UML

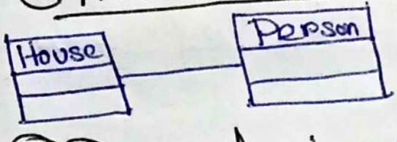
- **Structural** (static feature of a system)
  - class
  - object
  - Deployment } Implementation diagram
  - Component } Implementation diagram
  - Composite structure
  - Package diagram
- **Behavioral** (dynamic nature of the system)
  - Activity diagram
  - Interaction
    - Sequence
    - Collaboration
  - Use Case
  - State chart
  - (Represents interaction Among Structural diagram)
- **Architectural** (Structural + Behavioral)
  - Blueprint of Entire system
  - Package diagram

Class Diagram :

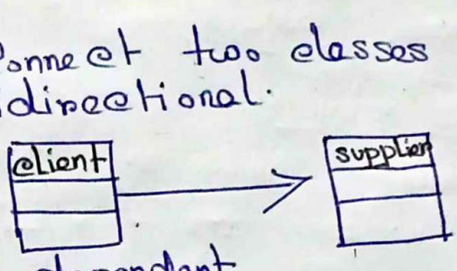
- Analysis and design of the static view of an application.
- Describe responsibility of a system.
- Base for component and deployment diagram.
- Forward and Reverse Engineering.

Relationships

(i) **Association** - • May be bi-directional or unidirectional
• Semantic connection between classes.

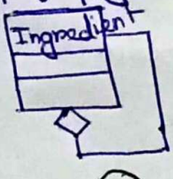


(ii) **Dependencies** : — (i) Connect two classes but it's unidirectional.

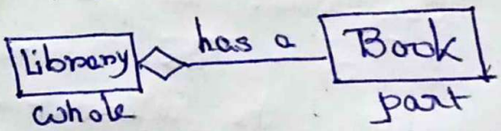


(iii) **Aggregation** :- Relationship between a whole and parts the part can exist independently without whole.

Reflexive Aggregation

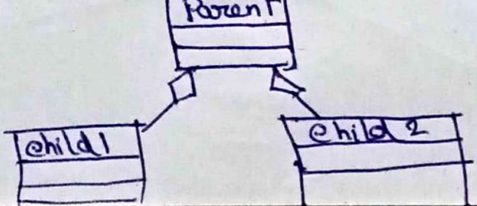


• weaker Realionship
• type of association.

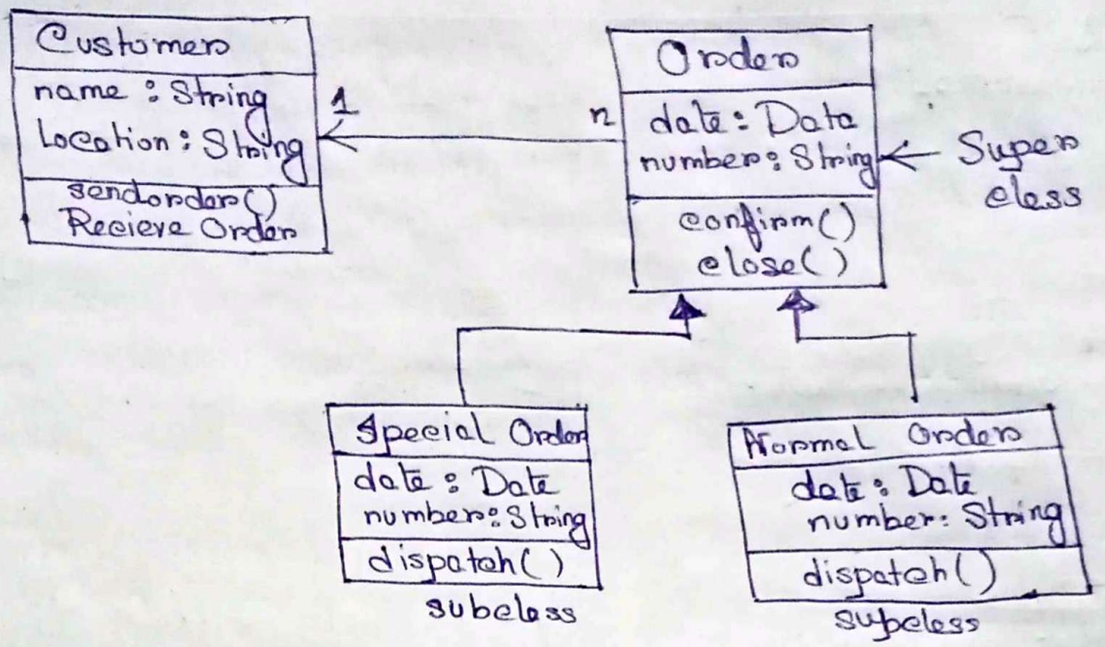


(iv) **Composition** :- Type of association relationship.
• Strong whole-part relationship.
• part can't exist independently.

