Unified **M**odeling **L**anguage – Creating an activity diagram

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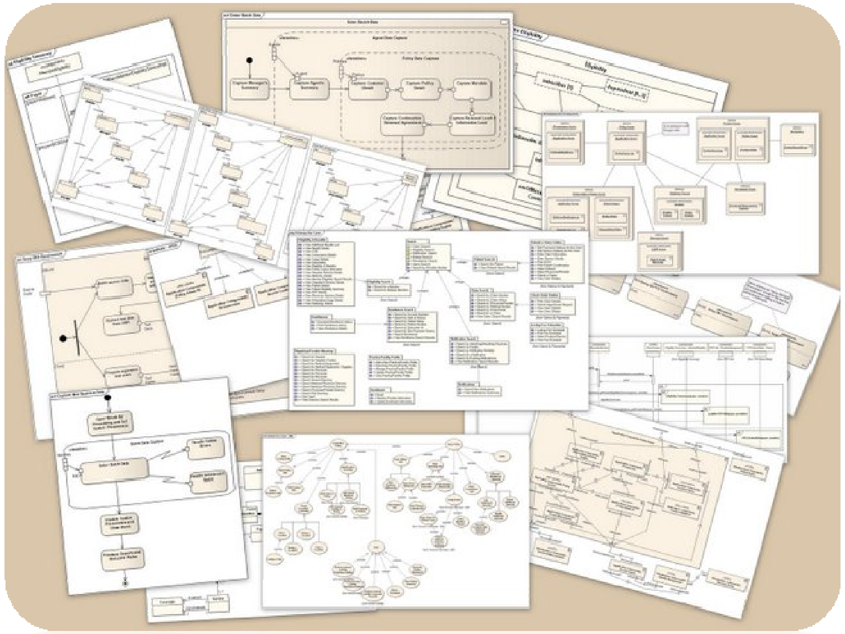
Unified Modeling Language (UML)

- Standardized general-purpose modeling language
  - For object-oriented software engineering

- Ease software development by creating blueprints of
  - Activities, actors, business processes, database schemas, logical components, …

