

Activity Diagrams

Based on Chapter 5
Bennett, McRobb and Farmer
*Object Oriented Systems Analysis
and Design Using UML*
4th Edition, McGraw Hill, 2010

In This Lecture You Will Learn:

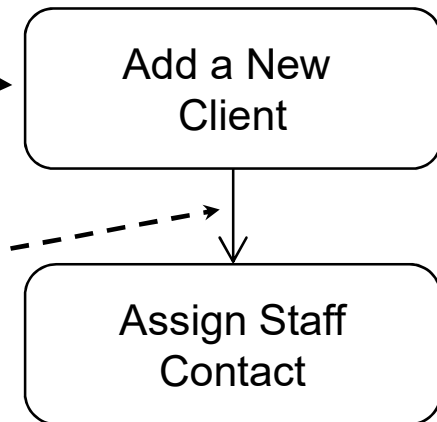
- The purpose of activity diagrams
- The notation of activity diagrams
- How to draw activity diagrams

Drawing Activity Diagrams

- Purpose
 - 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

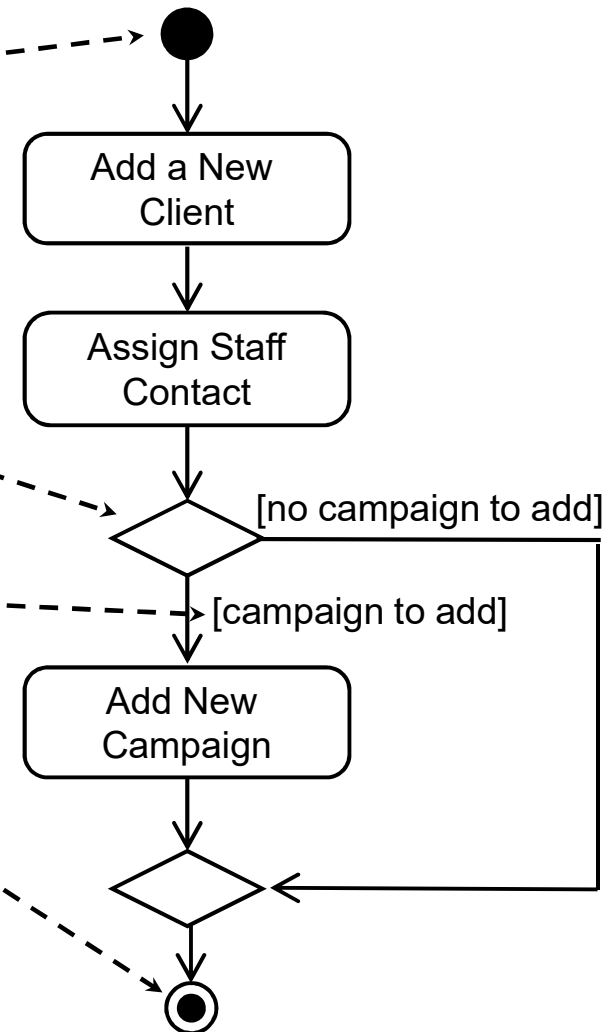
Notation of Activity Diagrams

- **Actions**
 - rectangle with rounded corners
 - meaningful name
- **Control flows**
 - arrows with open arrowheads



