Code Comprehension

What Is Code Comprehension?

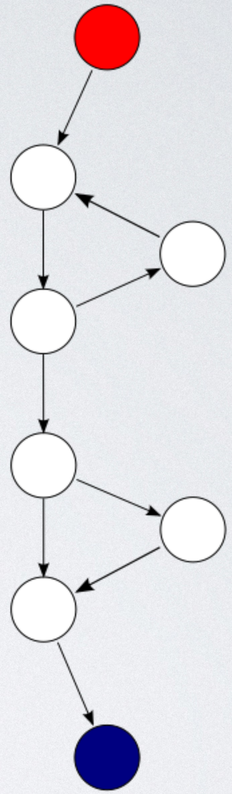
- (what questions do YOU think are important to answer?)

McCabe Cyclomatic Complexity (1976)

Considering the control flow graph:

$M = E - N + 2P$

- E = the number of edges of the graph.
- N = the number of nodes of the graph.
- P = the number of connected components.



9 – 8 + 2×1 = 3

Source: https://en.wikipedia.org/wiki/Cyclomatic_complexity

But What Does It all Mean?

- "Syntax, predicates, idioms — what really affects code complexity?"
  - "`for` loops are significantly harder than `if` s, that some but not all negations make a predicate harder, and that loops counting down are slightly harder than loops counting up."

Studies

- Controlled Experiments on Loops
- Eye Tracking to Study Code Regularity
- The Effect of Variable Names
- Also consider McCabe's cyclomatic complexity

For Each Study:

- In groups, summarize:
  - Research question
  - Method (tasks? participant population?)
  - Results
- Analyze:
  - Internal Validity
  - External Validity

Agenda

- Is there hope of a resulting theory?
- What should be done next? More experiments? If not, what instead?