

# UML

## Unified Modeling Language (UML)

-UML, as the name implies, is a modeling language.

-Is not a process!

-Helps to

- \* visualise a system throughout different phases of development.

- \* specify requirements

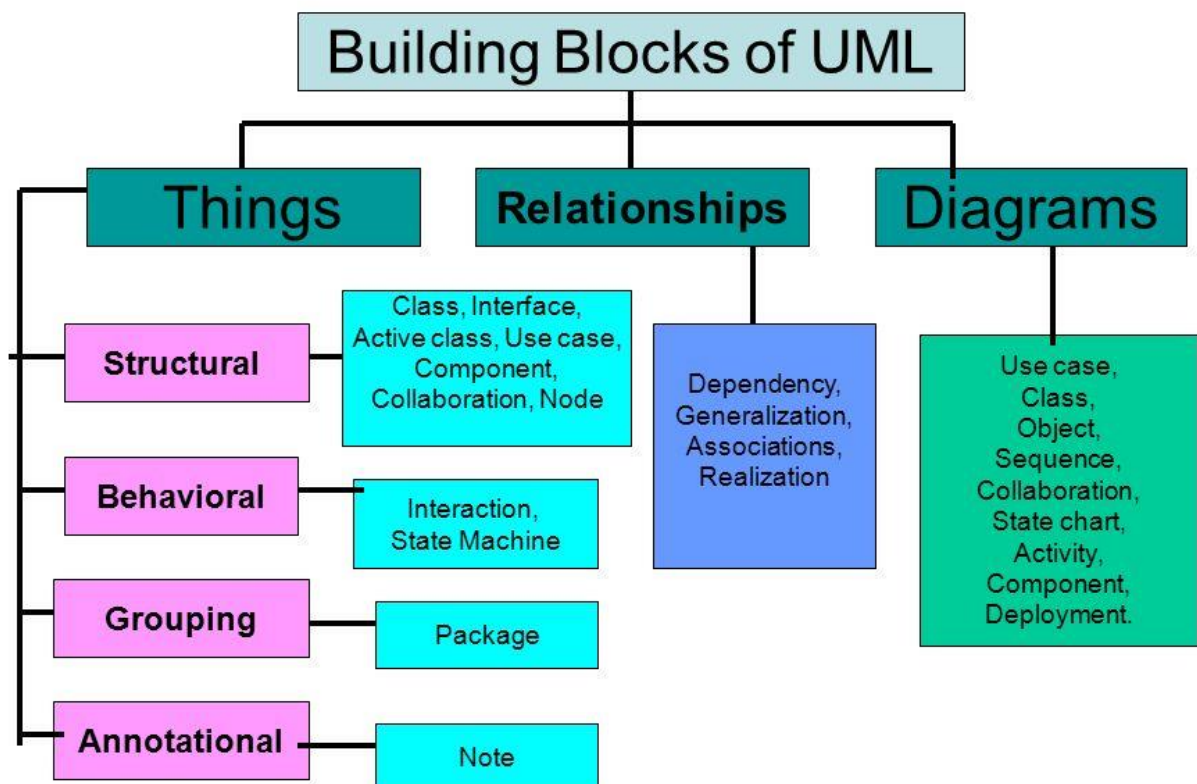
- \* design software components

- \* document

- UML is a pictorial language used to make software blue print

UML has 3 types of building blocks

- ➔ Things
- ➔ Relationships
- ➔ Diagrams



# DIAGRAMS

UML Diagrams are the ultimate outputs of our entire discussion. All the things , relationships are used to make a complete UML Diagram and the diagram represents a system

UML Includes the following diagrams

- i) **Structural Diagram**
  - a. Class Diagram
  
- ii) **Behavioral Diagram**
  - a. Use Case Diagram
  - b. Sequence Diagram
  - c. Activity Diagram

