SOFTWARE TESTING, QUALITY ASSURANCE AND TEST AUTOMATION COURSE

Introduction

This programme develops the knowledge and practical skills required to assess software quality, identify defects, verify requirements and improve the reliability of software applications. It covers software testing principles, test planning, test case design, functional testing, non-functional testing, defect management, regression testing and quality assurance processes. Participants learn how to develop test strategies, prepare test data, execute test cases, document defects and communicate findings to development teams. The course introduces test automation concepts and tools, including automated user interface testing, API testing and continuous integration testing. The programme also examines risk-based testing, usability, performance, security testing fundamentals and quality metrics. Practical exercises use realistic software scenarios to demonstrate how structured testing reduces production defects, improves user experience and supports reliable software releases.

Course Objectives

- Explain software testing principles and software quality assurance processes.
- Develop test plans, test scenarios and test cases from requirements.
- Perform functional, integration, regression and exploratory testing.
- Record, classify and track software defects.
- Apply introductory test automation techniques and tools.
- Evaluate test coverage, quality metrics and release readiness.
- Integrate testing activities into software development and delivery workflows.

Course Modules

> Module 1: Software Testing and Quality Assurance Fundamentals

- Software quality concepts and the role of testing.
- Software development life cycles and testing life cycles.
- Verification, validation and quality assurance distinctions.
- Testing principles, responsibilities and professional practices.

> Module 2: Requirements Analysis and Test Planning
- Reviewing requirements, specifications and acceptance criteria.
- Developing test strategies, test plans and test schedules.
- Risk-based testing, scope definition and resource allocation.
- Requirements traceability and test coverage planning.

> Module 3: Test Design Techniques and Test Data
- Equivalence partitioning and boundary value analysis.
- Decision tables, state transition testing and use-case testing.
- Exploratory testing and experience-based test design.
- Test data preparation, environment setup and data protection.

> Module 4: Manual Functional Testing
- Preparing and executing test cases and test scenarios.
- Testing user interfaces, business rules and workflows.
- Positive, negative and edge-case testing.
- Recording evidence, expected results and actual results.

> Module 5: Integration, System and Regression Testing
- Unit, integration, system and acceptance testing.
- Testing interfaces and interactions between software components.
- Regression testing and change impact analysis.
- User acceptance testing and release validation.

> Module 6: Defect Management and Quality Metrics
- Identifying, documenting and classifying software defects.
- Defect severity, priority, lifecycle and triage.
- Defect tracking, retesting and closure verification.
- Test execution reports, defect trends and quality indicators.

> Module 7: Non-Functional Testing
- Performance, load, stress and scalability testing.
- Usability, accessibility and compatibility testing.

- Security testing fundamentals and vulnerability awareness.
- Reliability, resilience and recovery testing.

> Module 8: Test Automation Fundamentals

- Identifying suitable candidates for test automation.
- Automation frameworks, scripting concepts and reusable components.
- Automated web testing using tools such as Playwright or Selenium.
- Test data management, assertions and automated result reporting.

> Module 9: API Testing and Continuous Integration

- API testing concepts, HTTP methods and response validation.
- Automated API testing using appropriate testing tools.
- Integrating automated tests into continuous integration pipelines.
- Test execution environments, logs and failure analysis.

> Module 10: Software Quality Assurance Project

- Analysing requirements and developing a test plan.
- Designing and executing functional and regression test cases.
- Automating selected tests and documenting defects.
- Preparing a test summary report with release recommendations.

P.O Box 7254- 01000
www.trustgatecorporateskills.co.ke
Location Thika & Nairobi