UNIT-II Object Oriented Analysis.

Q1] What is use case? Explain Actor classification & Include & Extend Association in use case modeling

→ • Use cases are the scenarios for understanding the requirements. By using use case one can understand the overview of the system.
• Use case helps in planning, development & documentation of the system.

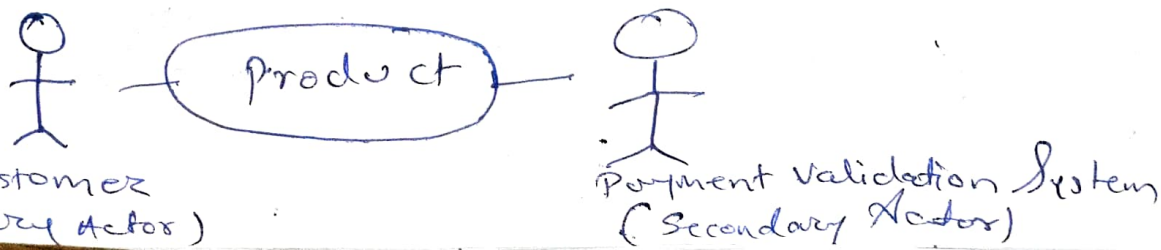
Basic Terminologies:

1) Use case → special flow of event through the system
2) Actor → Plays major role.
3] In a system :→ Actor communicates with system's use case
4] measurable value → Use case helps actor to perform task that has identical value.
5] Transaction → Set of activities performed.

Actors are classified into two types

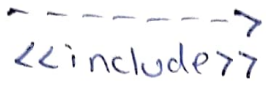
1) Primary Actor → Actors that interact with the system in order to acheive the user goal

2] Secondary Actor → Support system in such a way that primary actor can achieve the task.

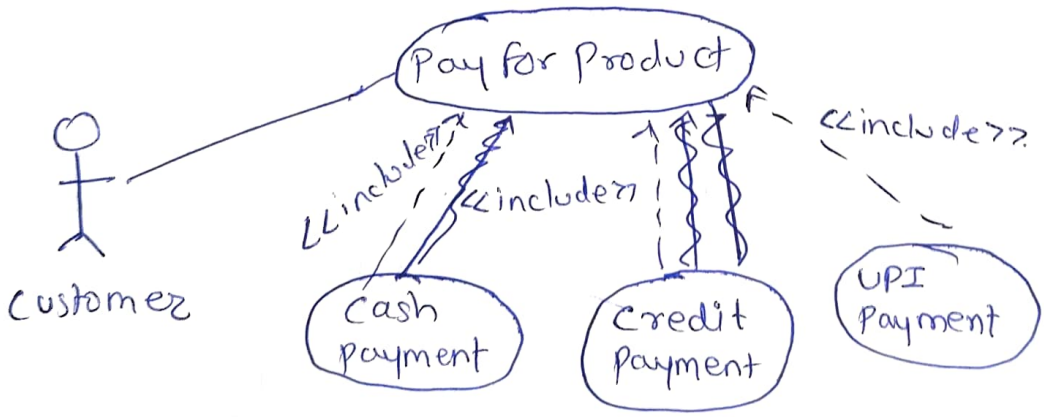


1] Include →

- This is most commonly used relationship which denotes that a given use case may include another
- It is denoted by follow



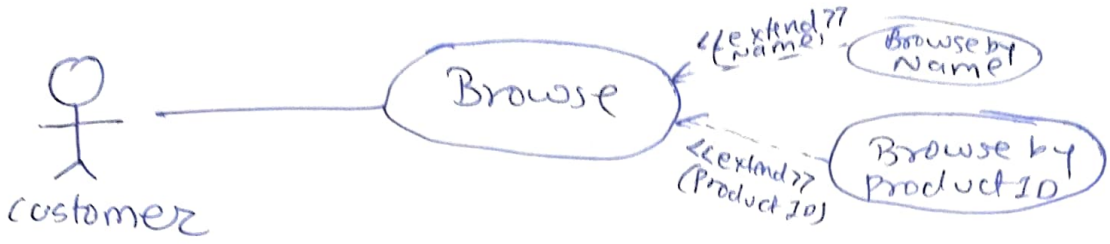
- The use case at the arrow head position is the use case that is being included in the use case of other side of arrow.
- When there are multiple steps to carry out by the single task then it is divided into subtask. and these subtask is denoted by this use case.



