

Тема 4: Модель вариантов использования

Where Are We?

- ★◆ The why and what of a use-case model
 - ◆ Elements of a use-case diagram
 - ◆ Flow of events and project artifacts
 - ◆ Elements of an activity diagram

Why Create a Use-Case Model?

- ◆ A use-case model allows the customer and system developer to communicate **WHAT** the system should do, in a language understandable to the customer.
- ◆ Consider the use-case model as the visual contract between customer and developer.

What Is a Use-Case Model?

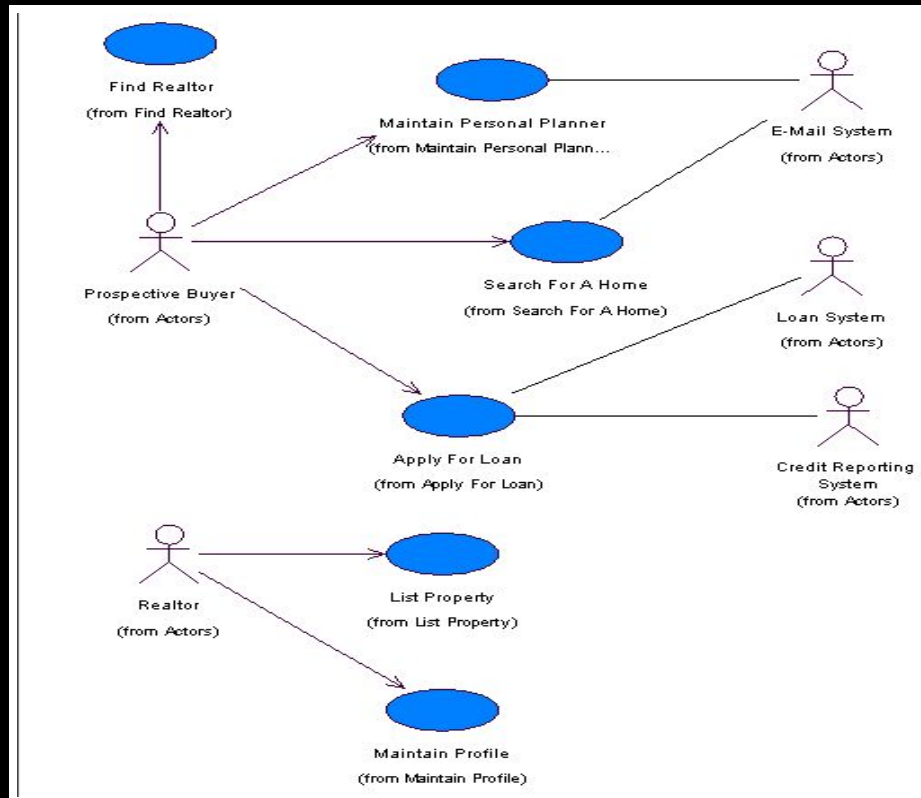
- ◆ A use-case model is representation of the system's intended functions and its environment.
- ◆ It is created in the Use-Case View and can include the following
 - Use-case diagrams
 - Use-case flow of events
 - Supplemental information
 - Activity diagrams

