

Activity Diagrams

Lecture 3A

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Purpose of Drawing Activity Diagram

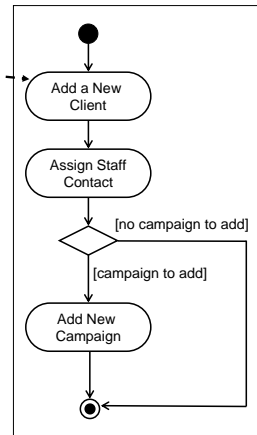
- To model a task (for example in business modelling)
- To describe a function of a system represented by a use case
- To describe the logic of an operation
- To model the activities that make up the life cycle in the unified process

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Notation of Activity Diagrams

- Activities
 - ◆ Rectangle with rounded ends
 - ◆ Meaningful name

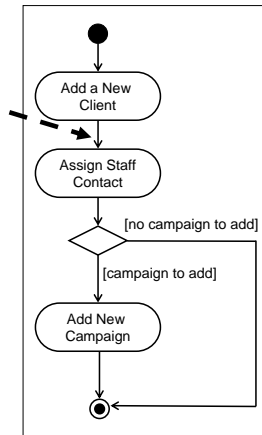


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- An action state represents an activity. If necessary, you can use another activity diagram to provide details about the activity; that is, you can use activity diagrams to decompose action states.
- An action state corresponds to an STDs state with internal actions when the state with internal actions has at least one outgoing transition that occurs when the internal action completes.

Notation of Activity Diagrams

- Transitions
 - ◆ Arrows with open arrowheads



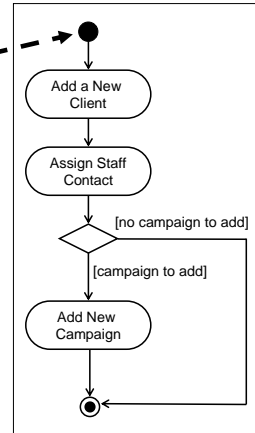
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- Transitions (solid arrows) order the sequence of activities. Completing an activity fires the outgoing transitions of the action state representing the activity.
- An action state must have at least one outgoing transition. If an action state has more than one outgoing transition, each must have a guard condition.

Notation of Activity Diagrams

■ Start State

- ◆ Black circle



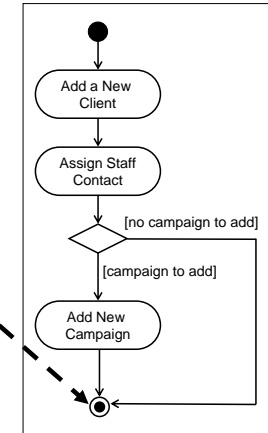
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•The start state begins the sequence of activities. It is the same as the initial state in an Activity Diagram

Notation of Activity Diagrams

■ Final State

- ◆ Black circle in white circle



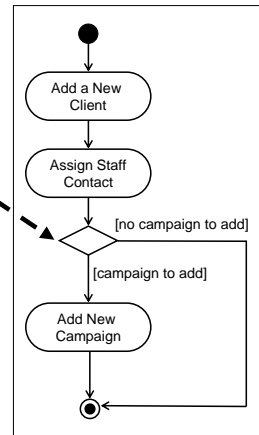
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The final state ends the sequence of activities. It is the same as the final state in an Activity Diagram.

Notation of Activity Diagrams

■ Decision Points

◆ Diamond



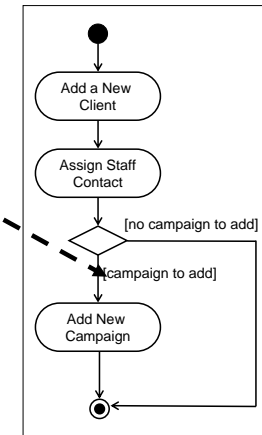
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You can use a decision diamond to express nested decisions.

