# State Diagrams

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# Overview

- Model state dependent activities

Purpose
**Notational Elements**
Tutorial

State Nodes
Transition edges
Control Nodes

- State Nodes
- Transition Edges
- Control Nodes

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## Initial Node



- Starting point

- A state diagram may at most have one initial node

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## Final Node



- Point where system terminates
- A state diagram may have many final nodes

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## State Node



active

- Represent a state
- Can contain another state diagram (infinitely)

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# Composite State
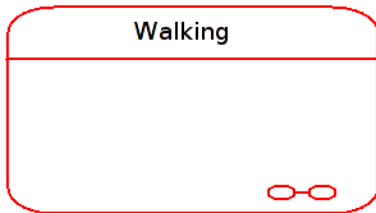


- Need not have a name (line & text above)
- If nameless it must include detailed flow

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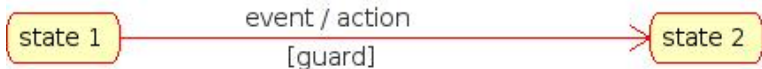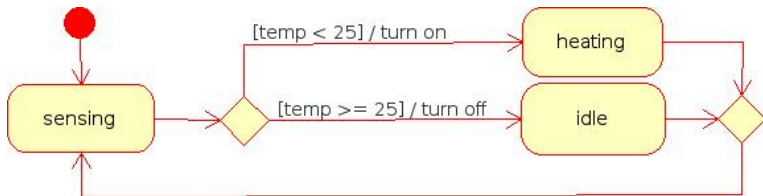
## Transition Edge



- Indicate transition between state
    - Should indicate the event that triggers the transition ( text )
    - May have a guard condition that is a prerequisite for transition ( text in [] )
    - May have an action that is executed during transition (method name after / )

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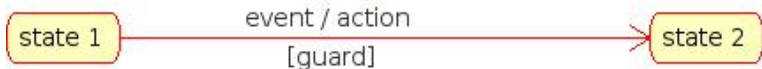
## Transition Edge



- If a transition is shown without an event it triggers immidiatly.

- If an event happens for which there is no transition, nothing happens.

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# Decision and Merge



- Alternate flows
- Need guard conditions for the alternatives

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## Fork and Join
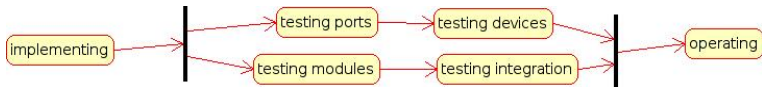


- Parallel flows
- Both paths are executed at the same time by different threads
- Join fires only after all flows have reached it. Sinchronisation point

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# Signal Action
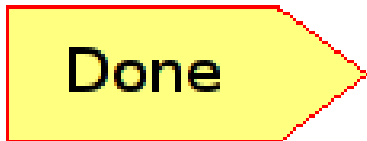


- Generates an event that can trigger a transtition in any other state in the diagram to fire as a result of this event.

Visualize the states of a torch that is operated with an on-off switch. When the torch is switched on, it shines yellow. It can only be switched off if the switch is turned off while the torch is shining red. The torch will start shining red when it is switched on while it was shining yellow. If the torch is switched off when shining yellow, it starts shining white. If it is turned off while shining white, it starts shining yellow.

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