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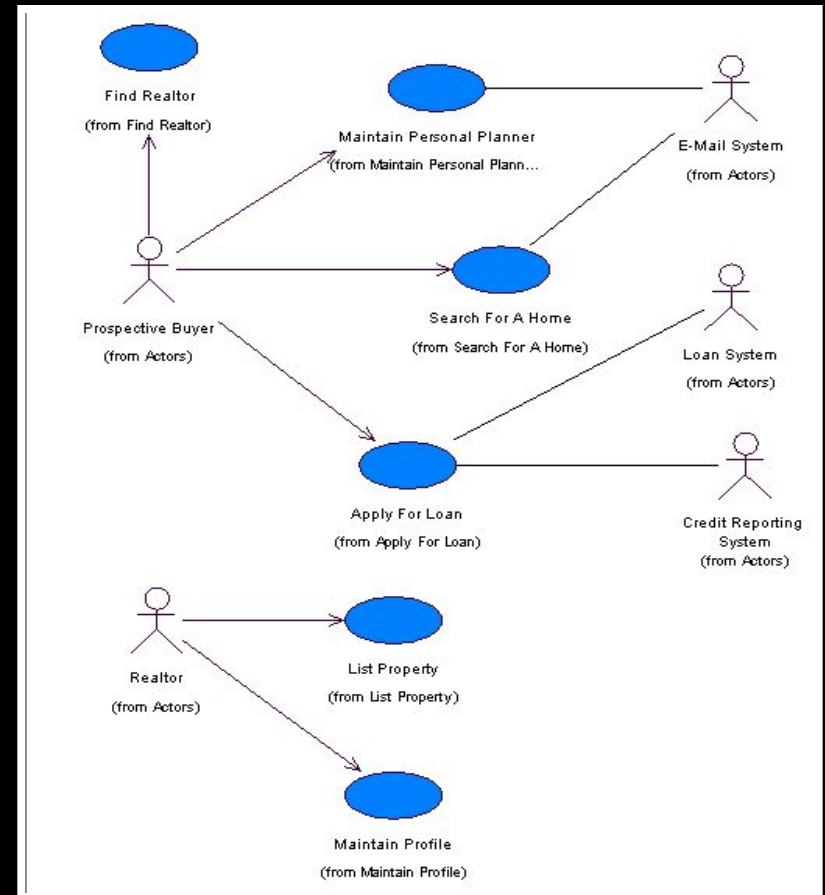
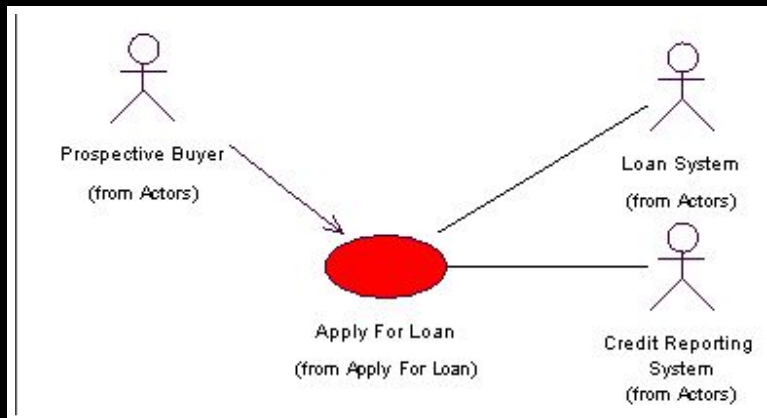
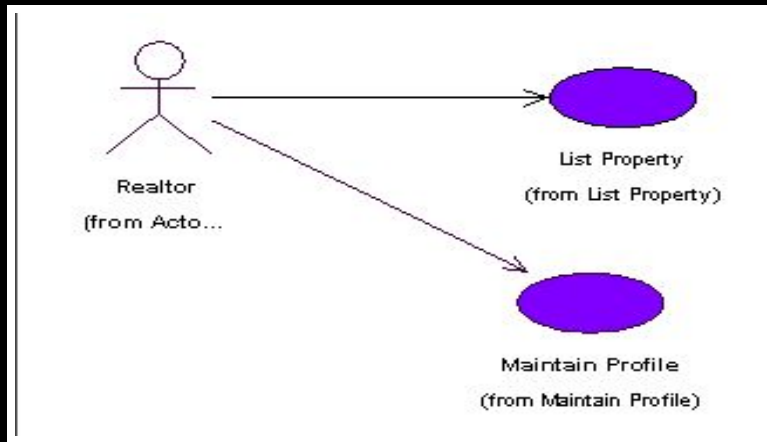
What Is a Use-Case Diagram?

- ◆ A use-case diagram is an illustration that shows the relationships among use cases and actors and among related use cases.



