Software Design & Architecture
(Lab-2)

Usama Musharaf

MS-CS (Software Engineering)

LECTURER *(Department of Computer Science)*

FAST-NUCES Peshawar

Agenda of Lab # 2

- Introduction to Visual Paradigm
- Software Modeling in Visual Paradigm
- Task # 2:

What is Visual Paradigm?

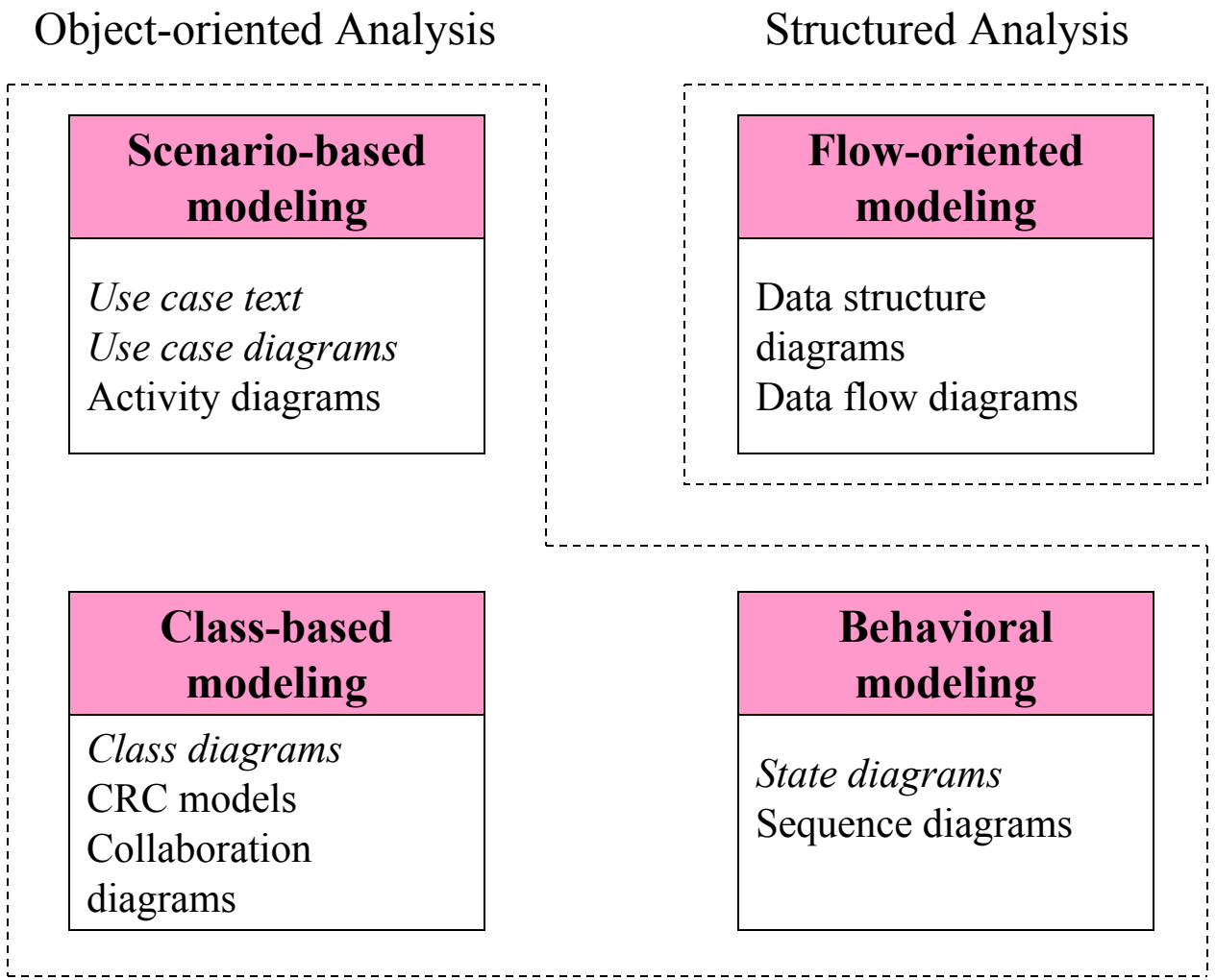
Visual Paradigm is a UML CASE Tool supporting UML 2, SysML and Business Process Modeling Notation (BPMN) from the Object Management Group (OMG).

