Software Testing Roadmap

24-09-2025

Basics (1)

* Testing fundamentals
* Quality Assurance Standards
* Testing Types Overview
* Testing Documentation

Skills (2)

* Analytical Skills Development
* Effective Communication Techniques
* Attention To Detail Enhancement
* problem-Solving Abilities

Techniques (3)

* Equivalence partioning Technique
* Boundary Value Analysis Method
* Decision Table Testing strategy
* State Transition Techniques

Automation (4)

* Introduction To Test Automation
* Test Scripting Languages
* Automation framework Selection
* Continuous Integration Tools

Development (5)

* Software Development Life Cycle
* understanding Waterfall Model
* Agile methodology fundamentals
* Continuous Integration and Development

Advanced (6)

* Load & stress Testing concepts
* Security Vulnerability Testing
* Usability Testing Best practices
* Compatibility Testing Techniques

Tools (7)

* Test Management Tool functions
* Bug Tracking Tool usage
* Automation Testing Tool Selection
* performance Testing Tool Knowledge

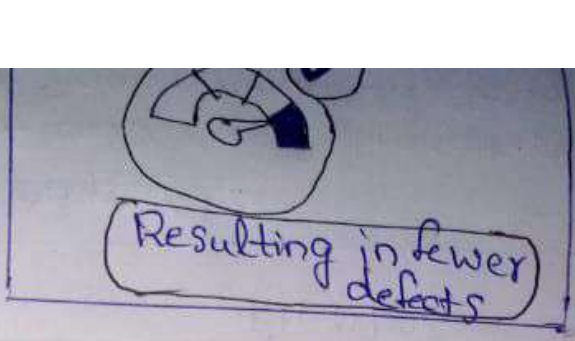
Environments (8)

* Web Application Testing procedures
* Mobile Application Testing techniques
* Desktop App- " Approach
* cloud-Based " " Methods

Reporting (9)

* Defect Reporting procedures
* Bug Triage And prioritization
* Regression Testing Importance
* Test Result Documentation

levels (Initial -> optimizing).



1. Quality Assurance Standards

=> What is Quality Assurance (QA)?

Quality Assurance is a process-oriented activity that ensures the Software development process follows proper standards, methods, and best practices to deliver a quality product.

* QA is preventive -> Aims to prevent defects before they occur.
* QA focuses on improves the process of development and testing.

Example :-

Imagine a pizza shop. QA is like ensuring :-

* The dough recipe is correct.
* Ingredients are fresh.
* The chef follows hygiene practices.

This ensures every pizza comes out perfect - reducing complaints.

Difference Between QA & QC

Aspect	QA (Quality Assurance)	QC (Quality Control)
focus	process (prevent defects)	product (find defects)
Type	proactive (prevention)	Reactive (detection)
Example	Creating Coding standards and guidelines	Testing the final Software for defects

Real-World Example :-

QA -> Setting rules for how to code, review, and test a banking app

QC -> Actually testing the banking App transactions and reporting bugs.

QUALITY ASSURANCE

⇨ The dough recipe is Correct.

⇨ Ingredients are fresh

⇨ The chef follows hygience practices

QA Standards (ISO, CMMI basics):-

* ISO 9001: Defines guidelines for quality Management Systems.

* CMMI (Capability Maturity Model Integration): A framework to improve Software development processes in 5 maturity levels (Initial -> optimizing).

Example

CMMI LEVEL 5

Infosys TCS

Their processes are very mature and optimized

Resulting in fewer defects

Req-002 : Login	TC-002	fail	Bug-128

2. Testing Types Overview

=> Black Box Testing vs White Box Testing

Aspect	Black Box Testing	White Box Testing
Focus	Test Software behaviour without looking at code	Test internal code, logic, structure.
Tester Role	End-user perspective	Developer perspective
Example	Enter username & password and check login works	check code logic for authentication function

Real-World Example

* Black box = Customer ordering food without knowing kitchen details
* White box = chef checking kitchen process step by step

Unit, Integration, System, UAT Basics

1. Unit Testing : Test individual modules / functions.
   Ex: Test only the "Add to cart" button function.
2. Integration Testing : Test how modules work together.
   Ex: Add to cart + checkout + payment integration.
3. System Testing : Test the whole Application as one.
   Ex: open the app and try end-to-end ordering process.
4. UAT (User Acceptance Testing) : final check by the client / Ex: Customer uses staging version. (business users) & Approves it before go-live

3. Testing Documentation:

Test plan - what it contains

=> Scope of testing
=> Testing objectives
=> Tools & resources needed
=> Testing schedule
=> Roles & responsibilities

Ex: Before launching Swiggy in a new city, the test plan includes what features to test.

Example

Black Box
(Custome Side)


(Menu)

Customer orders
without knowing process

White Box
(Kitchen Side)


(chef hat)
[pot on stove]
chef checking
step by step process

=> Test Case format

Test_ID	Description	step to Execute	Expected result
TC001	verify login page	1. Go to login page 2. Enter valid details 3. click login	user should successfully log in

=> Test Scenario

Test Scenario: Verify password Reset

=> Traceability Matrix

Requirement ID	Test Case	Status	Defect_ID
Req-001: Reset password	TC-001	Pass	–
Req-002: Login	TC-002	fail	Bug-123