Notation of Activity Diagrams

■ Guard Conditions

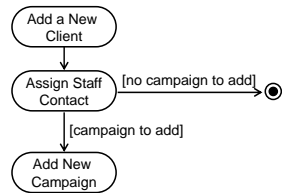
◆ In square brackets



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Notation of Activity Diagrams

- Alternative notation for branching:
 - ◆ Alternative transitions are shown leaving the activity with guard conditions
- Note that guard conditions do not have to be mutually exclusive, but it is advisable that they should be

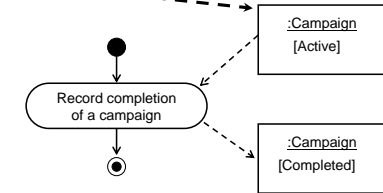


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Notation of Activity Diagrams

- Objects
 - ◆ Rectangle
 - ◆ With name of object underlined
 - ◆ Optionally shows the state of the object in square brackets



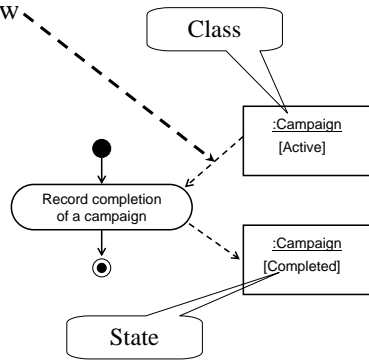
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Notation of Activity Diagrams

- Object flows

- ◆ Dashed arrow



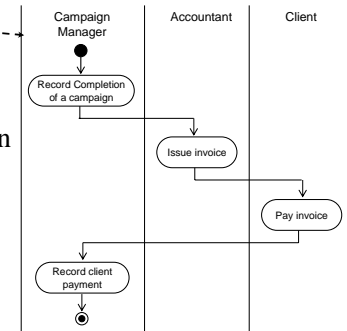
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Notation of Activity Diagrams

- Swimlanes

- ◆ Vertical columns
- ◆ Labelled with the person, organisation or department responsible for the activities in that column



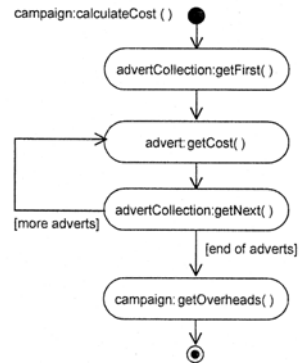
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- You use swimlane separators to divide a partition into horizontal or vertical zones called swimlanes. A partition with no swimlane separators contains one swimlane.

Example of Activity Diagram

- Activity diagram with object operation signatures as activities



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Drawing Activity Diagrams

- What is the purpose?
 - ◆ This will influence the kind of activities that are shown
- What is being shown in the diagram?
 - ◆ What is the name of the business process, use case or operation?
- What level of detail is required?
 - ◆ Is it high level or more detailed?

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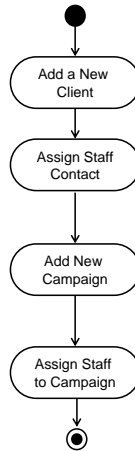
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1. Identify activities

- What happens when a new client is added in the system?
 - The following activities are defined
 - Add a New Client
 - Assign Staff Contact
 - Add New Campaign
 - Assign Staff to Campaign