In addition to modeling support, it provides code engineering capabilities like code generation.

It can reverse engineer diagrams from code, and provide round-trip engineering for various programming languages.

Analysis Modeling

Elements of the Analysis Model



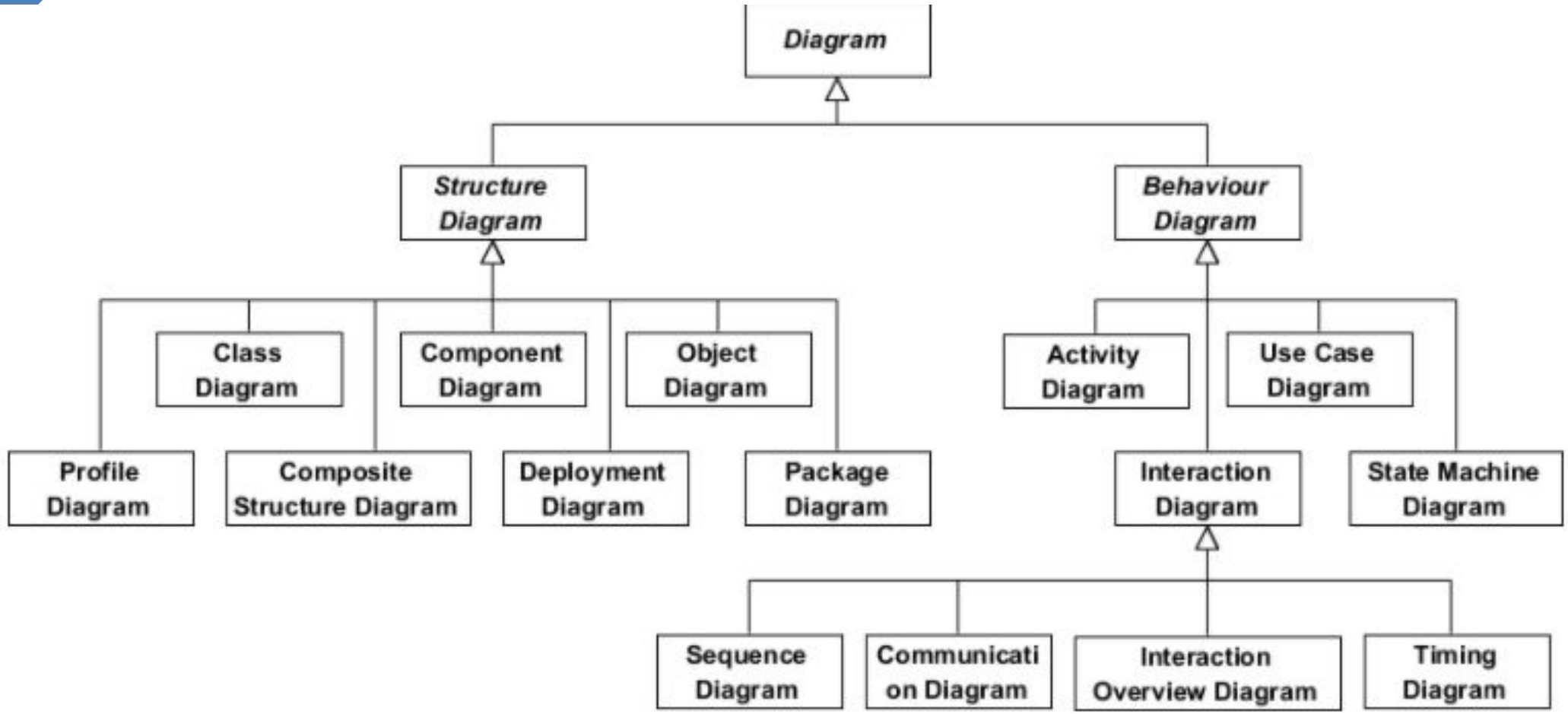
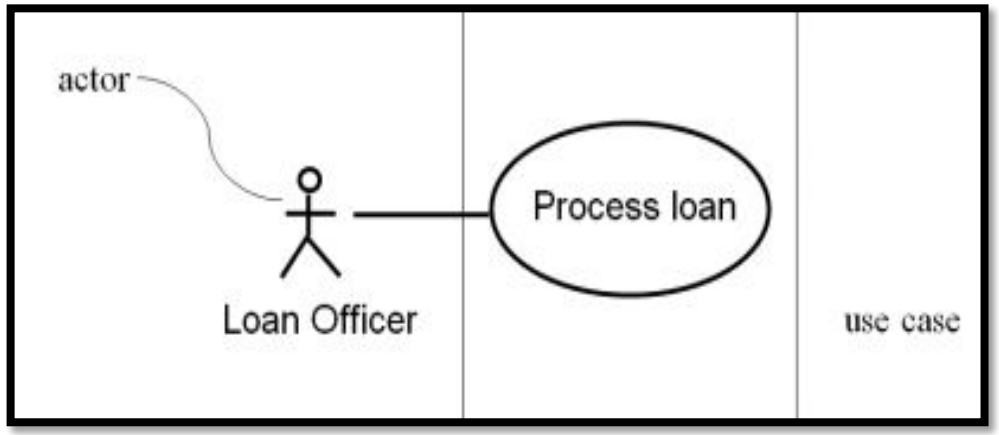


