❖ What is SDLC?

- SDLC = Software Development Life Cycle
- SDLC is a process that consists of series of steps for development of quality product.

❖ What is software testing?

- Software testing is a process used to identify the correctness, completeness, and quality of developed computer software.

OR

- It is a process of evaluating a system or its components with the intent to find that whether it satisfies the specified requirements or not.

❖ What is agile methodology?

- Agile SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product.
- Agile methods break the product into small incremental builds.
- These builds are provided in iterations.
- Every iteration involves cross functional teams working simultaneously on various areas like planning, requirements analysis, design, coding, unit testing, acceptance testing.
- At the end of the iteration a working product is displayed to the customer and important stakeholders.

❖ What is SRS:

- A software requirements specification is a complete description of the behaviour of the system to be developed.
- SRS contains non-functional and functional requirements.
- It includes a sets of use cases that describes all the interaction that the users will have with the software,

❖ what is oops:

Oops: Object Oriented Programming

- Oops can be defined as a programming model which based upon the concept of objects.

❖ Write Basic Concepts of oops:

- Class
- Objects
- Encapsulation
- Polymorphism
- Inheritance
- abstraction

❖ What is object:

- Object is an instance / example / part of a class.
- It is the basic unit of oops.

❖ What is class:

- It is a blueprint of an object.
- It defines and describes the properties and behviour of that object, but without any actual existence.

❖ What is encapsulation:

- it is the process of wrapping the data and code.
- In this oops concept, the variables are always hidden from other class.

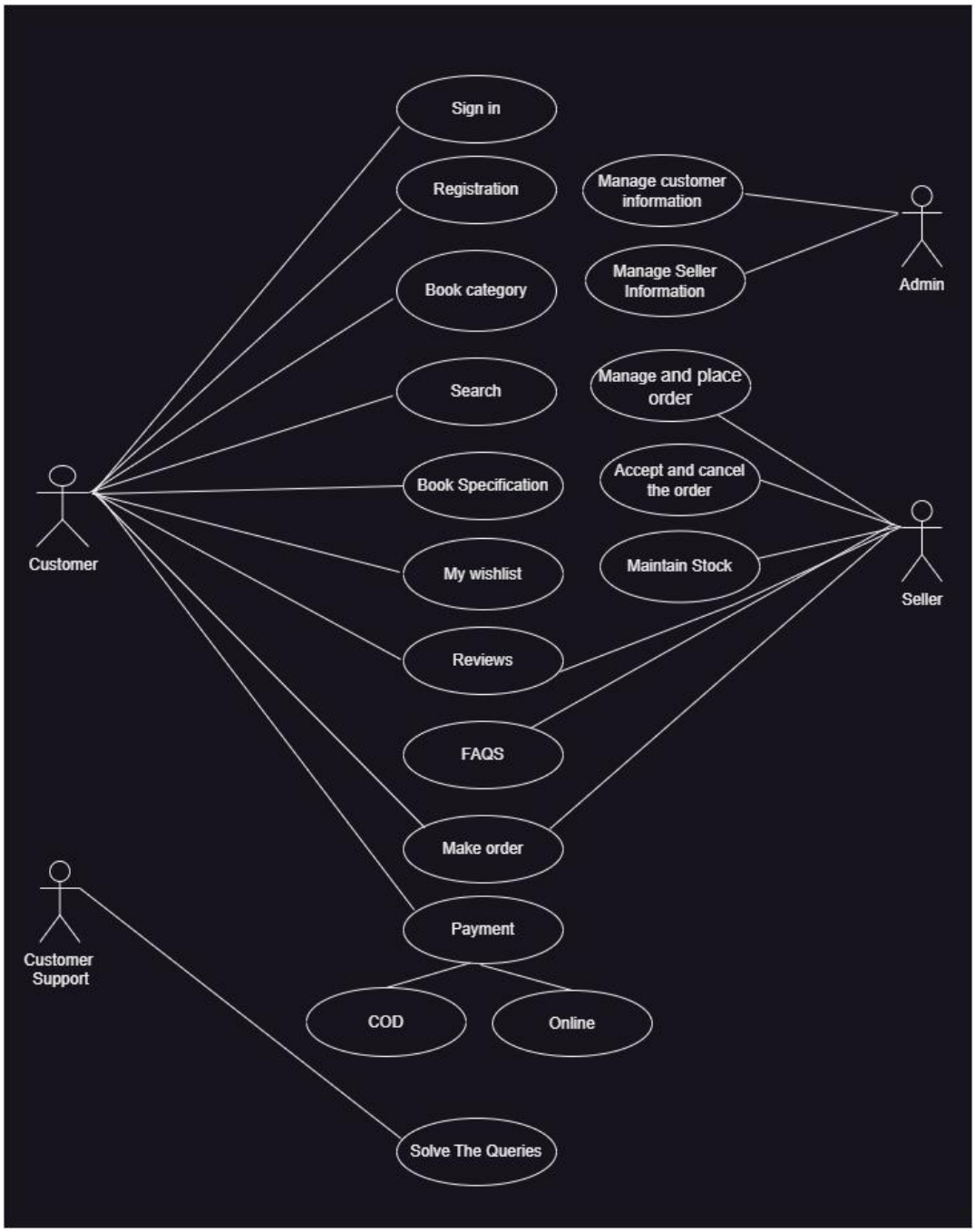
❖ What is inheritance:

- It means ability to adapt the behavior of parent class to child class.
- It is useful for code reusability.

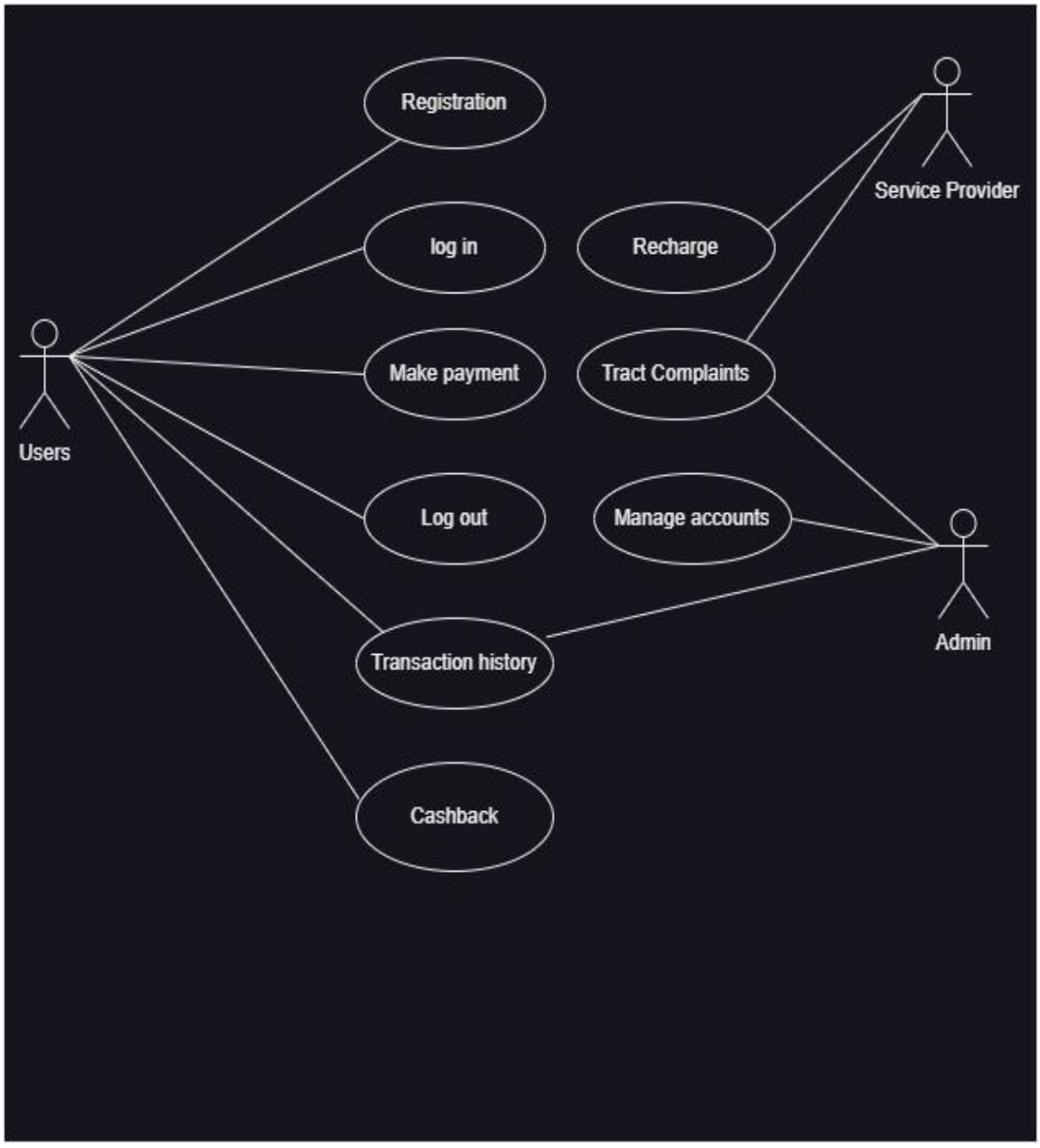
❖ What is polymorphism:

- It means having many forms.
- It is the ability of objects to take on different forms or behave in different ways depending on the context in which they are used,

❖ Draw Usecase on Online book shopping:



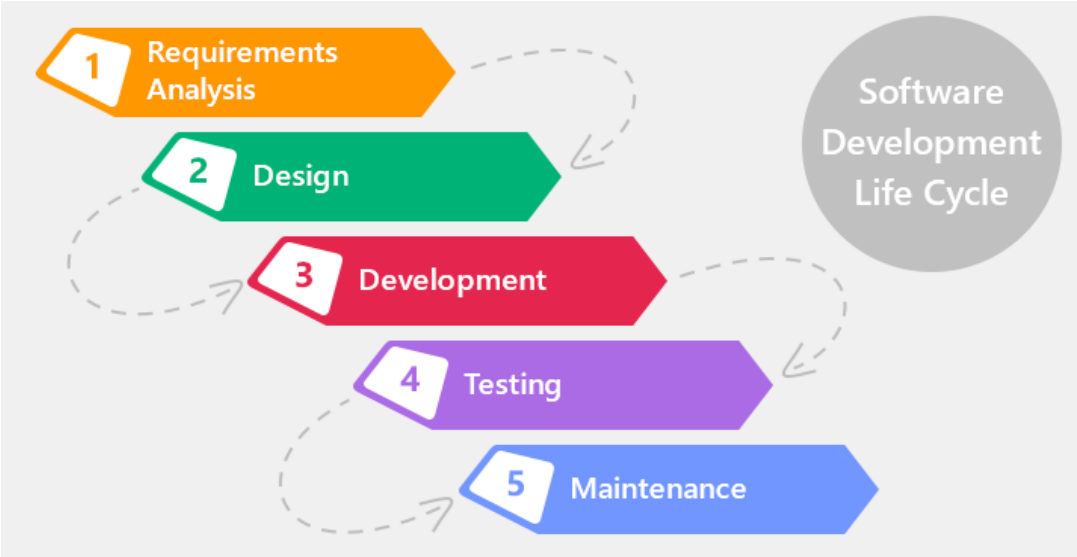
❖ Draw Usecase on online bill payment system (paytm):



❖ Write SDLC phases with basic Introduction:

- development of quality product.

