

Module–1(Fundamental)

1) What is SDLC (Software Development Life Cycle)?

- **It is the entire process of formal, logical steps taken to develop a software product.**
- **It describes the activities that take place at each stage of software development process.**
- **Timeline + Budget + Quality = SDLC**

2) What is software testing?

- **Software testing is a planned process that is used to identify the correctness, completeness, security and quality of software.**
- **Process to verify and validate the Developed software.**
- **Software testing is a process of evaluating a system by manual or tool (Automation) means and verifies that it satisfies specified requirements or identifies differences between expected and actual results.**

3) What is agile methodology?

- It is a flexible and iterative approach to project management and software development that focuses on collaboration, customer feedback, and continuous improvement to deliver small, incremental updates quickly.

4) What is SRS (Software Requirements Specification)?

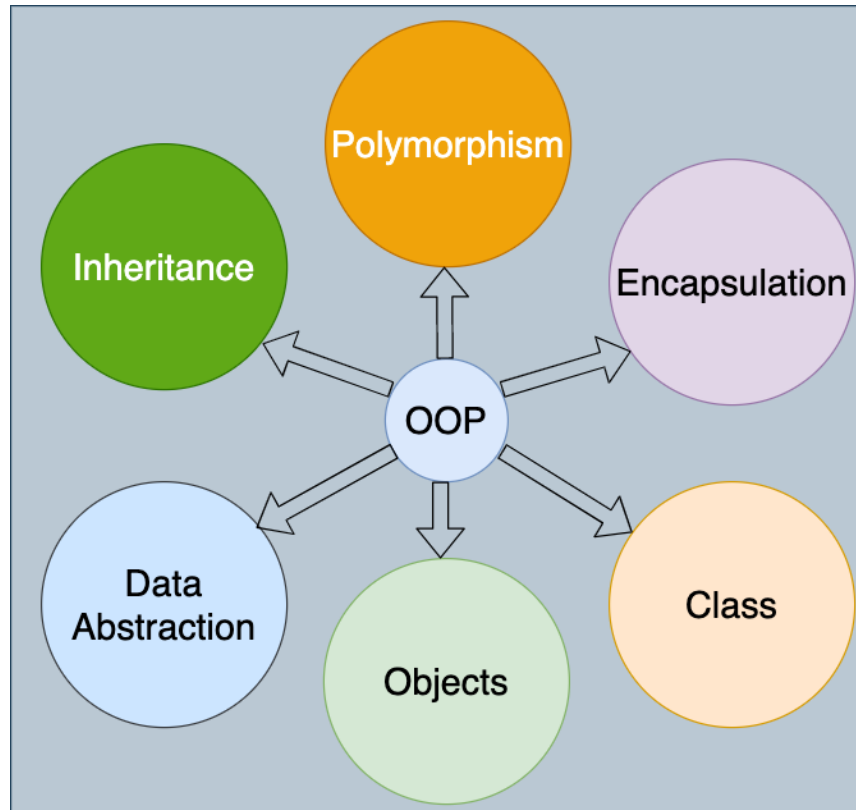


- **It is a document that defines the features, functions, and constraints of a software system.**
- **It serves as a guideline for developers, testers to ensure clear understanding and smooth development.**

5) What is oops ?

- **OOPs (Object-Oriented Programming System) is a programming paradigm based on the concept of objects, which contain data (attributes) and code (methods). It helps in organizing code efficiently by modeling real-world entities**

