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Unit-5

Test management and Automation

Test planning

A test plan is a detailed document which describes software testing areas and activities. It outlines the test strategy, objective, schedule, required resources (human, software, hardware) test estimation and test deliverables.

- Test plan is base of software testing, very crucial activity.
- Test plan is template for conducting software testing activities as defined process monitored & controlled by testing manager.
- Test plan is prepared by — Test lead 60%.
  — Test manager - 20%.
  — test engineer - 20%.

Types — Master test Plan - multilevel of testing
Phase test Plan - test that address only one phase
Testing type specific test plan - for non functional testing like security test, load test etc

How to write test Plan -

1) Analyze the Product - Researching about product, client expectation
2) Design test strategy - developed by manager overall strategy, cost effort
3) Define test objective - defining goals & achievement of test execution
4) Define test criteria - Rule on which test procedure or judgement is based
5) Resource planning - detailed summary of all required resource.
6) Plan test Environment - Setup of software & hardware for testing
7) Schedule estimation - estimation of effor for each type of activity.
8) Determine test deliverables - list of all documents, tool, component that has to be developed & maintained of testing effort. Types — Before testing - plan, design
During testing - Data, error, scripts
After testing - Result, Report, Note.

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* Test management - Process of managing the test activities in order to ensure high quality testing of application. The method consisting of organizing, controlling, ensuring traceability and visibility of testing.

Responsibility - work in collaboration with test analyst & technical test analyst to select appropriate templates.

- Provide all facility to keep track of project
- Give clear understanding.

Two main parts -

Planning - Risk analysis
Test Estimation
Test planning

Execution :- Testing activity
Issue management
Test report & Eval.

→ Test execution - Process of executing code and comparing expected and actual results

- Select test case
- Execute test case
- Report bug
- Resolve issues
- adjust assignment

Test reporting - Organised summary of testing objective, activities and results.

Test automation - Test automation is the practise of running test automatically, managing test case and utilizing results to improve software quality.

which test case to execute - High risk case
- test case that are repeatedly executed
- test that are difficult to perform
- time consuming test case.

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Process - Test tool selection - finding tool
- Define scope of automation - ~~planning all activities~~
- Planning, design & development - planning all activities
- test execution - Executing all test cases
- Maintainance - new scripts are added for new functions

→ Define scope of automation - It is the area of your application under test which will be automated.

following feature determine scope -
- feature important for business
- scenario have large amount data
- Common functionality
- technical feasibility
- complexity of test cases.
- Ability to use same cases.

- Benefits - faster
- Reliable
- ensure consistency
- save time & cost
- Improve accuracy
- Increase efficiency
- Re-usable script

Types - Smoke testing
Unit testing
Integration testing
Regression testing.

Some tool - Selenium, subject 7, Lambda test, Kobiton

Requirement for test tool
- tool is an artifact that assist in test related activities

necessary requirement are -

1) No hard coding in test suite - Data should not be embedded in code.

2) Test case expandability - test case used should be expandable
3) Reuse of code for different testing
4) Automatic setup & cleanup
5) Independent test case - case should not depend on each other
6) Selective execution of case - tool should support this from large test case
7) Random execution - tool should randomly
8) Parallel execution of case - tool should allow || execution
9) Independent of language - independent of programming lang.

Test tool selection - In order to succeed in automation proper tool selection is important because -

1) all tool are not well supported for different problem
2) tool are expensive
3) Not all test tool run on all platform
4) Test tool require strong training.

Criteria for ~~select~~ selecting - meeting requirement
~~technology expectations~~
~~training~~
Management aspects.

* Object Oriented testing

Testing class is fundamentally different problem that testing function. A function has defined input & output but class do not have

Issue in testing class -

- Additional method are required for testing
- Only objects can be tested
- inheritance open various issues.
- control flow is characterised by message passing among object.
- lack of sequential control flow within class

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~~test~~ techniques for testing -

1) Fault based testing - identify possible faults and to remove these this testing is done.
2) class testing based on method testing - Each method of class ~~perform~~ is tested.
3) Random testing - develop random test sequence and then testing
4) Partition testing - categorise the input & output of a category, minimise cases.
5) Scenario-based testing - Simulating real world scenario