

Working with Activity Diagrams

- Models the process steps or Use Case activities of the system.
- They represents the dynamics of a system.
- They are similar to flow charts .
- They graphically show the work flow of a system.

Working with Activity Diagrams

- They show the flow of control from activity to activity in the system.
- They show what activities can be done in parallel, (That is where they are different from flowcharts.)
- They also show alternative paths through the flow.

Working with Activity Diagrams cont..

- After creating a use case diagram, *activity diagrams* may be created to represent the flow ***across use cases*** or they may be created to represent the ***flow within a particular use case***.
- Activity diagrams may also be created to show the ***workflow for an operation***.

Working with Activity Diagrams cont..

- Activity diagrams contain :
 - Activities,
 - Transitions between activities,
 - Decision points,
 - and synchronization bars.
 - Swimlanes

Activity



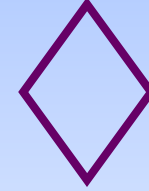
- ❑ Represented in UML by a rounded rectangle.
- ❑ *Activity* represents the performance of some behavior in the work flow.

Transitions



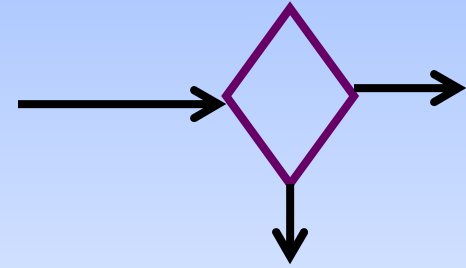
- Transitions are used to show the passing of the flow of control from activity to activity.
- They are typically triggered by the completion of the behavior in the originating activity.

Decision Points



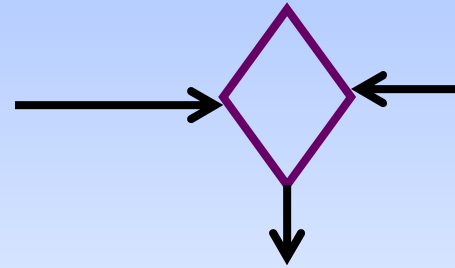
- o When modeling the workflow of a system, it is often necessary to show where the flow of control branches based on a decision point.
- o The transition from a decision point contain a guard condition.

Decision Points cont..



- o The guard condition is used to determine which path from the decision point is taken.
- o Decisions along with their guard conditions allow you to show alternative paths through a work flow.

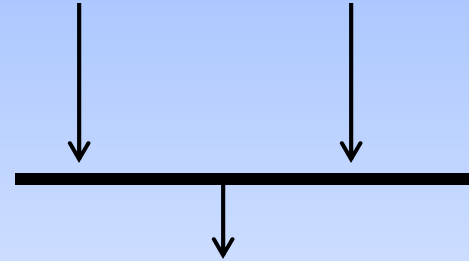
Merge Point



- Two or more flows come in and one flow goes out.
- This combines flows that were previously separated by decisions.
- Processing continues with any one flow coming into the merge.

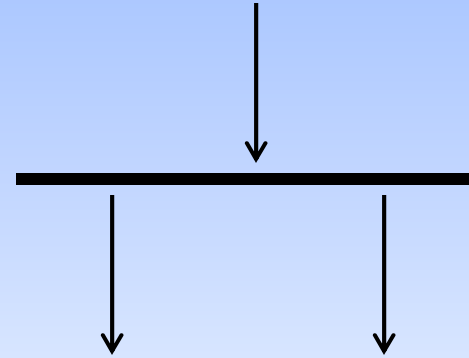
Synchronization Bars

- In a workflow there are typically some activities that may be done in parallel.
- A synchronization bar allows you to specify what activities may be done concurrently.



- Synchronization bars used to show joins in the workflow.
- ie. What activities must complete before processing may continue.
- All actions coming into the join must be completed before processing continues.

Fork



- Synchronization bars can also be used to show forks in the workflow.
- Actions on parallel flows beneath the fork can occur in any order or concurrently.

Swim lanes

- *Swim lanes* may be used to partition an activity diagram.
- This facility allows activity diagrams to expand and show who has the responsibility for each activity in a process.

Swim lanes cont...

Eg:- Consider a consulting firm and the business process involved in meeting a new client;

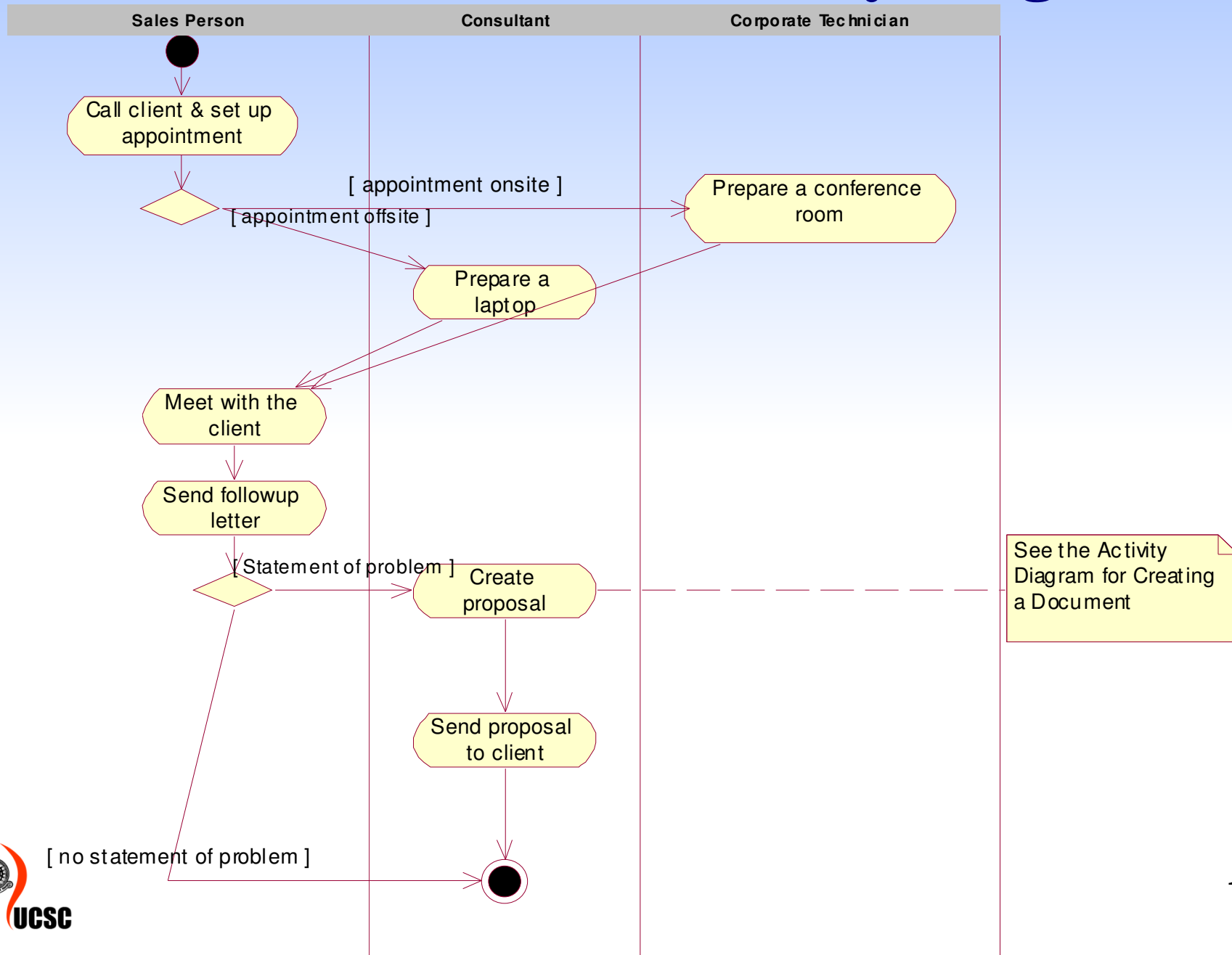
Following are the activities:

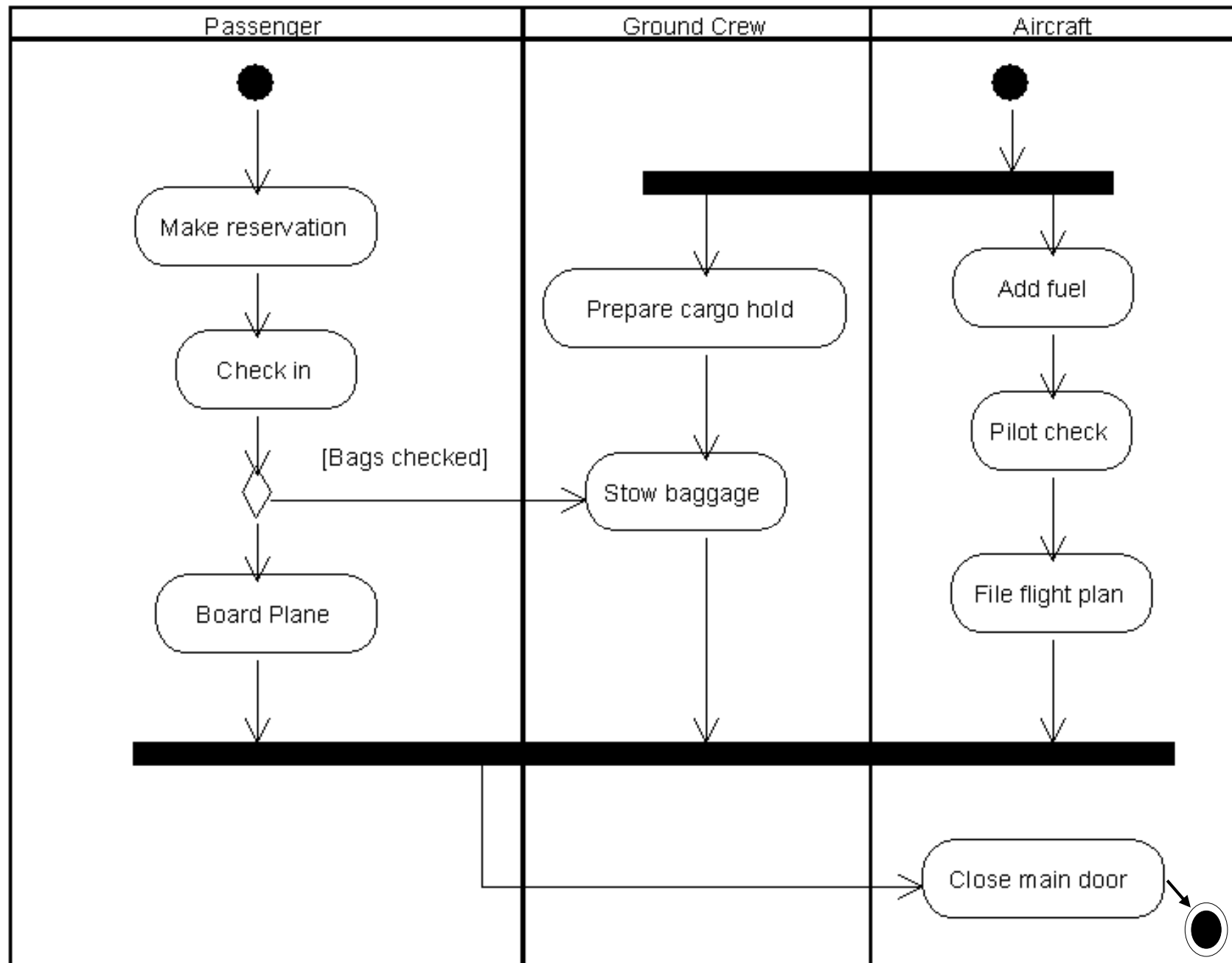
- A salesperson calls the client and sets up an appointment.
- If the appointment is onsite, corporate technicians prepare a conference room for a presentation.

Swim lanes cont...

- If the appointment is offsite, a consultant prepares a presentation on a laptop.
- The consultant and the salesperson meet with the client at the agreed-upon location and time.
- The salesperson follows up with a letter.
- If the meeting has resulted in a statement of a problem, the consultant creates a proposal and sends it to the client

An Activity Diagram





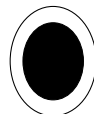
Activity Diagram cont...

Initial and Final Activities

- There are special symbols that are used to show the starting and final activities in a work flow.
- Starting activities are shown using a solid filled circle.



- The final activities are shown using a bull's eye.



Activity Diagram cont...

- Typically there is one starting activity for the workflow and
- There may be more than one ending activity (one for each alternate flow in the work flow)

Activity Diagrams cont..

- Activity Diagrams are useful for communicating logic to programmers.
- Be careful however trying to use them to communicate logic to users.
- Non technical users may have trouble following them.
- You are better off using use case narratives with users.

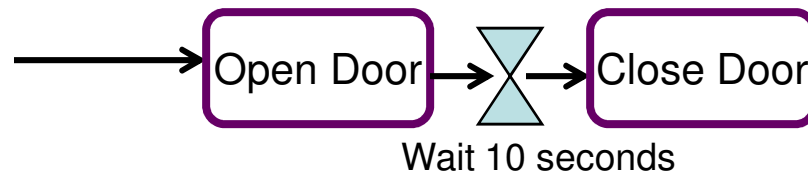
New concepts included in UML 2.0

Passage of time =>



3-6 Min

Eg. Accept time event



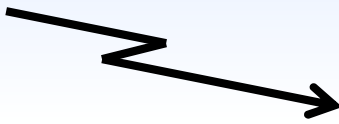
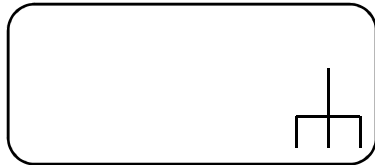
Eg. Action Node



Send company tax return

End of business year occurred

New concepts included in UML 2.0 cont...

- Exception activity 
 - Use to show an interrupting activity.
- Subactivity indicator 
 - Action invokes another activity

New concepts included in UML 2.0 cont...

Input/output nodes ,



- Specifies an activity's Input and output nodes



Flow final node



- Terminates a specific flow within an activity.
Other flows are unaffected.