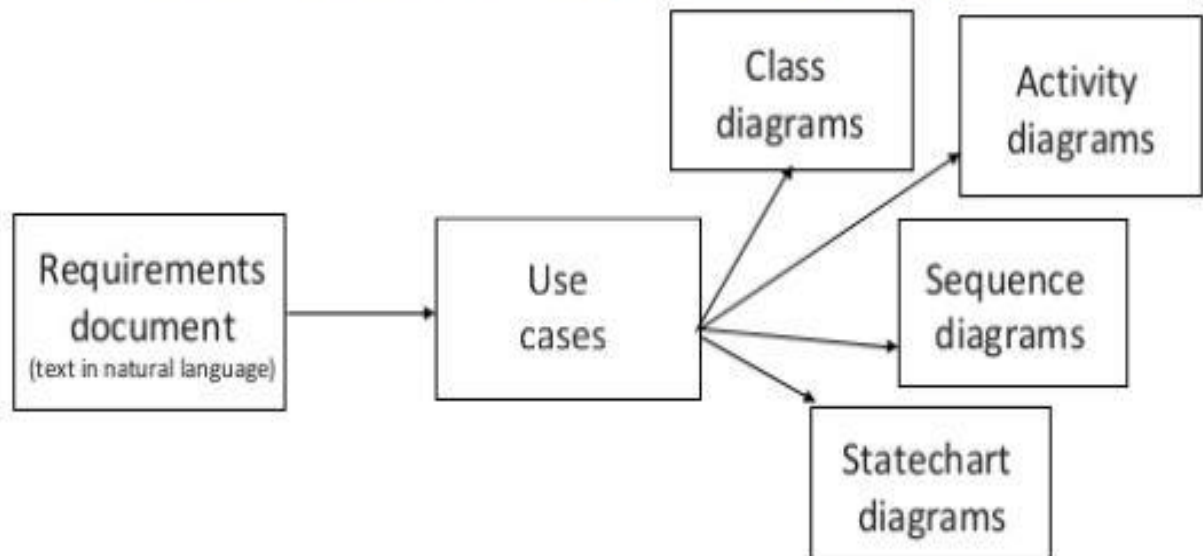
# Use Case Diagram

## Introduction

Use-cases are descriptions of the functionality of a system from a user perspective.

- ❖ Depict the behaviour of the system, as it appears to an outside user.
- ❖ Describe the functionality and users (actors) of the system.
- ❖ Show the relationships between the actors that use the system, the use cases (functionality) they use, and the relationship between different use cases.
- ❖ Document the scope of the system.
- ❖ Illustrate the developer's understanding of the user's requirements.

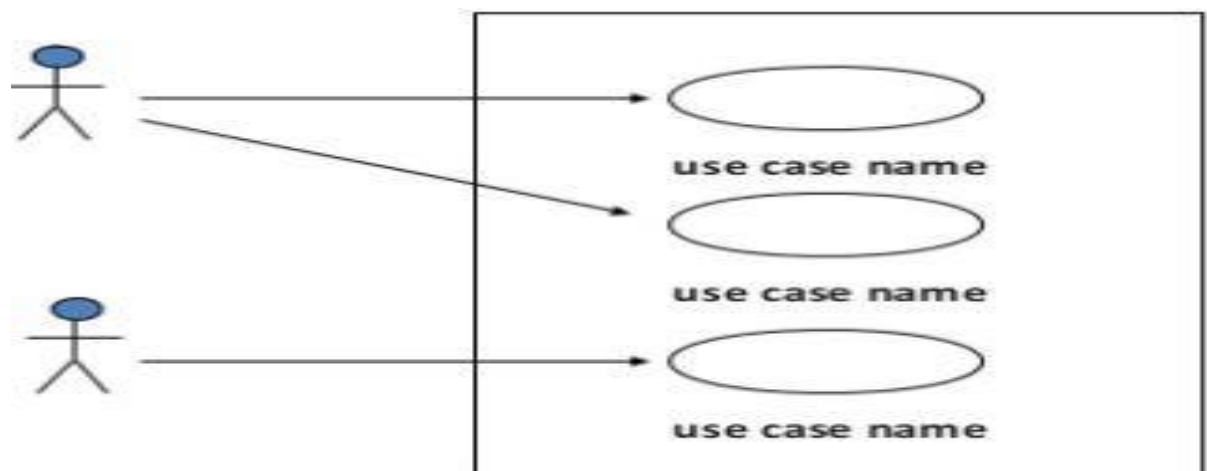
# Use Case Diagram, purpose



It is a very high level diagram and typically won't show a lot of details, but, it is great way to communicate complex ideas in a fairly basic way