6) **Write Basic Concepts of oops ?**

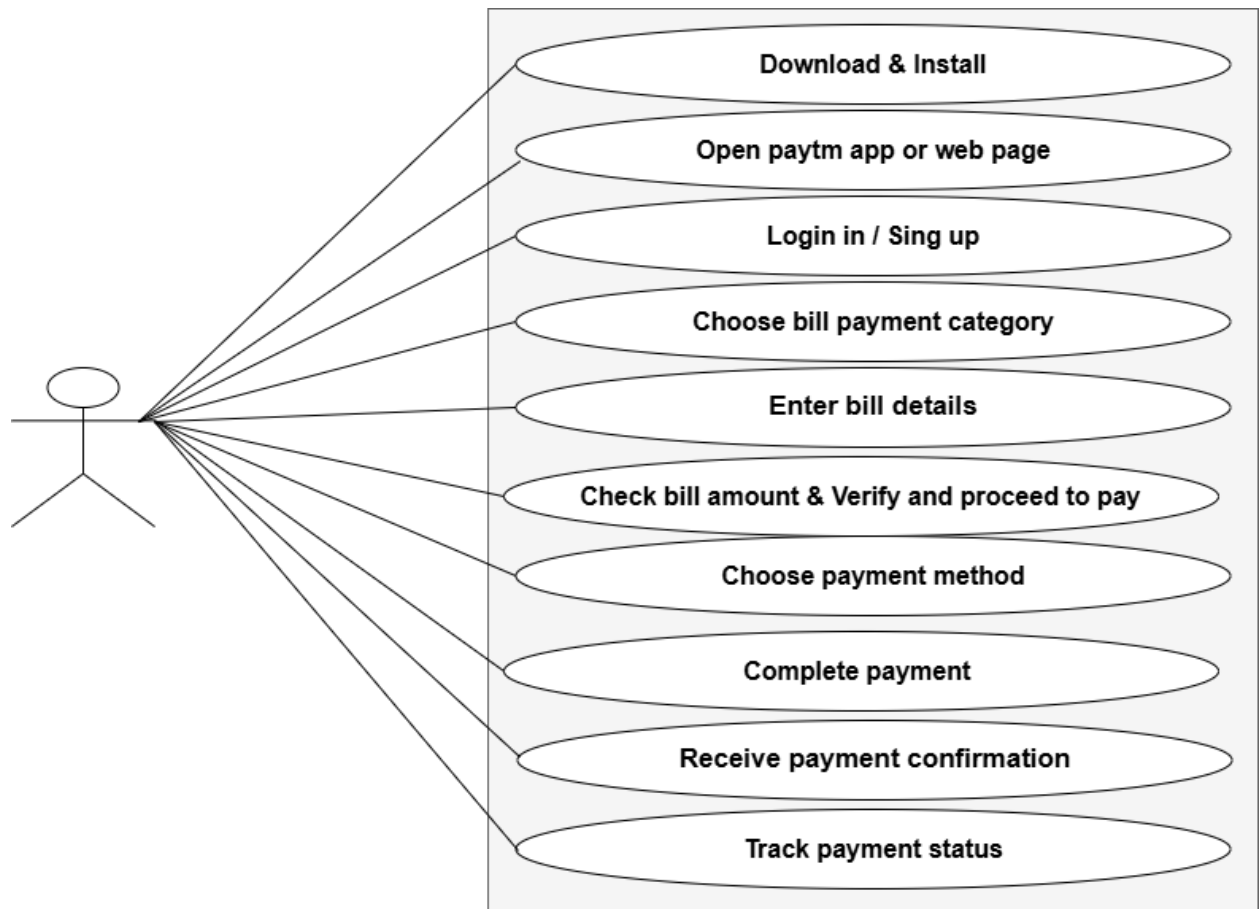


- **Class**

- **A class is a blueprint or template for creating objects.**
- **It defines attributes(data) and methods (functions) that objects will have.**