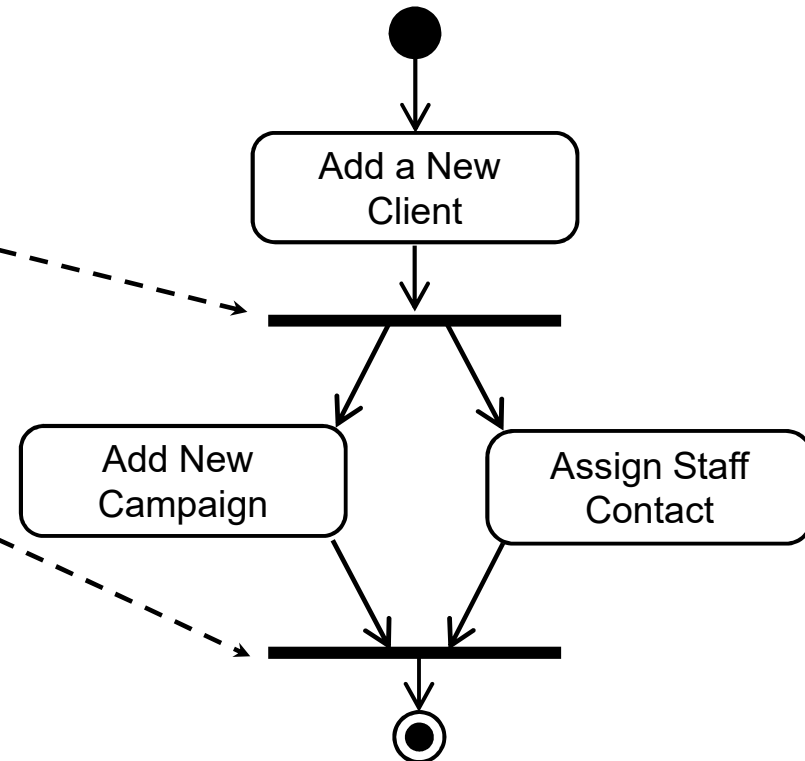
Notation of Activity Diagrams

- Initial node
 - black circle
- Decision nodes (and merge nodes)
 - diamond
- Guard conditions
 - in square brackets
- Final node
 - black circle in white circle



Notation of Activity Diagrams

- Fork nodes and join nodes
– thick bar
- Actions carried out in parallel

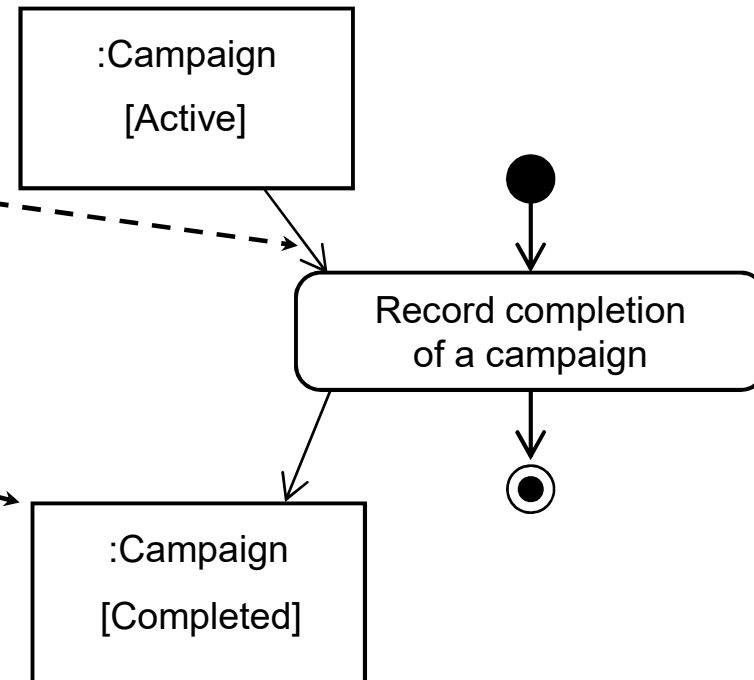


Notation of Activity Diagrams

- In UML 1.X multiple flows from an action were implicitly ORed
- In UML 2.0 they are implicitly ANDed
- Guard conditions do not have to be mutually exclusive, but it is advisable that they should be
- Decisions should be strictly nested, but...
- ... a merge point can be combined with a following decision point