## Components of use case diagram

- i) Actor
- ii) Use case
- iii) System
- iv) Relationship



## System

- A system is whatever we are developing . It may be

Website

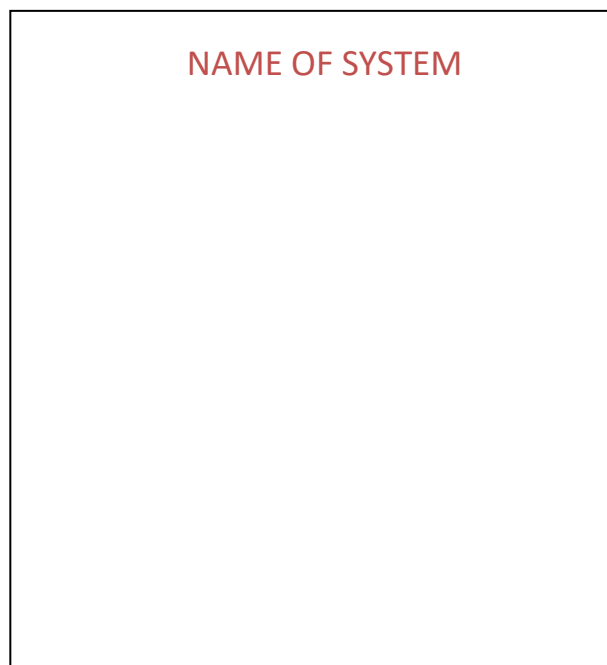
Software Component

Business Process

Application

Etc..

- We Represent a system with a rectangle and we put the name of the system at the top

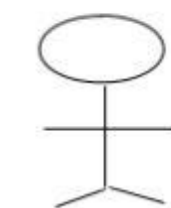


- This rectangle helps define the scope of the system
- Any thing with the rectangle happens with in system

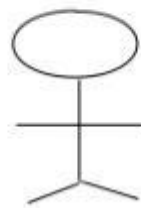
## Actor

- Actor is going to be someone or something that uses our system to achieve a goal

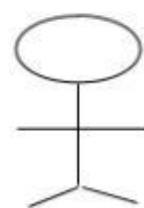
- Actors can be human or automated systems.
- Actors are not part of the system.
- UML notation for actor is stickman, shown below.



Student



Faculty



Employee

- An actor may perform more than one use case



# Primary and Secondary Actors

- Primary Actor
  - Acts on the system
  - Initiates an interaction with the system
  - Uses the system to fulfill his/her goal
  - Events Something we don't have control over
- Secondary Actor
  - Is acted on/invoked/used by the system
  - Helps the system to fulfill its goal
  - Something the system uses to get its job done

Generally , Primary actor must be left to the system and secondary actor must be in right

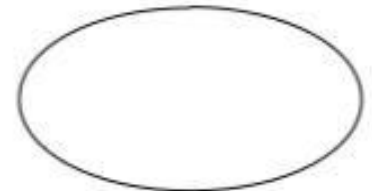
# Use case

## USE CASE

### What is USE case?

- A use case is a pattern of behavior, the system exhibits
- The use cases are **sequence of actions** that the user takes on a system to get particular target
- USE CASE is dialogue between an actor and the system.

- **Examples:**



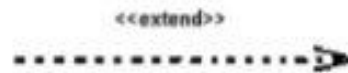
# Relationship

- Relationship is an association between use case and actor.
- There are several Use Case relationships:

- Association



- Extend



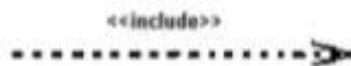
- Generalization



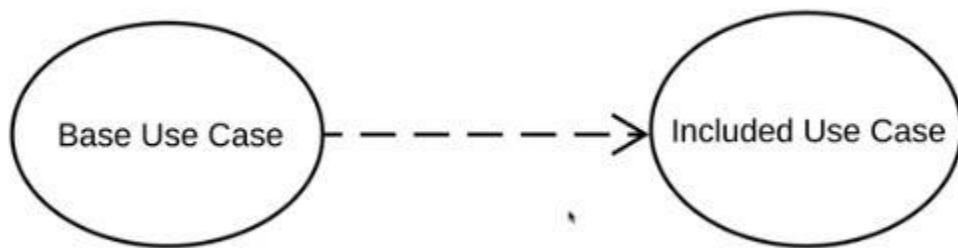
- Uses



- Include

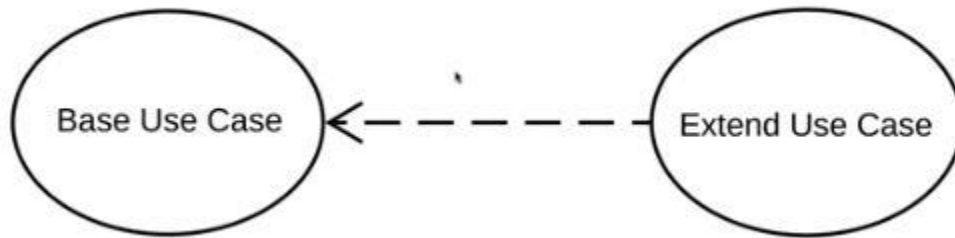


## Include Relationship



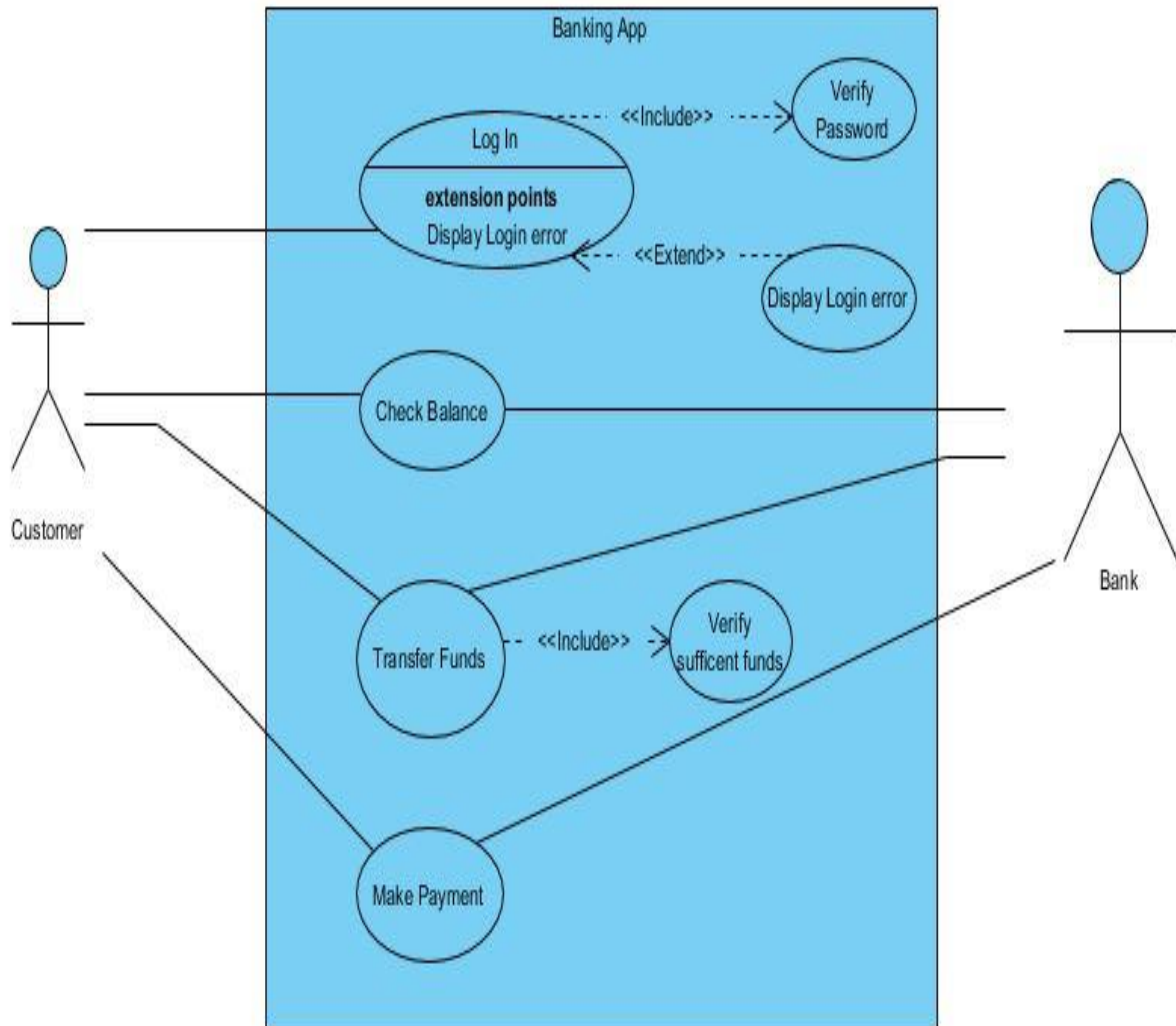
- An include relationship shows dependency between a base use case and an included use case
- Every time the base use case is executed  
The included use case is executed as well
- In another way we can say base use case requires an included use case in order to be complete

## Extend Relationship



- When the base use case is executed, the extend use case will happen sometimes but not everytime
- The extended use case will only happen when certain criteria are met

# Use case Example of Simple Banking App



## Exercise:

- 1) Draw Use case diagram for Softwarica module system
- 2) Draw use case Diagram for word processing system
- 3) Draw use case diagram for ATM Machine
- 4) Draw use case diagram for online Airline Reservation system