(v) **Generalization** : used to show inheritance relationship between two class.



Order System



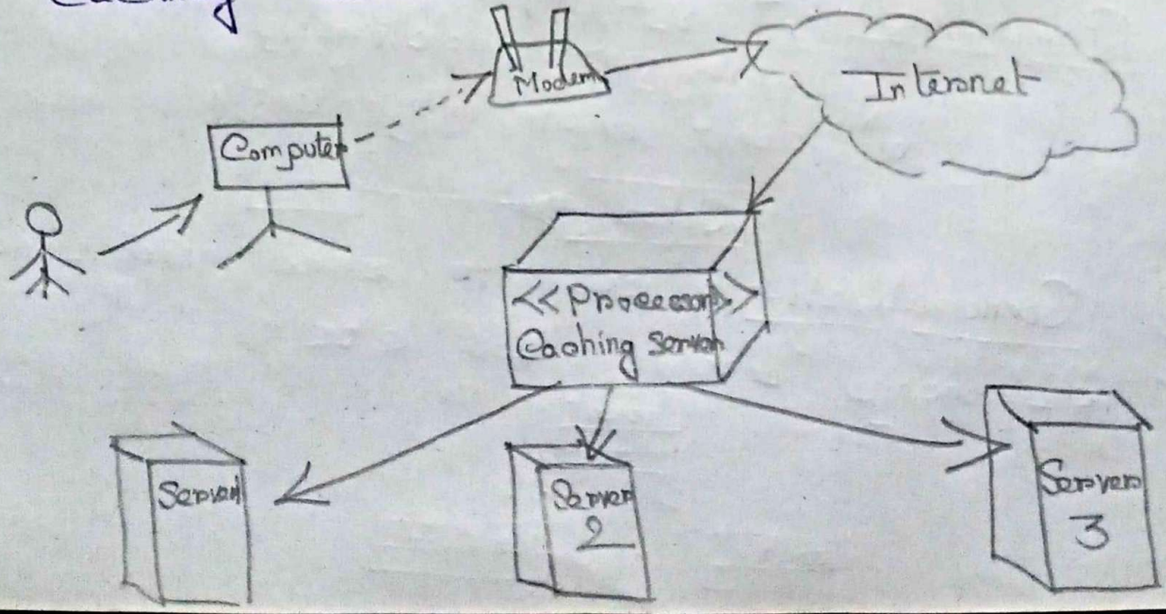
Deployment Diagram

- Used to visualize the topology of the physical components of a system.
- Consists of nodes and their relationship
- Component diagram are used to describe the components and deployment. dgm showed how they are deployed in hardware.

Case Study :

Deployment view of order management System where nodes are - • Monitor • Modem • Caching Server • Servers.

⇒ Assume A web based application which is deployed in a clustered env using server1, 2, 3. The user connects to the applica" using the internet. The control flows from caching Server to the clustard env.