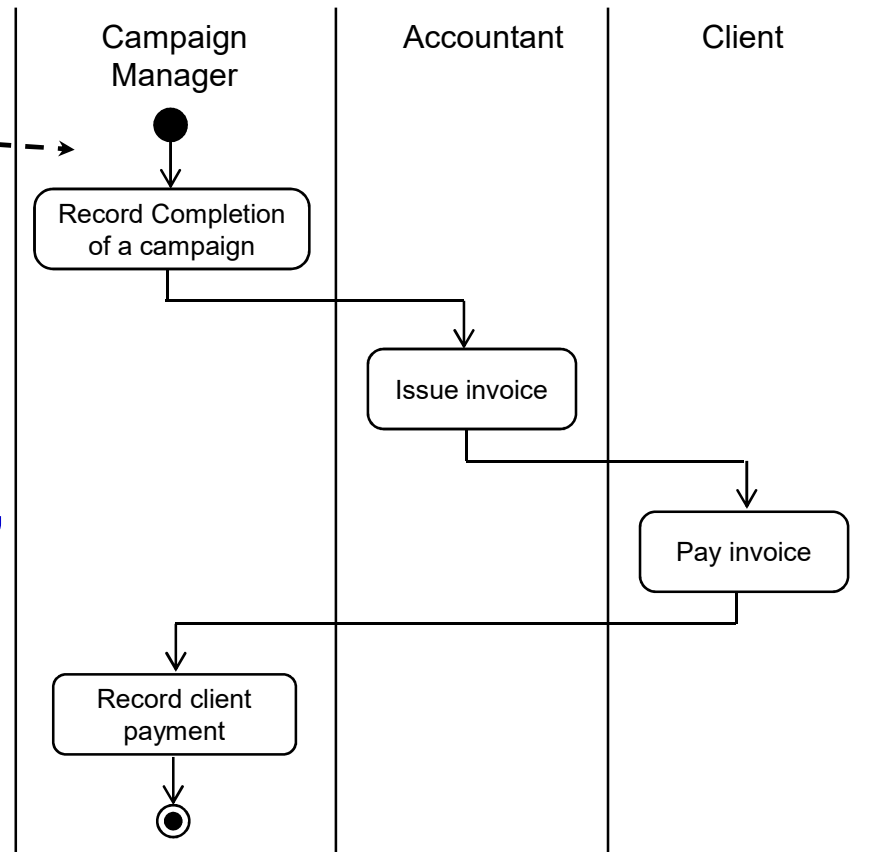
Notation of Activity Diagrams

- Object flows
 - open arrow
- Objects
 - rectangle
 - optionally shows the state of the object in square brackets



Notation of Activity Diagrams

- Activity Partitions (Swimlanes)
 - vertical columns
 - labelled with the person, organisation, department or system responsible for the activities in that column



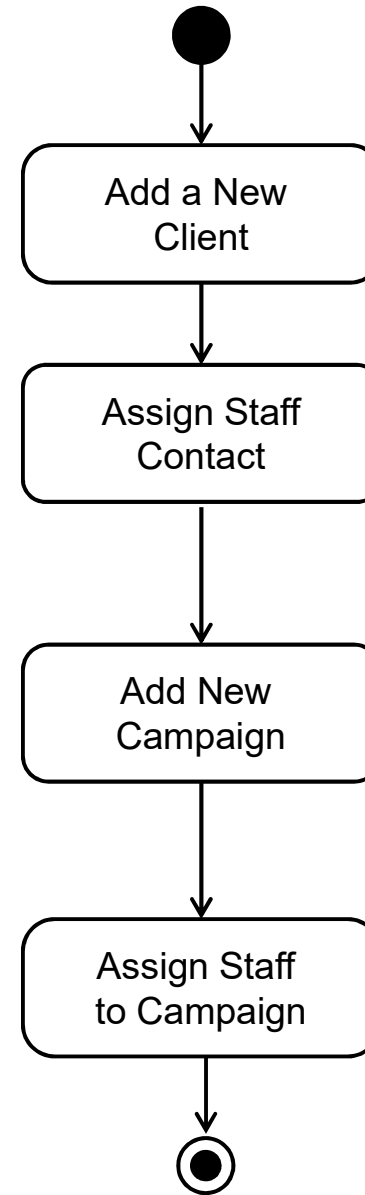
Drawing Activity Diagrams

- 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 actions
 - What happens when a new client is added in the Agate system?
 - Add a New Client
 - Assign Staff Contact
 - Add New Campaign
 - Assign Staff to Campaign
- Organise the actions in order with flows