➢ **It comprises various steps :**



Introduction of steps:

1) Requirements gathering and analysis:

- **It** means establish customer needs.
- Requirements can be change throughout project.
- Examples: - functional and non- functional requirements
  - Features

Analysis Phase:

- It defines the requirements of system.
- This phase defines the problem that the customer trying to solve.
- It represents 'what' phase.

2) **Design Phase**:

- This is the plan on how to approach the project.
- In this phase developers defines technical details of the product.
- **Activities:** - Design discussion
  - Application architecture
  - Prototype of design details

3) Development phase:

- In this phase developers start coding according to the requirements and design discussed in previous phases.
- In this phase tasks are divided into units and modules and assigned to the various developers.
- Longest phase of SDLC.

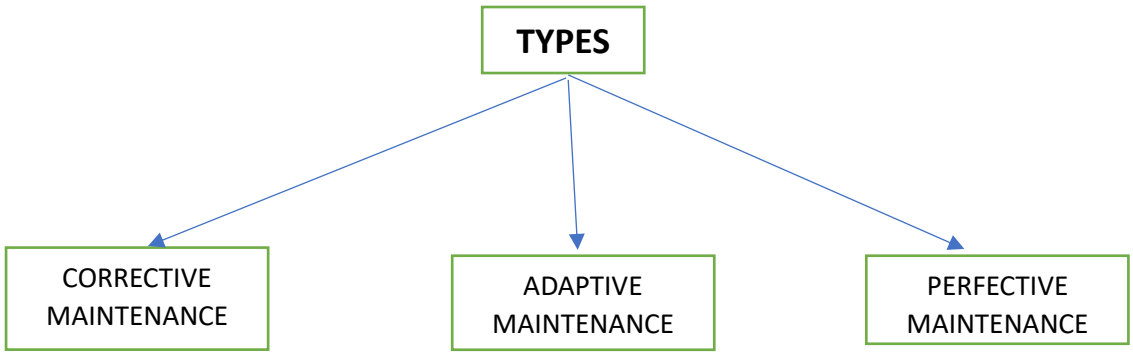
4) Testing:

- It starts when the software is completed, and it is deployed in the testing environment.
- Testing team starts testing functionality of the entire system.
- This is done to verify that the entire application works according to the customer's requirement.
- Tests that done in this phase:
  - Regression test
  - Unit test
  - Application test
  - Stress test

5) Maintenance Phase:

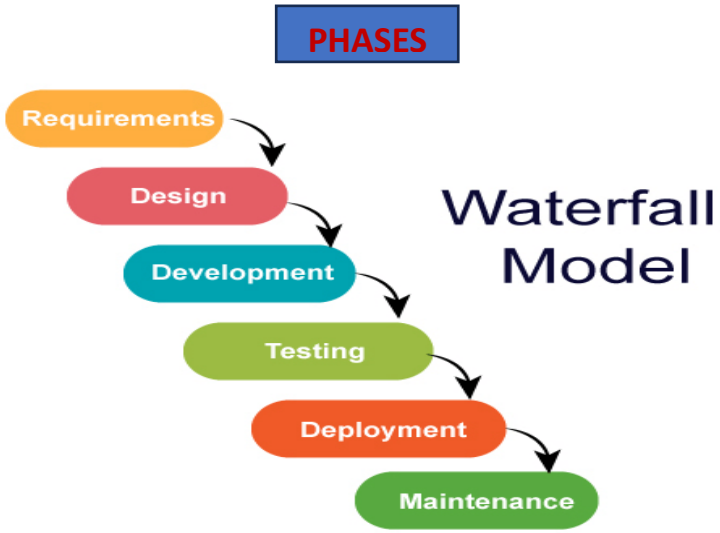
- It is the process of enhancing and optimizing deployed software as well as fixing defects.
- This phase comes after the deployment of the software into the field.
  Activities:
  - Track defects and deficiencies
  - Updating all analysis, design and user documentation

Types of maintenance:



❖ Explain Phases of the waterfall model:

- Water fall model is a classical software cycle.
- It includes 5 phases for the development of quality software.



