decided to develop a new feature for its software by prepare the test plan to ensure that the feature meets business requirements and user expectations while maintaining the overall integrity of the website. As software developer, help them to Prepare the test plan.

Checklist:

SN	Criteria	Indicators	Observation	
			Yes	No
1	Test plan is properly planed	1.1. Testing Objectives is defined		
		1.2. Testing Scope is performed		
		1.3. Test Strategy is developed		
		1.4. Resources are allocated		
		1.5. Test Environment is defined		
		1.6. Test Data is developed		
		1.7. Test Activities are scheduled		
		1.8. Risks are Managed		
		1.9. Plan is communicated		



Indicative content 2.2: Preparation of Testing Environment



Duration: 6 hrs



Theoretical Activity 2.2.1: Description of testing environment



Notes to the trainer:

- Trainer may use small group for Identifying key components of a Testing Environment, selecting test techniques, Select testing tools.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- What are Key Components of a Testing Environment?
- Explain the hardware infrastructure used in testing environment?
- Explain are software infrastructure used in testing environment?
- What are the dependencies need for testing?
- Explain software testing techniques used in testing environment.
- What are software testing tools used in testing environment?
- What is software functionalities?
- Match the following software Test Techniques with their corresponding system functionalities.

Functionality Type	Recommended Test Technique
User Interface	Automated Testing (Regression)
Core Business Logic	Manual Testing / Exploratory Testing
New or Unstable Features	Automated Testing (Performance Testing)
Performance Critical Paths	Exploratory Testing
Cross-Platform Compatibility	Manual testing
Ad-hoc Changes	Parallel testing

Step 2: Ask the trainees to answer the following questions:

Step 3: Monitor the activity.

Step 4: Ask trainees to present their findings.

Step 5: Process and Provide the clarification on the trainee's response.

Step 6: Ask trainees to read more in trainee manual in key reading (Refer to activity 2.2.1)



Points to Remember

- In description of testing environment, we can identify key components used in testing software environment which are: Hardware Infrastructure, Software Infrastructure (Enov8, 2024)
- In software development, there is Dependencies which are Libraries, APIs, Configuration Files
- When you Select Test Techniques it will depends on the nature of the system, project requirements, and available resources such as: Manual Testing, Automated Testing, Exploratory Testing, Parallel Testing (Singh, 2024).



Practical Activity 2.2.2: Selecting software testing tools



Notes to the trainer

- As a trainer guide learner on how to Select testing tools. This activity should take place in a computer Lab where the trainees should Select testing tools
- Avail of working current software project.
- Avail a computer.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 2.2.2

Task: As software developer you are asked to Select testing tools

Step 2: Provide instruction to the trainees.

Step 3: Demonstrate how to Schedule test delivery plan, while demonstrate explain the steps to follow.

Step 4: Ask trainees to Schedule test delivery plan and then monitor the activity.

Step 5: Verify whether the Scheduled test delivery plan is properly done.

Step 6: Assign the trainees to perform the application of learning 2.2 to improve skills at this Indicative Content.



Points to Remember

Selecting testing tools

- **There are Steps of Selecting Hardware Testing Tools which are:**
 1. Identify Hardware Components
 2. Define Testing Objectives
 3. Research and Evaluate tools
 4. Conduct Proof of Concept
 5. Make a Final Selection
- **Steps of Selecting Software Testing Tools which are:**
 1. Define Testing Requirements
 2. Identify Tool Categories Needed
 3. Evaluate Tool Features and Capabilities
 4. Check Compatibility
 5. Assess Learning Curve and Training Needs
 6. Review Vendor and Community Support
 7. Conduct a Cost-Benefit Perform Proof of Concept (PoC)
 8. Gather Feedback from Stakeholders



Practical Activity 2.2.3.: Set up and configure testing environment



Notes to the trainer

- As a trainer guide learner on how to perform testing.
- This activity should take place in a computer Lab where the trainees should Set up and configure testing environment.
- Avail the current working software project.
- Avail a computer.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 2.2.3

Task: As software developer you asked to Set up and configure testing environment

Step 2: Provide instruction to the trainees.

Step 3: Demonstrate how to Set up and configure testing environment, while demonstrate explain the steps to follow.

Step 4: Ask trainees to Set up and configure testing environment and then monitor the activity.

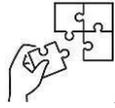
Step 5: Verify whether testing environment is properly Set up and configured.

Step 6: Assign the trainees to perform the application of learning 1.2 to improve skills at this Indicative Content.



Points to Remember

- **The Steps to Set Up and Configure a Testing Environment which are:**
 1. Identify the requirements
 2. Create the test plan
 3. Configure the test environment
 4. Validate the test environment
 5. Execute the test cases
 6. maintain the test environment.



Application of learning 2.2.

XYZ Company is software system company that specializes in software development and tech gadgets. With a rapidly growing user base and an expanding product catalog, it decided to develop a new feature for its website by Preparing the Testing Environment. As software system developer, help them to Prepare Testing Environment.

Checklist:

SN	Criteria	Indicators	Observation	
			Yes	No
1.	Key Components of the Testing Environment is well identified	1.1 Hardware infrastructure like servers, test devices, etc. are identified		
		1.2 Software infrastructure (operating systems, databases, web servers) are identified		
		1.3 Third-party APIs, payment gateways, external services) are identified		
2	Testing Techniques are properly Selected	2.1 Testing Techniques are selected		
3	Testing Tools are properly selected	3.1 software system tools for test automation (e.g., Selenium, JMeter) are selected		
		3.2 Tools for API testing (e.g., Postman) is selected		
		3.3 defect tracking tools (e.g., JIRA) is selected		
		3.4 hardware tools (mobile devices, tablets) are selected		
4	Testing Environment is well Set Up and Configured	4.1 Required software (databases, web servers) are Installed and configured		
		4.2 testing devices are Set up		
		4.3 Connections to third-party services (e.g., payment gateways) are Established		
		4.4. Network configurations to ensure testability is Validated		
		4.5 Test accounts and credentials are Created		



Indicative content 2.3: Perform Testing



Duration: 5 hrs



Theoretical Activity 2.3.1: Description of testing



Notes to the trainer:

- Trainer may use small group for performing testing by Review test plan, Select test cases, Process test, Record defects, Monitor test progress.



Key steps:

While delivering this content pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- Describe the review test plan.
- What are key aspects to select test cases?
- Describe test execution.
- Explain Record defects
- What is the Purpose of Recording Defects?
- Outline Key Steps to Record Defects.
- What are Best Practices for Recording Defects?
- What is Monitoring test progress?
- What is the Purpose of Monitoring test progress?
- Mention Key components of Monitoring test progress.
- What are Best Practices for Recording Defects?
- Explain document test result?

Step 2: Ask trainees to write answers provided on flipchart/paper.

Step 3: Provide expert view and clarifies ideas.

Step 4: Address any questions or concerns.

Step 5: Ask trainees to read the key reading 2.3.1 in the trainee manual.



Points to Remember

In software testing there are:

- Process test refers to executing the selected test cases in accordance with the defined test plan.
- Recording defects is an essential part of system testing where any issues or bugs identified during test execution are documented systematically.
- Monitoring test progress involves tracking the execution of tests against the planned schedule and assessing overall quality metrics throughout the testing phase.
- Documenting test results in system testing is a critical process that ensures the quality, reliability, and usability of software products.
- There are Key Components of Test Result Documentation that are Test Case Identification, Test Execution Summary, Detailed Test Results, Defect Summary, Test Coverage Information, Conclusion and Recommendations.



Practical Activity 2.3.2: Selecting test cases and test execution



Notes to the trainer

- As a trainer guide learner on how to select test cases. This activity should take place in a computer Lab where the trainees should select test cases.
- Avail the working current software system project.
- Avail a computer.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 2.3.2

Task: As software developer you asked to select test cases

Step 2: Provide instruction to the trainees.

Step 3: Demonstrate how to select test cases, while demonstrate explain the steps to follow.

Step 4: Ask trainees to Set up and configure testing environment and monitor the activity

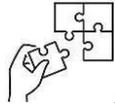
Step 5: Verify whether testing is properly done.

Step 6: Assign the trainees to perform the application of learning 2.3 to improve skills at this Indicative Content.



Points to Remember

- Selecting test cases identifies specific scenarios that will be executed during testing to validate that the system meets its requirements.
- **There are steps for selecting test cases in software testing which are following:**
 1. Define the test objectives
 2. Identify test scenarios
 3. Create test cases
 4. Prioritize test cases
 5. Execute test cases
 6. Analyze results
 7. Report defects
 8. Repeat testing
- Test execution is the phase where selected test cases are run to validate the software system.
- **The steps for Test execution in system software testing are as follows:**
 1. Prepare the Test Environment
 2. Review Test Cases
 3. Set Up Test Data
 4. Execute Test Cases
 5. Record Results
 6. Log Defects
 7. Monitor Progress
 8. Retesting and Regression Testing
 9. Document and Review Results



Application of learning 2.3.

XYZ Company is a software company specializing in software development and tech gadgets. The company is rolling out a new search feature aimed at improving user experience by providing more accurate, faster search results but they have a problem of ensuring if the feature meets the required quality standards. As a QA specialist, you perform testing by testing process involves:

1. Reviewing the test plan,
2. Selecting appropriate test cases,
3. Processing the tests,
4. Recording defects,
5. Monitoring progress,
6. Documenting the results.

As software system developer, you are hired to perform this task.

Checklist:

SN	Criteria	Indicators	Observation	
			Yes	No
1	Testing is clearly Performed	1.1 Test plan is reviewed		
		1.2 Test cases are Selected		
		1.3 Test is Processed		
		1.4 Record defects are recorded		
		1.5 Test progress is Monitored		
		1.6 Test results are documented		



Learning outcome 2 end assessment

Written assessment

Q1. What is software testing?

Q2. Match the following terms in column A with their corresponding descriptions column B.

Write the letter of the correct answer in the provided blank space in Column C.

Column A	Column B	Column C
1. Description of test plan	A. The process of identifying and selecting appropriate test toolsB.....
2. Identify test tools	B. A document outlining the scope, objectives, and approach for testing a software productA.....
3. Identify test techniques	C. The process of creating specific test cases to executeE.....
4. Identify test cases	D. The process of defining the criteria that will determine if a test is successful or failedC.....
5. Identify test criteria	E. The process of defining the specific methods and procedures that will be used to conduct testingD.....
6. Allocate resources	F. The process of assigning personnel, equipment, and other resources needed for testingF.....
7. Prepare Test Data	G. The process of creating a timeline for completing the testing processI.....
8. Prepare Test Execution Scripts	H. The process of creating detailed instructions for executing test casesH.....
9. Schedule test delivery plan	I. The process of creating or obtaining data that will be used during testingG.....

Q3. Circle the letter corresponding with the correct answer

1. Which of the following test techniques is most suitable for regression testing in a large-scale software system?

- a) Manual Testing
- b) Automated Testing
- c) Exploratory Testing
- d) Parallel Testing

Answer: b) Automated Testing

2. What is the main advantage of using automated testing over manual testing?
- a) Automated tests can explore new functionalities not previously planned.
 - b) Automated tests are cheaper to write than manual tests.
 - c) Automated tests can be run repeatedly with less effort and in less time.
 - d) Automated tests require no maintenance after creation.

Answer: c) Automated tests can be run repeatedly with less effort and in less time.

3. In which scenario would you typically choose parallel testing?

- a) To verify that new software versions perform consistently with the old version.
- b) To test a system under various conditions using random inputs.
- c) To perform security and load testing for critical applications.
- d) To verify that the system responds quickly under heavy loads.

Answer: a) To verify that new software versions perform consistently with the old version.

- Q4. Read the Following statement and answer by true if correct or false otherwise

- a) Preparation of a testing environment involves setting up both hardware and software infrastructure.

Answer: True

The testing environment includes setting up both hardware (such as servers, computers) and software (like operating systems, databases, applications) for effective testing.

- b) Hardware infrastructure is not essential for testing as most testing is done on virtual environments.

Answer: False

Hardware infrastructure is essential as it provides the physical or virtual machines where software is deployed and tested.

- c) Proper preparation of a testing environment helps prevent configuration-related issues during testing.

Answer: True

A well-prepared testing environment ensures that the configuration matches the expected setup and helps avoid issues that could arise due to improper setup.

- d) Hardware and software requirements in a testing environment should always match those in the production environment.

Answer: True

Matching the hardware and software requirements ensures accurate and reliable testing results, as it simulates real-world conditions.

e) Testing environments should be isolated from development environments to avoid interference.

Answer: True

Isolating the testing environment from the development environment prevents unintended changes and ensures accurate testing.

Q5. By using a table, differentiate Software testing tools and Hardware testing tools in software development testing.

Answer:

Here's a table that outlines the differences between software testing tools and hardware testing tools:

Aspect	Software Testing Tools	Hardware Testing Tools
Purpose	To test software functionality, performance, security, and user experience.	To test physical hardware components for electrical, thermal, and structural integrity.
Testing Types	Functional, Performance, Security, Unit, Integration, UI/UX, etc.	Electrical, Thermal, Signal Integrity, Environmental, Mechanical, etc.
Nature of Testing	Abstract (dealing with code, logic, algorithms, data).	Physical (dealing with components, signals).
Tools	Selenium, JUnit, Postman, JIRA, Zephyr, LoadRunner, OWASP ZAP.	Multimeter, Oscilloscope, Logic Analyzer, Spectrum Analyzer, Thermal Camera.
Errors Detected	Syntax errors, logic bugs, performance bottlenecks, security vulnerabilities.	Electrical faults, signal timing errors, overheating, structural failures.
Automation	Highly automated using CI/CD pipelines and scripts.	Some automation (e.g., burn-in tests), but often requires manual setup.
Test Environment	Virtual machines, test servers, cloud-based environments.	Specialized physical environments (temperature chambers, vibration rigs).
Iteration and Updates	Continuous and iterative; frequent testing during development.	Less frequent; typically happens before production or deployment.
Cost of Fixes	Easier to fix with patches, updates, or code changes.	More costly and complex to fix due to physical redesigns or component replacements.

Focus	Verifying software logic, functionality, and user interactions.	Verifying hardware performance, durability, and electrical integrity.
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Practical assessment

A healthcare technology company is developing a hybrid system architecture for a patient management application that integrates both hardware (medical devices) and software (application interface). To ensure this software system meets the required quality standards, a comprehensive test plan is prepared to outline the testing strategies, tools, techniques, and schedules. As a software developer, you are tasked to:

1. Prepare the test plan,
2. Setup of the testing environment,
3. Execute testing.

Checklist:

SN	Criteria	Indicator	Observation	
			Yes	No
1	Test Plan is well prepared	1.1 Test tools are identified		
		1.2. test cases are identified		
		1.3 Test criteria are identified		
		1.4 Resources are allocated		
		1.5 Test data are prepared		
		1.6 test execution scripts are prepared		
		1.7 Test delivery plan is Scheduled		
2	Testing Environment is well prepared	2.1 hardware and software infrastructure are selected		
		2.2 Software system test tools are selected		
		2.3 Set up and configure testing environment		
3	Testing is properly performed.	3.1 Test plan is reviewed		
		3.2 Select test cases are selected		
		3.3. Test is processed		
		3.4 Defects are recorded		
		3.5 Test progress is monitored		
		3.6 Test results are documented		

END



Further information to the trainer

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Learning Outcome 3: Generate Test Documentation



Indicative contents

- 3.1 Consolidation of test results**
- 3.2 Providing User Acceptance Testing Report**
- 3.3 Generating recommendation Report**

Key Competencies for Learning Outcome 3: Generate Test Documentation

Knowledge	Skills	Attitudes
<ul style="list-style-type: none"> ● Description of the Test data ● Description of test results ● Description of User Acceptance Testing Report ● Identification of usability testing outcomes ● Description of Security vulnerability findings ● Description of recommendation report 	<ul style="list-style-type: none"> ● Analysing and evaluating test results ● Creating test summary report ● Measuring performance testing (speed, stability) ● Generating UAT report ● Analysing overall test results ● Generating recommendation Report ● Documenting and archiving test artifacts 	<ul style="list-style-type: none"> ● Having Self Confidence in test documentation. ● Being Good observer in test documentation ● Being Creative in test documentation ● Having Critical thinking in test documentation ● Being Problem solver in test documentation ● Being Continuous learner in test documentation ● Being Innovative in test documentation ● Being Teamwork in test documentation ● Being Speak with Relevance in test documentation



Duration: 5 hrs

Learning outcome 3 objectives:



By the end of the learning outcome, the trainees will be able to:

1. Consolidate properly test results as used in quality assurance
2. Provide clearly the User Acceptance Testing Report as used in quality assurance
3. Generate properly the recommendation Report as used in quality assurance



Resources

Equipment	Tools	Materials
<ul style="list-style-type: none"> ● Computer 	<ul style="list-style-type: none"> ● Version control systems: Git, Subversion ● Screenshot/recording tools: Snagit, Screencastify 	<ul style="list-style-type: none"> ● None



Advance Preparation:

Before delivering this learning outcome, you are recommended to:

- Have the developed software system



Indicative content 3.1: Consolidation of Test Results



Duration: 2 hrs



Theoretical Activity 3.1.1: Description of the test results



Notes to the trainer:

- Trainer may use small group for Describing the test results



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- Describe test data collection in software development?
- Talk about Test Artifacts in software development
- Describe test execution data
- Explain Test Logs in test results
- Explain Test Findings in test results
- What is Defects in test results?
- Define Test Metrics in test results

Step 2: Monitor the activity

Step 3: Ask trainees to present their findings.

Step 4: Process and Provide the clarification on the trainees' response.

Step 5: Ask trainees to read more in trainee manual in key reading (Refer to activity 3.1.1)



Points to Remember

Collecting involves gathering the inputs, conditions, and environmental factors that will be used during testing (Felice, 2024).

- Test artifacts refer to the documents, reports, tools, and other deliverables created and maintained during the software testing process (Tran, 2022).
- Test execution data refers to the information generated and collected during the execution of test cases in the software testing process.

- Test logs are detailed records generated during the execution of test cases in the software testing process (15.68, 2024).
- Test findings refer to the results and observations derived from executing test cases during the software testing process.
- A defect in software development refers to any flaw, error, or inconsistency in a software product that causes it to behave unexpectedly or fail to meet the specified requirements.
- Test metrics are quantitative measures used to assess the effectiveness, efficiency, and overall quality of the software testing process.



Practical Activity 3.1.2: Consolidating test results



Notes to the trainer

- As a trainer guide learner on how to Consolidate test results.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 3.1.2

Task: As software developer, you asked to consolidate the test result as used in software development.

Step 2: Provide instruction to the trainees

Step 3: Demonstrate how to consolidate the test result, while demonstrate explain the steps to follow

Step 4: Ask trainees to consolidate the test result and monitor the activity

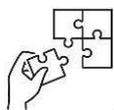
Step 5: Verify whether the test result properly consolidated.

Step 6: Assign the trainees to perform the application of learning 3.1 to improve skills at this Indicative Content.



Points to Remember

- The steps to consolidate test results are:
 1. Collect All Test Results
 2. Organize Results by Test Suites
 3. Summarize the Test Case Status
 4. Analyze Defects
 5. Include Test Metrics
 6. Evaluate Test Coverage
 7. Summarize Key Findings
 8. Generate Test Summary Report
 9. Attach Supporting Artifacts
 10. Review and Distribute
- **Create Test Summary Report:** Compile all findings, metrics, and summaries into a formal Test Summary Report.



Application of learning 3.1.

XYZ- solutions ltd is a software development company that specialises in building different software systems. However, the developer is facing with challenges of improving the system by applying the quality assurance. As a student of level 5 in software development, you are tasked to consolidate the test result.

Checklist:

SN	Criteria	Indicators	Observation	
			Yes	No
1.	Test Data is well Collected	1.1.Test Artifacts are Collected		
		1.2. Test Execution Data is Compiled		
2	Test Results are properly analysed and Evaluated	2.1. Test Logs and Reports is Reviewed		
		2.2. Test Findings is Summarized		
		2.3. Defects are Prioritized		
		2.4. Test Metrics are Generated		
3	Test Summary Report is well Created	3.1.Test summary report is created		



Indicative content 3.2: Prepare User Acceptance Testing Report



Duration: 2 hrs



Theoretical Activity 3.2.1: Description of the User Acceptance Testing Report



Notes to the trainer:

- Trainer may use small group for Describing the User Acceptance Testing Report by Assess Acceptance Criteria, Summarizing the key UAT activities conducted.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask the trainees to answer the following questions:

- i. What is the User Acceptance Testing (UAT)?
- ii. What are the Characteristics of UAT?
- iii. What are the Objectives of UAT?
- iv. Discuss on the UAT Process
- v. What are the Benefits of UAT?
- vi. What are the Types of UAT?
- vii. What is the Usability testing?
- viii. What is a security vulnerability?

Step 2: Monitor the activity

Step 3: Ask trainees to present their findings.

Step 4: Process and Provide the clarification on the trainees' response.

Step 5: Ask trainees to read more in trainee manual in key reading (Refer to activity 3.2.1)



Points to Remember

- In software testing process, User Acceptance Testing (UAT) is the final phase where the end-users or business stakeholders validate whether the software meets their requirements and functions as expected in real-world scenarios (Elazar, 2018).
- There are Objectives of UAT which are Confirm Business Requirements, Verify Usability, Identify Any Gaps, Ensure Readiness for Production
- UAT Process are Title Page, Introduction, Acceptance Criteria, Test Plan Summary, Test Execution Details, Test Results, User Feedback, Risk Assessment, Recommendations, Sign-Off Section.

- In UAT there are two types which are : Alpha Testing, Beta Testing (Technologies, 2024).



Practical Activity 3.2.2: Preparing the User Acceptance Testing Report



Notes to the trainer

- As a trainer guide the learners on how to Provide the User Acceptance Testing Report. This activity should take place in a computer Lab where the trainees should make UAT Report



Key steps:

While delivering this activity, pass through the following steps:

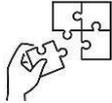
- Step 1:** Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 3.2.2
As software developer you are asked to prepare the User Acceptance Testing Report of mobile banking application.
- Step 2:** Provide instruction to the trainees
- Step 3:** Demonstrate how to make UAT report, while demonstrate explain the steps to follow
- Step 4:** Ask trainees to make UAT report and then monitor the activity
- Step 5:** Verify whether the UAT report are properly Provided
- Step 6:** Assign the trainees to perform the application of learning 3.2 to improve skills at this Indicative Content



Points to Remember

- **The steps to generate a comprehensive UAT report:**
 1. Define the Purpose
 2. Include UAT Test Overview
 3. Identify Test Participants
 4. Detail the UAT Environment
 5. Summarize Test Scenarios and Cases

6. Defect Summary
7. Test Metrics
8. Evaluate Risks and Impact
9. Recommendations
10. Provide Conclusion
11. Attach Supporting Documentation



Application of learning 3.2.

XYZ- solutions ltd is a software development company that specialises in building different software systems. However, the developer is facing with challenges of improving the system by applying the quality assurance. As a student of level 5 in software development, you are tasked to make User Acceptance Testing Report for that company.

Checklist:

SN	Criteria	Indicator	Observation	
			Yes	No
1.	Acceptance Criteria are clearly Assessed	1.1. User Registration is assessed		
		1.2. Login Functionality is assessed		
		1.3. Password Reset is assessed		
		1.4. Add to Cart is assessed		
		1.5. Checkout Process is assessed		
		1.6. Performance is assessed		
		1.7. Security is assessed		
2	the key UAT activities conducted are well Summarized	2.1. test case and results is Executed		
		2.2. Usability testing outcomes is identified		
		2.3. performance testing is Measured		
		2.4. Security vulnerability findings is performed.		
3	Overall Test Results are properly Analysed	3.1. Overall Test Results is analysed		
4	UAT Report is well Generated	4.1.UAT Report is Generated		



Indicative content 3.3: Generating Recommendation Report



Duration: 1 hr



Theoretical Activity 3.3.1: Description of recommendation Report



Notes to the trainer:

- Trainer may use small group for Describing recommendation Report



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask the trainees to answer the following questions:

- What is the recommendation report?
- What are the components of recommendation report?
- What are the Benefits and impacts of a Recommendation Report?
- Describe the archive test artifacts.

Step 2: Monitor the activity

Step 3: Ask trainees to present their findings.

Step 4: Process and Provide the clarification on the trainee's response.

Step 5: Ask trainees to read more in trainee manual in key reading (Refer to activity 3.3.1)



Points to Remember

- Recommendation report is a structured document that presents a problem or issue, evaluates potential solutions, and recommends the best course of action (Team, 2023).
- In Recommendation report there are different components which are: Introduction, Background, Evaluation Criteria, Options or Solutions, Recommendations, Implementation Plan (if applicable), Conclusion, Appendices (if needed).
- In Recommendation report there are Benefits that are: Informed Decision-Making, Clarity and Focus, Objective Analysis, Cost and Resource Optimization, Risk Mitigation, Enhances Communication, Accountability, Time-Saving

- In Recommendation report there are impact that are: Improved Business Performance, Strategic Alignment, Reduction in Decision Errors, Innovation and Growth, Enhanced Stakeholder Confidence, Better Risk Management, Guidance for Future Actions
- In Recommendation report, archiving of test artifacts is a critical step in the overall testing and project lifecycle, ensuring that key testing documents, data, and results are securely stored for future reference, audits, or post-release analysis.



Practical Activity 3.3.2: Generating recommendation Report



Notes to the trainer

- As a trainer guides learners on how to generate recommendation Report.
- This activity should take place in a computer Lab where the trainees should generate recommendation report.



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to perform the tasks described below by referring to the key reading 3.3.2

Task: As software developer, you asked to generate a recommendation report

Step 2: Provide instruction to the trainees

Step 3: Demonstrate how to generate Recommendation report, while demonstrate explain the steps to follow

Step 4: Ask trainees to generate Recommendation report and monitor the activity

Step 5: Verify whether Recommendation report are properly generated

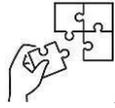
Step 6: Assign the trainees to perform the application of learning 3.3 to improve skills at this Indicative Content.



Points to Remember

- **Steps to generate a Recommendation Report are:**
 1. Provide Recommendations
 2. Conclusion

- **Steps for documenting and archiving test artifacts**
 1. Identify Key Test Artifacts for Archiving
 2. Define the Documentation Format
 3. Establish Organization and Naming Conventions
 4. Select the Storage Medium
 5. Establish Access Control and Data Security
 6. Define a Retention Policy
 7. Archive References and Provide Accessibility
 8. Review and Audit Preparation



Application of learning 3.3.

XYZ- solutions ltd is a software development company that specialises in building different applications. However, the programmer is facing challenges of improving the system by applying the quality assurance. As a student of level 5 software development, you are tasked to generate recommendation report for that company.

Checklist

SN	Criteria	Indicators	Observation	
			Yes	No
1.	Recommendation is well Provided	1.1.Proposing changes are performed		
		1.2. Present supporting evidence are performed.		
		1.3. Outline action steps are performed		
2	Artifacts is properly archived	2.1 recommendation is documented		
		2.2 Recommendation report is stored		



Learning outcome 3 end assessment

Written assessment

Q1. Circle the letter corresponding with the correct answer

- 1) Which methodology is used to performed Maintenance testing?
 - a) Breadth test and depth test
 - b) Confirmation testing
 - c) Retesting
 - d) Sanity testing

Answer: (a) Breadth test and depth test

- 2) Which of the following is not part of the Test document?
 - a) Test Case
 - b) Requirements Traceability Matrix [RTM]
 - c) Test strategy
 - d) Project Initiation Note [PIN]

Answer: (d) Project Initiation Note [PIN]

- 3) Which term is used to define testing?
 - a) Evaluating deliverable to find errors
 - b) Finding broken code
 - c) A stage of all projects
 - d) None of the above

Answer: a. Evaluating deliverable to find errors

- 4) Which of the following testing is related to the boundary value analysis?
 - a) White box and black box testing
 - b) White-box testing
 - c) Black box testing
 - d) None of the above

Answer: (c) Black Box testing

- 5) What are the different levels of Testing?
 - a) Integration testing
 - b) Unit testing
 - c) System testing
 - d) All of the above

Answer: (d) All of the above

Q2. Match the Recommendation Elements in column A to Their Corresponding Descriptions in column B.

Answer	Column A (Recommendation Elements)	Column B (Descriptions)
.....B.....	1.Executive Summary	A. Outlines the steps and specific actions proposed to achieve desired outcomes
.....D.....	2.Problem Statement	B. Provides a brief overview of the report and the key points of the recommendation.
.....E.....	3.Proposed Solutions	C. Explains the reasons and supporting arguments for the recommended course of action.
.....A.....	4. Action Plan	D. Summarizes the issue or challenge that the recommendation addresses.
.....F.....	5.Supporting Evidence	E. Includes the main suggestions or recommendations made in the report to solve the problem.
.....G.....	6. Conclusion	F. Offers data, research, or examples that back up the recommendations made in the report.
.....C.....	7.Recommendations	G. Wraps up the report by reinforcing the key points and the importance of acting on the recommendations.

Q3. What is the primary purpose of a User Acceptance Testing (UAT) report?

Answer:

The primary purpose of a UAT report is to document the outcomes of the testing process where actual users validate that the system meets business requirements. It ensures the system is functioning correctly before it is released into production.

Q4. Who are the typical participants involved in UAT, and what roles do they play?

Answer:

Typical participants include end-users (who represent the target audience), business analysts (to ensure business requirements are met), quality assurance testers, project managers, and developers (to resolve issues). End-users provide real-world feedback, while the other roles help facilitate and fix issues.

Q5. How are test cases designed for UAT, and what factors are considered while creating them?

Answer:

Test cases for UAT are designed based on business requirements and user scenarios. Factors such as usability, functionality, user flow, and specific business rules are considered to ensure the system behaves as expected in real-world use.

Q6. What is the difference between "Passed" and "Failed" test cases in the UAT report?

Answer:

- Passed: The system behaves as expected and meets the defined requirements for the test case.
- Failed: The system does not perform as expected, meaning there is a defect or mismatch between actual results and expected outcomes.

Q7. Why is it important to include both functional and business requirements in UAT?

Answer:

Both functional and business requirements ensure that the system not only works from a technical standpoint but also satisfies the real-world needs of the business. Functional tests check if the system works, while business requirements ensure it solves the actual business problems.

Q8. What are some common issues identified during UAT, and how are they typically resolved?

Answer:

Common issues include:

- Bugs in user workflows (e.g., incorrect pricing)
- Usability concerns (e.g., unclear navigation)
- Performance problems (e.g., slow page loads)

These issues are logged, prioritized, and assigned to the development team for resolution. Critical issues may delay the release until resolved, while lower-priority issues might be fixed in future updates.

Q9. How do delays in UAT affect the overall project timeline and deployment?

Answer:

Delays in UAT can push back the overall project timeline, as the system cannot be deployed to production until testing is complete. This can lead to missed deadlines and project cost overruns.

Q10. What actions should be taken after UAT if certain test cases fail?

Answer:

- The issues should be logged, detailing the failed test case, expected vs. actual results, and severity.
- The development team needs to address the issues, after which regression testing or a follow-up UAT should be conducted.
- Only after critical issues are resolved can the system proceed toward production deployment.

Q11. What role does test data play in the success of UAT?

Answer:

Test data is crucial as it simulates real-world scenarios. Using accurate and representative data ensures that the system is tested under realistic conditions, which improves the accuracy of the test results.

Q12. Why is it important to document the actual results alongside the expected results in UAT?

Answer:

Documenting both the expected and actual results helps to identify discrepancies and areas where the system doesn't meet requirements. It provides clear evidence for any issues or deviations, which help developers, troubleshoot and fix the problems.

Practical assessment

XYZ software System Company, is preparing to release a new product recommendation feature for its software system. Before launch, the QA team is tasked with ensuring that the feature works as expected by:

1. Consolidating test results,
2. Conducting User Acceptance Testing (UAT)
3. Providing a recommendation report to stakeholders.

The goal is to verify system functionality, performance, and usability, ensuring the new feature meets both business and user expectations. As the one of QA team, you are tasked to perform the above task.

Checklist:

SN	Criteria	Indicator	Observation	
			Yes	No
1	Test Results are clearly Consolidated	1.1. Test data Collected		
		1.2. Test artifacts is Collected		
		1.3. Test execution data is compiled		
		1.4. Test results is analysed and evaluated		
		1.5. Test logs and reports is reviewed		
		1.6. Test findings are summarised		
		1.7. Prioritizing defects is performed		
		1.8. Test summary report is created		
2.	User Acceptance Testing (UAT) Report is well prepared	2.1. Acceptance criteria is assessed		
		2.2. Key UAT activities are summarized		
		2.3. Test cases and recording results are executed		

		2.4. Performance testing is Measured		
		2.5. Security vulnerabilities is Documented		
		2.6.Overall test results are analysed		
		2.7.UAT report is generated		
3	Recommendation Report is properly Generated	3.1.Recommendations are provided		
		3.2.Changes are proposed		
		3.3 Presenting supporting evidence		
		3.4 Test artifacts are Documented and archived		



Further information to the trainer

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