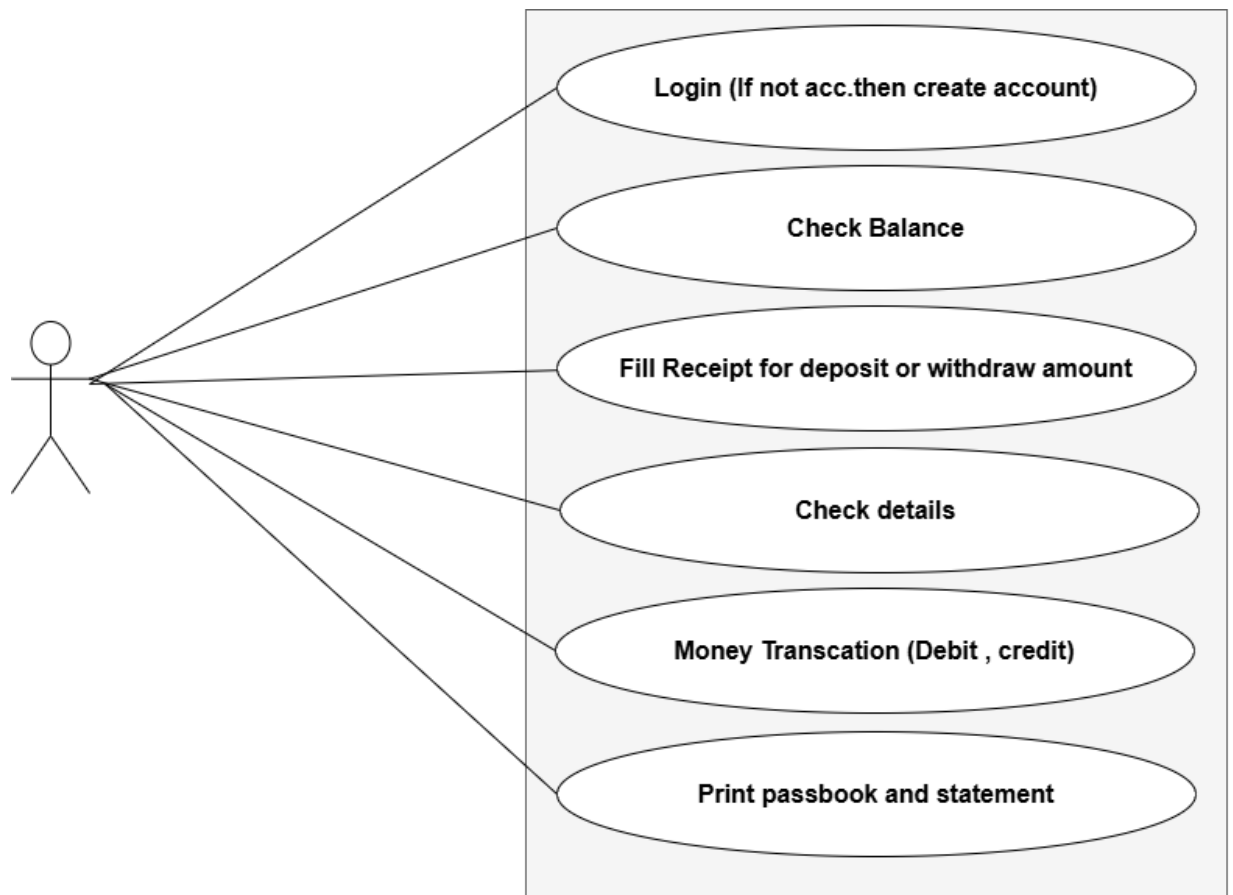
- **Object**
 - **An object is an instance of a class. It has its own unique values for the attributes defined in the class.**
- **Encapsulation**
 - **Hiding data within a class and restricting direct access.**
- **Abstraction**
 - **Showing only essential details and hiding complexity.**
- **Inheritance**
 - **Allowing a class to inherit properties and behaviour from another class.**
- **Polymorphism**
 - **Enabling a single interface to represent different underlying forms.**

