SYSC 4101 / 5105

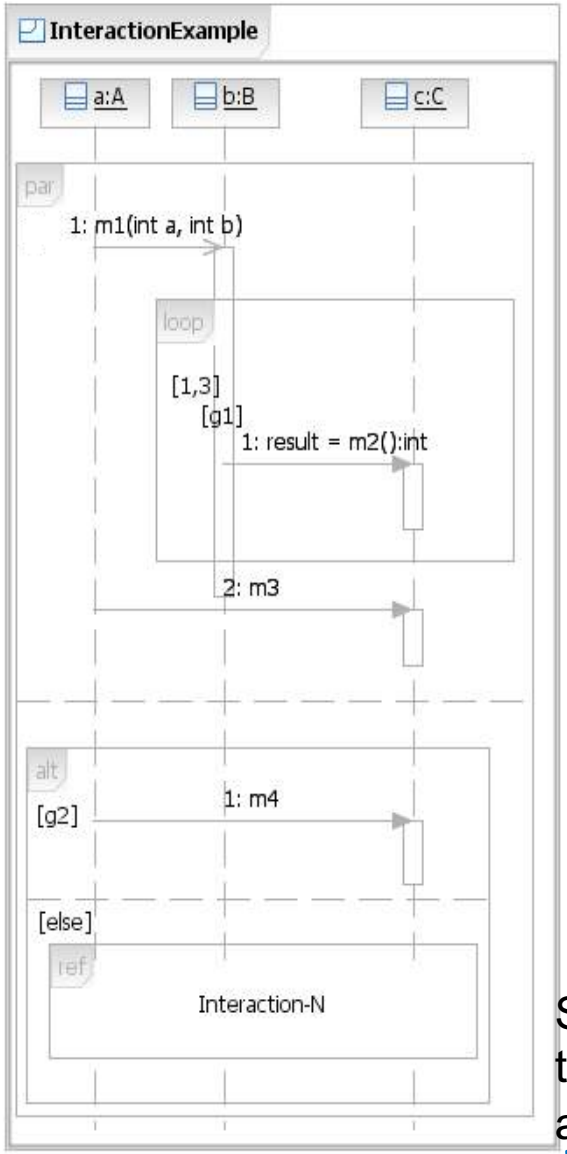
Graph Criteria—Other Applications

Graph Coverage—Applications

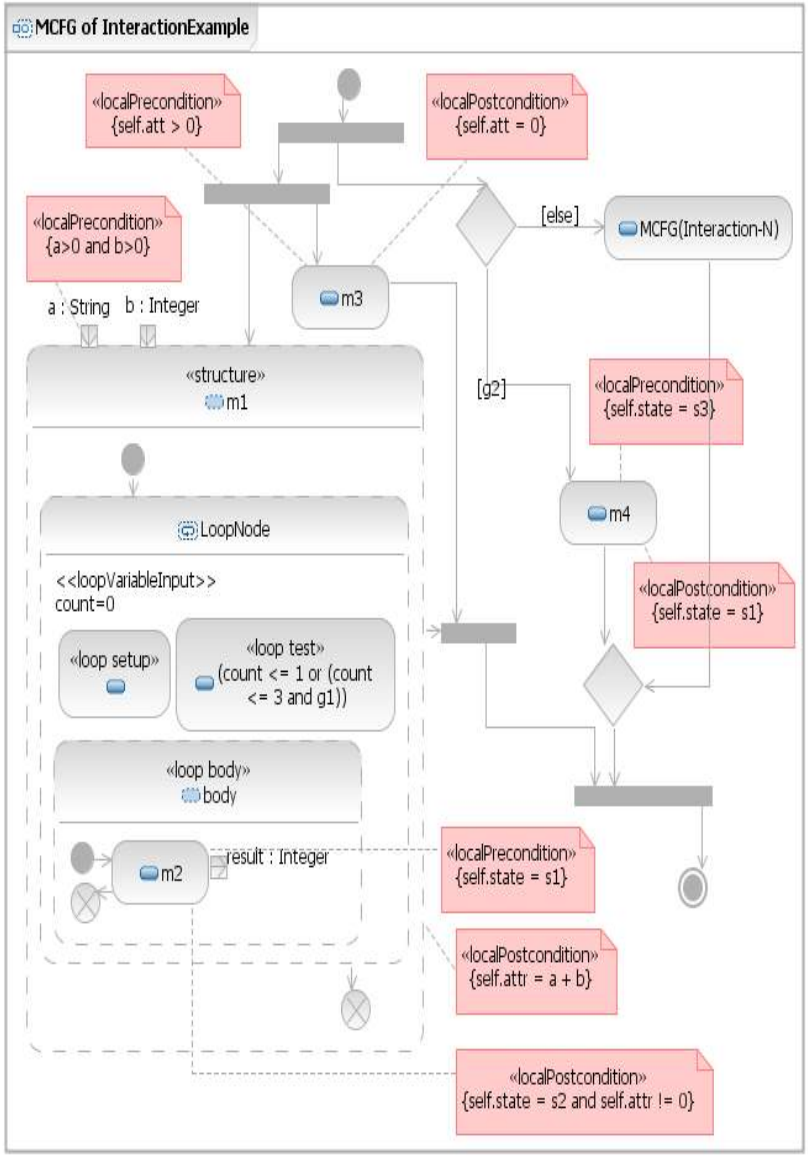
- Graph Coverage for Sequence Diagrams
- Graph Coverage for Activity Diagrams
- Graphical notation for Synchronous Data Flow