Diagram
Structure Diagram
Behaviour Diagram
Class Diagram
Component Diagram
Object Diagram
Activity Diagram
Use Case Diagram
Profile Diagram
Composite Structure Diagram
Deployment Diagram
Package Diagram
Interaction Diagram
State Machine Diagram
Sequence Diagram
Communicati on Diagram
Interaction Overview Diagram
Timing Diagram

Scenario-Based Modeling

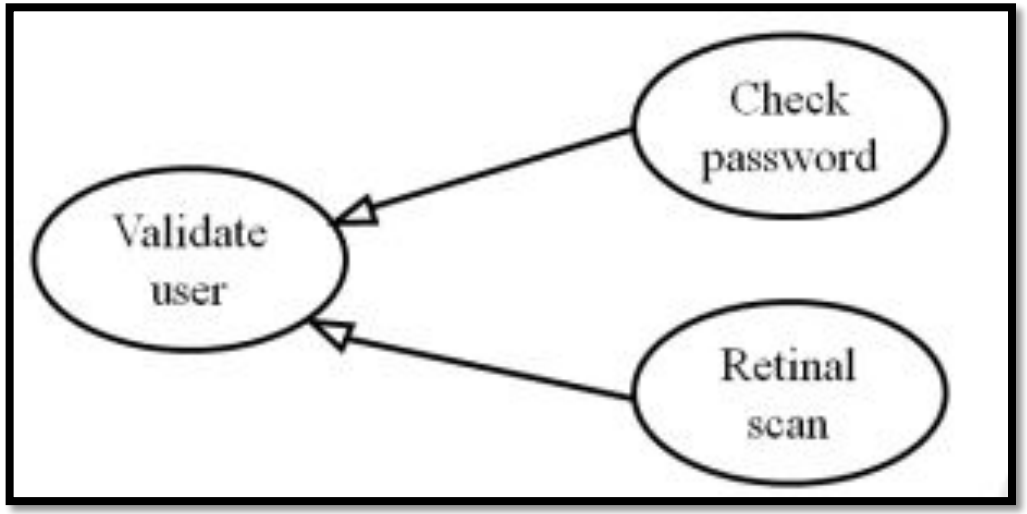
Developing Use Cases

- Define the set of actors that will be involved in the story
  - Actors are people, devices, or other systems that use the system or product within the context of the function and behavior that is to be described
  - Actors are anything that communicate with the system or product and that are external to the system itself



