**Assignment No. 1**

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Subject : Software Testing and Quality Assurance

Create an Report on following topics

1. What is testing
2. What are different features & principles of testing
3. case study on Internet Banking web application(To understand the test cases working)

**Report on Software Testing**

**1. What is Testing?**

It is important to note that software testing is one of the most critical elements of the process of developing software products to guarantee dependability, accuracy, and product quality. The processes involve creating of test cases and their execution for evaluation of the results. The primary goals of software testing are as follows:

* Defect Identification:

The objective of testing is to reveal existing bugs or any deviation from the requirements specification in the software under test. Some of these flaws can comprise function problems, obstacles to performance and security weaknesses.

* Verification and Validation:

On the other hand, verification makes sure that the developed code is correct, whereas validation confirms that the program fits the client’s criteria.

* Quality Assurance:

Testing is crucial as it identifies defective products and correcting them during the development stage ensures total quality assurance. It ensures that problems do not trickle down to the users.

* Risk Mitigation:

Through testing, risk management is made easier and mitigated. This is a step aimed at solving fundamental problems before the system goes live.

* Objective Assessment:

Testing is a scientifically defined process based on preset test cases and evaluation standards that reduces the possibility of subjectivity.

**2. Features and Principles of Testing**

**Features of Testing:**

* Quality Assurance:

Testing works as a quality barrier only letting out software when quality requirements is met.

* Verification and Validation:

Software verification ensures that is complies with the design whereas testing validates whether or not it satisfies users’ needs and meets the specified requirements.

* Objective and Unbiased:

Testing is undertaken through the application of standardized criteria, utilizing prescribed test cases eliminating the impact of judgment based on opinion.

* Iterative Process:

Instead, testing is continuous across various stages of SDLC, thereby making for an easy discovery and correction of problems.

* Dynamic Nature:

The act of testing involves executing the software dynamically so that the observed behavior and functionally can be verified.

**Principles of Testing:**

* Testing Shows the Presence of Defects:

Defects are testable, however they cannot be non-tested. It infers that no defect does exist; it does not prove so.

* Comprehensive Testing is Not Possible:

Testing cannot be done for every possible input and scenario, hence it concentrates on high – risk elements, priority functions and critical areas.

* Early Testing:

Testing should be performed as soon as possible during software development. It is more economical early detecting and preventing the spread of defects.

* Pesticide Paradox:

However, repeating on the execution of the same set of test cases over a number of times might not be effective in the long run. Testing also needs development, but for different reasons.

* Testing is Context Dependent:

The choice of testing approach, types of tests and criterion for success depends largely upon the software’s utility, intended users as well as compliance to industry standards.

**3. Case study of Internet banking web application.  
  
Overview of Internet Banking Web Application:**  
  
The Internet Banking Web application serves as our case of study. User has access to his or her bank account through the internet, with functionality of account management, funds transfer, payment of bills, and security improvement.  
  
**Understanding Test Cases:**

* Login Test Cases:  
  - Make sure users are able to log in using rightful details.
* Prevent access by customers when they send in the wrong personal details (username and password).
* Test the "Remember Me" functionality.
* See if you can reset your password using a questionnaire or retrieving it via an email.
* Account Management Test Cases:  
  - Ensure that users are able to access their account information such as balance and transaction history.  
  - Ability to change account password.  
  - Enable users to change their contact info- email, phone or address.
* Transaction Test Cases:  
  - Test fund transfers between different branches of the same institution.  
  - Use separate payment media (e.g., ACH and wire) to ascertain that all fund transfers made to external accounts are legitimate.  
  - Ensure transactions are posted into the account’s statement of account.
* Bill Payment Test Cases:  
  - Try the procedure of billing and also add new payee for testing purposes.  
  - Validate their payment history on bills.  
  - Recurring bill payments and scheduled payments test.
* Security Test Cases:  
  - Security vulnerability checks should include SQL injection, XSS, and session fixation as part of the analysis criteria.  
  - Provide security while sending and storing data using encryption.Z  
  - Ensure that user profiles, are deleted every time where there is lapse of activity on user accounts, or for security purposes.
* Performance Test Cases:  
  - Run the test over on an app’s performance over different load states like traffic and peak periods.  
  - Carry out the operations like login and transfers and record the various response times with respect to the same actions.
* Compatibility Test Cases:  
  - Carry out an application testing in various web browsers like Chrome, Firefox, Safari, or Internet explorer, as well as iOS or android mobile devices.  
  - Make sure that the website application is accessible, operative, and looks the same on all tested devices.

Such test cases are theoretically developed but in practice they have to meticulously planned with positive, negative, boundary testing scenario and so on. Furthermore, blended approaches of manual as well as automated testing strategies will be used for comprehensive assessment of the usability and the integrity of the Internet Banking web application.