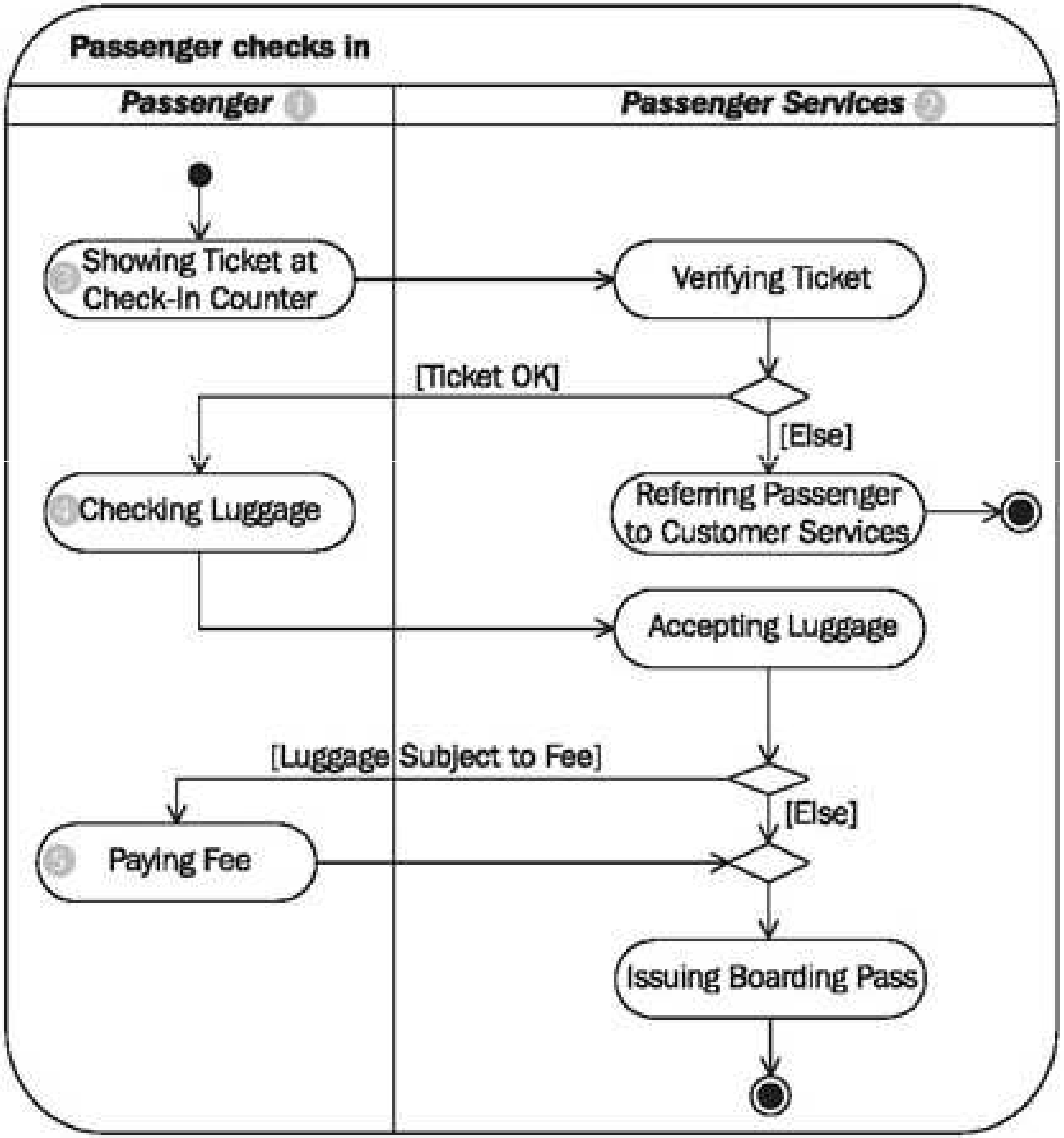


→ Today: The activity diagram

The activity diagram

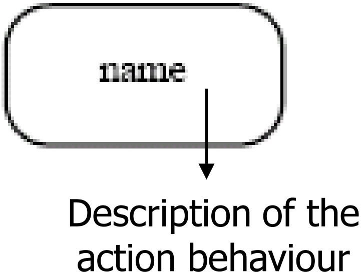
- Describes
  - procedural logic
  - business processes
  - Workflows

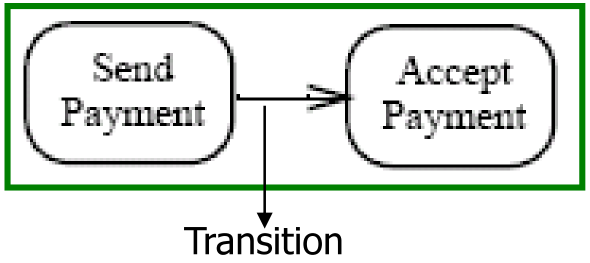
- Great to visualize single steps of an algorithm
  - Conditions
  - Dependencies
  - Concurrency



Basic Elements - Actions

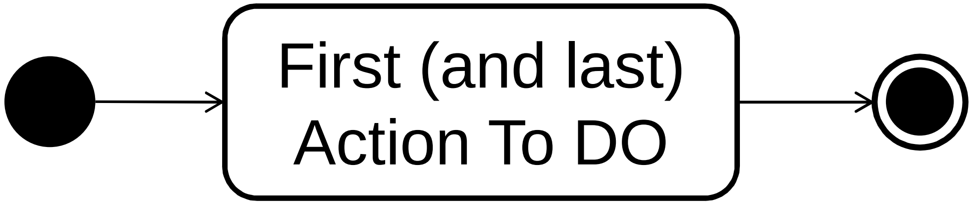
- Fundamental unit of executable functionality in an activity
- Represents some transformations or processes in the modeled system
  - creating objects
  - setting attribute values
  - linking objects together
  - invoking user-defined behaviours





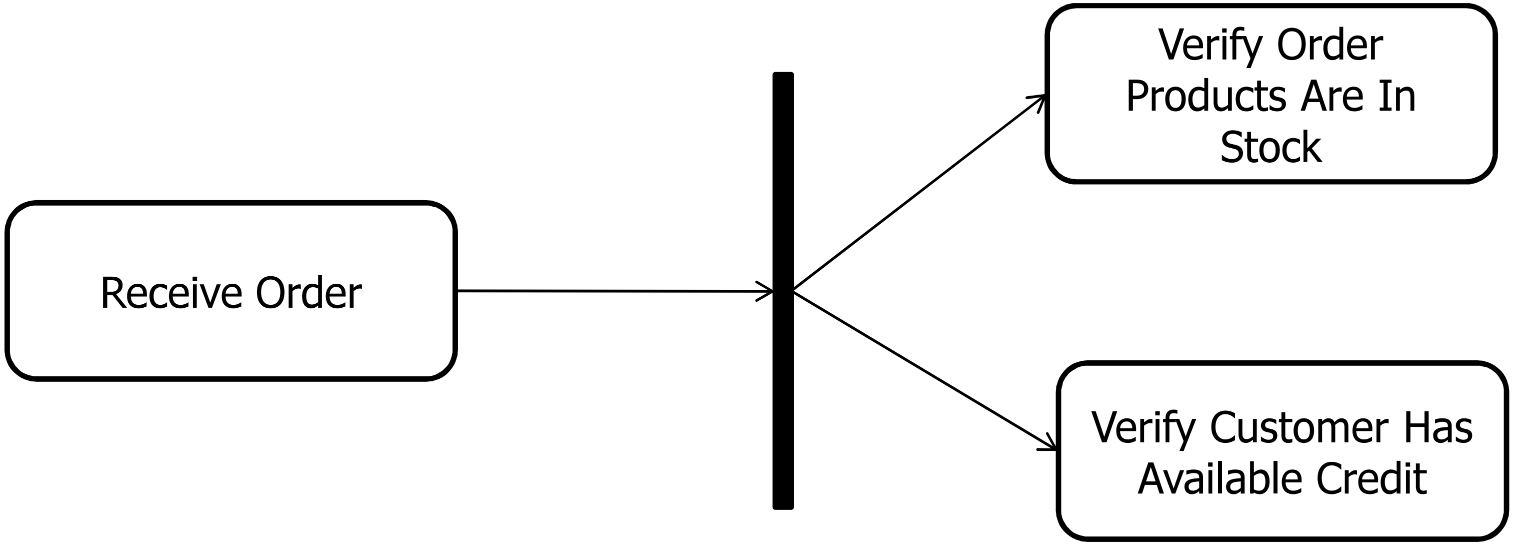
Basic Elements – Initial and final node

- Initial state shows the starting point for the action sequence within
  - An initial node isn’t required
- An activity diagram can have zero or more activity final nodes