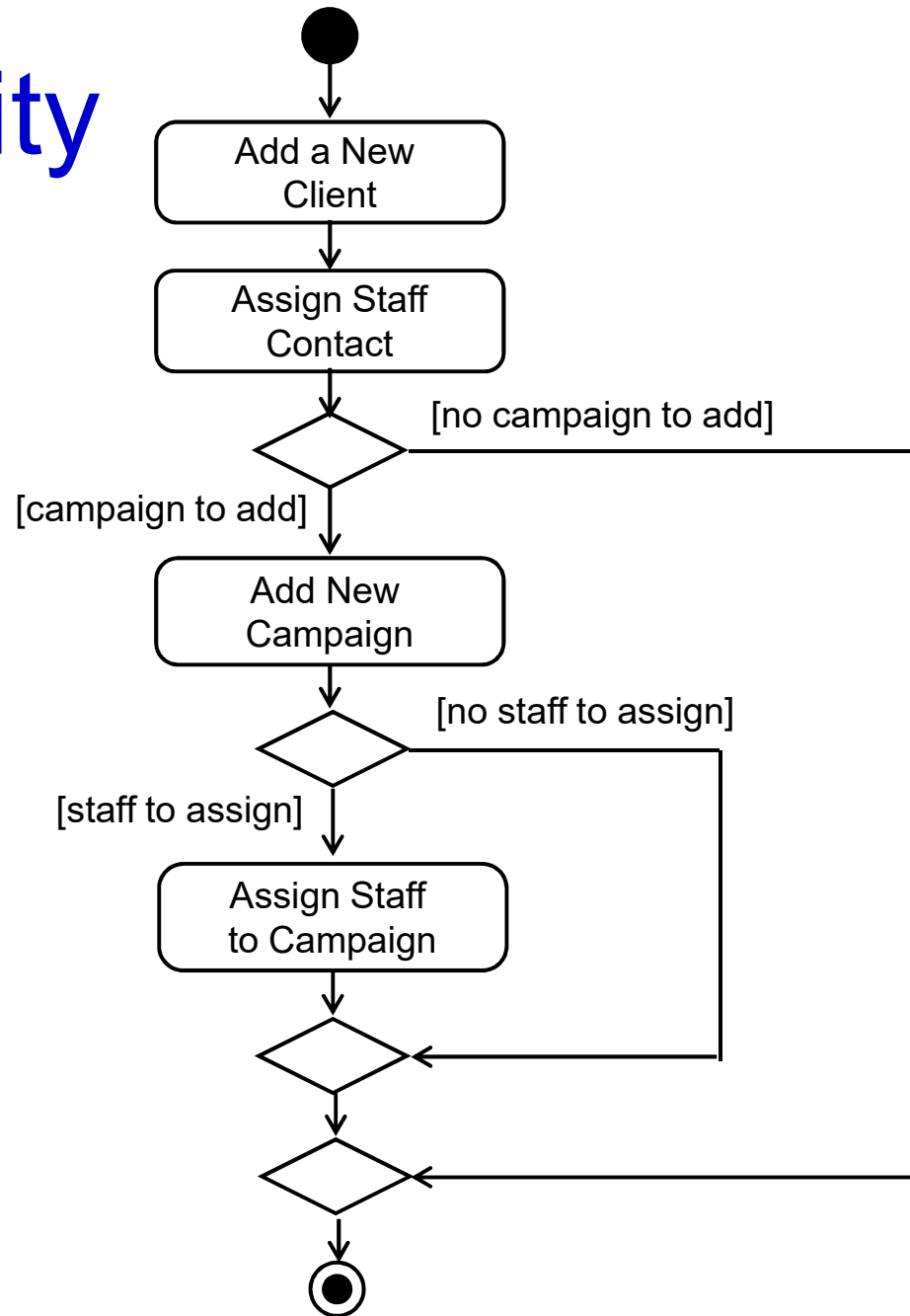
Drawing Activity Diagrams



Drawing Activity Diagrams

- Identify any alternative flows 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 decision and merge nodes, flows and guard conditions to the diagram