Specialized Use Cases

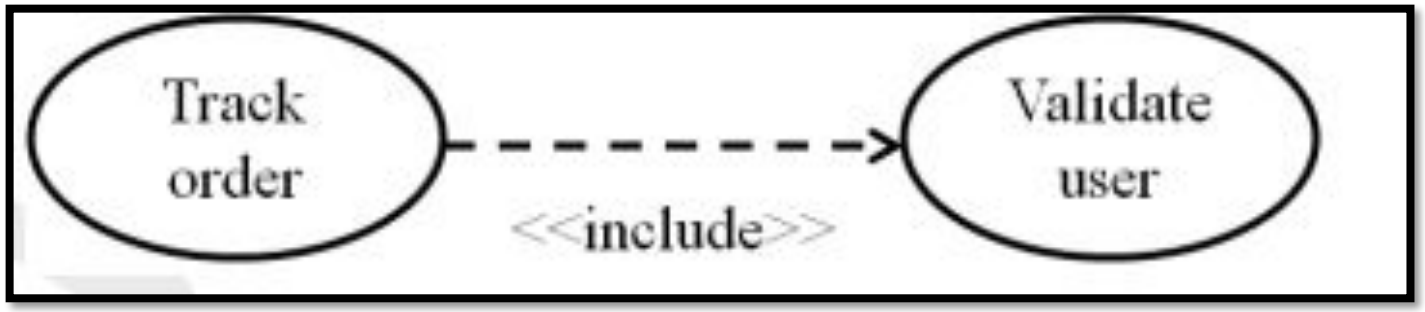
You may have two specialized children of this use case (Check password and Retinal scan).



Include

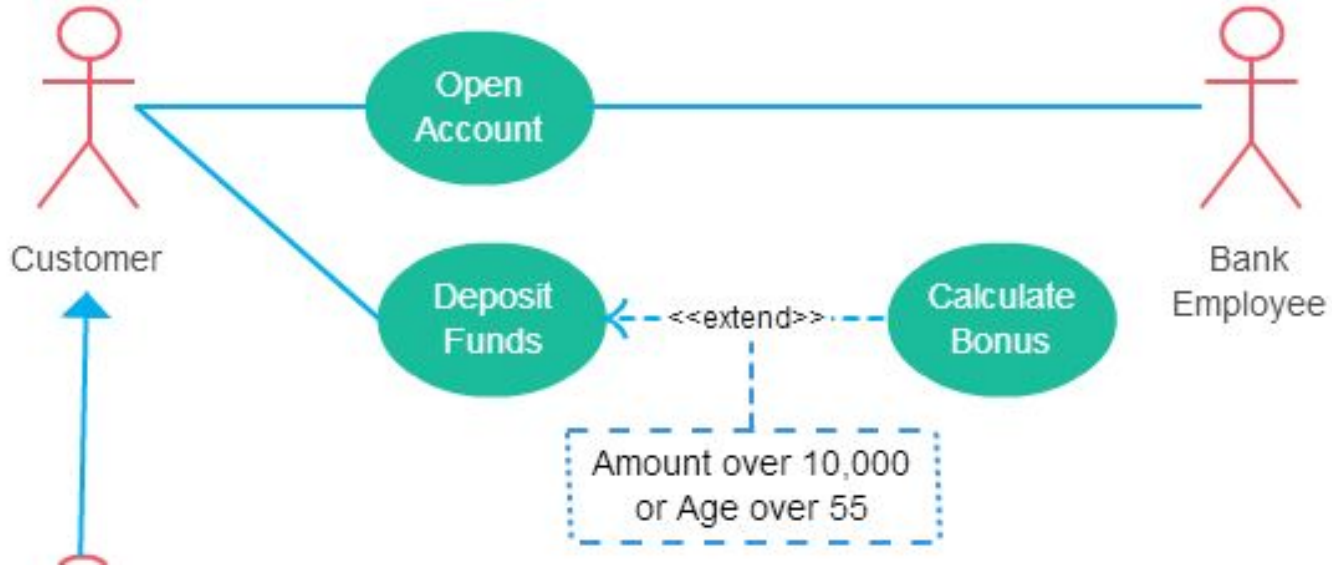
- Include relationship is used to avoid describing the same flow of events several times, by putting the common behavior in a use case of its own