7) **Draw Use case on online bill payment system (paytm)?**



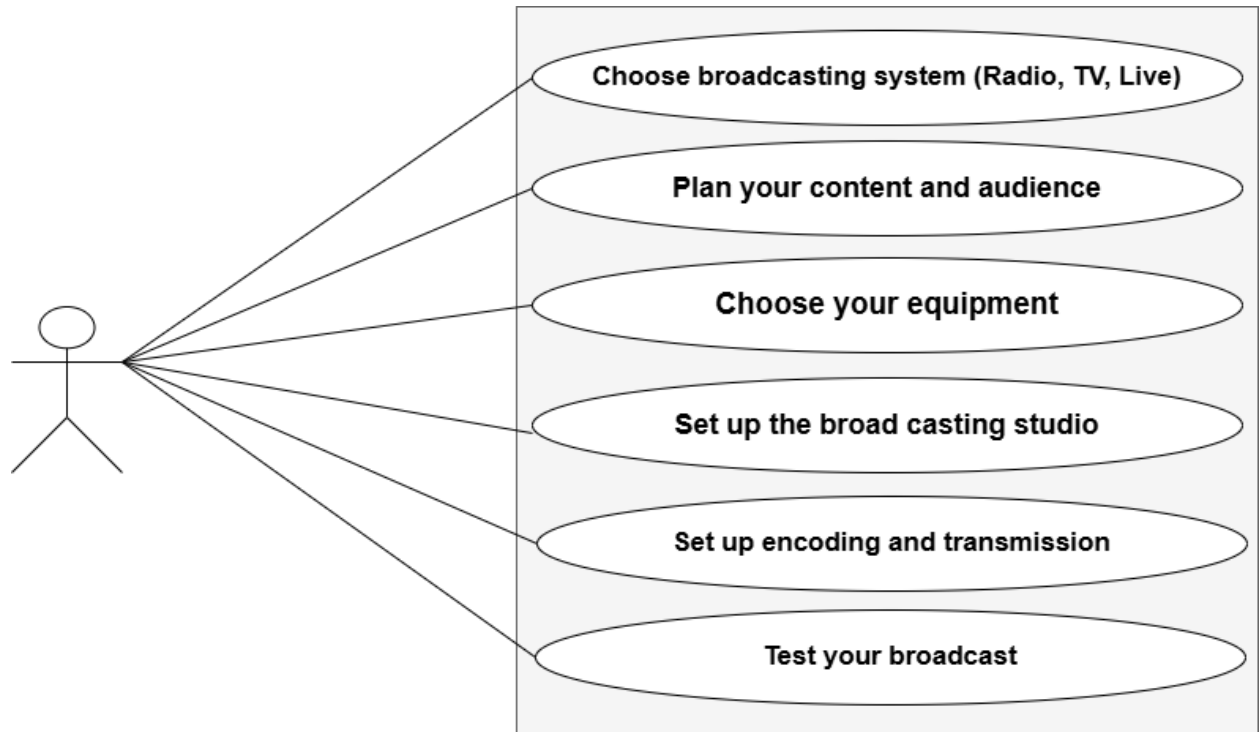
Bill Payment(paytm)