Drawing Activity Diagrams



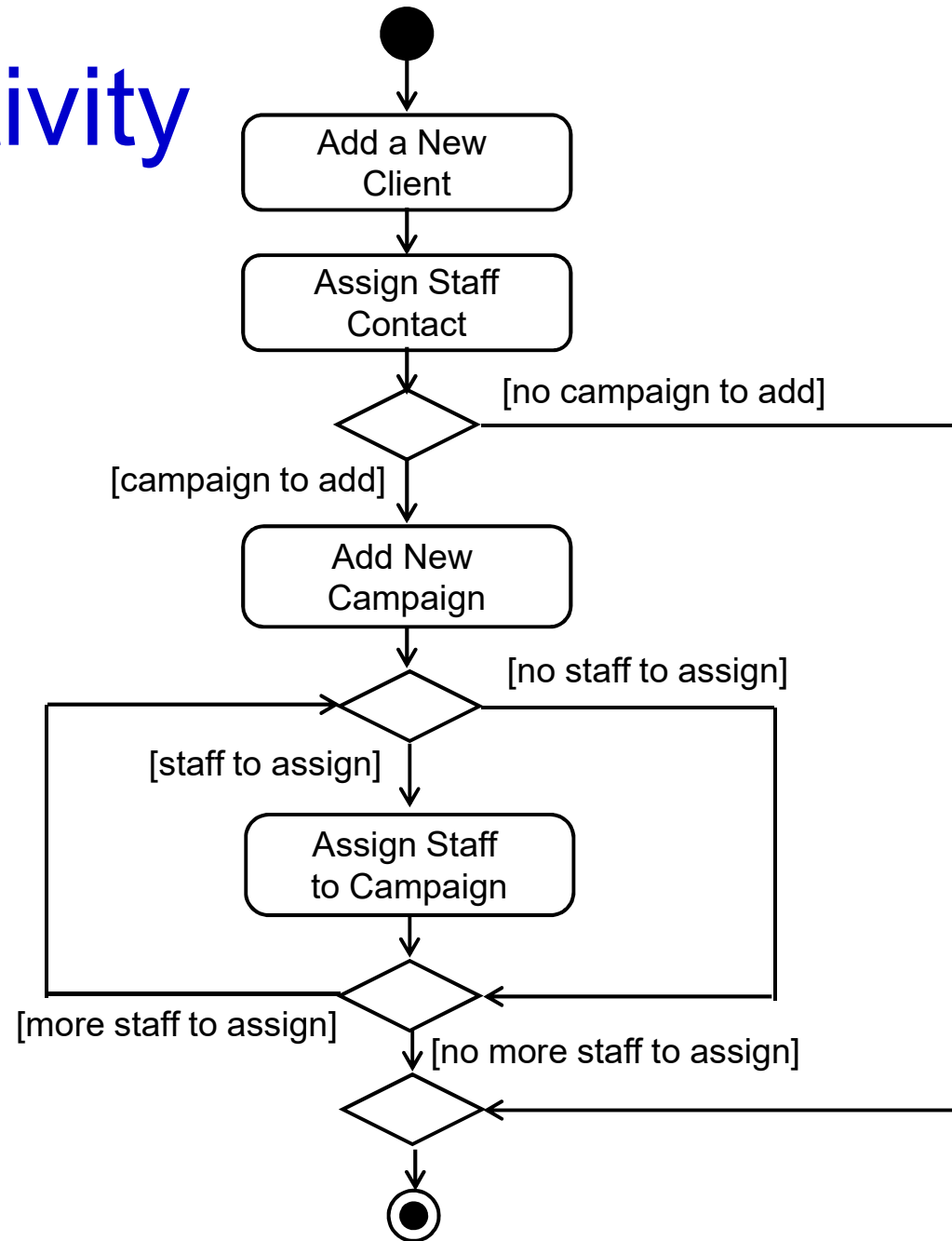
Drawing Activity Diagrams

- Identify any actions that are carried out in parallel
 - there are none in this example
- Add fork and join nodes and flows to the diagram