2. Organise the activities in order with transitions

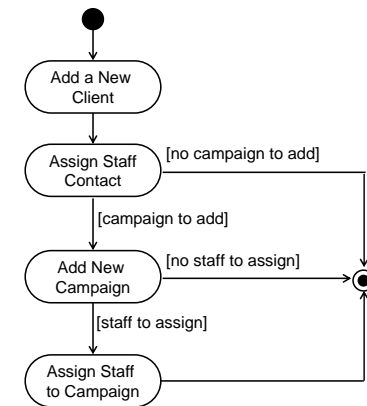
Drawing Activity Diagrams



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Drawing Activity Diagrams

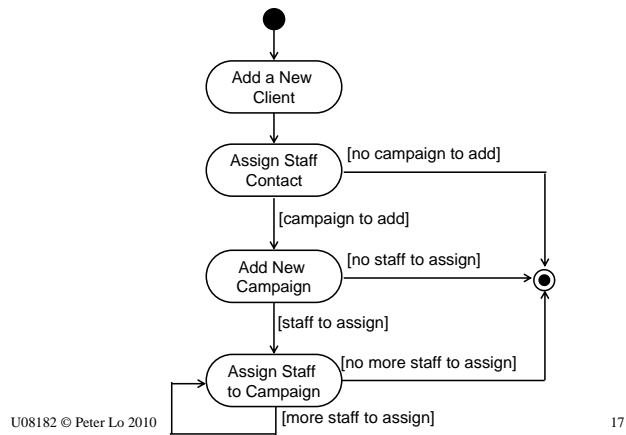


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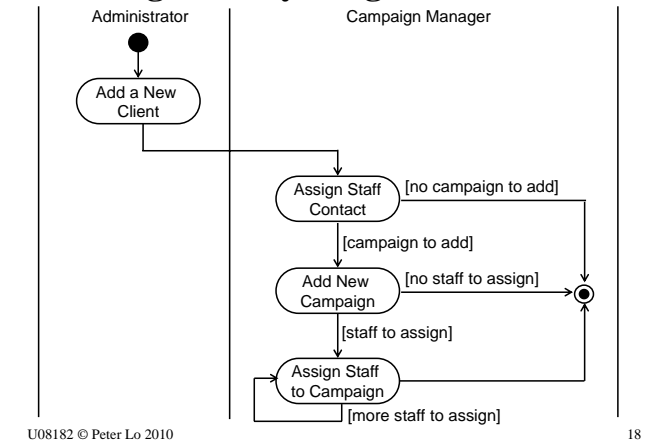
1. Identify any alternative transitions and the conditions on them
 - Sometimes there is a new campaign to add for a new client, sometimes not
 - Sometimes they will want to assign staff to the campaign, sometimes not
2. Add transitions and guard conditions to the diagram

Drawing Activity Diagrams



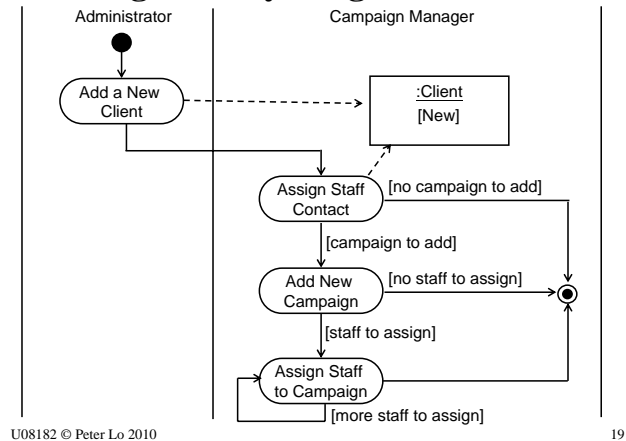
1. Identify any processes that are repeated
 - They will want to assign staff to the campaign until there are no more staff to add
2. Add transitions and guard conditions to the diagram

Drawing Activity Diagrams



1. Are all the activities carried out by the same person, organisation or department? If not, then add swimlanes to show the responsibilities
2. Name the swimlanes and show each activity in the appropriate swimlane
3. From our observation, client creation must be done by administrator, other activities are be done by Campaign Manager

Drawing Activity Diagrams



1. Are there any object flows and objects to show?
 - These can be documents that are created or updated in a business activity diagram
 - These can be object instances that change state in an operation or a use case
2. Add the object flows and objects
3. In this example, the state for the object "Client" will change to "New" after the client creation or staff contact assign.