Introduction of all steps:

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Updating all analysis, design, and user documentation

❖ Write phases of spiral model:

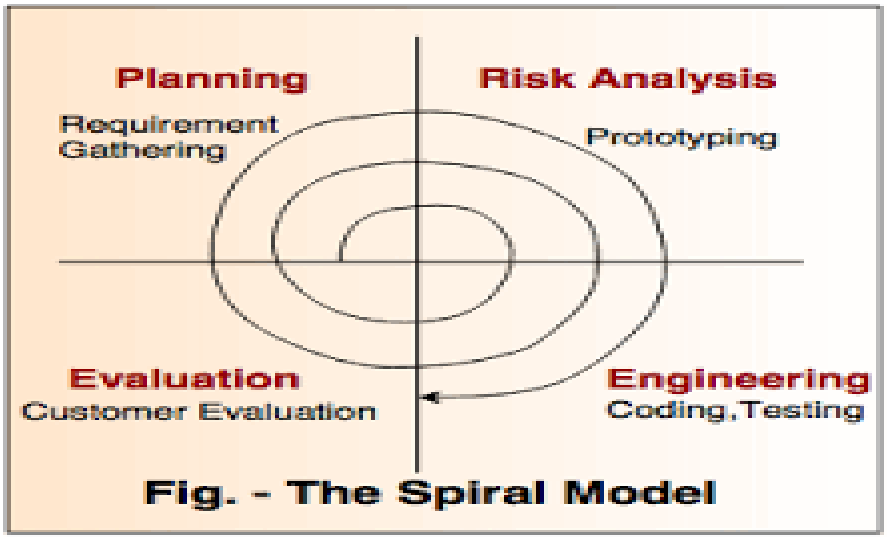


Fig. - The Spiral Model

Phases of spiral model:

1) Planning:
    - Requirements are gathered from the customer and objectives are identified, elaborated, and analysed at the start of every phase.
    - This is the phase, where the scope of the project is determined, and a plan is created for the next iteration of the spiral.
2) Risk analysis:
    - In this phase, the risks are associated with the project are identified and evaluated.
    - At the end of this quadrant, the prototype is built for the best possible solution.
3) Engineering phase:
    - In this phase software is developed based on requirements.
    - In this phase version of software is available.
4) Evaluation:
    - The software is evaluated in this phase to determine if it meets the customer's requirements.
    - Again, the spiral begins with a new planning phase, bases on the result of the evaluation.

❖ Write agile manifesto principles:

- Individual and interaction
- Working software
- Customer collaboration
- Responding to change
-

❖ Explain working methodology of agile model and write pros and cons.