Drawing Activity Diagrams

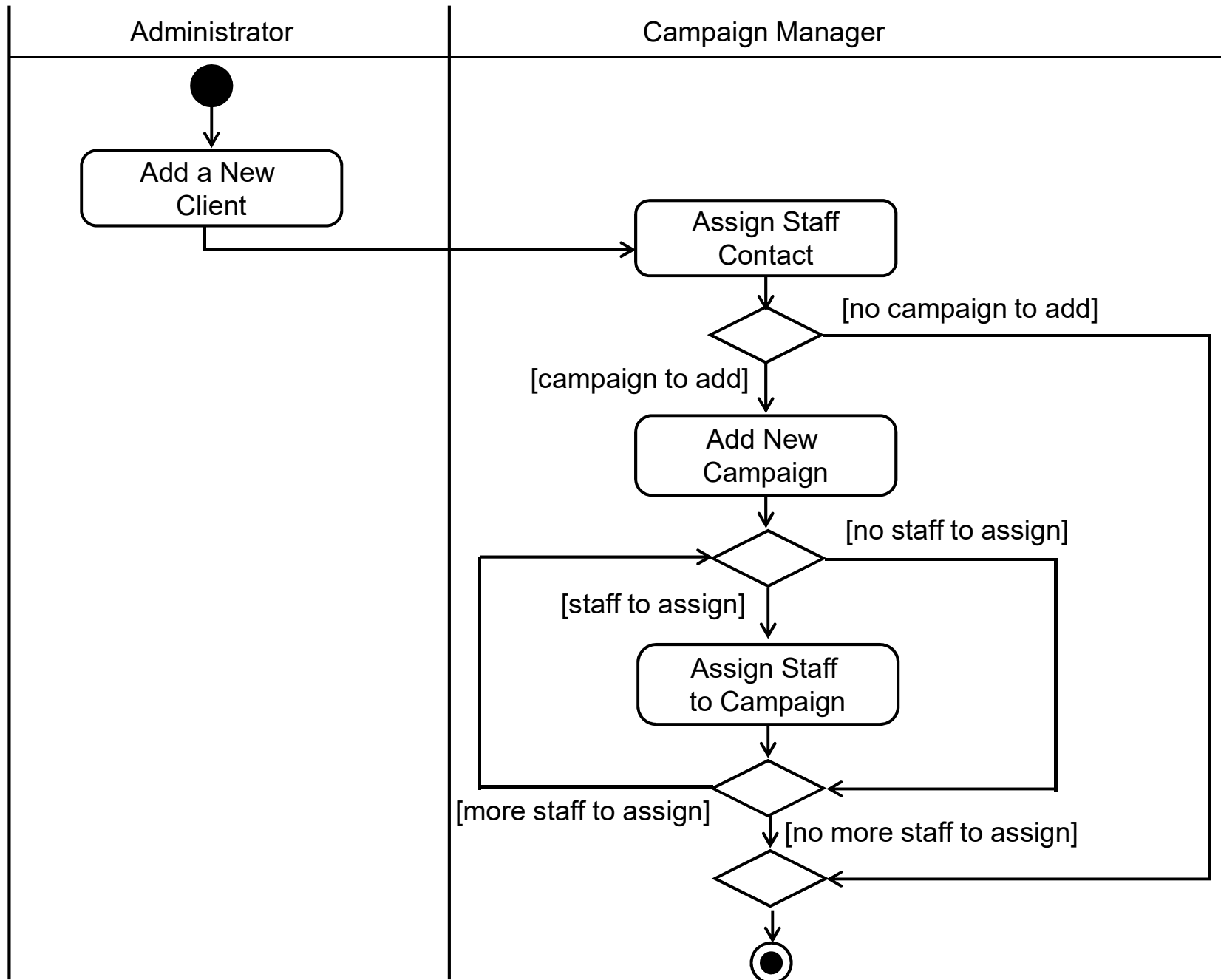
- Identify any processes that are repeated
 - they will want to assign staff to the campaign until there are no more staff to add
- Add decision and merge nodes, flows and guard conditions to the diagram