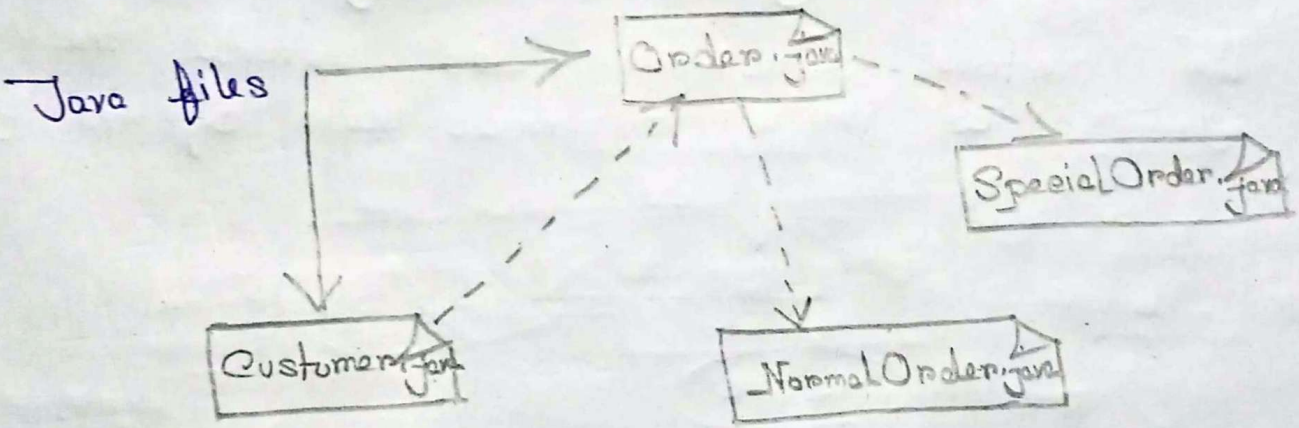
Component Diagram

It doesn't describe the functionality of system but it describes the components used to make those functionalities.

- used to visualise physical components in a system. Like Libraries, Packages, files etc.

Case Study

Componet diagram for Order Management System The artefacts are files. In the following diagram four files are identified and their relationships are produced.



Component Diagram can be used to:-

- Model the Component of a system.
- Model the database Schema.
- Model the System's Source Code.
- Model the executables of an application.

Use Case Diagram

Use-Case dgm consists of Actors, use cases and their Relationship.

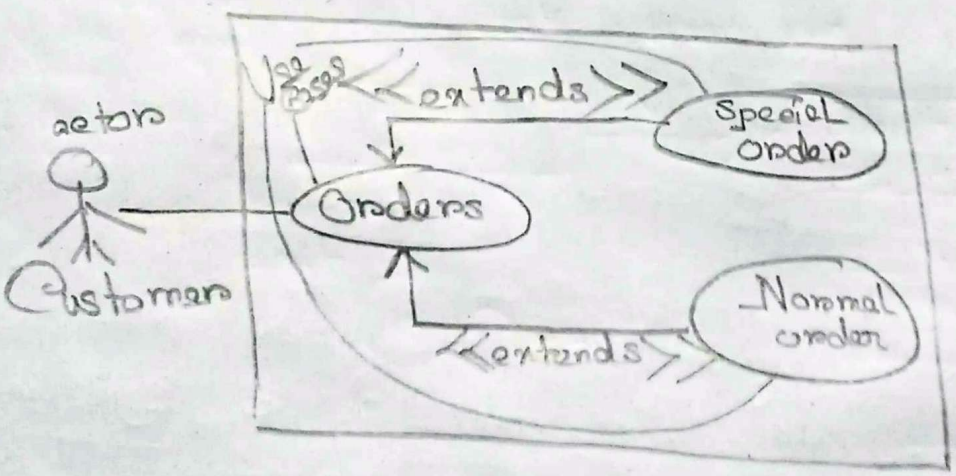
- Used to gather requirement of the System.
- " " get an outside view of the system.

Use Case Dgm Case-Study

Three Use-Cases are - Order, Normal Order, Special Order.

Actor → User.

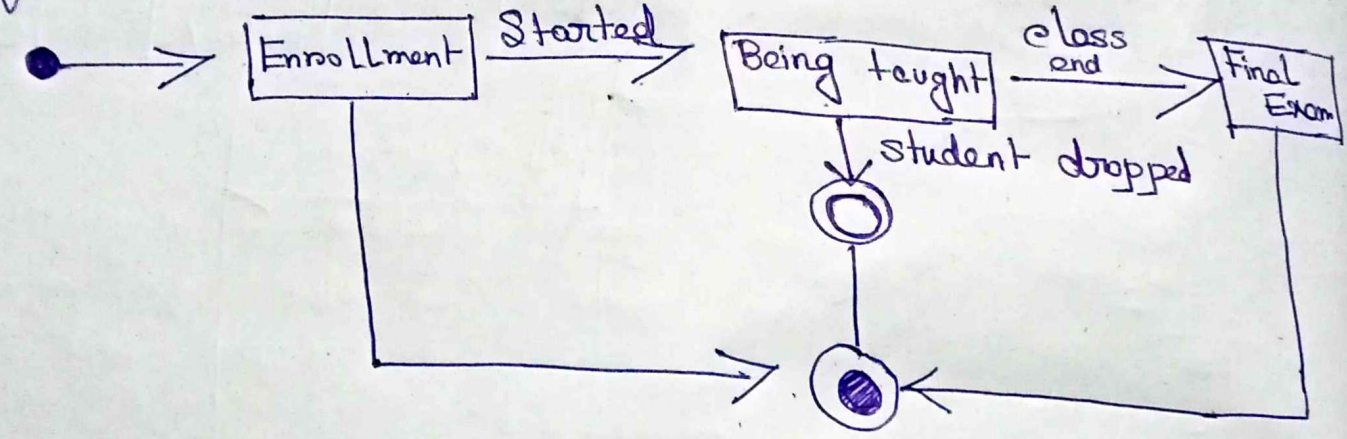
- The special Order and Normal order are extended from Order Use-Case.
- Identify the system boundary.
- The Actor Customer Lies outside the system as it is external user of the system