8) **Draw Use case on banking system for customers.**



banking system for customers

9) **Draw Use case on Broadcasting System.**

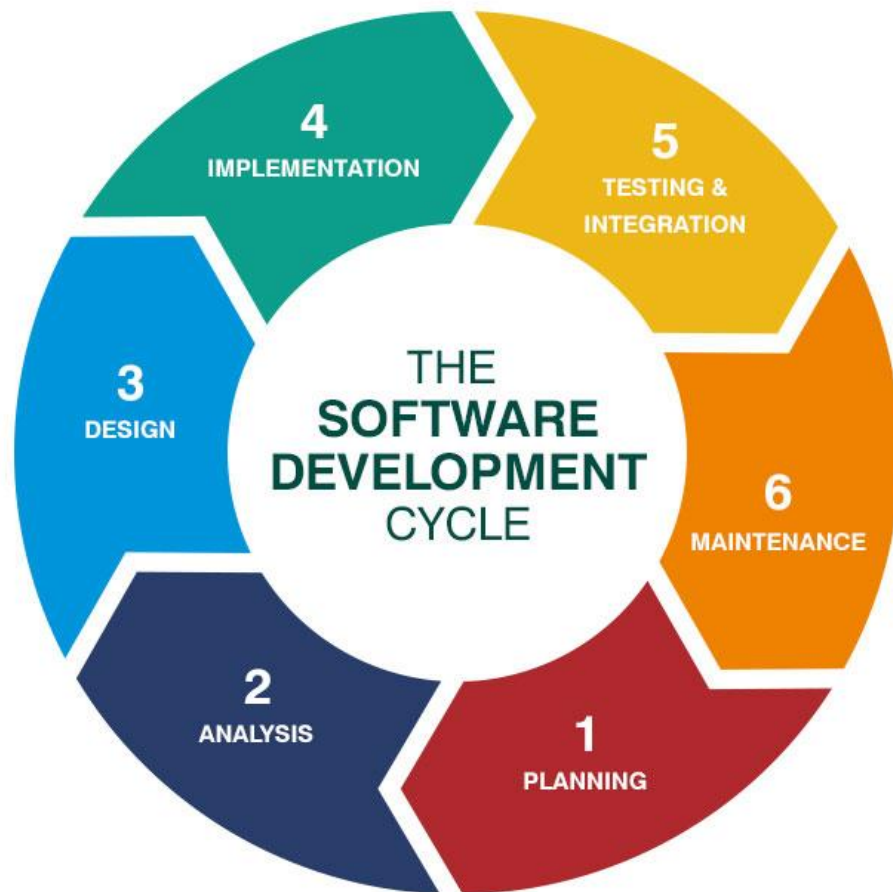


Broadcasting System

10) Write SDLC phases with basic introduction

SDLC Phases:-

- 1) Planning
- 2) Analysis
- 3) Design
- 4) Implementation (Coding)
- 5) Testing
- 6) Maintenance & Support



1) Planning

- **Define projects goals, what need customers...**
- **Planning & requirement analysis**
- **Set objectives and goals.**
- **Resources planning.**

2) Analysis

- **Gather and document functional and non-functional requirements.**
- **Define requirement (functional, technical)**
- **Reviews and approved.**

3) Design

- **create software architecture and UI/UX design.**
- **Decide on technologies, frameworks, and database structure.**

4) Implementation (Coding)

- **Developers write the code according to the design specifications**

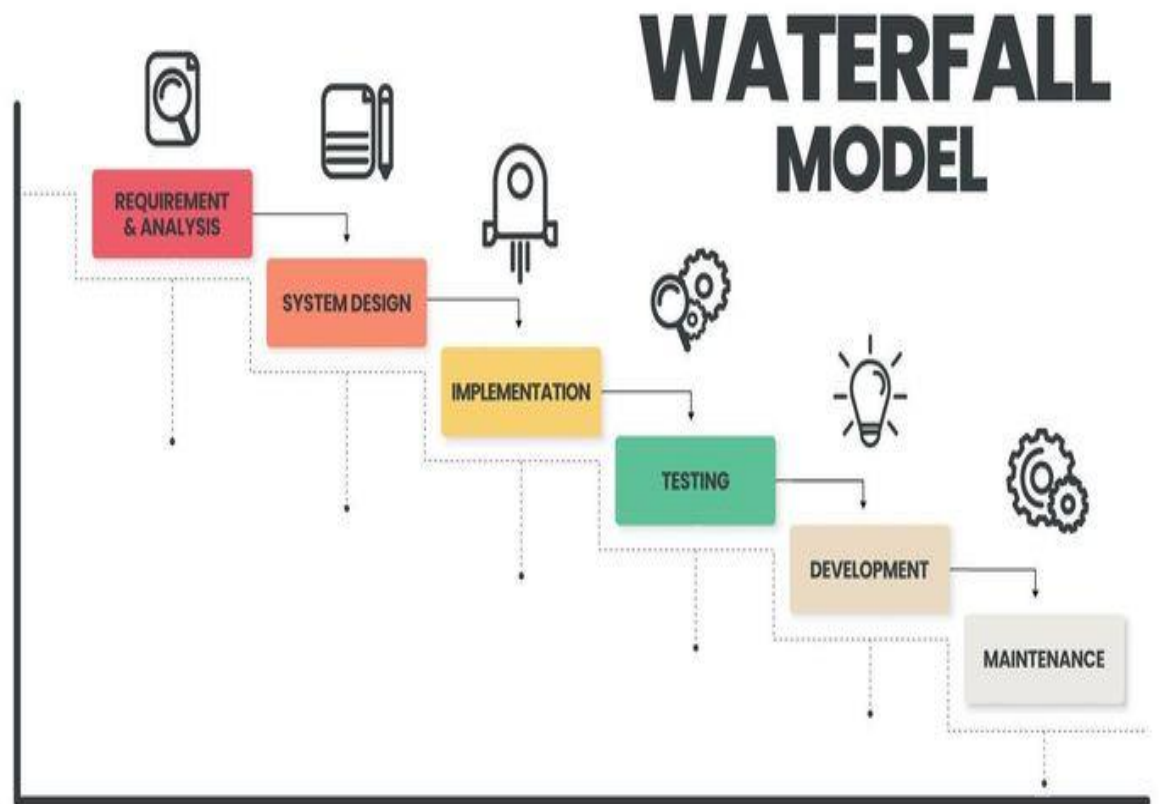
5) Testing

- **Perform functional, security and identify and fix bugs.**

6) Maintenance & Support

- **Monitor performance and fix any post release bugs.**
- **Release planning**
- **Provide updates.**
- **Feedback**

