

QA and Tests

- Quality assurance
- Methods of evaluation
- Test-driven development (TDD)
- Types of tests



Quality assurance

QA is a way of preventing mistakes or defects in manufactured products and avoiding problems when delivering solutions or services to customers.

Quality criteria or quality requirements

A list or criteria that a product will need to meet in order to be of sufficient quality to be offered to consumers.

Methods of evaluation

Reproducible way of evaluation

Regular formal checks

Systematic process of checking to see whether a product or service being developed is meeting specified requirements

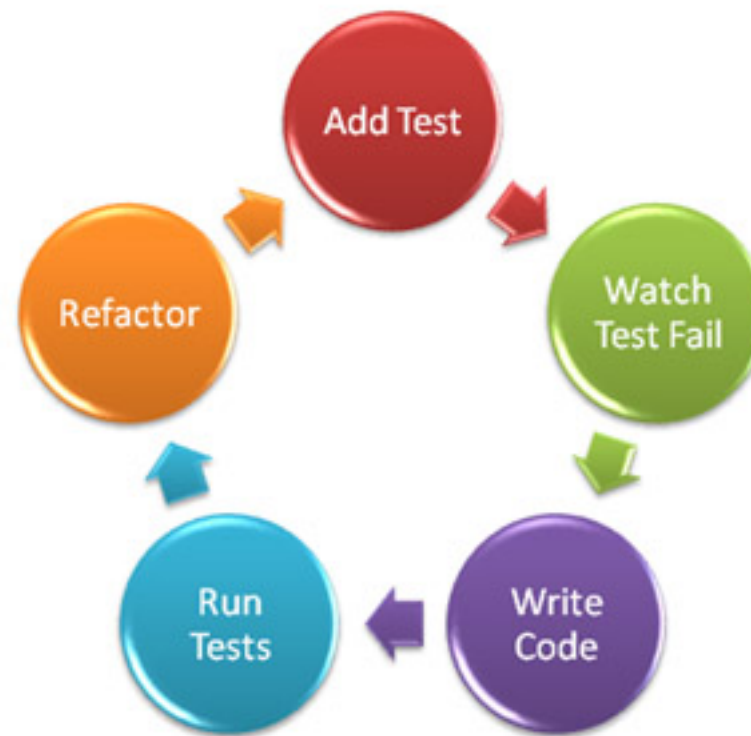
Methods of evaluation

- static code analysis
- tests
- commit hooks
- continuous integration
- staging deployment

Test-driven development (TDD)

TDD is software development process that relies on the repetition of a very short development cycle:

- requirements are turned into very specific test cases
- the software is improved to pass the new tests



Types of tests

- Unit
- Functional
- Integration
- Load
- Stress

Unit tests

Unit testing is a software development process in which the smallest testable parts of an application, called units, are individually and independently inspected for proper operation.

Features:

- 100% control of environment
- created by developer
- can be launched before commit (or push)
- can be launched in Continuous Integration
- Code Coverage Metrics
- total isolation
- order independent
- one test – one check
- repeatable

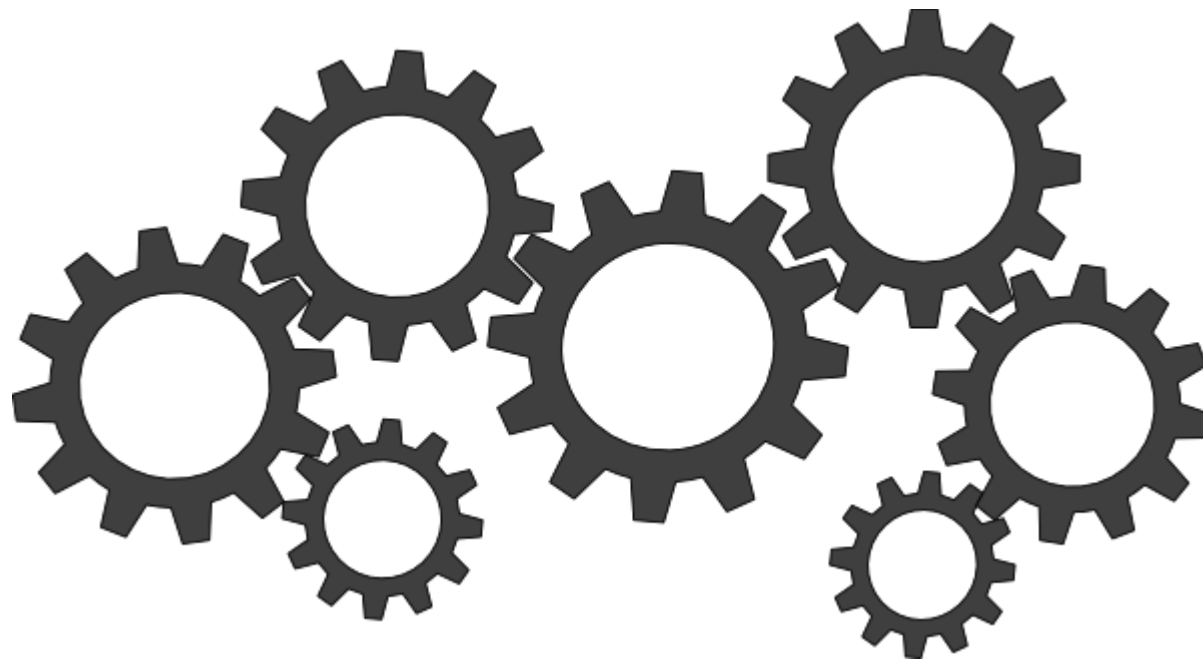
Functional tests

Functional testing is a type of black-box testing that bases its test cases on the specifications of the software component under test.

- feeding functions with input and examining the output,
- describes what the system does,
- tests a slice of functionality of the whole system.

Integration tests

Integration testing is the phase in software testing in which individual software modules are combined and tested as a group.



Load/Stress tests

Load testing is the process of putting demand on a software system or computing device and measuring its response.

Load testing is performed to determine a system's behavior under

- normal load conditions,
- anticipated peak load conditions.

Normal load tests can check ability of the system to work for a long period of time.

Stress load tests can check how the system works in peak load conditions.

