

Activity Diagrams

Chapter 5B

In this Lecture you will Learn:

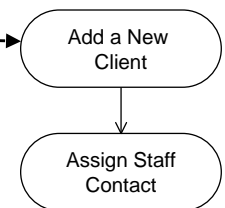
- The purpose of activity diagrams
- The notation of activity diagrams
- How to draw activity diagrams

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

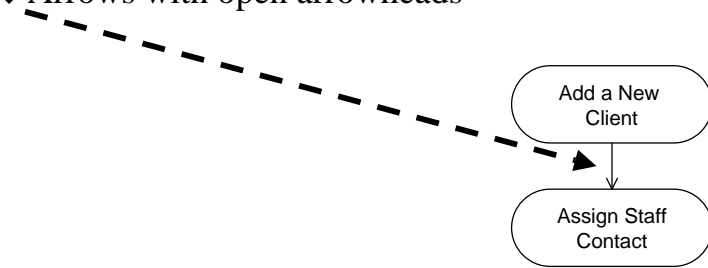
Notation of Activity Diagrams

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



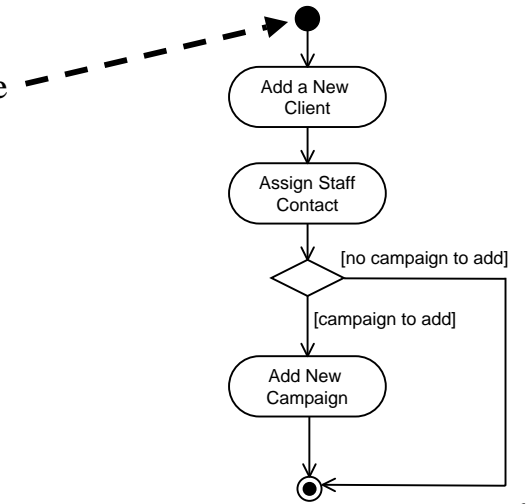
Notation of Activity Diagrams

- Transitions
 - ◆ Arrows with open arrowheads



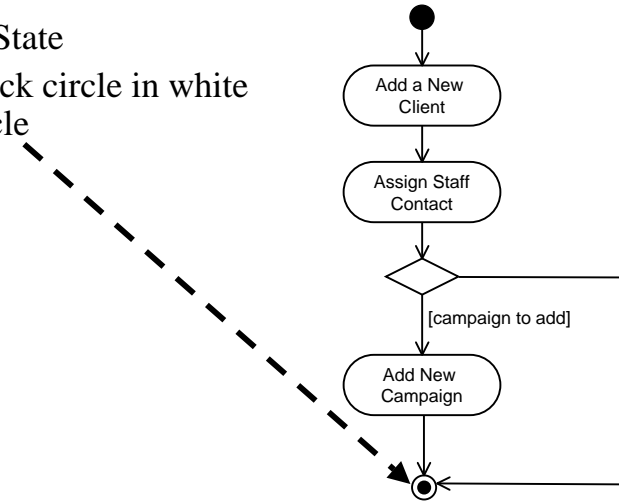
Notation of Activity Diagrams

- Start State
 - ◆ Black circle



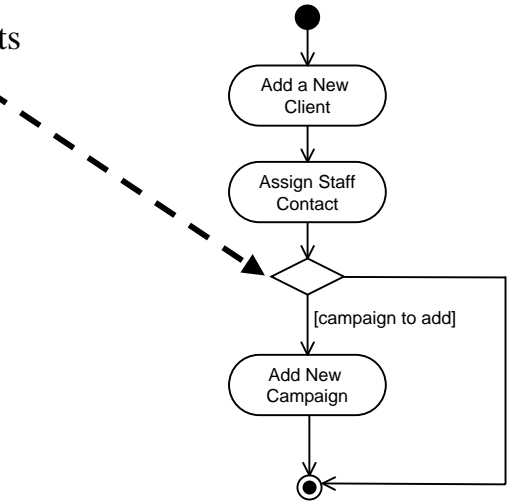
Notation of Activity Diagrams

- Final State
 - ◆ Black circle in white circle



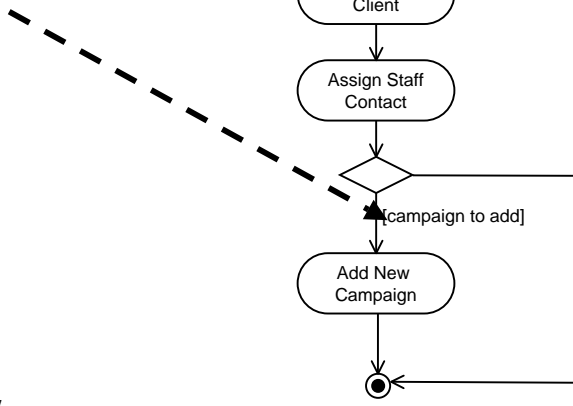
Notation of Activity Diagrams

- Decision Points
 - ◆ Diamond



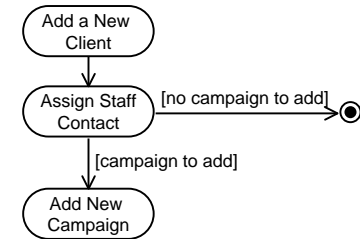
Notation of Activity Diagrams

- Guard Conditions
 - ◆ In square brackets



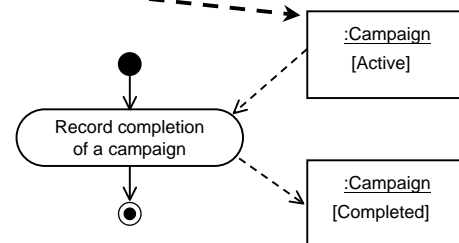
Notation of Activity Diagrams

- 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



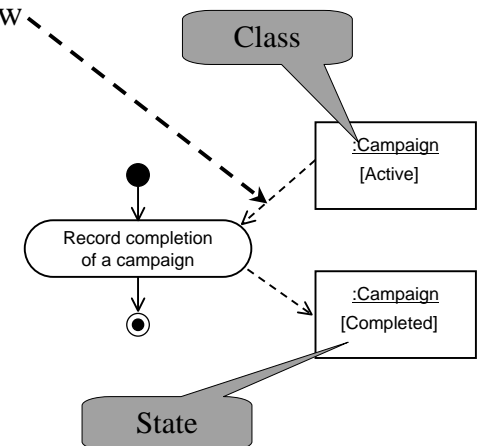
Notation of Activity Diagrams

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



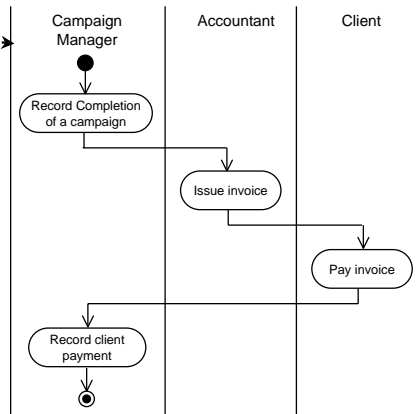
Notation of Activity Diagrams

- Object flows
 - ◆ Dashed arrow



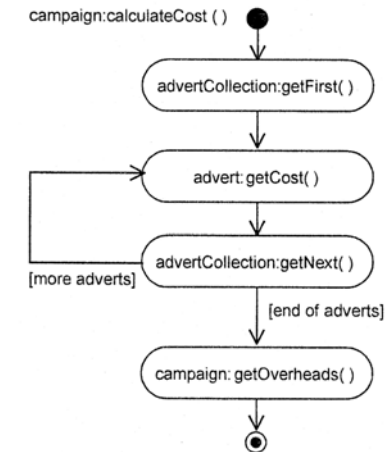
Notation of Activity Diagrams

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



Example of Activity Diagram

- Activity diagram with object operation signatures as activities



Class Exercise

- What is the notation used for an activity in a UML activity diagram?

Class Exercise

- What links activities in an activity diagram?

Class Exercise

- In what two ways can a decision be represented in a UML activity diagram?

Class Exercise

- What are the two special states shown in an activity diagram?

Class Exercise

- What is meant by guard condition?

Class Exercise

- What is an object flow and what is the notation?

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?

Drawing Activity Diagrams

- Identify activities
 - ◆ What happens when a new client is added in the system?
 - ◆ The following activities is defined
 - Add a New Client
 - Assign Staff Contact
 - Add New Campaign
 - Assign Staff to Campaign
- Organise the activities in order with transitions

Drawing Activity Diagrams

Drawing Activity Diagrams

- 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
- Add transitions and guard conditions to the diagram

Drawing Activity Diagrams

Drawing Activity Diagrams

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

Drawing Activity Diagrams

Drawing Activity Diagrams

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

Drawing Activity Diagrams

Drawing Activity Diagrams

- 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
- Add the object flows and objects
- In this example, the state for the object “Client” will change to “New” after the client creation or staff contact assign.

Drawing Activity Diagrams