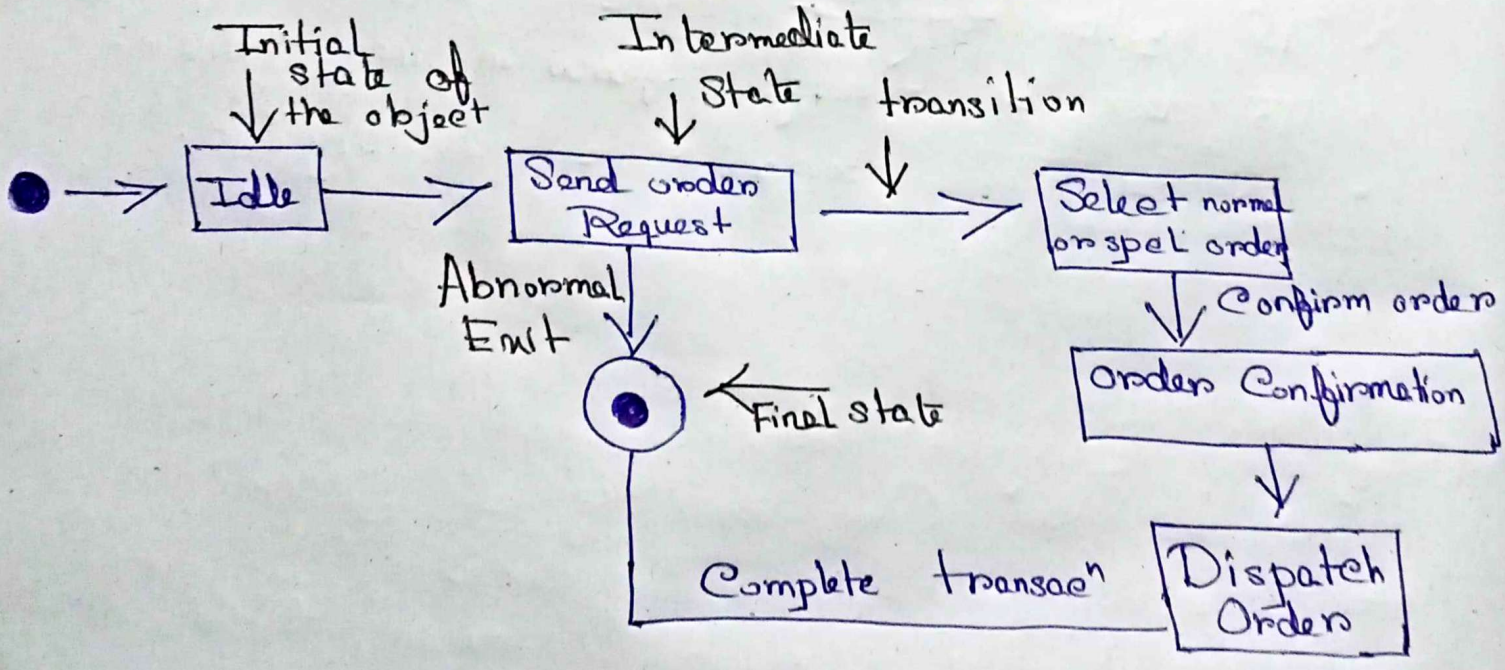
State Chart

It describes different states of a component in a system.

- It used to model the lifetime of an object from creation to termination.



Case-Study:



Activity Diagram

Flowchart to represent the flow of control among the activities in a system.

The flow of operations can be sequential, branched or concurrent.

Start

Final node

Control flow ⇨

Join

Fork

Task

Decision Node

Merge Node

Final Flow Node

Note

Note