- This is an example of dependency

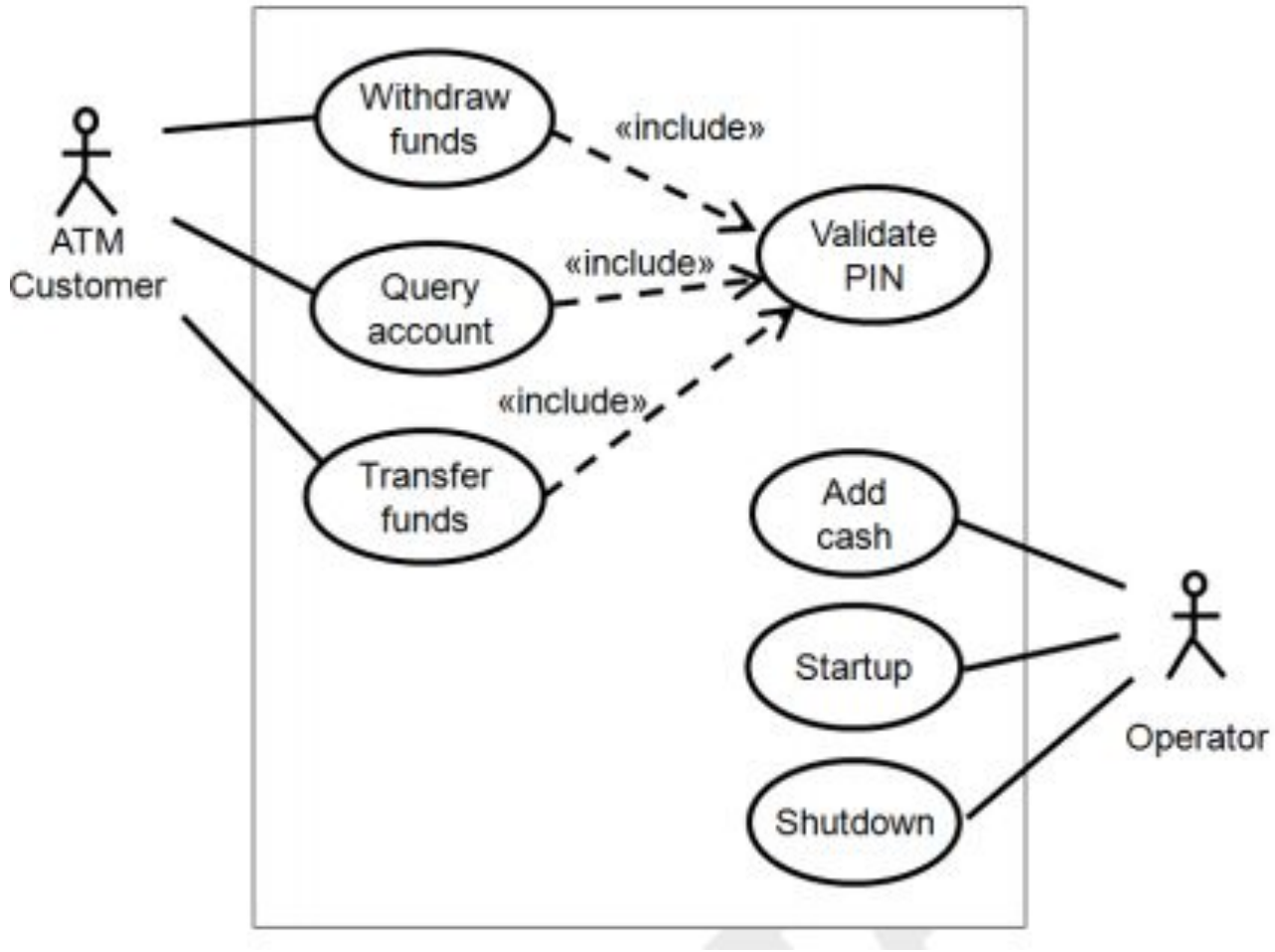


Extend

- **The extending use case is usually optional** and can be triggered conditionally. In the diagram, you can see that the extending use case is triggered only for deposits over 10,000 or when the age is over 55.



Use case diagram for ATM



Use Case Example

Name	Validate PIN
Summary	System validates customer PIN
Dependency	none
Actors	ATM Customer
Preconditions	ATM is idle, displaying a Welcome message.
Flow of Events	Activity Diagram / Sequence Diagram for interaction
Alternatives	• If the system does not recognize the card, the card is ejected. • If the system determines that the card date has expired, the card is confiscated. • If the system determines that the card has been reported lost or stolen, the card is confiscated. • If the customer-entered PIN does not match the PIN number for this card, the system re-prompts for PIN. • If the customer enter the incorrect PIN three times, the system confiscates the card. • If the customer enters Cancel, the system cancels the transaction and ejects the card
Post condition	Customer PIN has been validated.

Task # 2

After capturing functional requirements through user-story cards in task # 1, state non-functional requirements as well for HMS.

Requirement Analysis

- User Stories card would help you to capture use-cases. Identify actors from story cards and draw use-cases for HMS.

HAVE A GOOD DAY !