2] Extend.

- The extend relationship is used when an extended use case is connected to the base use case.
- When some part of use case is optional. and we need to show them then extend is used
- When we want to show ~~the~~ Subflow of the System when specific condition occurs
- It is denoted as follow 

ex → Online purchase System - User may borrow Product ~~Book~~ with product name or by product ID



Q] Solve excercise ~~10~~ 1.10 completely

Q2] Explain CRC approach.
or
Explain class responsibility collaboration Approach

→ • The CRC → class Responsibility collaborator is a technique used in OOD to help model & undeerstand ~~cta~~ system's class. ~~It~~ .
- It is used to design software before implementation.
- The CRC model is colledion of standard index cards. This cards is divided into three sections.
- The First section contain class. That is on top
- The second section contain Responsibility that is on left
- Third section Contains Collaboration that is on right

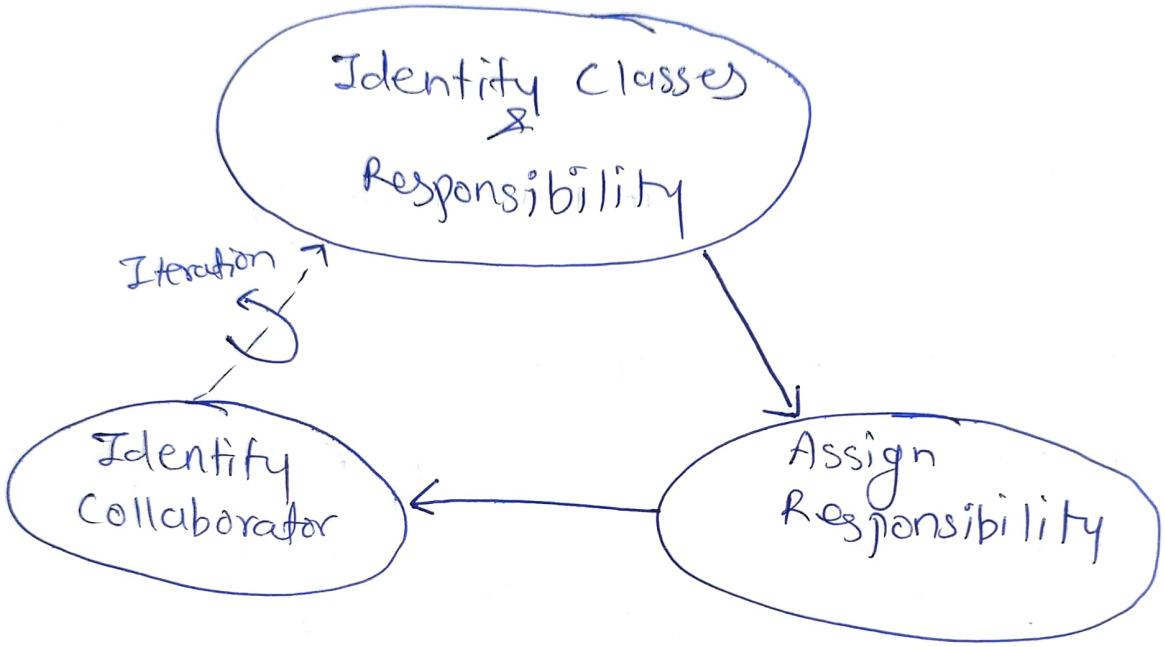
Class Name: Class Type: characteristics:	
Responsibility	Collaborations.