11) Explain Phases of the waterfall model



The Waterfall Model is a linear and sequential software development process with six phases:

1. Requirement Gathering & Analysis

- **Collect project requirements.**

2. System Design

- **Plan architecture and system components.**

3. Implementation

- **Write the actual code.**

4. Testing

- **Identify and fix errors.**

5. Deployment

- **Release the software for users.**

6. Maintenance

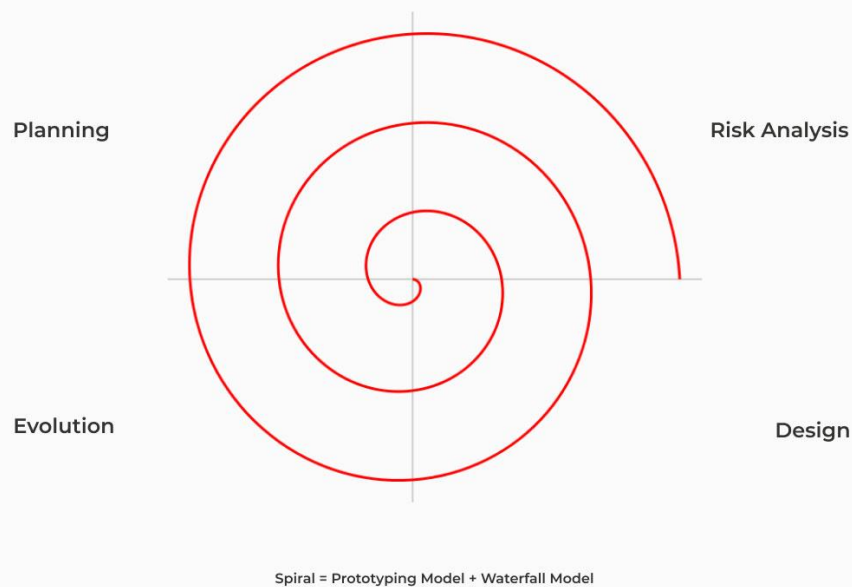
- **Provide updates and bug fixes.**

12) Write phases of spiral model

- **The Spiral Model is a risk-driven software development process that combines iterative development with systematic risk analysis. It consists of four main phases, repeated in multiple spirals (iterations).**

Phases of the Spiral Model

Spiral Development Model



1. Planning

- **Gather requirements and identify objectives for the iteration.**

2. Risk Analysis

- **Identify potential risks and develop strategies to mitigate them.**

3. Development & Testing

- **Design, implement, and test the software in small increments.**

4. Evaluation & Review

- **Get feedback from stakeholders and decide whether to continue or modify the approach.**

13) Write agile manifesto principles

✓ 12 Principles of the Agile Manifesto:

Principles In Agile Manifesto



1. Customer Satisfaction Through Early and Continuous Delivery

- Deliver valuable software frequently to satisfy customers.

2. Welcome Changing Requirements, Even Late in Development

- Adapt to changes to provide competitive advantage.

3. Deliver Working Software Frequently

- Shorter timescales (weeks rather than months) for releases.

4. Business and Developers Must Work Together Daily

- Continuous collaboration ensures alignment with goals.

5. Build Projects Around Motivated Individuals

- Provide them the environment and trust to get the job done.

6. Face-to-Face Communication is the Most Effective

- Direct communication enhances efficiency and clarity.