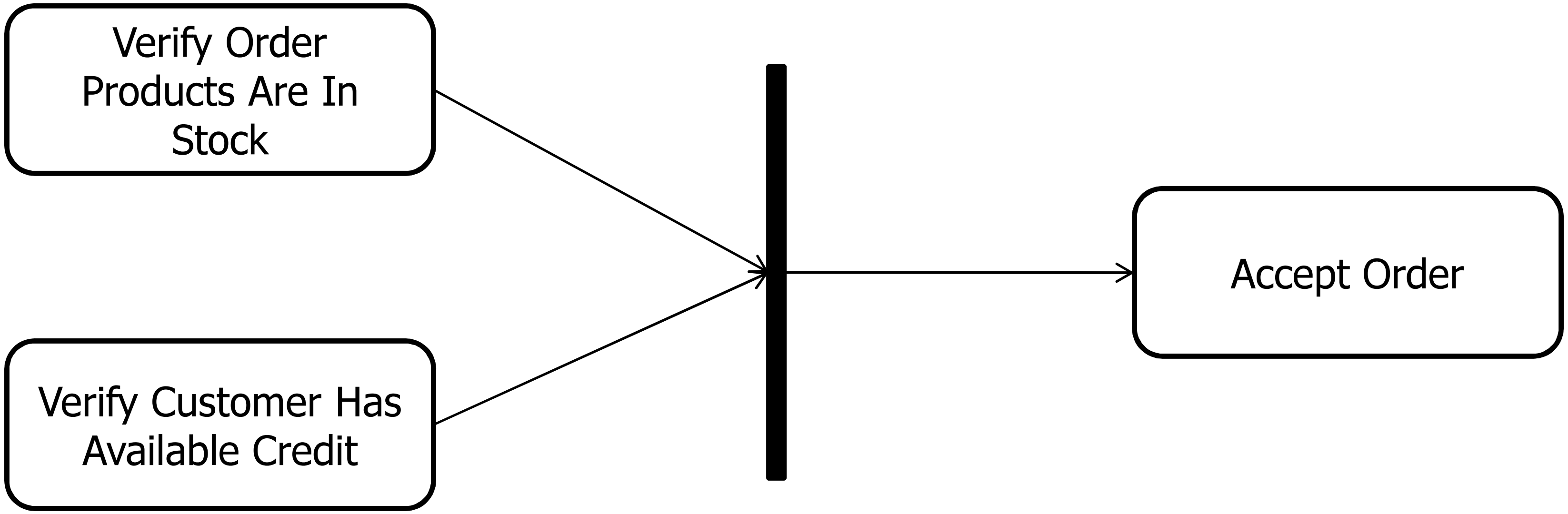
Basic Elements – Fork

- Denotes the beginning of parallel actions


Receive Order
Verify Order Products Are In Stock
Verify Customer Has Available Credit

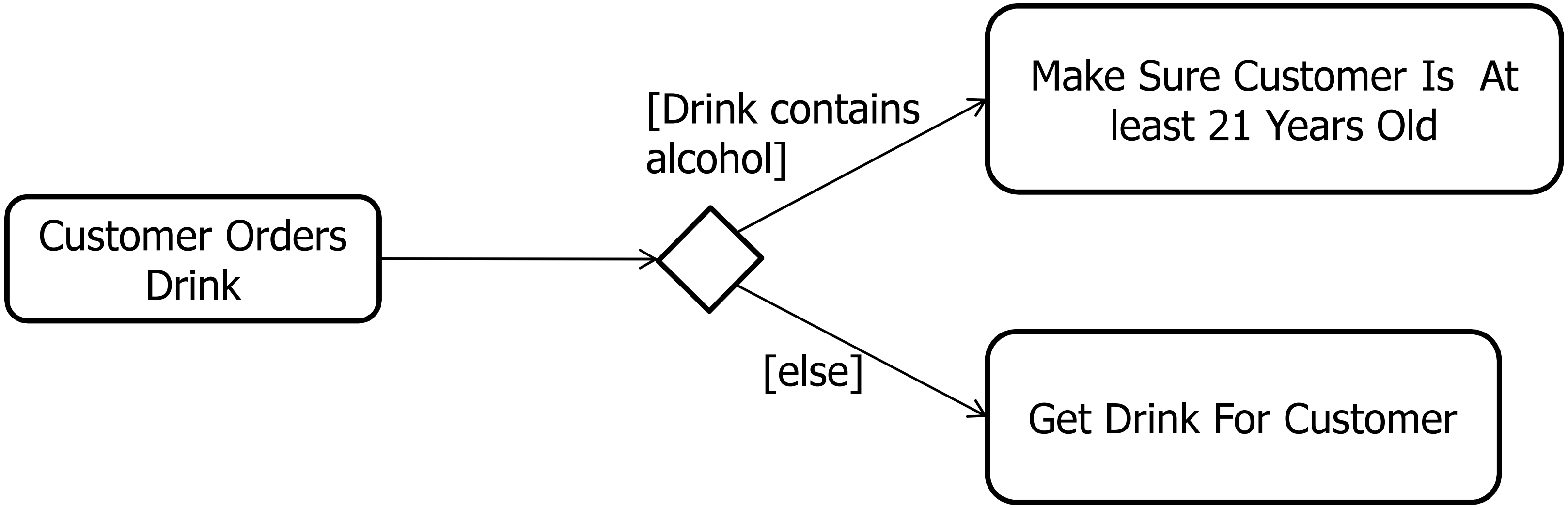
Basic Elements – Join

- All incoming flows must reach it before processing may continue. This denotes the end of parallel processing


Verify Order Products Are In Stock
Verify Customer Has Available Credit
Accept Order

Basic Elements – Decision & guards

- A diamond with one flow entering and several leaving



Customer Orders Drink

[Drink contains alcohol]

Make Sure Customer Is At least 21 Years Old

[else]

Get Drink For Customer

Comprehension & example

- Use the activity diagram to model algorithms and workflows to identify …
  - … concurrent actions
  - … depdendencies
  - … conditions for certain actions

Tools, Literature & References

- Tools: http://www.jeckle.de/umltools.htm
  - Recommendation: Dia, http://projects.gnome.org/dia/: small, versatile, cross platform

- Literature & References:
  - Books: UML 2.0, C. Kecher, 2006 (German)
  - Online: TONS of (use Google), Wikipedia