CRC Process

1] Identify the class responsibilities

2] Assign responsibilities

3] Identify Collaborators.



Q3] Explain Actor identification, Classification & Generalization.

→ Actor identification

- Actor represent the role when user interacts with use cases
- The actor can be Human, device or other system.
- Actor can be connected to use cases only by association. This represent that actor and system use cases communicate with each other by sending & receiving the message.

ex →

- Guideline for actor identification →
  - Who is using system
  - Who affects system
  - Which external system is needed to perform task
  - What kind of problem are solved
  - How do user interact with system

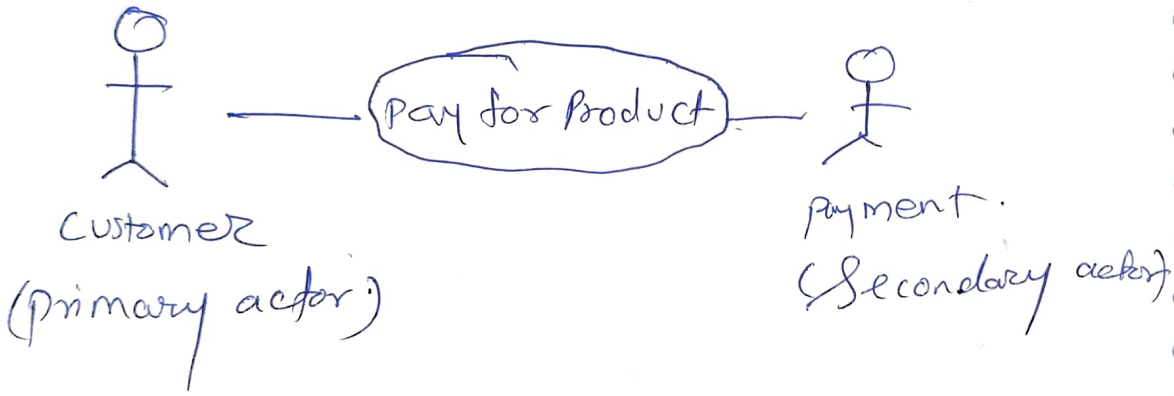
Two three Rule

- The two three Rule is for identifying ~~object~~ actor. The rule states that start with naming atleast two, preferable three ~~actor~~ people who could serve as actor in the system

P.T.O.

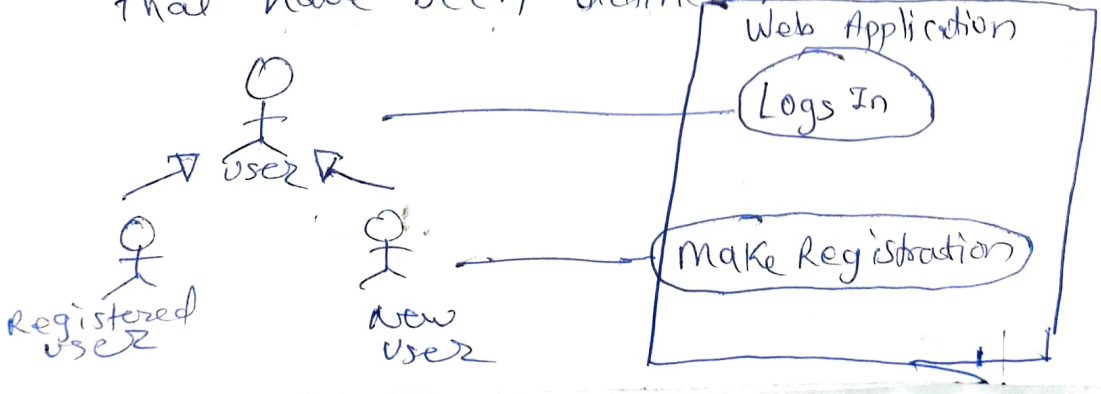
2] Actor Classification.

- The actors are classified into two types
  1] Primary Actor : This are the actors that interact with the system in order to achieve the user goal.
  2] Secondary Actor : This are the actors that supports system in such a way that primary actor can perform/complete the task.



3] Actor Generalization

- Actor Generalization refers to the relationship which can exist between two actors & which shows that one actor inherits the role & properties of another actor.
- The decendant actor can use all the use cases that have been defined for its ancestor.



Q] Explain Approaches ~~for~~ identifying Classes

OR

Explain class pattern Approach & CRC

→ • Classification is the process of checking if an ~~object~~ object belongs to same ~~class~~ Category or not.

• Classes are most important concept in object oriented design. It describes ~~that~~ the object that have common set of attributes, operation & relationship.

Approaches for identifying class are.

→ CRC
→ class Pattern Approach
→ Noun phrase Approach.

1) CRC → Q2.

2] Class pattern Approach.

• This approach is based on idea of identifying classes ~~of~~ using common class pattern. which is based on Knowledge based of common classes.

1) Conceptclass → It represent specific idea. that have no physical existence but are essential for the system

2) Events class → Events are things that happen at particular time or place.

3] Organization class → collection of people, resources facalities

4] People class → Represent different roles while interacting with the application.

5] Places class → represent physical relation.

6] Device class → Device with which application interacts.

Q] Explain multiplicity, Association End Names & Qualified Association.

→ Multiplicity

- Multiple objects can be related to some objects. The multiplicity represents "how many" objects are connected.
- The multiplicity can be written as expression. It describes "one" or "many" objects associated with other object.
- The multiplicity is specified at the end of association link.
- Notations

1 → one instance

0...1 → 0 to 1

* → many

0...* → 0 to many

1...* → 1 to many

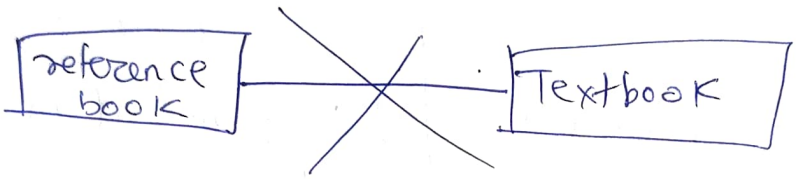
} Instance.

2 → Integer value.

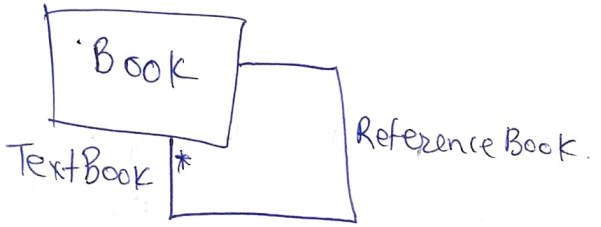
Association End Names

- The multiplicity can be assigned at the end of association. for example if there is one to many multiplicity then at one end, one is written. and at other end many is written

- for clear understanding of the association relationship we can write the names at the association.
- Traversing direction can be understood due to association end names.
- If there are multiple reference of same class. for each reference separate book must not be created. for example



Wrong method



Correct method.

- The association end name must not be same as attribute name.

Qualified Association

- The qualified association has qualifier which is used to select particular object from the set of Object.
- for example selection of particular student. from the course the qualifier will be StudentID
- Qualifier is a property which defines selection key.

Q] Class diagram from book - 2.8 / page 2-45

Q] Difference between Aggregation & Composition

→

Aggregation	Composition
1] Relationship is represented using straight line.	1] using Doted line
2] weak association	2] Strong association
3] Not dependent on other object	3] Dependent on other object
4] Child can exist without parent	4] Child cannot exist without parent
5] Deleting one element does not affect another element	5] Deleting one element affects other element.
6] Aeg → A car & wheel (wheel can exist seperately)	6] Human & Heart (Heart cannot exist seperately).