7. Working Software is the Primary Measure of Progress

- **Functioning products matter more than documentation.**

8. Sustainable Development Pace

- **Teams should maintain a constant and sustainable workload.**

9. Continuous Excellence and Good Design Enhances Agility

- **Technical excellence and simplicity ensure long-term success.**

10. Simplicity—the Art of Maximizing Work Not Done—is Essential

- **Avoid unnecessary work to be more productive.**

11. Self-Organizing Teams Deliver the Best Results

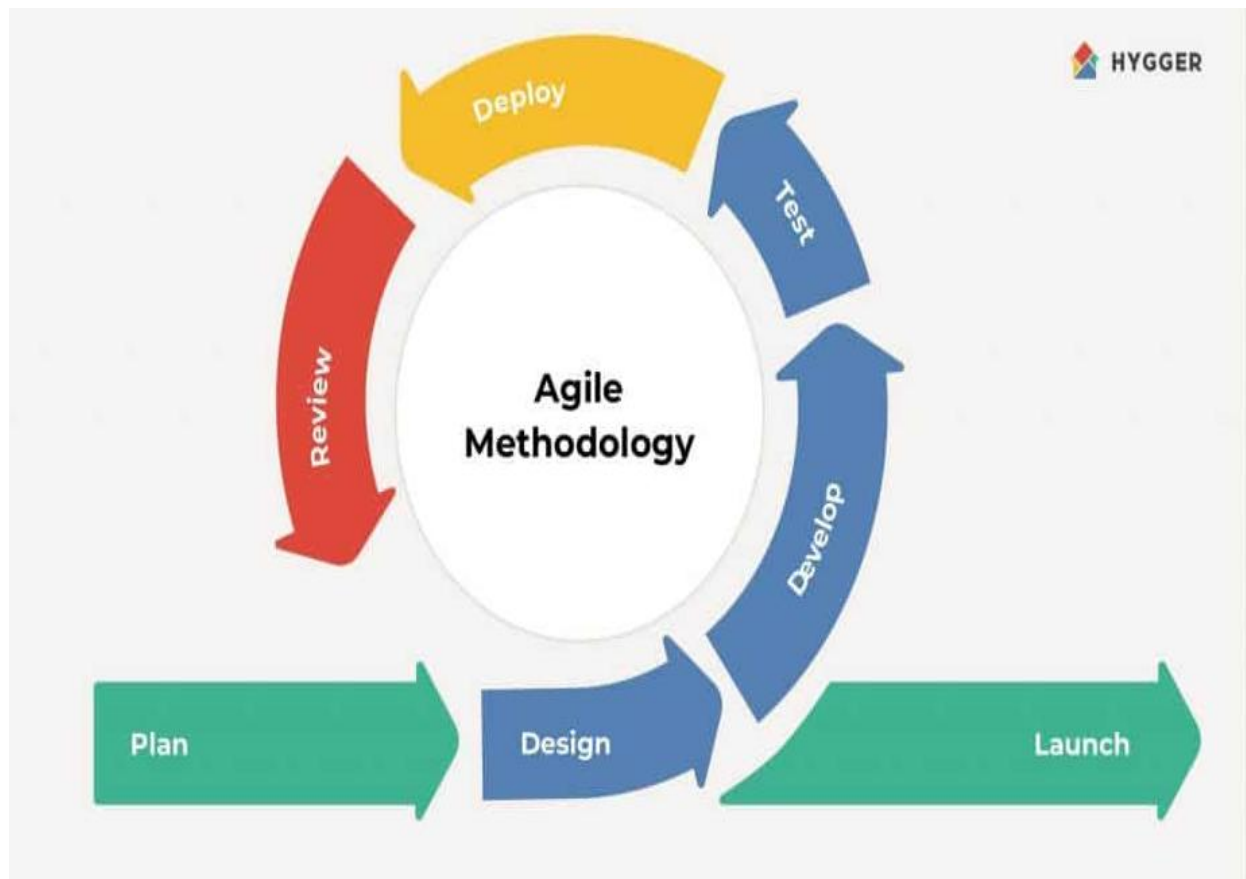
- **Teams should have the freedom to make decisions.**

12. Regular Reflection and Adjustment for Improvement

- **Teams should frequently evaluate and improve their processes.**

14) Explain working methodology of agile model and also write pros and cons.

