Introduction to Enterprise Resource Management Systems and Mobile Application Testing, NQF Level 5, Credits 3

SUMMATIVE ASSESSMENT

Module #	251901-001-00-KM-09:
NQF Level	level 5
Notional hours	30
Credit(s)	Cr 3
Occupational Code	251901001
SAQA QUAL ID	118789
Qualification Title	Occupational Certificate: Quality Test Automator

CONTACT INFORMATION:

Name	Daniyaal Mallick
Contact Address	Daniyaal.mallick@redacademy.co.za
Telephone (H)	-
Telephone (W)	-
Cellular	060 153 4049

PURPOSE OF THE QUALIFICATION

The purpose of this qualification is to prepare a learner to function as a Quality Test Automator

A Quality Test Automator is responsible for the quality of software development and deployment. They are involved in performing automated and manual tests to ensure the software created by developers is fit for purpose and any bugs or issues are removed within a product and reported to the relevant person before it gets deployed to everyday users. Some of the duties include analysis of software, mitigation of risk, prevention of software issues, and testing of any changes.

A qualified learner will be able to:

- Review and analyse software requirements, prepare test scenarios and write test cases
- Set up and configure test data and a test environment
- Execute manual or automated test scripts and on software usability and review results in terms of database impact, defects, errors or bugs and usability

QUALIFICATION RULES

This qualification is made up of the following compulsory Knowledge and Practical Skills Modules: Knowledge Modules:

- 251901001-KM-01, Software Testing in Context, NQF Level 4, Credits 2
- 251901001-KM-02, Basic Calculations and Logical Thinking, NQF Level 4, Credits 4
- 251901001-KM-03, Computers and Computing Systems, NQF Level 4, Credits 4
- 251901001-KM-04, Computing Theory, NQF Level 4, Credits 4
- 251901001-KM-05, The Role of Testing in Software Efficiency, NQF Level 5, Credits 8
- 251901001-KM-06, Software Testing Principles, Methodologies and Techniques, NQF Level 5, Credits 8
- 251901001-KM-07, Data and Databases, NQF Level 5, Credits 2
- 251901001-KM-08, Introduction to Computer Database Management Systems, NQF Level 5, Credits 2
- 251901001-KM-09, Introduction to Enterprise Resource Management Systems and Mobile Application Testing, NQF Level 5, Credits 3
- 251901001-KM-10, Introduction to Governance, Legislation and Ethics, NQF Level 4, Credits 2
- 251901001-KM-11, 4 IR and Future Skills, NQF Level 4, Credits 4
- 251901001-KM-12, Design Thinking Principles for Innovation, NQF Level 4, Credits 1

Total number of credits for Knowledge Modules: 44

Practical Skills Modules:

- 251901001-PM-01, Basic Calculations for Programming, NQF Level 4, Credits 6
- 251901001-PM-02, Basic Programming, NQF Level 4, Credits 6
- 251901001-PM-03, Scrape Data and Access, Analyse and Visualise using Spreadsheets, NQF Level 4, Credits 4

- 251901001-PM-04, Gather Information and Systematically Analyse Requirements for Testing, NQF Level 5, Credits 4
- 251901001-PM-05, Plan Software Testing Activities and Develop a Test Design and Test Case, NQF Level 5, Credits 4
- 251901001-PM-06, Set up the Software Test Environment, NQF Level 5, Credits 4
- 251901001-PM-07, Apply Current State-of-the-Art Tools and Techniques to Test a Software System, NQF Level 5, Credits 16

- 251901001-PM-08, Execute Computer Software Program Testing against Expected Results, NQF Level 5, Credits 12
- 251901001-PM-09, Participate in a Design Thinking for Innovation Workshop, NQF Level 5, Credits 3
- 251901001-PM-10, Function Ethically and Effectively in the Workplace, NQF Level 4, Credits 4

Total number of credits for Practical Skills Modules: 63

This qualification also requires the following Work Experience Modules:

- 251901001-WM-01, System Specifications Analysis and Test Case Development, NQF Level 5, Credits 24
- 251901001-WM-02, Test Environment Setup, NQF Level 5, Credits 24
- 251901001-WM-03, Test Execution and Test Closure, NQF Level 5, Credits 24

Total number of credits for Work Experience Modules: 72

EXIT LEVEL OUTCOMES

Extract information from test basis documentation and execute a systematic analysis of the requirements to determine what must be tested, how and when it must be tested. (?%)

