Assignment 3

Q 1 What are the type of reviews?

→   There are three type of reviews-

1) Formal review :-

These type of review are schedule earlier and consists of a lot of reviewers. They are all present with diff. knowledge and skills set.

Having different reviews is an added advantage as we are able to covert up all the necessities with respect to the software.

2) Semi - formal Review :-

These reviews are where the person who makes up give presentations.

These reviews are taken very often and keep accuring a lot of times during the cycle. The mistakes are noted and the corrections are asks to be done.

3) Informal review :-

There are reviews that are mostly taken without any formal invitation.

The speakers presents it verbally.

There is no particular agenda and can be sometime just a process of checking the progress done.

Q 2. What are the static testing techniques?

→   There are mainly two type of technique

Static Testing

Review → Static Analysis

Review:
→ Informal
→ walkthrough
→ pear review
→ Inspection

Static Analysis:
→ Data-Flow
→ control Flow
→ cyclomatic - Complexity.

1) Review:-
In static testing the review is a process or techniques that is performed to find potential defect in the design of the software.
It is a process to detect and remove errors and defects in the different supporting documents like software requirement specification. -

a) Informal -
Informal review the creator of the documents put the contents in front of an audience and everyone gives their opinion and thus defect are identified in the early stages.

b) Walk through :-
It is basically performed by an experienced person or expert to check the defects so that there are might not be problems further in the development or testing phase.

c) Pear review :-
Pear reviews means checking documents of one another to defects and fix defects.

d) Inspection :-
Inspection is basically the verification of documents by the higher authority like the verification of software requirement specification.

2) Static Analysis :-
It includes the evaluation of the code quality that is written by developers. Different tools are used to do the analysis of the code and companies of the same with the Students.

Data - Flow :-
Data - Flow is related to the storear processing

Control- Flow :-
Control Flow is basically how statement or instructions are executed.

Q.3 What is the need add and advantage of daynamic testing?
→ Advantages of Dynamic Testing :-
1) Complex defects :-
I discloses very difficult and complex defects.

2) Improvement in software quality :-
It increase the quality of software product or application being tested.

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3) Security threat Detection:-
   Dynamic testing detects security threats and enhances
   the better secure application.

4. Ease of implementation :-
   It is easy to implement and does not required
   and special tools or expertise.

5) Early-stage functionality testing.

   ⭐ Needs:-
   i) Dynamic testing is essential in the software develop
   ment process because it ensure that the software
   functions correctly when executed.

   2) Dynamic testing is crucial for evaluating the system
   real-time behaviour functionality, performance
   and Interaction with users.

Q4 Write short note on
   a) Data flow analysis :-
      Data flow analysis is a static analysis technique
      used to track how data moves through a program
      to identify potential issues. It examines the flow
      of data across various point in the program to ensure
      that variable are properly defined, used and update.

Q5 Differentiate beth static testing and dynamic testing.

Static Testing	Dynamic Testing
1) The objective is to prevent the defects	The objective is to find and fix defects.

Static Testing   ;   Dynamic Testing

2) It is performed at the early. It is performed at the later
   stage of software   stage of software developm
   development   ent.

3) Static testing the whole Dynamic testing the whole
   code is not executed   code is executed

4) Static testing is perform Dynamic testing is performed
   med before code deve-   after code development.
   lopment.

5) Static testing is less cost Dynamic testing is highly cost

6) It is a verification   It is validation process
   process

7) It generally takes a It asually takes a longer
   shorter time   time as it involves
                   running several test cases.

Q6 Explain boundary value analysis d-equivalence partiti-
   oning with example?
   → Boundary value analysis:
      It is a technique where we identify the errors
      at the boundary of input data to discover those
      errors in the input center. Boundary values are
      those that contain the upper and lower limit
      of a variable.

Boundary value analysis is testing the boundaries both partitions. It will help decrease testing time due to a lesser number of test case from infinite to finite.

eg. Consider a function that accepts an input from 1 and 100.

Valid range - 1 to 100
boundary values to be tested
lower boundary - 0, 1, 2
upper boundary - 99, 100, 101

Test Cases -
i. Test input - 0 (Just outside the lower boundary)
ii. 1 at the (lower boundary), 100 (at the upper boundary).
101 (Just outside the upper boundary).

Equivalence partitioning (EP) - is technique that divide the input data into logical partition that are expected to behaviour the same way.

For the same function that accepts and input both 1 and 100.

i. one value so - valid
ii. case 0 or -5 - Invalid
greater then 100 - test case could be 101 or 150.

Q.7 Explain state partition testing technique with eg.
-) State transition Testing.
It is a powerful technique useful used to black-box testing to ensure that show behaviours as expected. while transitioning both different states of system.

It identifies a finite set of states that the show can occupy. Then it test how the show transitions both them based an diff. input conditions.

This techniques can be applied to various system. Such as vending machines, traffic lights and different web app as along as their behaviour can be defined as a finite state machine.

Example Scenarios:-
1.) logged out - The user is not logged in
2.) logged in - The user has successfully logged in.

Transitions:
1.) From logged out to logged in:-
Occurs when valid credentials are entered.
2.) From logged in to logged out:-
Occurs when user logs out.
3.) From logged out to logged out:-
occurs if invalid credentials are entered.

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6/10/24