***The role of testing in software development***

Ensure the quality and functionality of software applications has become a top priority.

***The role of testing in software development***

* Ensuring quality
* Cost savings
* Supporting Agile development
* Facilitating communication and collaboration
* Reducing risks

***Software development life cycle (SDLC)***

***Shift left testing***

1. ***Planning (What do we want?):***identification of the system for development, feasibility assessment and creation of a project plan.
   1. ***Collaboration with stakeholders***
   2. ***Test strategy and planning***
   3. ***Test effort estimation***
   4. ***Risk analysis***
2. ***Defining (How will we get what we want?):*** *gathering business requirements, creating process diagrams, performing a detailed analysis and designing the IT infrastructure.*
   1. ***Reviewing and analysing requirements***
   2. ***Developing testable requirements***
   3. ***Test effort estimation***
3. ***Building (Developers write actual code):*** *development of IT infrastructure and development of the database and code*
4. ***Testing (Did we get what we want?):*** *execution of the test cases and product feedback*
5. ***Deploying:*** *product is shared with costumers and potential users*
6. ***Maintaining:*** *the team focuses on refining and improving the deployed software*

***Testing activities***

* **Planning (what and how to test the software)**
  + *Test plan:* describe the software testing scope and activities
  + *Identifies:* features to be tested, testing tasks, testing environment, testing design, entry and exit test criteria
* **Specification (design test cases, build test cases)**
  + ***Design test cases:*** determine how the identified test conditions will be exercised
  + ***Build test cases:*** focus on implementing the test case by creating the necessary scripts, data and other resources required for executing the tests
* **Execution:** engineer runs the tests and ensures that the app matches “expected results”
* **Test completion :** engineer should be confident that all testing activities have been completed successfully, all high level bugs are resolved, and the product is delivered

***Bug reporting***

Issue related to the software, show where there’s a problem in our development and help our developers know where to start fixing.

* Visual bug
  + Truncated images
  + Misaligned pages
  + Incorrect button borders
* Functional bug
  + Related to the software’s functionality
  + It can be a major problem
  + Should be fixed as soon as possible
* Performance issue
  + Critical aspect of software
  + Mostly performed by software engineers/ performance engineers
  + Test engineers should detect major performance issues
* Bug reporting
  + The most commonly used reporting portal is Atlassian’s Jira
  + A bug report should be self-explanatory and as simple as possible
  + It’s essential to provide clear and concise information

In the description give it a summary, the steps to reproduce and the expected results.

Assign it a meaningful name and a bug priority that could be (Trivial, Low, Medium, High and Critical)

***Bug life cycle – Tracking and managing defects***

Process that a defect goes through during its lifetime. It starts when a bug is found and ends when it is closed after ensuring it won’t be reproduce anymore

A diagram of a process

AI-generated content may be incorrect.

***Jira scrum board***

* To do
* In progress
* In review
* Done

***Software requirement specifications***

Is a description of a software system to be developed, outlines functional and non-functional requirements, it may include a set of use cases that describe the user interactions that the software most provide

***Software testers***

Read or test software requirements, collaborate with business analysts and catch incorrect application behaviour at an early stage

***Test cases and check lists***

**Test case** is a document that contains a set of test data, preconditions, expected results, postconditions, and is developed for a particular test scenario to verify compliance against a specific requirement.

**Test case parameters:**

* Test scenario
* Test description
* Test steps
* Preconditions
* Test data
* Expected result
* Priority
* Environment information

**Checklist**

Similar to a test case but contains less information, preferable with a experience team

***Types of testing: black box and white box***

**Black box**

Software testing method in which the internal implementation of the function is known by the tester (tester does not know how the applications code work)

* Functional testing (functional requirements of a system)
* Non-functional testing (checks non-functional aspects of a software app)
* Regression testing (involves testing existing software app to ensure that a change or addition hasn’t broke any existing functionality)

A screenshot of a computer

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* **Equivalence class testing:** test cases are designed to exercise one representative member of each partition
* **Boundary value testing:** focus on the values at boundaries. (range is acceptable)
* **Decision Table testing:** visual representation of which actions to perform depending on a given condition. (create all possible decisions of the user)

A diagram of a black box

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**Black box:** tester does not know what happened

**White box:** tester does know what happened

***Black box techniques***

* Equivalence partitioning
* Boundary value analysis
* Decision table state
* Transition testing
* Use case testing

***White box techniques***

* Unit testing
* Statement testing

***Testing mindset***

Aims to verify, validate and identify defects before release.

* **Brainstorming** and providing continuous feedback are vital for successful software projects
* Early involvement in the process yields significant benefits for you company
* **Effective communication and teamwork** and collaboration with developers and other team members are essential
* **Problem-solving abilities**
* **Keen eye (attention to detail, growth mindset)** for detail