Associated Assessment Criteria

- Functional and non-functional requirements of the test case are established as per test basis
- Systematic scenario-based test design methodology is applied to create test scenarios and test cases as per test basis and a Requirement Traceability Matrix is prepared
- The test plan is created to cover all the requirements
- Reusable scenarios, test cases, scripts and tools are accessed from the organization's knowledge base
- Software test cases relevant to the requirements are created and modified

Set up and configure a test environment that provides accurate feedback about the quality and behaviour of the application under test (??%)

Associated Assessment Criteria

- Test data are accessed or created relevant to the requirements and inserted to test environment (test bed)
- The test environment is set up and environmental factors such as servers, frameworks, hardware, software, database and testbed for executing developed test cases are ensured to be in place
- Smoke test is performed on the build and the build is accepted/rejected depending on smoke test result
- Troubleshooting is done on issues related to the environment ensuring the test-environment provides accurate feedback about the quality and behaviour of the application under test

Execute manual or automated test scripts as well as on software usability and review results in terms of database impact, errors or bugs and usability against expected results (?%)

Associated Assessment Criteria

- Scripts informed by an input from the analysis phase are developed and scripts or automated testing tools are used to run the same tests again after every fix and deployment
- Software is tested against given specifications according to test plans and best options are applied in terms of test techniques and methods
- Assistance is given on troubleshooting and resolving of bugs, errors, defects and any issues until defect closure
- Defects are mapped to test cases in Requirement Traceability Matrix (RTM) and defects and fixes are documented and tracked to closure

Document and report on the effectiveness, defects and any technical issues (??%)
Associated Assessment Criteria

- Technical issues are documented, logged and reported on to provide an audit trail
- Testing results are recorded as the script is being executed and validation is done against what is expected and actual
- Variations from expected test results are identified by the records and reasons are given where available
- The recorded results are reproduced if the tests are repeated under the same conditions.
- Test cycle closure activities are executed by performing checks that all deliverables have been accepted and signed off, the test ware is archived, the environment is closed, lessons learned are analysed and the information is used to improve the test maturity

ENTRY REQUIREMENTS:

Entry Requirements

NQF 4

ARTICULATION OPTIONS

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Occupational Tasks

- Review and analyse software requirements, prepare test scenarios and write test cases
- Set up and configure test data and a test environment
- Execute manual or automated test scripts and on software usability and review results in terms of database impact, defects, errors or bugs and usability

ASSESSMENT REQUIREMENTS

Integrated Formative Assessment:

Integrated Assessment Focus Area 1

Integrated Assessment Focus Area 2

Integrated Assessment Focus Area 3

Integrated Assessment Focus Area 4

PROVIDER ACCREDITATION REQUIREMENTS FOR THE MODULE:

Physical Requirements:

- The provider must have lesson plans and structured learning material or provide learners with access to structured learning material that addresses all the topics in all the knowledge modules as well as the applied knowledge in the practical skills
- QCTO/ MICT SETA requirements

Human Resource Requirements:

- Lecturer/learner ratio of 1:20 (Maximum)
- Qualification of lecturer (SME):
  NQF 6 in industry recognised qualifications with 1 years' experience in the IT industry
  Vendor certification
- Assessors and moderators: accredited by the MICT SETA

Legal Requirements:

- Legal (product) licences to use the software for learning and training (where applicable)
- OHS compliance certificate
- Ethical clearance (where necessary)

1.4 Exemptions

- No exemptions, but the module can be achieved in full through a normal RPL process

TOPIC ELEMENTS TO BE COVERED INCLUDE:

The main focus of the learning in this knowledge module is to build an understanding of ERP as a consolidated process of gathering and organizing business data through an integrated software suite and the testing principles related to ERP

The learning will enable learners to demonstrate an understanding of:

- KM-09-KT01 ERP 20%
- KM-09-KT02 Benefits of ERP 20%
- KM-09-KT03 Popular ERP software brands 10%
- KM-09-KT04 ERP testing 25%
- KM-09-KT05 Mobile applications 25%

Task
1

What Are ERP System Modules?

ERP stands for Enterprise Resource Planning which are systems that are structured around models that define how the software is designed, implemented and delivered. These models differ depending on business needs, requirements and industry preferences.

On-Premise ERP

- Installed locally on a company's own servers and infrastructure.
- Managed by the company's IT team.
- Best for: Large enterprises with strict data control needs.

Cloud-Based ERP

- Hosted on the vendor's cloud infrastructure.
- Accessed via web browser (subscription-based).
- Best for: SMBs or growing businesses needing scalability and low IT overhead.

Open Source ERP

- Source code is available and can be customized.

