

# STATIC ANALYSIS BY TOOLS

SOFTWARE TESTING, VERIFICATION, VALIDATION AND  
QUALITY ASSURANCE

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# STATIC ANALYSIS

- Performed on requirement design or code without actually executing the software or before the code is actually run.
- Goal of static analysis is to find the defects whether or not they may cause failure.
- Static analysis **find defects** rather than failures.

# TOOLS

- Used by the designers during **software modelling**.
- Typically used by the developers before and sometimes during **component and integration testing**.
- **Compiler** can be considered as a static analysis tool because it builds a symbol table, points out incorrect usage and checks for non-compliance to coding language conventions or syntax.



# VARIOUS FEATURES OF STATIC ANALYSIS TOOLS

## ○ Coding standards

- ✓ set of programming rules, naming conventions and layout specifications,
- ✓ most of the coding standards probably have checking tools (plugins, library) available which support the standard,
- ✓ if rules in coding standard is not applied, then large number of rules may create problem leading to failure

## ○ Code metrics

- ✓ measurement of depth of nesting, cyclomatic number and number of lines of code,
- ✓ monitors the change, complexity and growth of the project

# VARIOUS FEATURES OF STATIC ANALYSIS TOOLS

## ○ **Code structure**

the effort required to write the code in the first place, to understand the code while making the change, or to test the code using particular tools or techniques

○ **Control flow structure** - addresses the **sequence** in which the **instructions are executed**.

○ **Data flow structure** - follows the **track of the data item** as it is accessed and modified by the code.

○ **Data structure** - refers to the **organization of the data** itself, independent of the program.



# Review

Guru 9/9

A close-up, slightly blurred image of a hand pointing towards a digital screen. The screen is dark and displays the text 'Guru99.com' in a white, sans-serif font. The background is dark and out of focus, suggesting an indoor setting with low lighting.

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# Static Code Analysis

**Thank you !**