A review of software testing

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Software testing

- The principal objective of software testing is to gain confidence in the software.

- Confidence arises from thorough testing.

Testing techniques

- Testing techniques can be assessed according to where along the two main testing strategy dimensions they fall.

  - The functional-structural dimension
  - The static-dynamic dimension

Functional testing

- Identify the functions which the software is expected to performs.

- Create test data which will check whether these functions are performed by the software

Structural testing

- to execute the program with test data.

  the funtions of the program are compared with the required functions for congrunce

- Approaches is characterized by symbolic execution and program proving.

Static versus dynamic analysis

- Static analysis
  - program proving
  - symbolic execution
  - anomaly analysis
- Dynamic analysis
  - analysis routines

Testing techniques

- Static-functional
- Static-structural
- Dynamic-functional
- Dynamic-structural

Testing techniques

	Structural	Functional
Static	Symbolic execution Program proving Anomaly analysis	
Dynamic	Computation testing Domain testing Automatic path-based test data generation Mutation analysis	Random testing Domain testing Cause-effect graphing Adaptive perturbation testing

Static-structural

- Symbolic execution
- Partirion analysis
- Program proving
- Anomaly analysis

Dynamic-functional

- Domain testing
- Random testing
- Adaptive perturbation testing
- Cause-effect graphning

Dynamic-structural

- Domain and computation testing
- Automatic test data generation
- Mutation analysis

Summary

- For the production of correct software the wider the range of testing techniques used the better the software is likely to be.