# Đảm bảo chất lượng phần mềm

**Liên bang Xô SUS - TỐI MẬT**

# QA

**Khái niệm**

## Phần mềm (Software)

 Software is included these components: Computer programs (Code), Procedures, Documentation and Data necessary for operating the software system

## Chất lượng phần mềm (Software Quality)

 The degree to which a system, component, or process meets specified requirements

## Đảm bảo chất lượng phần mềm (Software Quality Assurance)

 A systematic, planned set of actions necessary to provide adequate confidence that software development process or the maintenace process of a software system product conforms to established functional technical requirements as well as with the mangerial requirements of keeping the schedule and operating within budgeting confinemnt

## Error - Fault - Failure

Error:

Part of code is wrong casue by programmer. It can be result of syntax error, logic error or design error

Fault:

Error that lead software works inaccurately Not all error lead to fault

Failures

 Fault become falures when it is activated

## V&V (Verification and Vadlidation)

Verification: Rating a system or a component to detect that the product of development phase is meet requirement that have been stated when start this phase

Vadlidation: Rating a system or a component during or when development phase to detect that it is meet requirement in Functional Requirement Specification

## MCCall

 11 factors and 3 categories

 Operation: Correctness, Reliability, Efficiency, Integrity, Usability  Revision: Maintainability, Fexibility, Testability

 Transition: Portability, Reusability, Interoperability

## Review - Inspection - Walkthrough

Review

A process or a meeting

A product that bring in front of all project member, stakeholders, user, customer for getting comment and feedback

Inspection

Detects error and try to improve them Prepare: Read & List the note

In session

Presenter read a part of document and add if necessary Stakeholder give or react to coment

Post review

Fix error

Send report to CAB for analyzing

Walkthrough

Detect error and take note them.

Prepare: Read the part need to be reviewed In session

Start: Short presentation of autor, or the overview of project or design part need to be reviewed

Take note: Place, Description, Type, Characteristic (Error, Missing, Added Part) of any accepted error.

**Checklist (GUI, Web, Code)**

Ghi chú: 3 khái niệm đầu tiên **in đậm** là 3 khái niệm phải thuộc lòng, nếu không là **TẠCH**

**Bài tập**

# Test

**Khái niệm**

## Kiểm thử (Testing)

 Testing need to run program and check the result.

## Test Cases

 Test Cases are created for using in Unit Test

 A Test Case included: Input, proceess and expected output

## Level kiểm thử (Testing Level)

Unit Test

The smallest testing activity

Test one function or individual components Done by Developers (Not Tester)

Purpose: Make sure information is processed in the right way and have right result.

Test case and test script need to be prepared: State the input, process and expected output.

Integration Test

Purpose: Detect the communication error among components or error of individual component (module, appllication, client/server on the same netowrk)

Kind of Integration Test

Big-bang: Test all the software, when the package is completed

Top-down: Test from the root. Component is added by decrease level Bottom-up: Test from the bottom. Component is added by increase level

System Test

Purpose: Rating the software is follow the requirements (Functional and Non-functional) Kind of System Test

Functional Testing

Positive Test

Check software that function is work accurately as software requirement speicification stated, don't test the exceptional case

Not use to detect software error

Negative Test

Use the software in diffrent way to detect the hidden error that doesn't related directly to software function.

Make sure that use software in the wrong way doesn't effect to software function or the data.

End-to-end Testing

Entites in software are followed from initation to disappeared

Conccurent/Parralel Testing

A big amount of users access a features and input the data at the same time. Test how the software manage parralel requests and make sure data is right

Performance Test

Make sure the resources allocation are efficently

Load test: Mesuaring the software can manage lots of requests at the same time Volume test: When data size is big

Stress test: Executing the system against the device assumes an unresponsive request for system resources in terms of quality, stability and quantity

Acceptance Test

Purpose: Check if the system meets all the customer's requirement and customer can accept the product

Alpha Test: User test the software at the software development place, developer will recorded the error and feedback Beta Test: The software will be sent to user to test at production environment, error and feedback will be sent to developer for fixing