Drawing Activity Diagrams



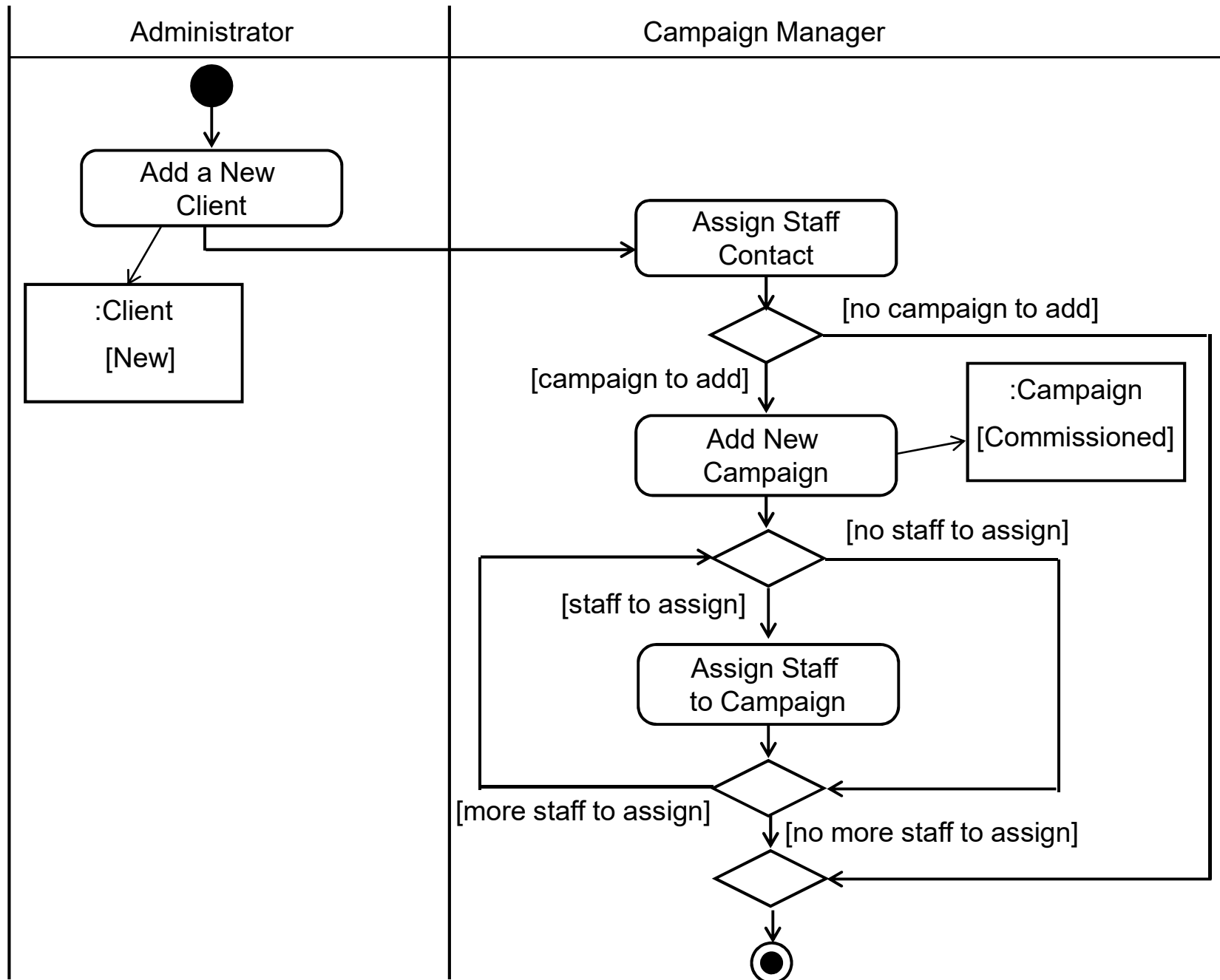
Drawing Activity Diagrams

- 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
- Show each activity in the appropriate swimlane

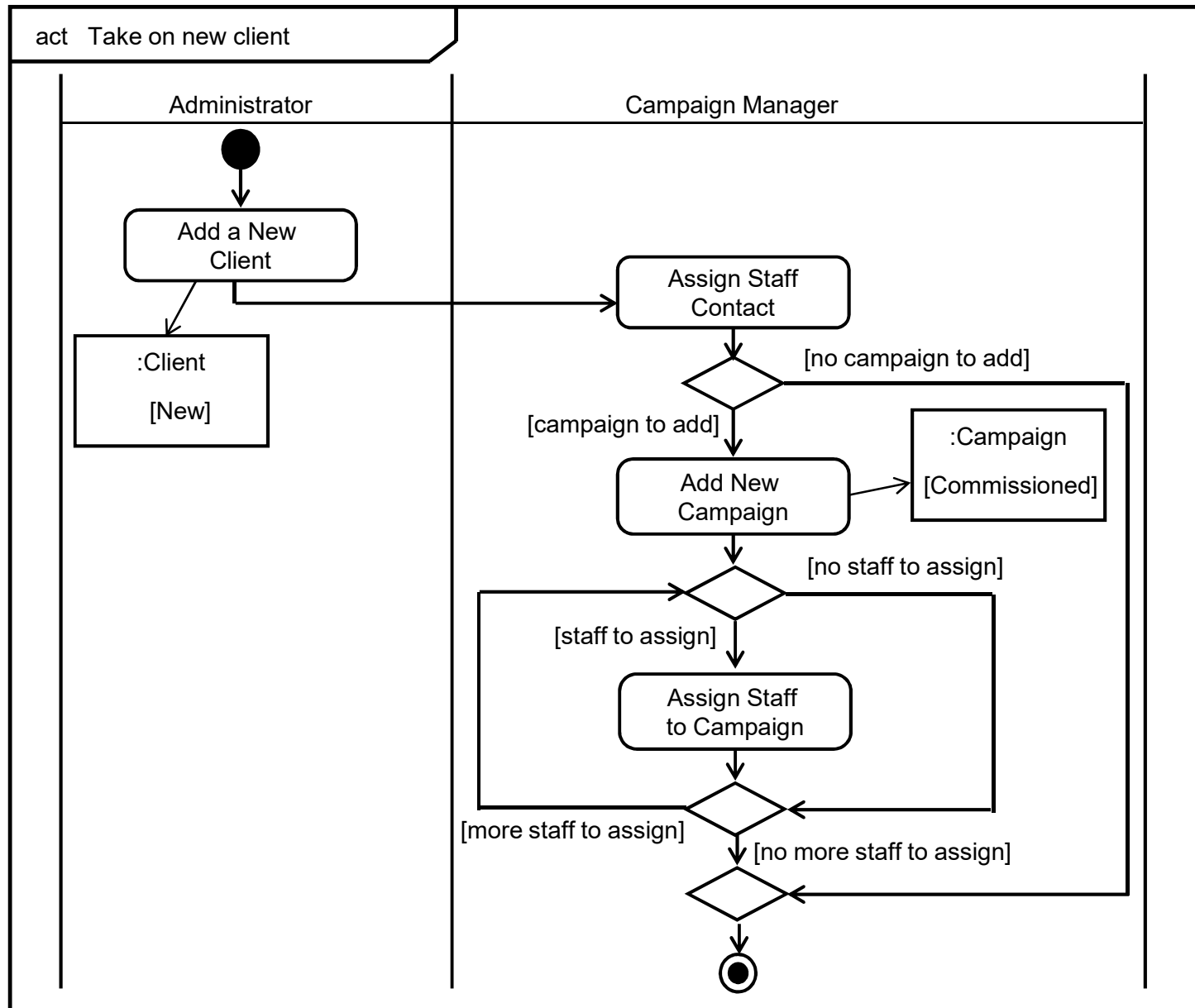


Drawing Activity Diagrams

- 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



- When printed or copied a frame is used



Summary

In this lecture you have learned about:

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

References

- The notation and semantics of activity diagrams have changed significantly since UML was first released. The original UML books by Rumbaugh, Booch and Jacobson are now out of date on the subject.
- Bennett, Skelton and Lunn (2005)
(For full bibliographic details, see Bennett, McRobb and Farmer)