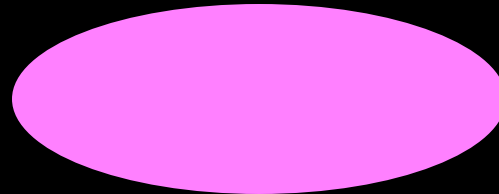
What Is a Use-Case Diagram?

- ◆ A use-case diagram can be modeled in a number of ways.



Use Cases

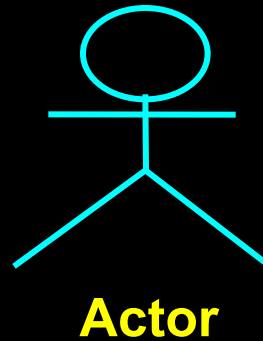
- ◆ A use case is a sequence of actions performed by the system that yields a measurable value for an actor.
- ◆ In the UML, a use case is represented by an oval.



Use Case

Actors

- ◆ An actor is someone or something outside the system that interacts with the system.
- ◆ In the UML, an actor is represented by a “stickman.”



Relationships

- ◆ A relationship illustrates a semantic connection among model elements.
- ◆ In the UML, an association relationship is represented by a solid line with or without an arrow.



Association Relationships

Review

1. Why create a use-case model?
2. What are possible sources for developing a use-case diagram?
3. What are the elements of a use-case diagram?
4. Define a use case.



Where Are We?

- ◆ The why and what of a use-case model
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What Is a Flow of Events?

- ◆ A flow of events is a text description of the use case and is part of the use-case specification.
- ◆ In Rose, you include each use case's flow of events in the Use-Case View.
- ◆ A flow of events is included under its use-case package in Rose and can be accessed directly from Rose once it's attached.

What Are Artifacts?

- ◆ Artifacts are documents, models, or model elements used to capture and convey project information.
- ◆ In Rose, you will attach only those artifacts important to maintaining the use-case model.

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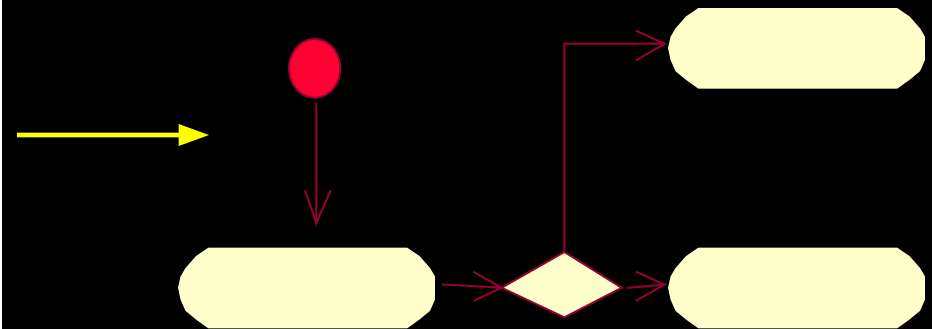
What Is an Activity Diagram?

- ◆ An activity diagram in the use-case model can be used to capture the activities in a use case.
- ◆ It is essentially a flow chart, showing flow of control from activity to activity.

Flow of Events

This use case starts when the Registrar requests that the system close registration.

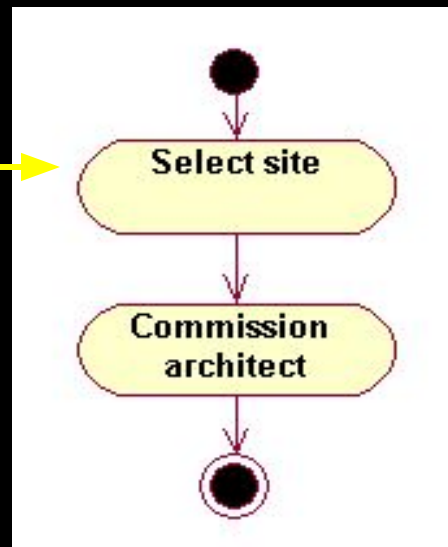
1. The system checks to see if registration is in progress. If it is, then a message is displayed to the Registrar and the use case terminates. The Close Registration processing cannot be performed if registration is in progress.
2. For each course offering, the system checks if a professor has signed up to teach the course offering and at least three students have registered. If so, the system commits the course offering for each schedule that contains it.



