Static and dynamic verification

- Software inspections
  - Concerned with analysis of the static system

Inspection success

- Many different defects may be discovered in a single inspection
  - In testing, one defect may mask another so several executions are required
- The reuse domain and programming knowledge
  - reviewers are likely to have seen the

13

Inspection teams

- Made up of at least 4 members
- Author of the code being inspected
- Inspector who finds errors, omissions and inconsistencies
- Reader who reads the code to the team
- Moderator who chairs the meeting and notes discovered errors

14

Inspection checklists

- Checklist of common errors should be used to drive the inspection
- Error checklist is programming language dependent
- The 'weaker' the type checking, the larger the checklist
- Examples: Initialization, loop termination, array bounds, etc.

Inspection checks

Fault class	Inspection check
Data faults	Are all program variables initialised before their values are used? Have all constants been named? Should the lower bound of arrays be 0, 1, or something else? else? else? else?

Inspection rate

- 500 statements/hour during overview
- 125 source statement/hour during individual preparation
- 90-125 statements/hour can be inspected
- Inspection is therefore an expensive process
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Static analysis checks

Stages of static analysis

- *Information flow analysis.* Identifies the •

Use of static analysis

- Particularly valuable when a language