

## Software Testing (study notes)

### ##1 definition questions

#1

#### Integration testing

Integration testing tests if different modules or component of a system can work together as intended.

Integration testing is a software testing technique that checks whether different modules or components of a system can work together as expected. The goal of integration testing is to uncover errors in the interaction between these modules before the system is deployed to production.

#2

#### Regression testing

Regression testing tests if changes made to a system have introduced bugs on existing functionality by re-testing previously passed tests.

#3

#### Equivalence class

Equivalence class is a software testing technique that groups input values with similar behaviour, reducing the number of test cases needed to be executed while still ensuring thorough testing.

#4

#### complexity measure

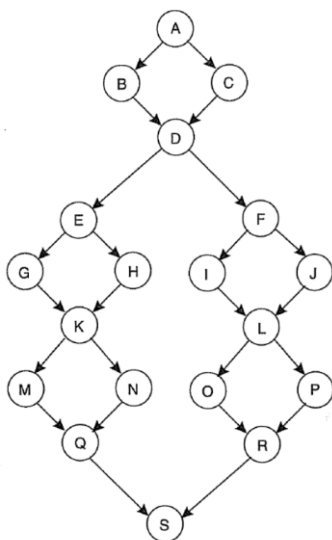
Evaluating the complexity of a unit based on the code structure.

Complexity measures are numerical values used in software testing to estimate the complexity of the code based on factors such as the number of variables, conditional statements, and loops. Higher complexity means harder testing, maintenance, and modification. Measures help identify defect-prone areas and guide testing. Examples include McCabe cyclomatic complexity, Halstead complexity.

McCabe cyclomatic complexity

Complexity = number\_of\_edges – number\_of\_nodes + 2

Complexity = 29 – 19 + 2 = 7



#5

#### Static testing

Static testing is a software testing technique that reviews code before execution, to identify bugs early and save time.

#6

#### Boundary value analysis

Boundary value analysis tests if the system can handle extreme conditions with boundary inputs.

#7

#### White box testing

White box testing is software testing based on the analysis of the internal structure of the system.

#8

#### Statement coverage

Statement coverage is a software testing technique that measures the percentage of code statements that have been executed during testing to ensure every statement has been tested at least once.

#9

#### Path coverage

Path coverage is a software testing technique that measures whether all possible paths through a software system have been executed during testing to ensure the software behaves as expected under all possible scenarios.

#10

#### Branch coverage

Branch coverage is a software testing technique that measures the extent to which all possible paths in a software system have been executed during testing.

#11

#### Combinatorial testing

Combinatorial testing involves creating a set of test cases that cover all possible combinations of input values to a software system to identify potential defects. It is used when the number of possible input combinations is too large to test exhaustively.

#12

### V-Model

The V-Model is a software development and testing methodology that emphasizes early and continuous testing. It's represented as a V-shaped diagram, with the left side representing development and the right-side representing testing.

#13

### Extreme Programming

Extreme Programming (XP) is an agile software development methodology that emphasizes rapid development, customer involvement, collaboration, and feedback. Key practices include pair programming, continuous integration, test-driven development, and frequent releases. XP aims to create high-quality software that meets customer requirements while improving the skills and satisfaction of the development team.

#14

### Black box testing

Black box testing is a technique that tests the external behaviour of a software system without examining its internal code. Testers focus on how the system responds to inputs.