Testing Use Case Functionality

- Each Use Case should be described by a Sequence Diagram
- A Sequence Diagram is basically a graph
- From a Sequence Diagram to a (control/data flow) graph
  - Need to account for asynchronous messages
  - Need to account for par combined fragments
  - We can add data flow information
    - Operation signatures indicate in/out/inout parameters
    - Operation contracts indicate what is used and modified
- Possible notation for the graph: UML (2.0) activity diagram
- Most of this is still research



Sequence diagram transformed into an activity diagram



Graph Coverage—Applications

- Graph Coverage for Sequence Diagrams
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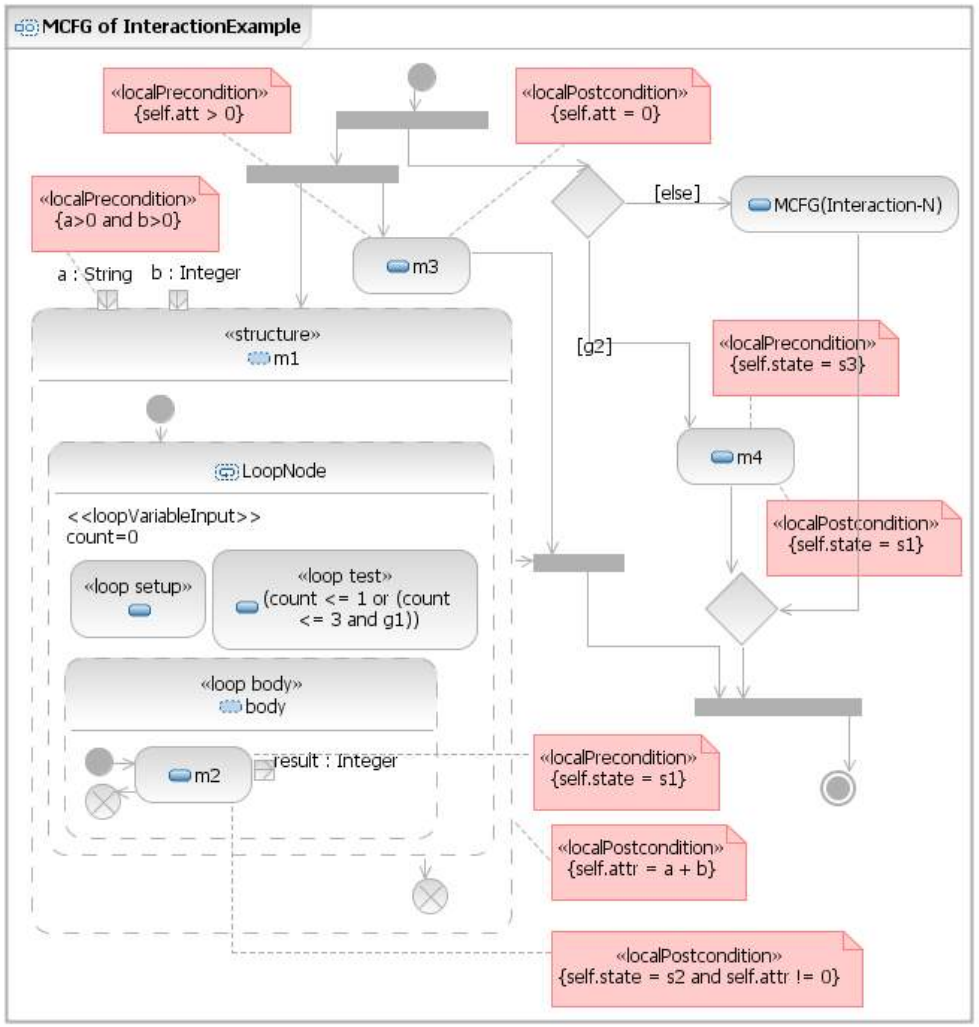
Testing from Activity Diagrams

- Activity diagram
  - To describe an operation's algorithm
  - Created from a sequence diagram
  - Showing use case dependencies
  - …
- An activity diagram is a kind of control/data flow graph!
  - It is simply a different notation



Graph Coverage—Applications

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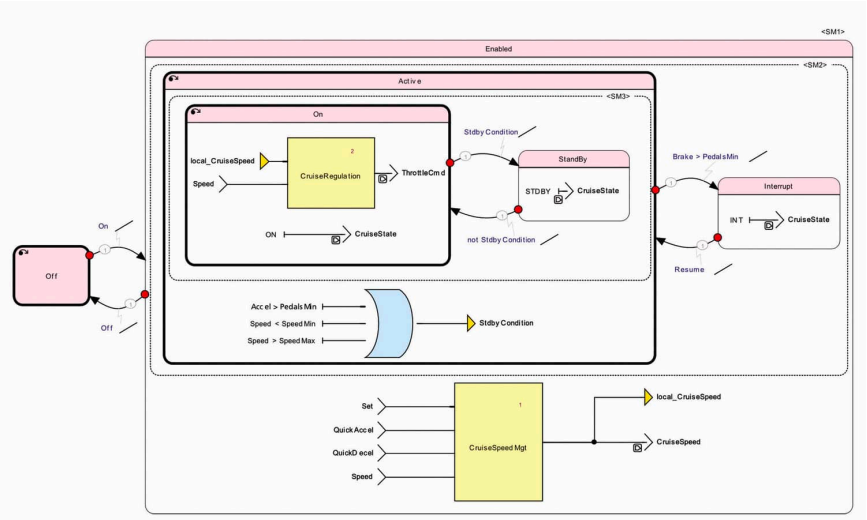
Scade™ and Simulink

- Used to specify synchronous dataflow for programming reactive systems.
- These are also graphs.

- Scade



- Simulink block diagram