

Analiza și Modelarea Sistemelor Software - Lab 2¹

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¹Thanking Andrian Babii @ Endava for slide content

Agenda

UML behavioral diagrams

Use case diagrams

Sequence diagrams

Behavior diagrams

Purpose

- ▶ individual aspects of a system and their changes are displayed at runtime.
- ▶ provide clarity about internal processes, business processes or the interaction of different systems.

Elements and relationships

- ▶ Diagram elements resemble verbs in a natural language
- ▶ relationships that connect them typically convey passage of time.

Example

Elements of a behavioral diagram of a vehicle reservation system

- ▶ Make a Reservation
- ▶ Rent a Car
- ▶ Provide Credit Card Details.

Types of behavioral diagrams

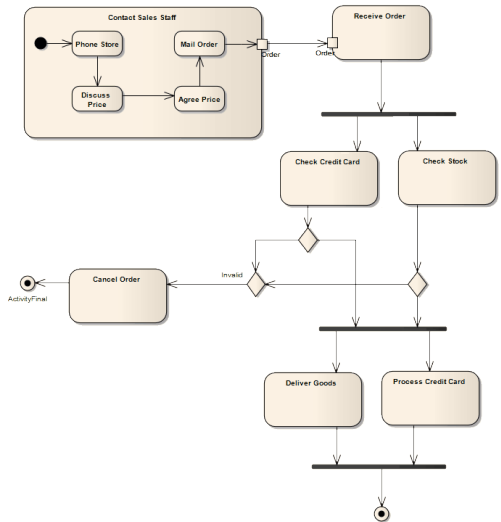
Activity diagrams

Model

- ▶ behaviors of a system
- ▶ how these are related (in the overall flow of the system).

Activities can be:

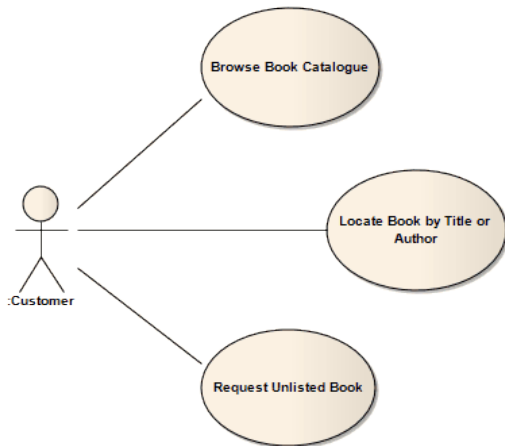
- ▶ sequential,
- ▶ branched
- ▶ concurrent.



Use case diagrams

Model users interacting with the system

- ▶ Users: stick figures called “actors”
- ▶ high-level overview of relationships between actors and systems
- ▶ explain system to non-technical audience

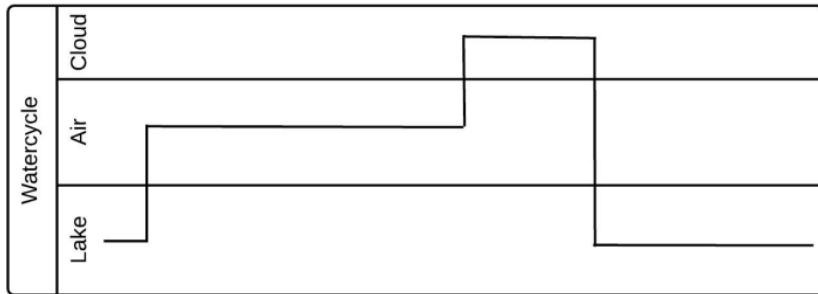


This diagram illustrates the use cases that support searching for a book and browsing the resultant record set. The customer can enter browse criteria and scroll through the results. The user can select an item for addition to their current shopping cart.

Timing diagrams

Powerful tools for making a system as efficient as possible.

- ▶ define the behavior of different objects within a time-scale
- ▶ represent objects changing state and interacting over time.



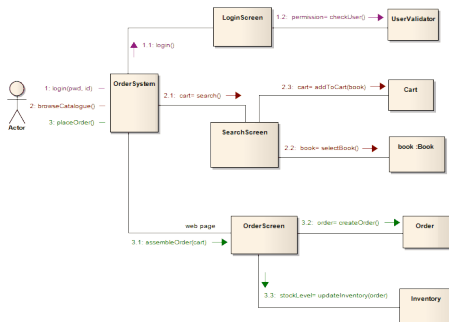
Communication diagrams

Model how components communicate and interact

- ▶ like sequence diagrams
- ▶ but focus on interaction
- ▶ program communication

Useful for

- ▶ businesses
- ▶ organization
- ▶ engineers

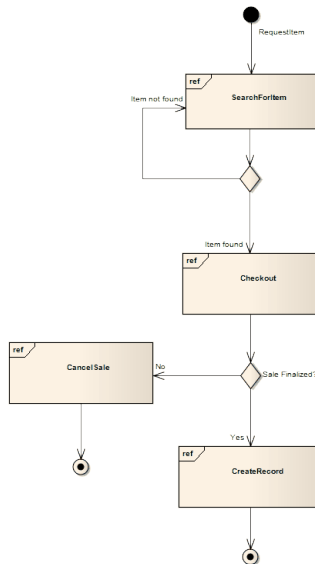


Interaction Overview diagrams

Activity diagram where nodes are interaction diagrams

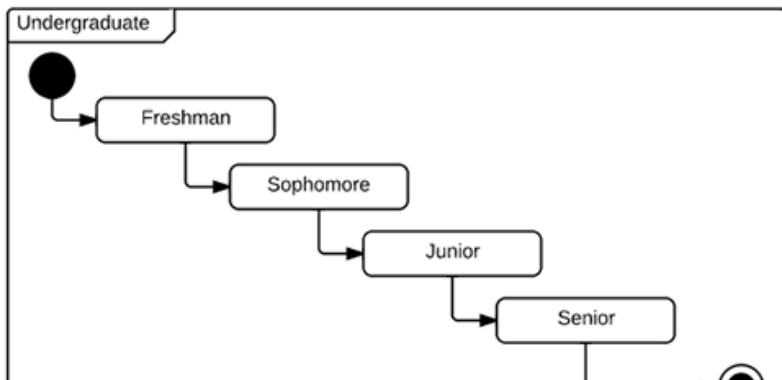
Diagrams used as nodes

- ▶ sequence
- ▶ communication
- ▶ interaction overview
- ▶ timing



State Diagram

A state machine is any device that stores the status of an object at a given time and can change status or cause other actions based on the input it receives. States refer to the different combinations of information that an object can hold, not how the object behaves. In order to understand the different states of an object, you might want to visualize all the possible states and show how an object gets to each state, and you can do so with a UML state diagram.



Create a state diagram for an online shopping website

Sequence Diagrams

A sequence diagram is a type of interaction diagram because it describes how—and in what order—a group of objects works together. These diagrams are used by software developers and business professionals to understand requirements for a new system or to document an existing process. Sequence diagrams are sometimes known as event diagrams or event scenarios.

