Software Testing

Test Coverage

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Test Coverage

- Measures quantitatively how exhaustively some source code has been tested
- A program with high test coverage has a lower chance of containing undetected software bugs compared to a program with low test coverage

Functional Coverage vs Structural Coverage

- **Functional Coverage:** Measures the amount of testing with respect to the desired functionalities

  - Also called requirement based coverage

- **Structural Coverage:** Measures the amount of testing with respect to the structure of the code, such as statements, conditions, paths, etc.

  - Also called code coverage

- Test cases can be generated based on functional specifications and testing effectivity can be measured through structural coverage

Importance of Structural Coverage

- Helps identify the missing requirement based test cases
- Detects undesirable code segments leading to unintended functionality or dead code
- A non-functional requirement mandated by certification, such as DO178B/C (for avionics industries) and ISO26262 (for automotive industries)

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