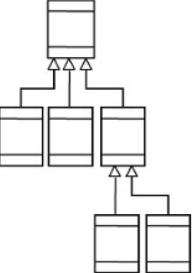
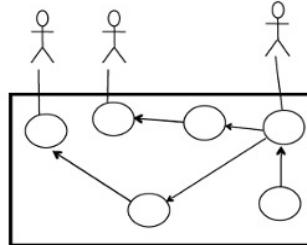
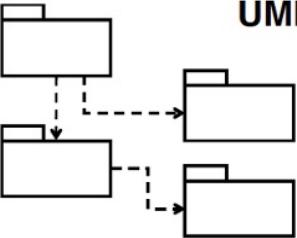
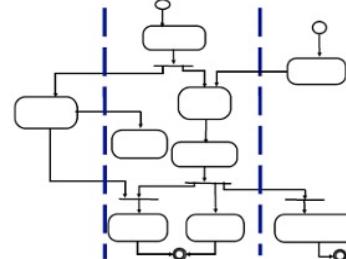
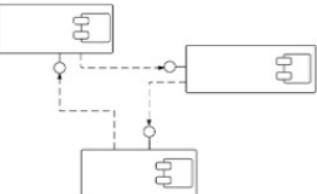
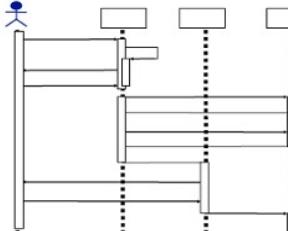


Activity Diagrams

Fattane Zarrinkalam

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UML Diagrams

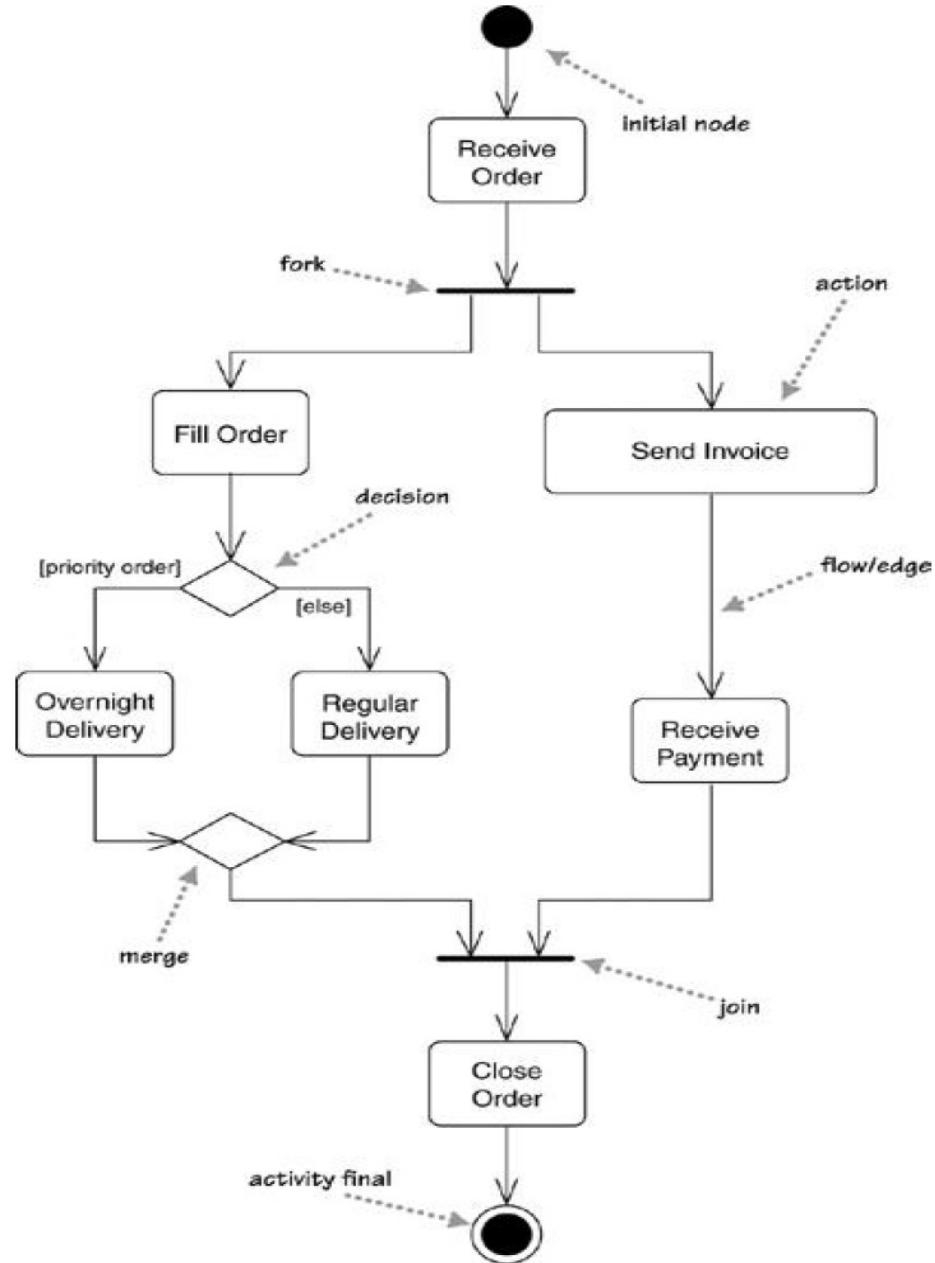
 <p>UML Class Diagrams information structure relationships between data items modular structure for the system</p>	 <p>Use Cases user's view Lists functions visual overview of the main requirements</p>
 <p>UML Package Diagrams Overall architecture Dependencies between components</p>	 <p>Activity diagrams business processes; concurrency and synchronization; dependencies between tasks;</p>
 <p>UML Component Diagrams static implementation view of a system Interfaces between components</p>	 <p>UML Sequence Diagrams individual scenario interactions between users and system Sequence of messages</p>

Activity Diagram

- Activity diagrams are particularly good at **modeling business processes**.
- A business process is a set of coordinated tasks that achieve a business goal, such as shipping customers' orders.
- Activity diagrams are one of the most accessible UML diagrams since they use symbols similar to the widely-known flowchart notation;
- They are useful for describing processes to a broad audience.

Activity Diagram

- Elements:
 - Action state
 - Flow Transition
 - Object Node
 - Swimlane
 - Decision and Merge
 - Fork and Join
 - Expansion Region



Action State

Simple action

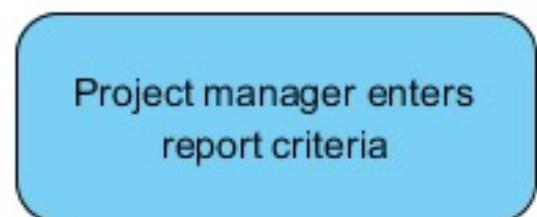
Project manager enters
report criteria

Project management system
generates report

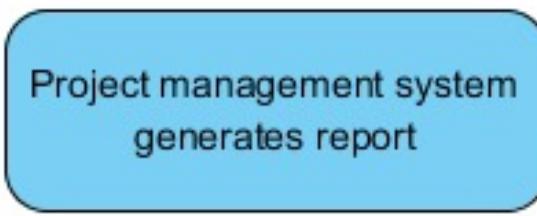
Printer prints the report

Initial and final action states

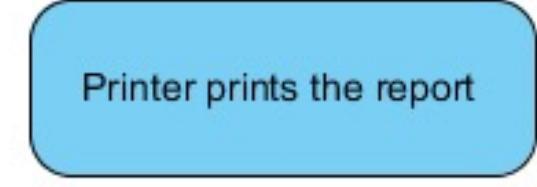
Initial state



A rounded rectangular box representing an activity node. Inside, the text "Project manager enters report criteria" is displayed.



A rounded rectangular box representing an activity node. Inside, the text "Project management system generates report" is displayed.



A rounded rectangular box representing an activity node. Inside, the text "Printer prints the report" is displayed.

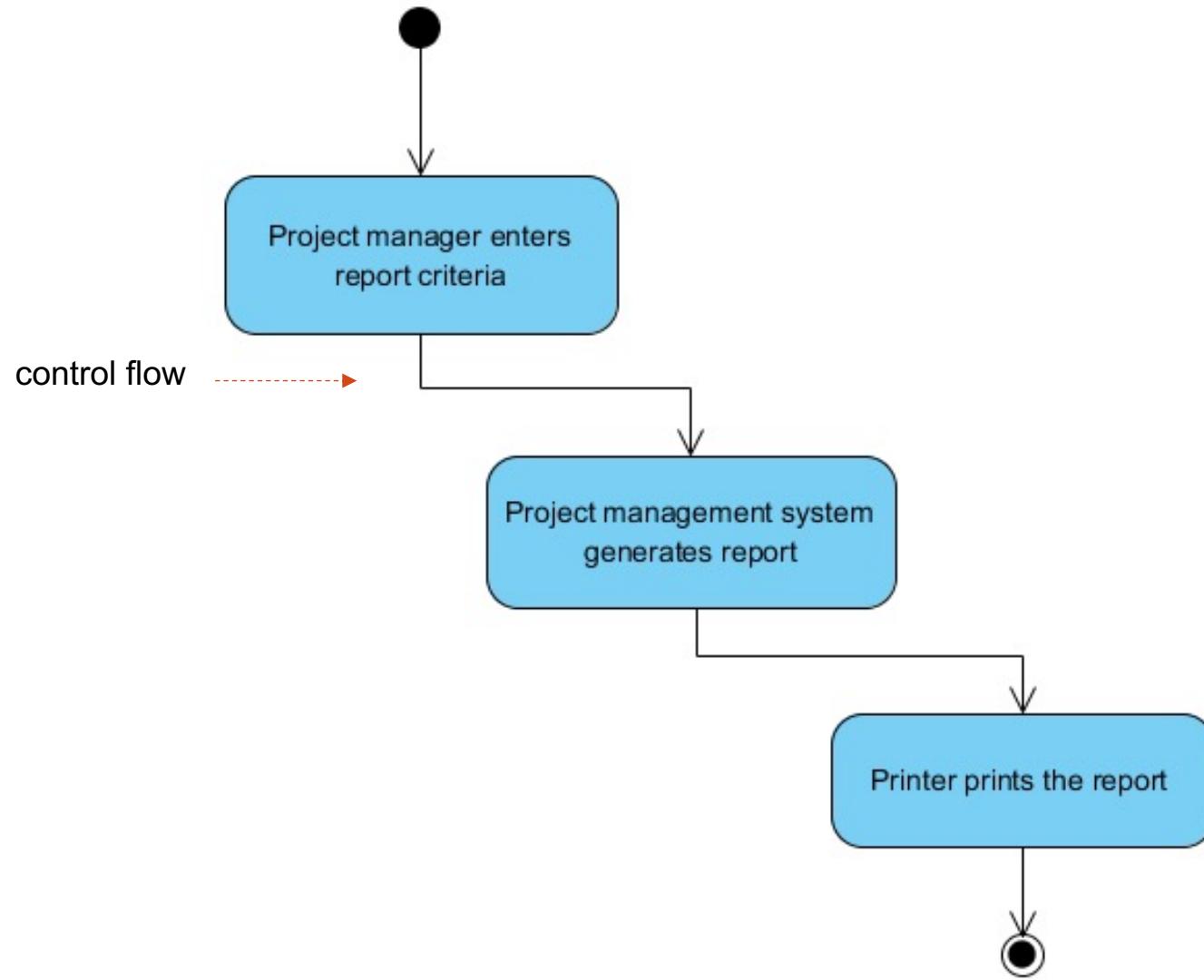
- An activity diagram may have only one **initial** action state but may have any number of **final** action states.

Final state

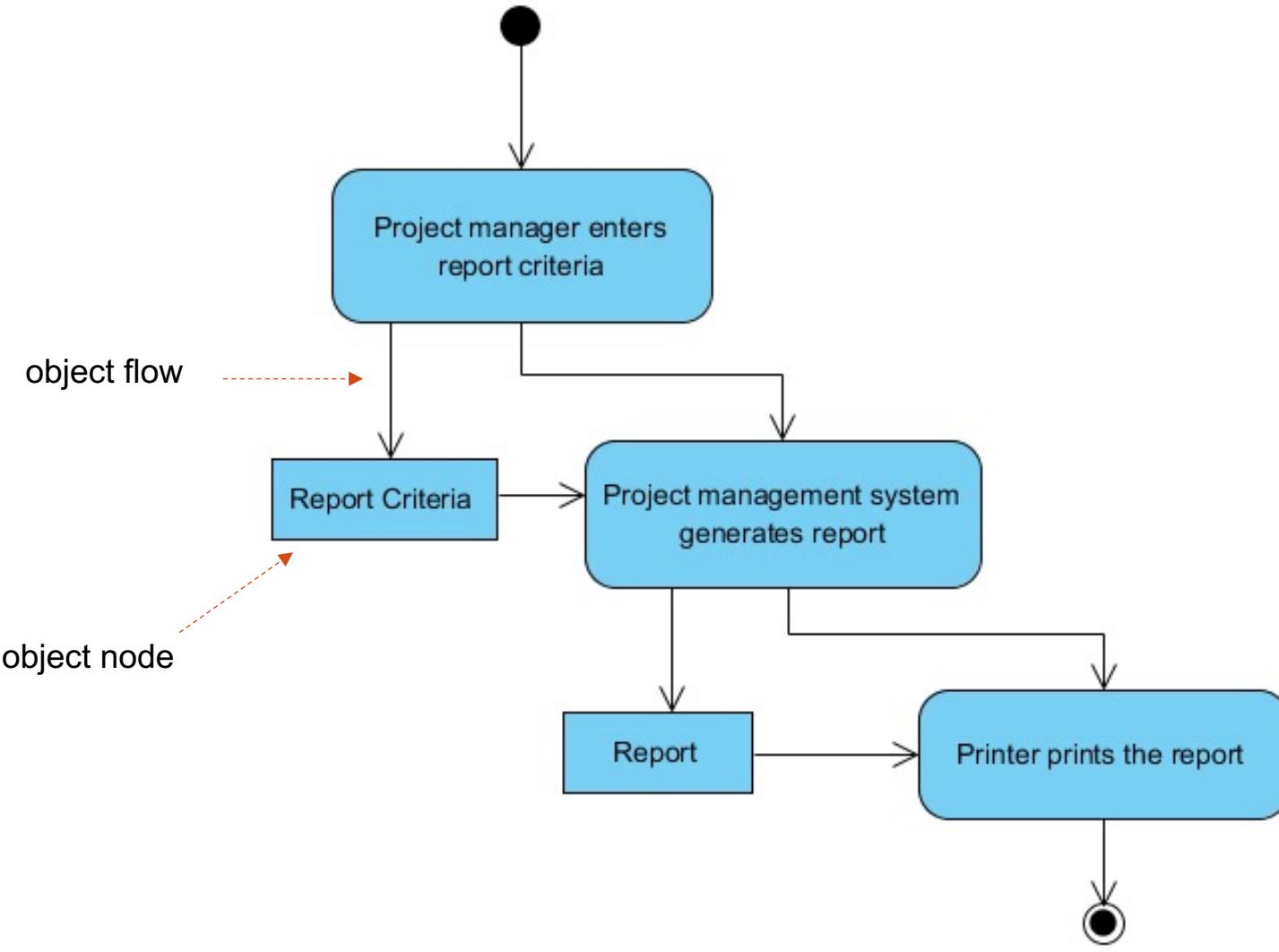


Flow Transition

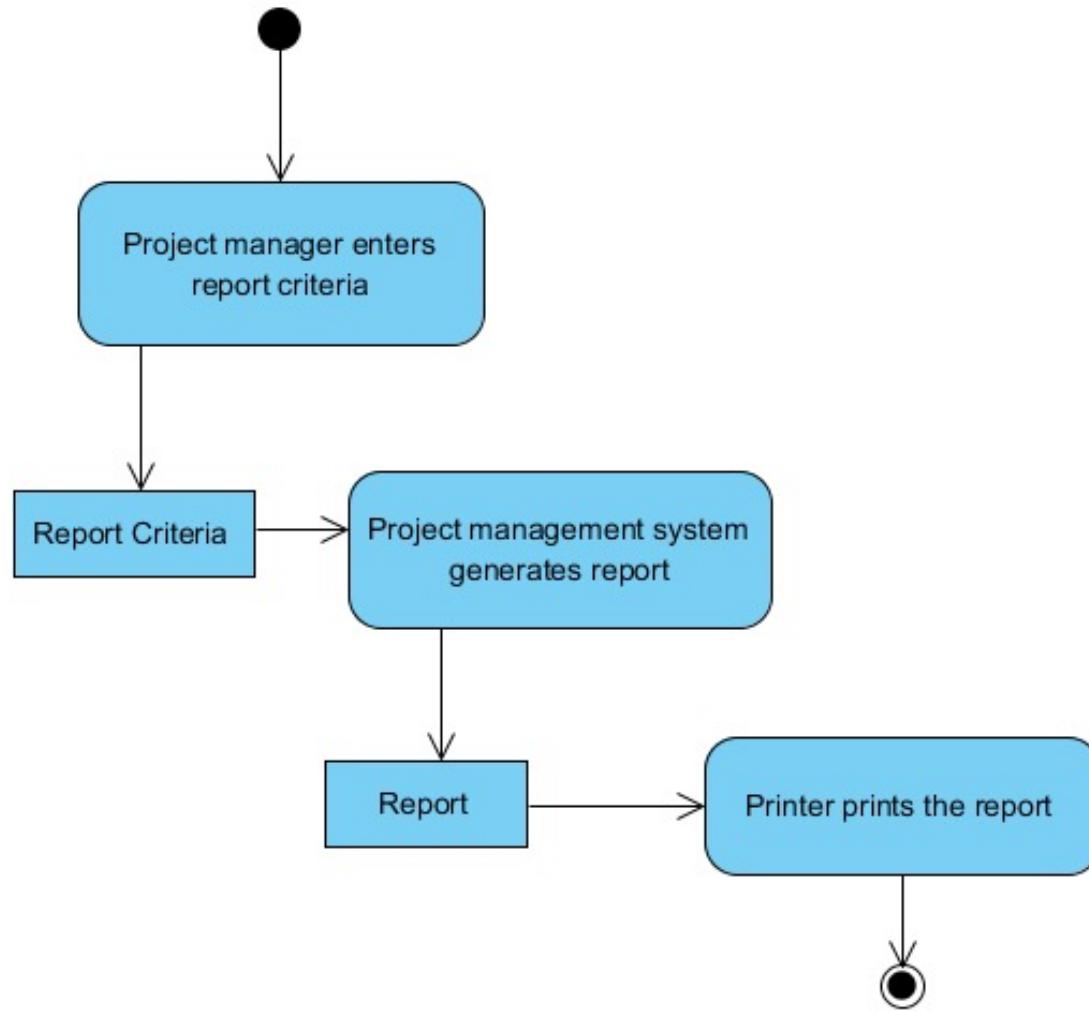
Control Flow



Object Flow



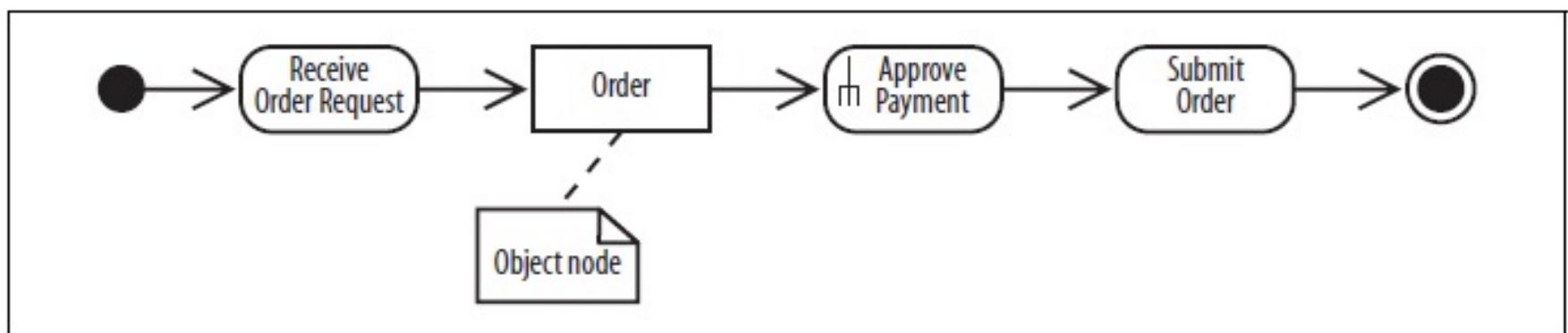
Object Flow



Object Node

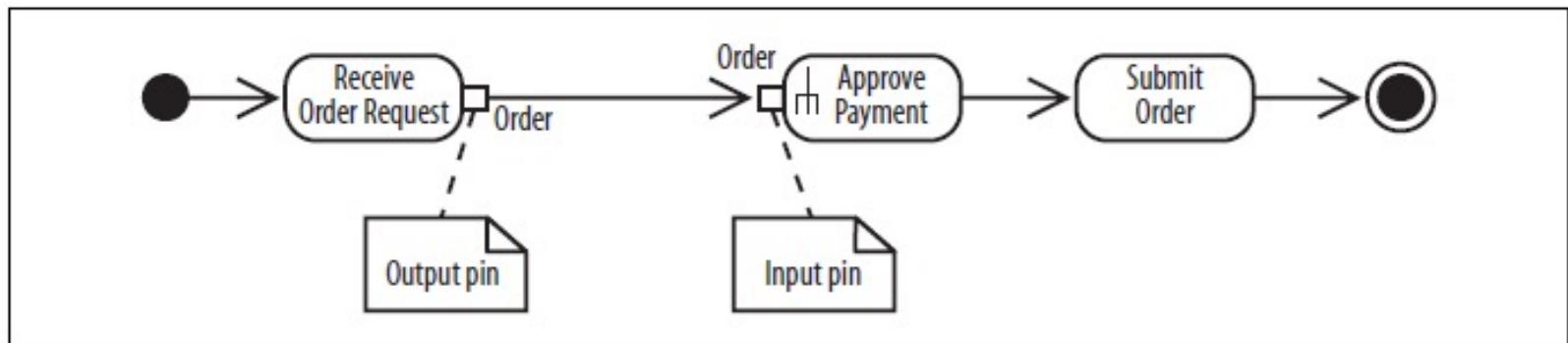
Object Node

- An **object node** represents an object that is available at a particular point in the activity and can be used to show that the object is used, created, or modified by any of its surrounding actions.

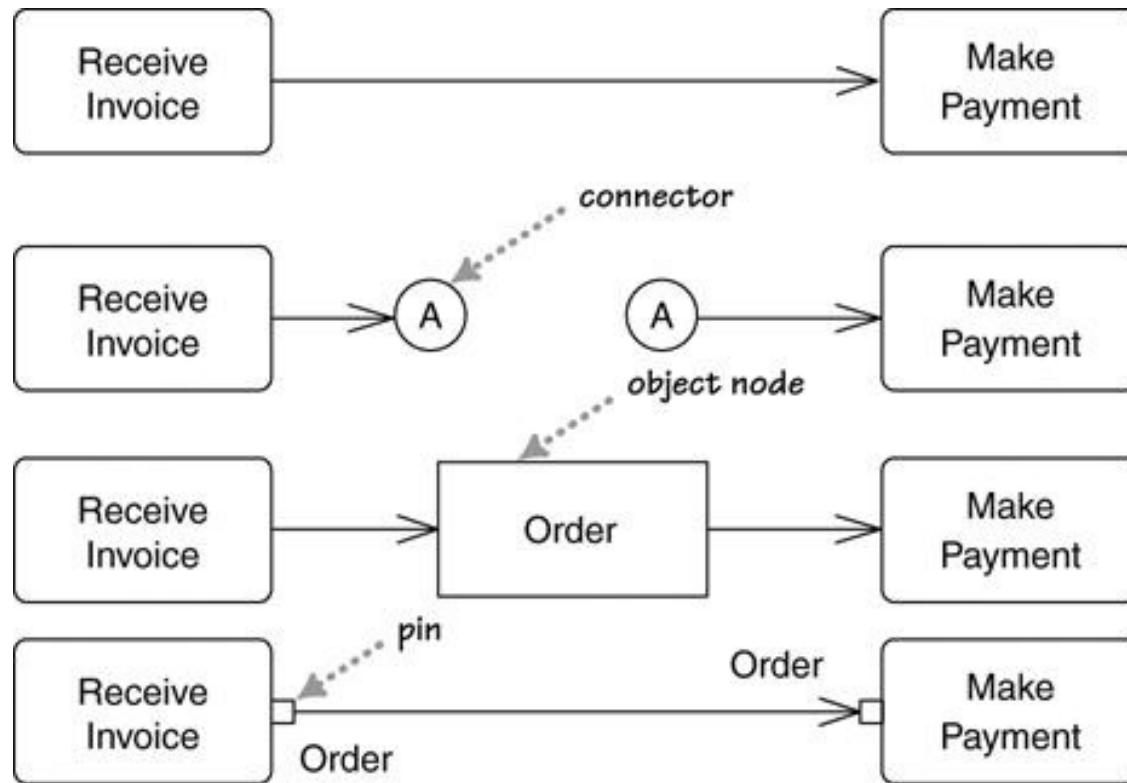


Pins

- An **input pin** means that the specified object is input to an action.
- An **output pin** means that the specified object is output from an action.

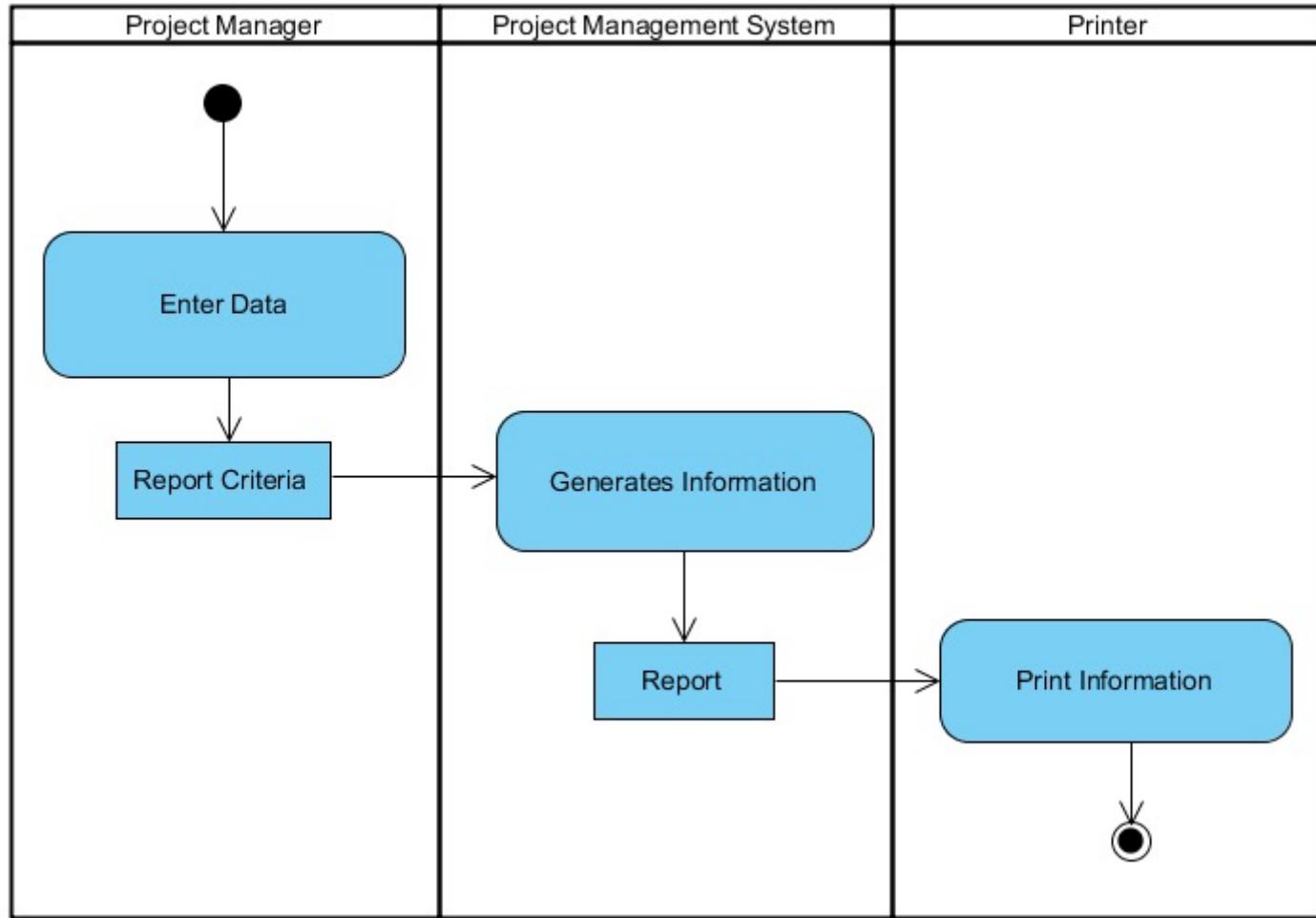


Four ways of showing an edge



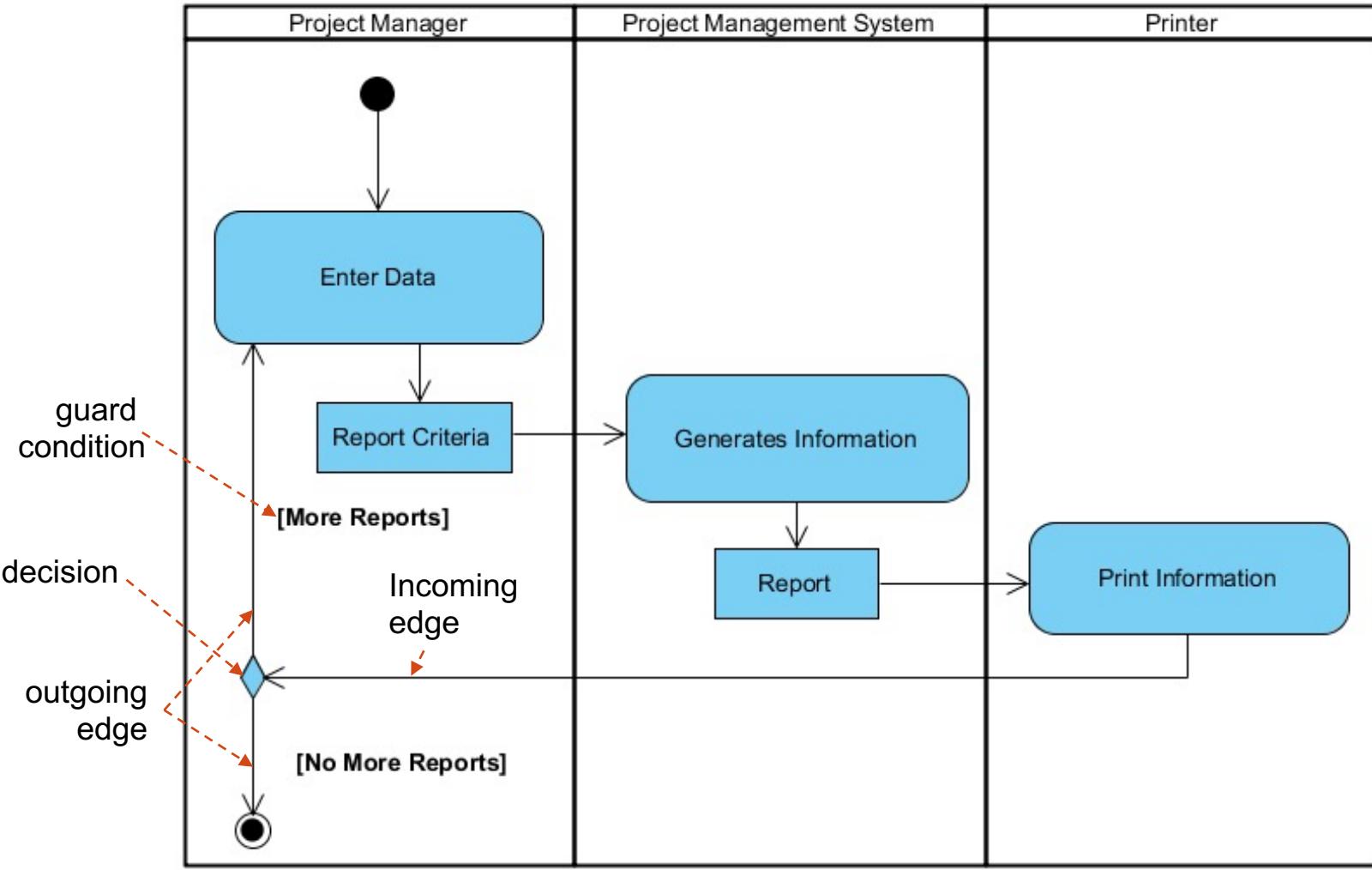
Swimlane

Swimlane

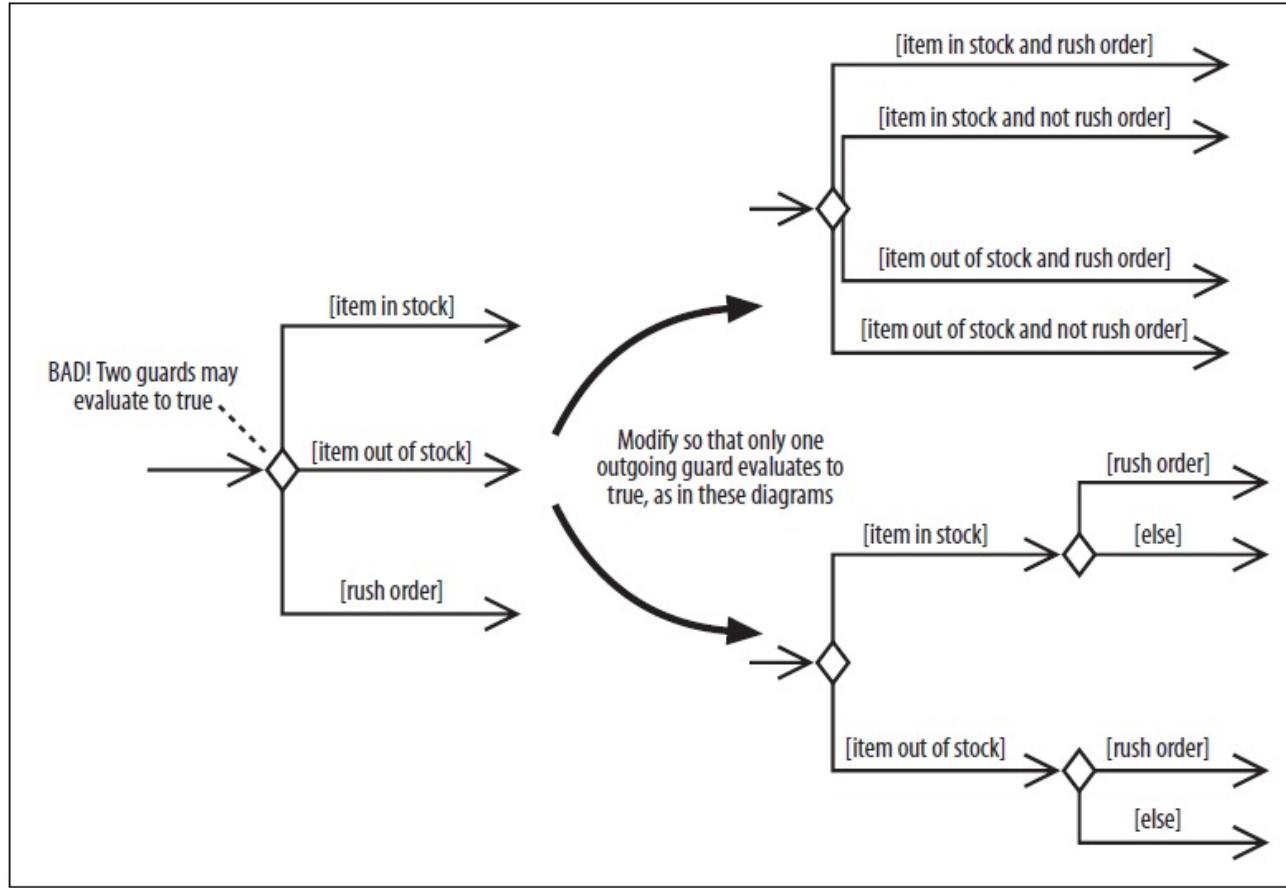


Decision and Merge

Decision

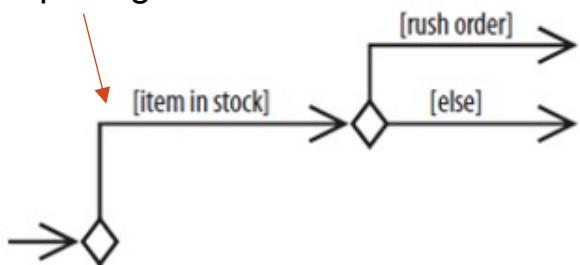


Making guards mutually exclusive

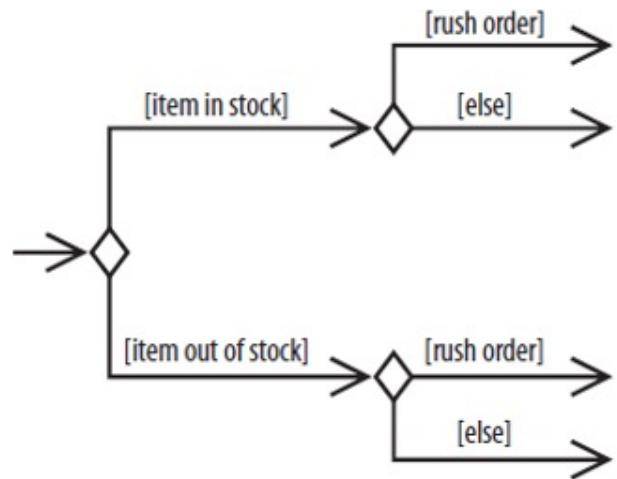


Avoid incomplete guards

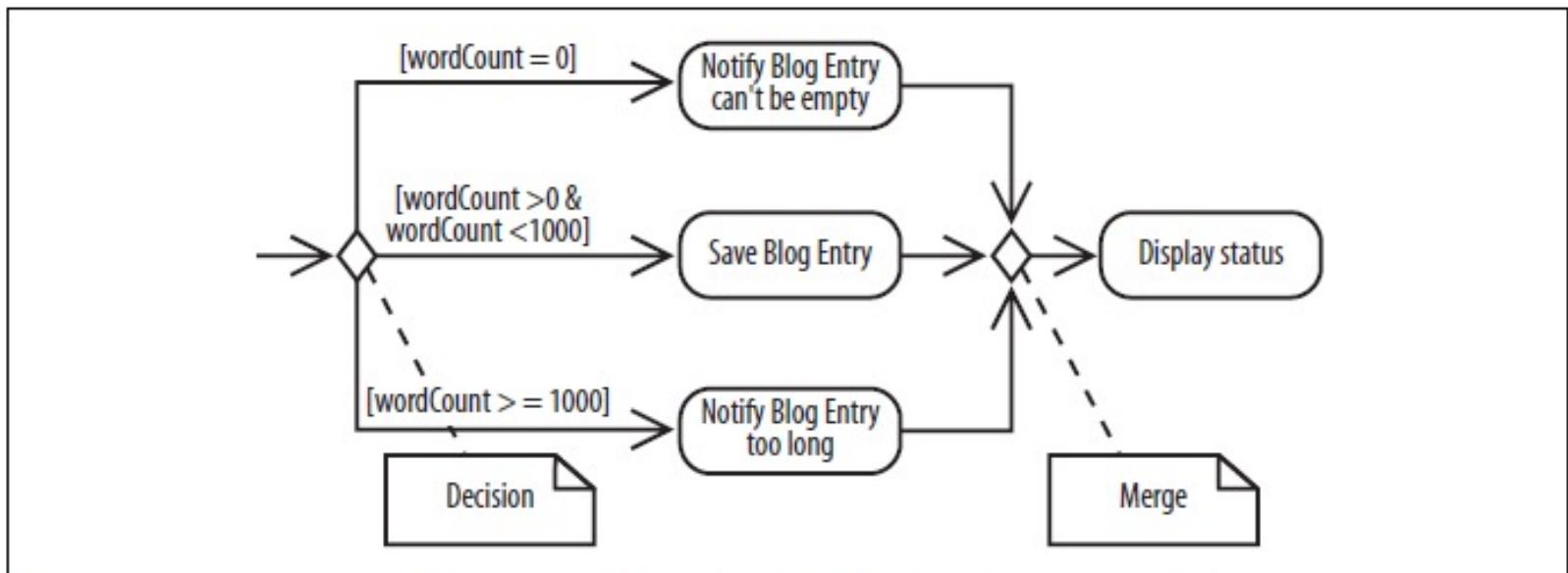
Incomplete guard



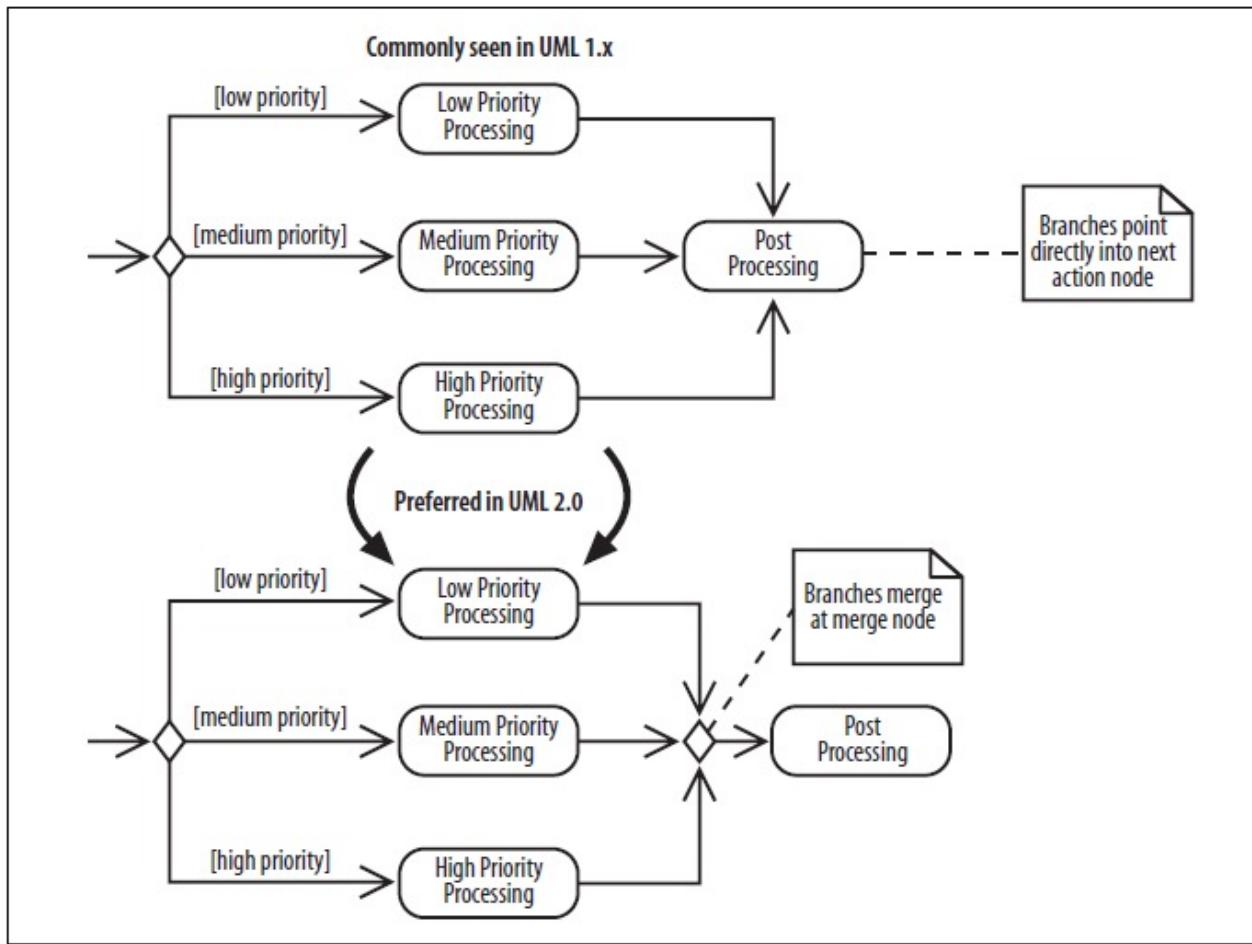
Modify to
cover every
possible
situation



Merge

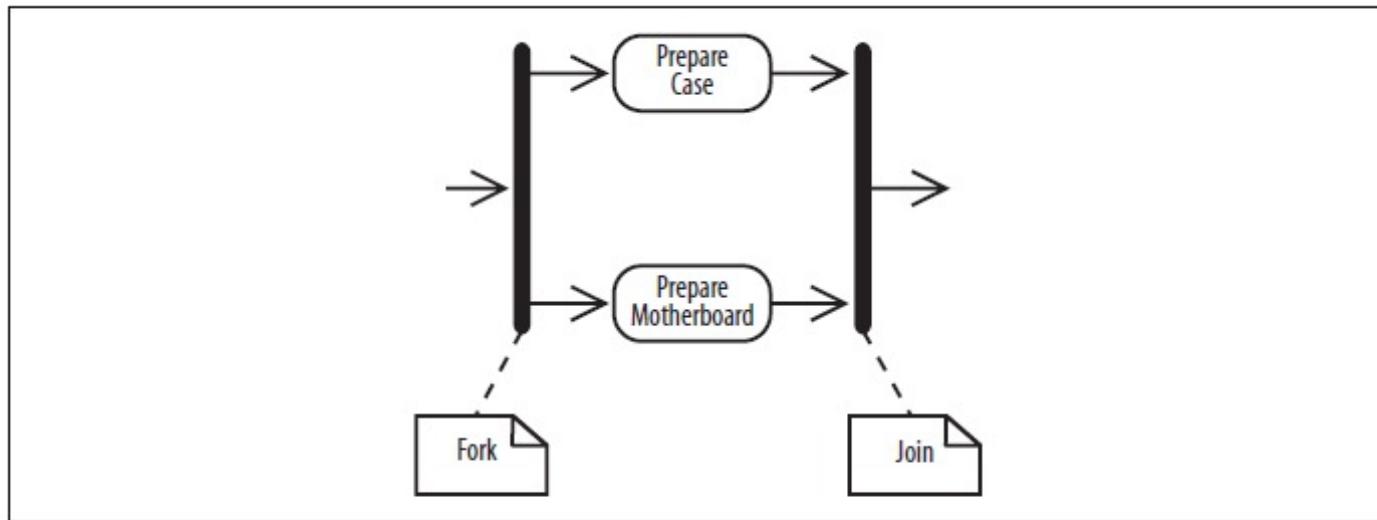


Merge

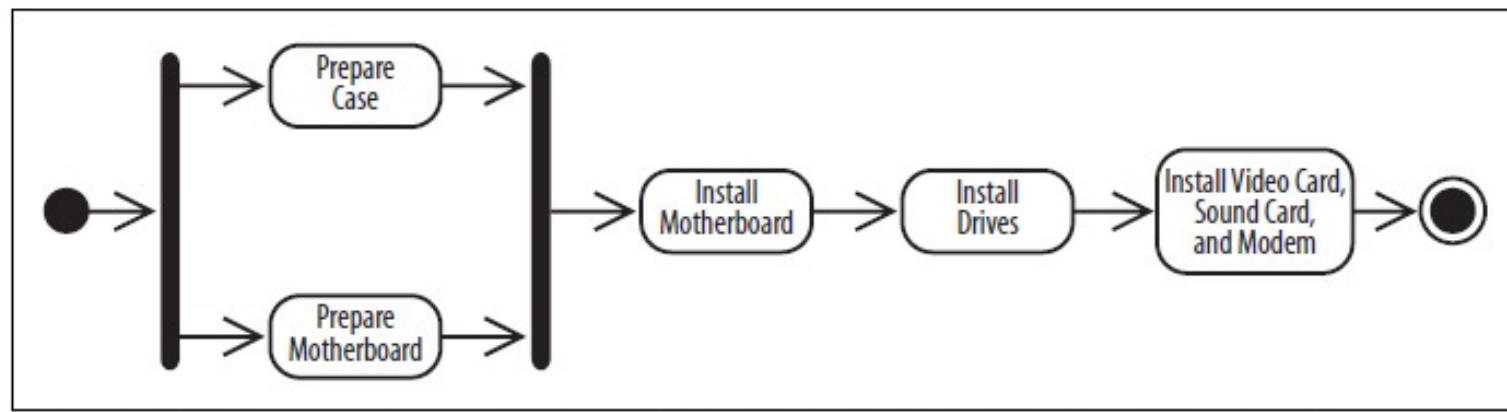


Fork and Join

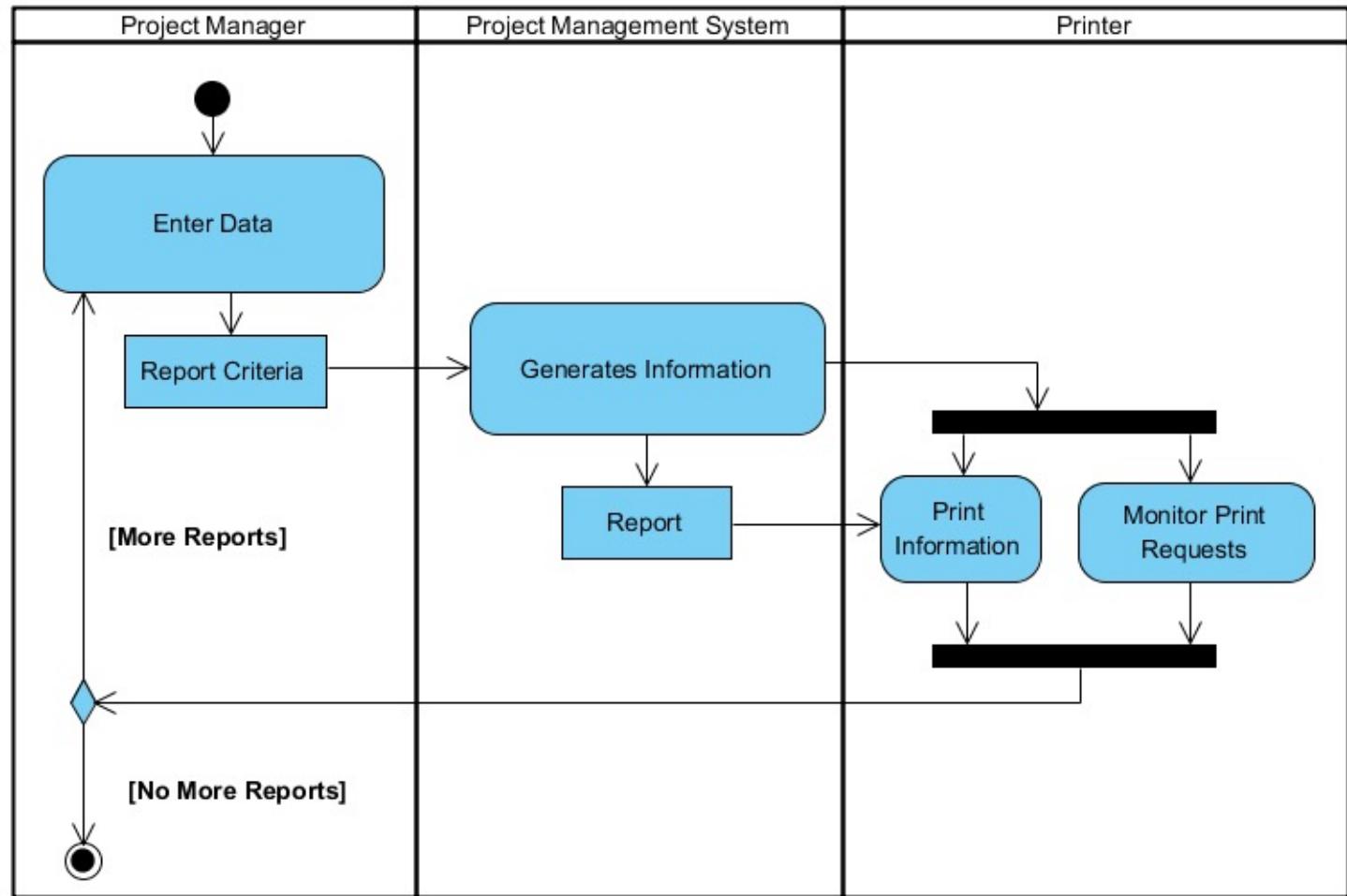
Fork and Join



Fork and Join

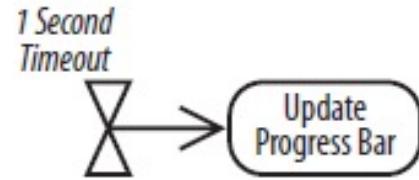
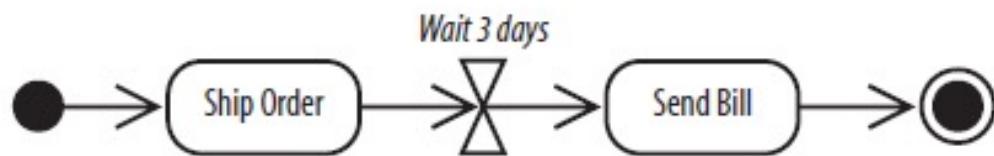


Fork and Join

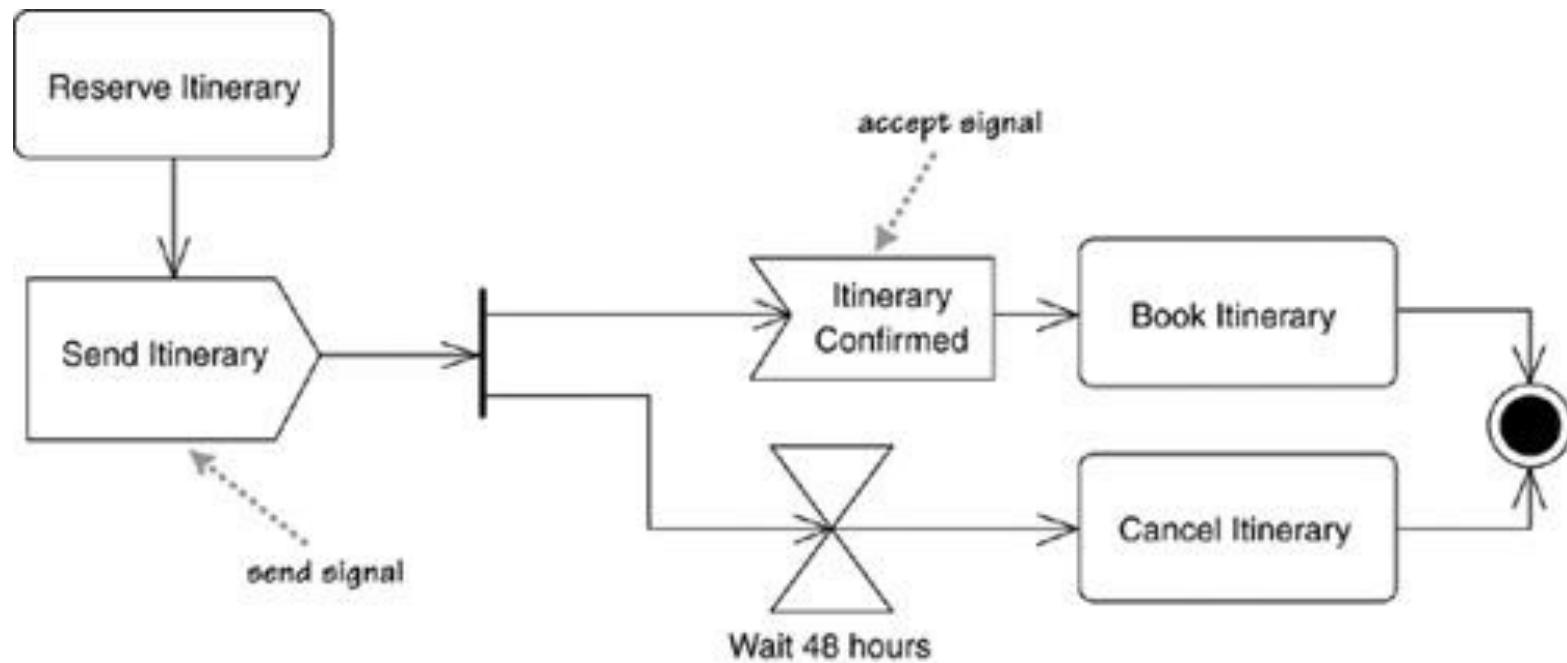


Signals

Time Signal

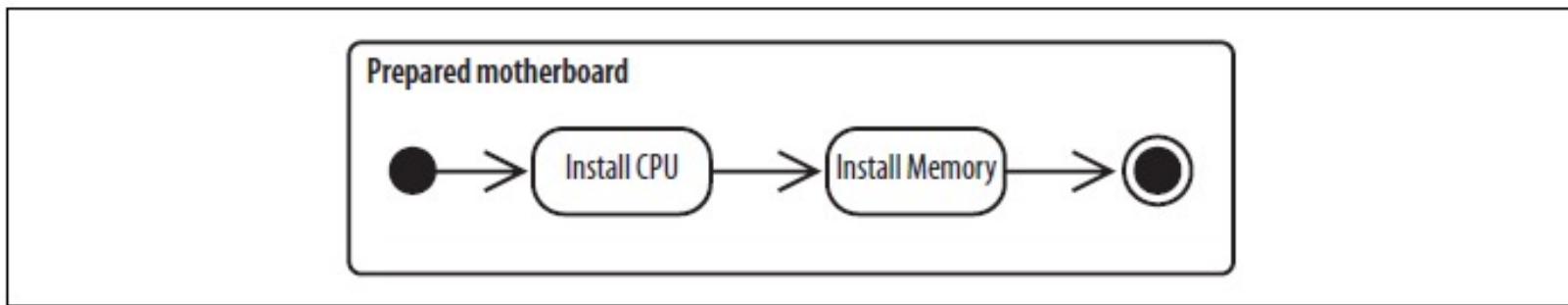
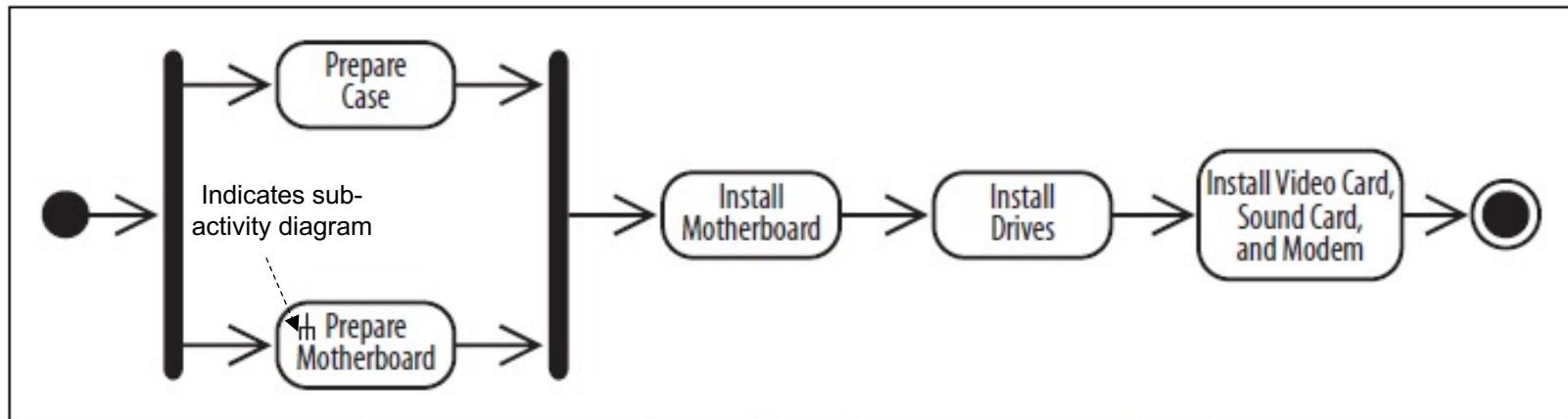


Send and Accept Signal



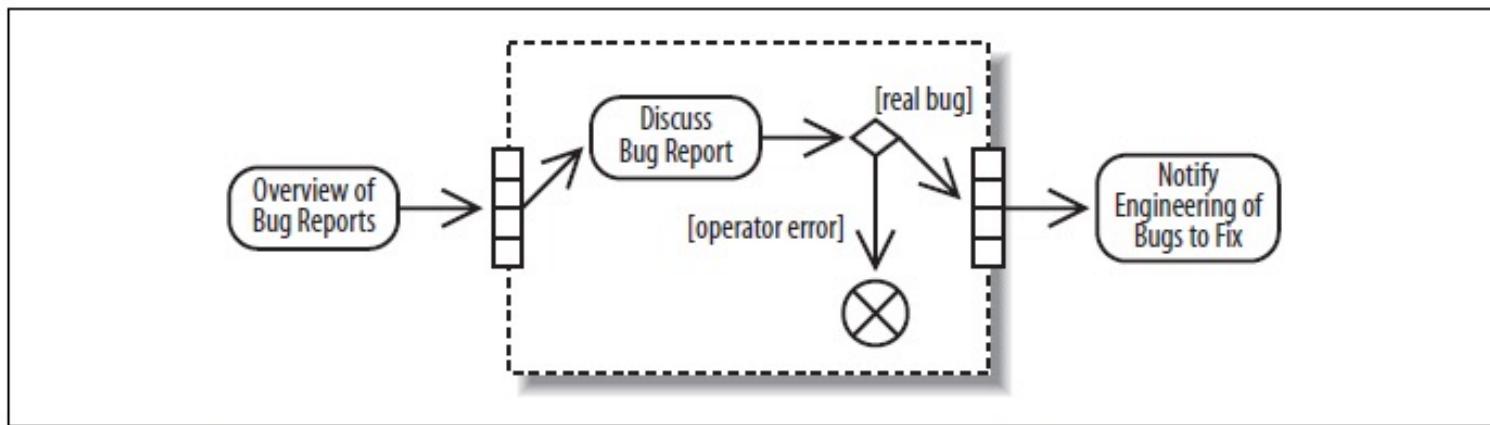
Call Activity

Call Activity

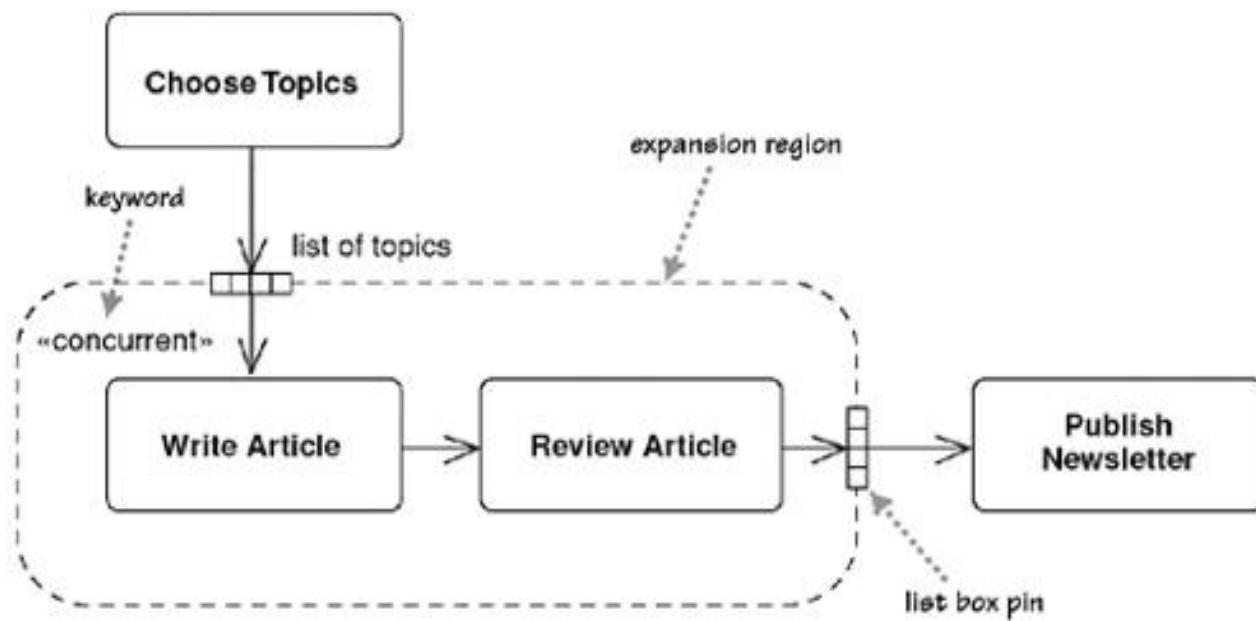


Expansion Region

Expansion Region



Expansion Region



Summary

Summary

- Activity diagrams allow you to specify how your system will accomplish its goals.
- The great strength of activity diagrams lies in the fact that they support and encourage parallel behavior.
- Activity diagrams often used to describe a use case.
- Elements:
 - Action state
 - Flow Transition
 - Object Node
 - Swimlane
 - Decision and Merge
 - Fork and Join
 - Expansion Region