Theory – DA – 1

Software Testing Document

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Topic: Learning Management System

* Scope

This document outlines the testing Process for the learning management system. The goal is to check if the system works correctly, is secure, and can handle multiple users. It focuses on Key features like user login, Course management assignment Submission, and performance.

* Objective

The main Objective of this testing are :

⇒ Ensure the LMS functions as expected

⇒ Identify and fix bugs before the system goes live.

⇒ Check if the system is secure from potential attacks

⇒ Ensure the smooth performance under different conditions

⇒ Provide documentation for future reference.

* Test Environment

⇒ Hardware requirements :-

* Processor :- Minimum 2.5GHz (Intel i5)

* RAM :- Minimum 8GB

* Storage :- 50GB of free space.

⇒ Software requirements :-

* Operating System :- Windows 10, Ubuntu

* Database :- MySQL

* webserver :- Apache

* Browser :- Chrome, firefox.

⇒ Network requirement :-

* Stable Internet Connection (Atleast 10MBPS).

* Test tools

⇒ Selenium :- For Automated UI testing.

⇒ Postman :- For testing APIs

⇒ JMeter :- For load and performance testing

⇒ OWASP ZAP :- For security testing

⇒ Junit :- For unit testing.

* Test Strategy

⇒ unit testing :-

* Tests the individual functions

⇒ Integration testing :-

* Ensures different modules. (Eg :- user and course)

⇒ System testing :-

* Tests the entire system (Eg:- enrolling, submitting).

⇒ Performance testing :

* Checks how the system handles multiple users.

⇒ Security testing :-

* Ensures system safety from vulnerabilities (Eg:- SQL injection).

* Test Scenarios with Test Cases :-

Test ID	Test scenario	Test steps	Expected Result
TC01	User Login	Enter valid username. and password click login	user is redirected to dashboard
TC02	Invalid login	Enter wrong password and click login	shows "Invalid Credentials!" error.
TC03	Course Enrollment	Select a course and click "Enroll".	user successfully enrolled
TC04	Assignment Submission	upload and submit assignment	Assignment is uploaded
TC05	API - User Authentication	send a POST request to /api/login	Returns an authentication token.

Q2] Why Configuration management is necessary for Software Engineering. Justify and explore the necessary tools used for the same.

Ans:- Configuration management:

Effective configuration management is essential for maintaining Consistency across environments.

why Configuration Management is necessary?

* Tracks and many manages code changes
* Ensures consistent environment for development and testing
* Simplifies rollbacks and deployment processes;

Configuration Management Process

① Version Control — use Git for source code tracking.
② Build Management : Automate builds using Jenkins
③ Change Management : Document and track changes Systematically
④ Release Management : Automate deployment for consistency.

TOOLS :-

* Git - version control
* Jenkins : Automated testing and deployment
* Docker - Containerized testing environment.