Activity

- ◆ An activity represents the performance of a task within the workflow.
- ◆ In the UML, an activity is represented by a lozenge (horizontal top and bottom with convex sides).

Activity

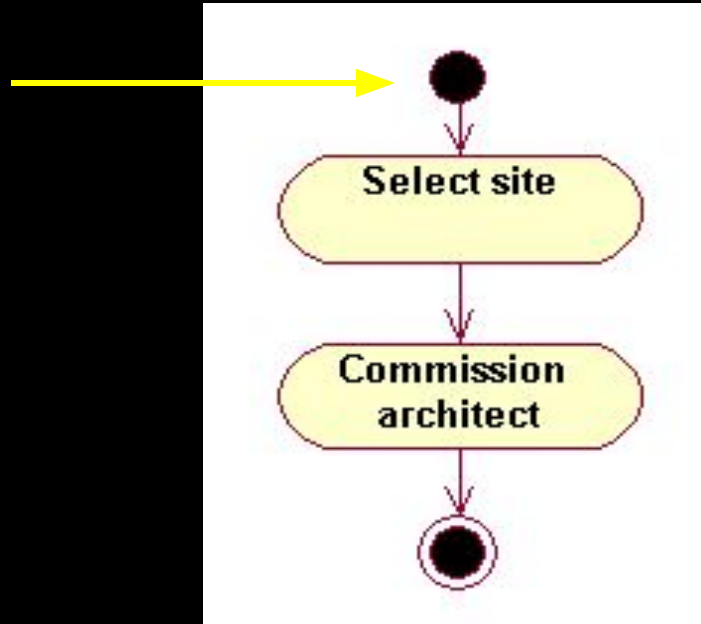


State

Start State

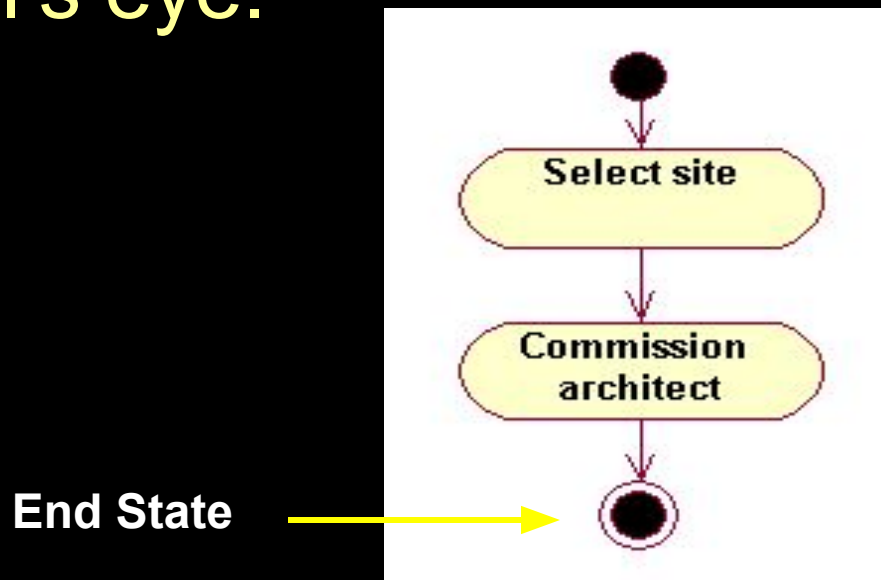
- ◆ A start state explicitly shows the beginning of a workflow on an activity diagram.
- ◆ There is only one start state.
- ◆ In the UML, a start state is represented by a solid circle.