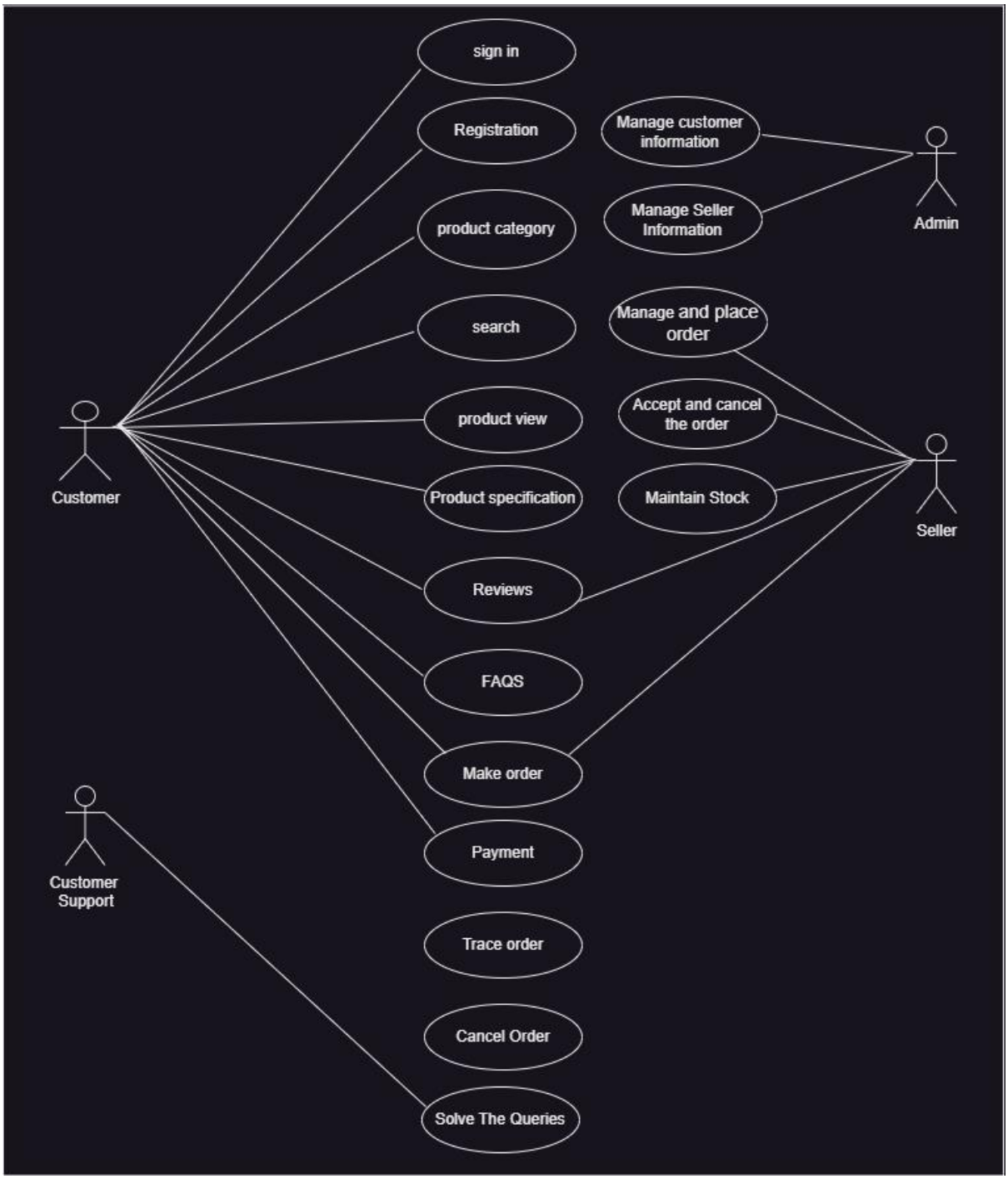
- ***Pros:***
  - Promotes teamwork and cross training.
  - Functionality can be developed rapidly and demonstrated.
  - Resource requirements are minimum.
  - Suitable for fixed or changing requirements.
  - Delivers early partial working solutions.
  - Good model for environments that change steadily.
  - Minimal rules, documentation easily employed.
  - Enables concurrent development and delivery within an
  - overall planned context.
  - Little or no planning required.
  - Easy to manage.
  - Gives flflexibility to developers.

- ***Cons:***

- Not suitable for handling complex dependencies.
- More risk of sustainability, maintainability, and extensibility.
- An overall plan, an agile leader and agile PM practice is a must without which it will not work.
- Strict delivery management dictates the scope, functionality to be delivered, and adjustments to meet the deadlines.
- Depends heavily on customer interaction, so if customer is not clear, team can be driven in the wrong direction.

- There is very high individual dependency, since there is minimum documentation generated.
- Transfer of technology to new team members may be quite challenging due to lack of documentation.

❖ Draw usecase on Online shopping product using COD:



❖ Draw a use case on online shopping product using payment gateway: