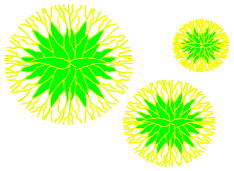
XI. Activity Diagrams

Activity Diagrams
Petri Nets
Examples

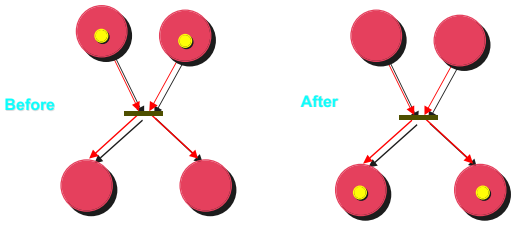


Activity Diagrams

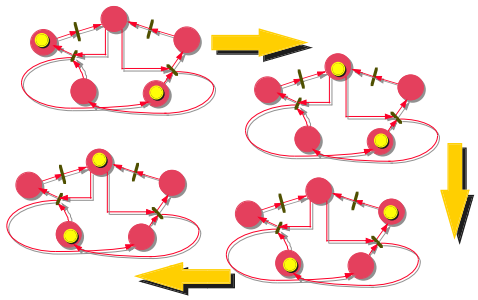
- Like state diagrams, activity diagrams describe activities which involve concurrency and synchronization.
- Activity diagrams focus on the flow of actions and events.
- Can be used
  - ✓ To model a human task (e.g., a business process).
  - ✓ To describe a system function represented by a use case.
  - ✓ To describe the logic of an operation.

Petri Nets

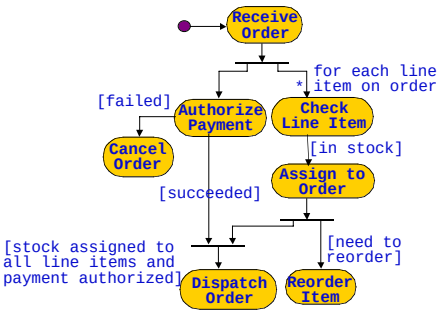
- Petri nets generalize state diagrams by allowing transitions which involve several input and output states:



An Example

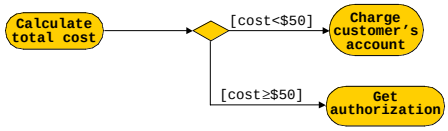


Order Processing



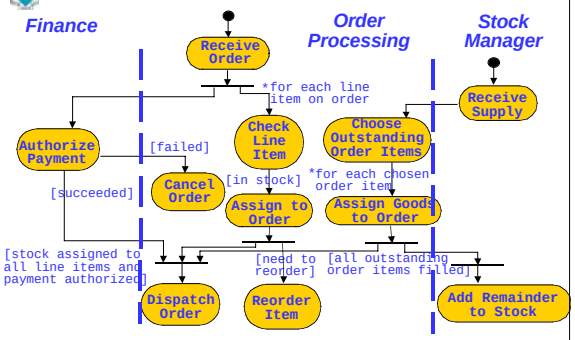
Decision Points

- *Decision points:*



- *Dead ends: there may be transitions in an activity diagram with no destination state; this can mean that:*
  - ✓ Not all processing has been specified;
  - ✓ Or, that another activity diagram will take over.

Swimlanes



When to Use What?

- *State diagrams are good for modeling the lifetime of an object or actor, also for modeling user interfaces and business processes which involve many states.*
- *Activity diagrams are good for modeling business processes and system processes **that involve a lot of concurrency**.*
- *Sequence and collaboration diagrams are useful for modeling interactions; **several of them** can be used to model dialogue structure for a user interface, or a business process.*

Additional Readings

- *[Booch99] Booch, G. et al., The Unified Modeling Language User Guide, Chapters 19, 20, 21, 24. Addison-Wesley.*
- *[Fowler00] Fowler, M., UML Distilled: A Brief Guide to the Standard Object Modelling Language, Chapters 8, 9. Addison-Wesley.*