Start State



End State

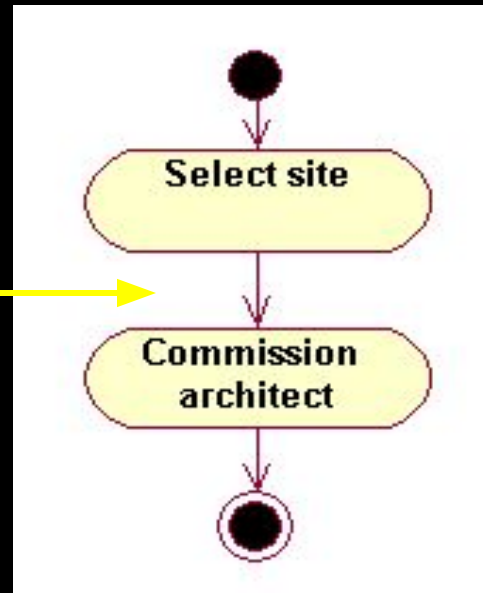
- ◆ An end state represents a final or terminal state on an activity diagram.
- ◆ There can be zero or more end states on an activity diagram.
- ◆ In the UML, an end state is represented by a bull's eye.



State Transitions

- ◆ A state transition shows what activity follows after another.
- ◆ In the UML, a state transition is represented by a solid line with an arrow.

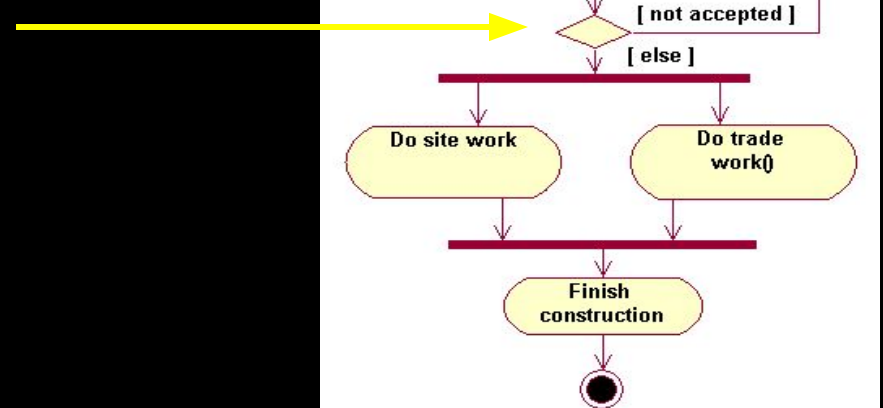
State Transition



Decisions

- ◆ A decision is a point in an activity diagram where guard conditions are used to indicate different possible transitions.
- ◆ In the UML, a decision is represented by a diamond.

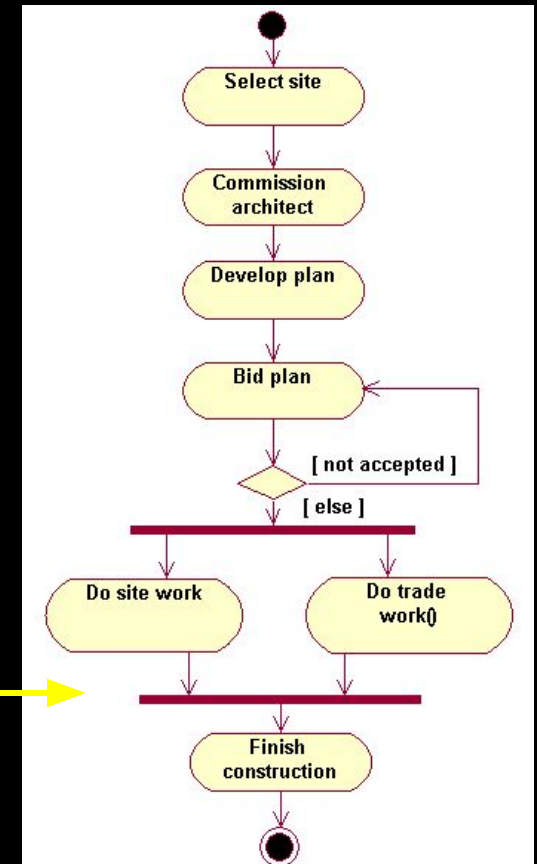
Decision



Synchronization Bars

- ◆ A synchronization bar allows you to show concurrent threads in a workflow of a use case.
- ◆ In the UML, a synchronization bar is represented by a thick horizontal or vertical line.

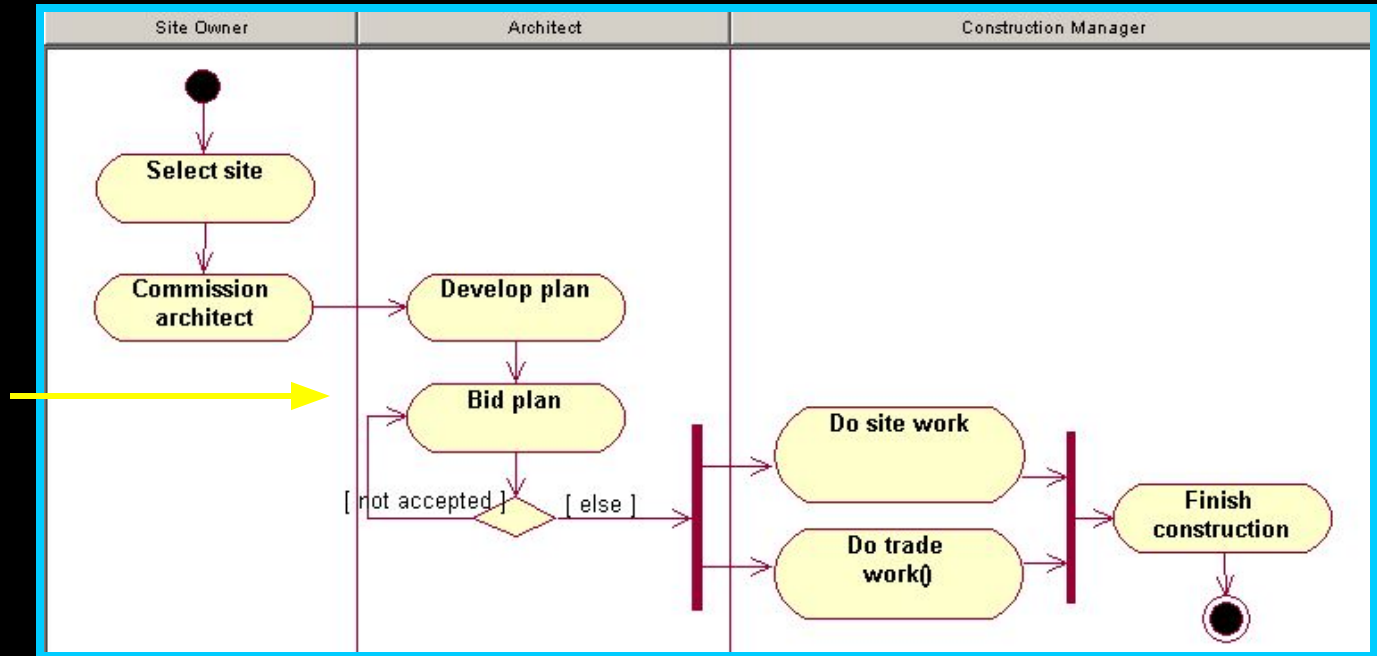
Synchronization Bar



Swimlanes

- ◆ A swimlane is used to partition an activity diagram to help us better understand who or what is initiating the activity.

Swimlane



Review

1. What is the difference between a flow of events and an activity diagram?
2. What artifacts might be important to a use-case model?
3. Name three elements of an activity diagram.

