PRACTICAL-6

AIM:

List at least 10 type of Testing for software development life cycle in IT industry and Design Test Case, Test Suites & Testing Strategy for the "VLC Media Player" Mobile Application.

IMPLEMENTATION:

INTRODUCTION:

- Testing is the process of running a software and looking for flaws. Our software must be error-free in order to perform well. If the testing is completed successfully, the software will be free of all errors for majority if not for all.

Principles of Testing:

- All the test should meet the customer requirements
- To make our software testing should be performed by a third party
- Exhaustive testing is not possible. As we need the optimal amount of testing based on the risk assessment of the application.
- All the test to be conducted should be planned before implementing it
- It follows the Pareto rule (80/20 rule) which states that 80% of errors come from 20% of program components.
- Start testing with small parts and extend it to large parts.

10 Types of Common Testing:

- o   Unit Testing
- o   Integration Testing
- o   System Testing
- o   Sanity Testing
- o   Smoke Testing
- o   Interface Testing
- o   Regression Testing
- o   Beta/Acceptance Testing

Unit Testing

- It concentrates on the tiniest aspect of software development. This is where we test a single unit.
- The programmer frequently does this task by using sample input and seeing the accompanying results.

Example of it our SGP:

- We will be doing Unit testing, once development of each module is completed, we will perform unit testing. It will be performed by the respective developer.
- Checking if dataframes are working correctly
- Correct precedence

Integration Testing

- The goal is to take unit-tested components and use them to create a software program that is dictated by design.
- Integration testing involves integrating a number of components to achieve a result.

Example of it our SGP:

a) **Black Box testing**: - It is used for validation. In this we ignore internal working mechanism

In our project, if we give the testing to a third party like Capgemini then, they will perform black box testing as they will only have .exe file and srs.

(b) **White Box testing**:- It is used for verification. In this we focus on internal mechanism

If we will perform the testing, then we will have access to both source code and srs, so it will be perfect example of white testing.

Regression Testing

- Every time a new module is added leads to changes in the program.
- This type of testing makes sure that the whole component works properly even after adding components to the complete program

Our Example:

- While developing the project, we will have bugs and thus, after identifying and resolving the bug, we will perform the regression to make sure that our program is running rightly.

Smoke Testing

- This test is done to make sure that software under testing is ready or stable for further testing.
- It is called a smoke test as the testing an initial pass is done to check if it did not catch the fire or smoke in the initial switch on.

Our Example:

- As we will develop the project in phased manner and each phase will be divided into modules and each module will be developed by different developers and once, module is completed, we will smoke testing it in order to determine that module 1 is working perfectly before moving to next module.

Alpha Testing

- This is a type of validation testing. It is a type of acceptance testing which is done before the product is released to customers. It is typically done by QA people.

Example:

- When software testing is performed internally within the organization

Beta Testing

- The beta test is conducted at one or more customer sites by the end-user of the software.
- This version is released for a limited number of users for testing in a real-time environment.

Our Example:

- After performing the alpha testing, we will give the software to our professors and peers in order to take their feedback. Thus, it is beta testing.

System Testing

- This software is tested such that it works fine for the different operating systems. It is covered under the black box testing technique.
- In this, we just focus on the required input and output without focusing on internal working.
  In this, we have security testing, recovery testing, stress testing, and performance testing

Stress Testing

- In this, we give unfavourable conditions to the system and check how they perform in conditions.

Example:

- We will stress test our product to determine whether it can process big datasets or not and how the RAM is performing.

Reliability Testing

- Reliability Testing is a software testing process that checks whether the software can perform a failure-free operation for a specified time period in a particular environment.

Example:

- We will need to perform it as our product deals with data of all types, so it is important for it to be reliable.

Security Testing

- Security testing is a process intended to reveal flaws in the security mechanisms of an information system that protect data and maintain functionality as intended

Example:

- As data is involved, so we will need to determine that security is sufficient so it can be securely processed.

TEST CASES:

- A test case is a document, which has a set of test data, preconditions, expected results and postconditions, developed for a particular test scenario in order to verify compliance against a specific requirement.
- For us, we will have to create multiple test cases, in such a way that it will have minimal inputs in the form of the data sets and maximal level of inputs.
- Each Test case, will have corresponding inputs, state of testing and expected output.

Example:

- We will give the relevant data set as an input.
- For state, we will give description of the input and also certain specialities of the input data.
- For output, as expected, the desired output data will be given in order to determine whether the product is giving right result for the given input.

TEST SUITES:

- We can simply say that test suite is the collection of relevant test cases for the product.
- Test suite normally covers wide range of test cases to get the relevant result.

TESTING STRATEGY:

- Test Strategy is a set of guidelines that explain the test design and determine how testing needs to be done.

Our approach:

- As far as our testing strategy is concerned, we have a very straight forward approach.

- Firstly, unit testing will be performed by the developers

- The test cases will be designed in module specific manner

- Then, smoke testing will be undertaken before moving to next module.

- After that, integration testing will take place in order to determine the running of the product during the integration process.

- Then, white box testing will take place by the team.

- As we are inexperienced in the testing, we will also undertake black box testing which will be done by the trusted third party.

- Then, once the product is ready, we will do alpha testing, where all the fellow team members will use the product.

- Then, beta testing will be done, where, the peers and professors will use the product in their day-to-day use.

CONCLUSION:

By performing the above practical, I learnt the basics of software testing and the methodology followed and different testing happening in the industry.