SECTION 2: KM-09-KT02: KM-09-KT02 : Benefits of ERP (20%)

Task
2

Identify the difference between BI and data analytics.

BI, which stands for Business intelligence, focusses mainly on helping organizations understand what happened in the past and why, like breaking down specific past data. This helps to generate insights into a certain matter or event and generate them through dashboards, reports and KPI's.

In contrast, Data Analytics dives deeper into data to uncover patterns, make predictions, and suggest actions. It involves more advanced techniques, including statistical modelling, machine learning, and real-time analysis, to explore future trends and answer questions

In essence, while BI helps in understanding and monitoring the current and past state of the business, data analytics goes further to optimize and forecast future outcomes. Both play complementary roles in driving data-informed strategies within an organization.

Task
3

What is an integrated ERP system?

An integrated ERP system is a type of ERP system where all core business functions come together to connect into one another and becomes one unified software platform. This system ensures the seamless flow of data and information therefor helping to organize it and making things easier in the future across departments such as finance, HR, sales, inventory, manufacturing and customer services.

Task
4

Identify different features of popular ERP software

SAP S

Features:

Real-time data processing via in-memory database.

Advanced financial management.

Manufacturing & supply chain optimization.

Robust analytics and reporting.

Industry-specific modules.

Strong compliance and governance tools.

Oracle NetSuite

Features:

Financial management with multi-currency and global tax support.

CRM and e-commerce integration.

Inventory & order management.

Professional services automation.

Customizable dashboards and KPIs.

Native cloud-first architecture.

Microsoft Dynamics 365

Features:

Modular apps for finance, sales, HR, customer service, and operations.

Tight integration with Microsoft 365.

AI and business intelligence via Power BI.

Field service and project operations.

Task
5

What is ERP Testing?

ERP Testing is the process where organization systematically verifies that an Enterprise Resource Planning system works as intended across all your integrated and combined modules and business process before it is to be deployed.

Organizations use ERP testing to help ensure that all the modules work together and correctly.

Types of ERP Testing

Unit Testing

Verifies individual components or functions within a module. Done by developers or technical consultants.

Integration Testing

Ensures different modules work together correctly.

Functional Testing

Tests whether the ERP system performs required business functions. Follows real-world business scenarios.

User Acceptance Testing

Conducted by end-users to validate that the system meets business needs. Focuses on usability and actual workflows.

Regression Testing

Ensures new updates or customizations don't break existing functionality.

Performance Testing

Measures how the system performs under load. Important for systems with many users or large data volumes.

Task
6

What is Unit Testing?

Unit testing is a type of software testing where individual components or functions of a program called units are tested in isolation to verify that they work as expected.

A unit is the smallest testable part of an application usually a function, method, or class in programming. Unit testing ensures that each part of the software performs its task correctly, independently of the rest of the system.

Task
7

What is Integration Testing?

Integration testing is a level of software testing where individual units or components are combined and tested as a group to verify that they work together correctly.

Definition:

After unit testing verifies that each individual part works on its own, integration testing checks the interfaces and data flow between modules. It

ensures that different components, which may have been developed separately, interact as expected.

Purpose of Integration Testing:

Detect issues in the way components communicate or exchange data. Validate workflows that span multiple modules or systems.

Task
8

Discuss the benefits of mobile applications.

Flexibility and Accessibility

Mobile apps allow users to access services or data anytime and anywhere using their smartphones or tablets. This makes it easier to support remote work and stay productive while on the go.

Improved User Experience

Designed specifically for smaller screens and touch interactions, mobile apps offer a faster and smoother experience compared to mobile websites. Many apps also provide offline capabilities, enhancing usability even without an internet connection.

Increased Engagement

Mobile apps keep users engaged through push notifications that deliver real-time updates. They also enable personalized experiences by tracking user preferences and behavior.

Enhanced Security

Mobile apps can take advantage of device-level security features such as fingerprint scanning and face recognition. With data encryption and secure authentication methods, apps protect sensitive information more effectively than many web-based platforms.

Better Performance

Because mobile apps can directly utilize a device's hardware resources—like

the camera, GPS, and sensors—they typically perform faster and offer smoother animations than mobile websites.

Integration with Device Features

Apps can easily access phone features such as the camera, microphone, contacts, calendar, and GPS. This integration enables advanced functionalities, including augmented reality, scanning, and location-based services.

Offline Access

Many mobile apps offer offline modes or data caching, allowing users to continue working or accessing information even when there's no internet connection.

Cost-Effective Communication

Push notifications and in-app messaging enable businesses to communicate with customers more affordably than traditional channels like SMS or email marketing.