❖ Working Methodology of the Agile Model



The Agile Model is an iterative and flexible approach to software development that emphasizes collaboration, customer feedback, and continuous improvement. It follows these key steps:

1. Concept & Requirement Gathering

- ✓ **Collect initial requirements and define project goals.**

2. Iteration Planning

- ✓ **Break down work into small cycles (iterations or sprints).**

3. Design & Development

- ✓ **Develop a working product incrementally in short iterations.**

4. Testing & Feedback

- ✓ **Continuously test the product and gather user feedback.**

5. Review & Deployment

- ✓ **Deliver functional software frequently and refine based on feedback.**

6. Continuous Improvement

- ✓ **Adapt to changes and improve processes in each iteration.**

Pros & Cons of Agile Model

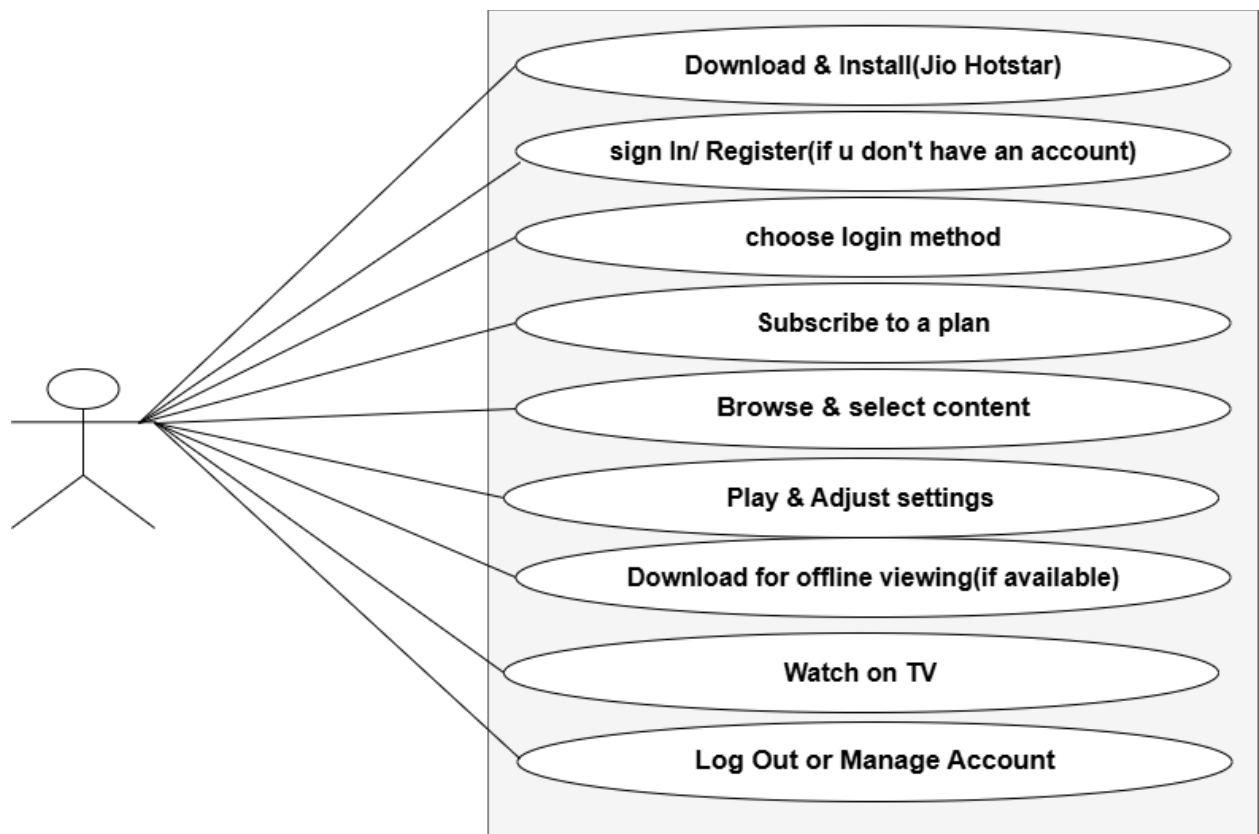
❖ Pros (Advantages):

- **Faster Delivery**
 - ✓ Working software is delivered frequently.
- **Flexibility**
 - ✓ Easily adapts to changing requirements.
- **Customer Satisfaction**
 - ✓ Continuous user involvement ensures alignment with needs.
- **Improved Quality**
 - ✓ Regular testing and feedback enhance software quality.
- **Better Collaboration**
 - ✓ Encourages teamwork between developers and stakeholders.

❖ Cons (Disadvantages):

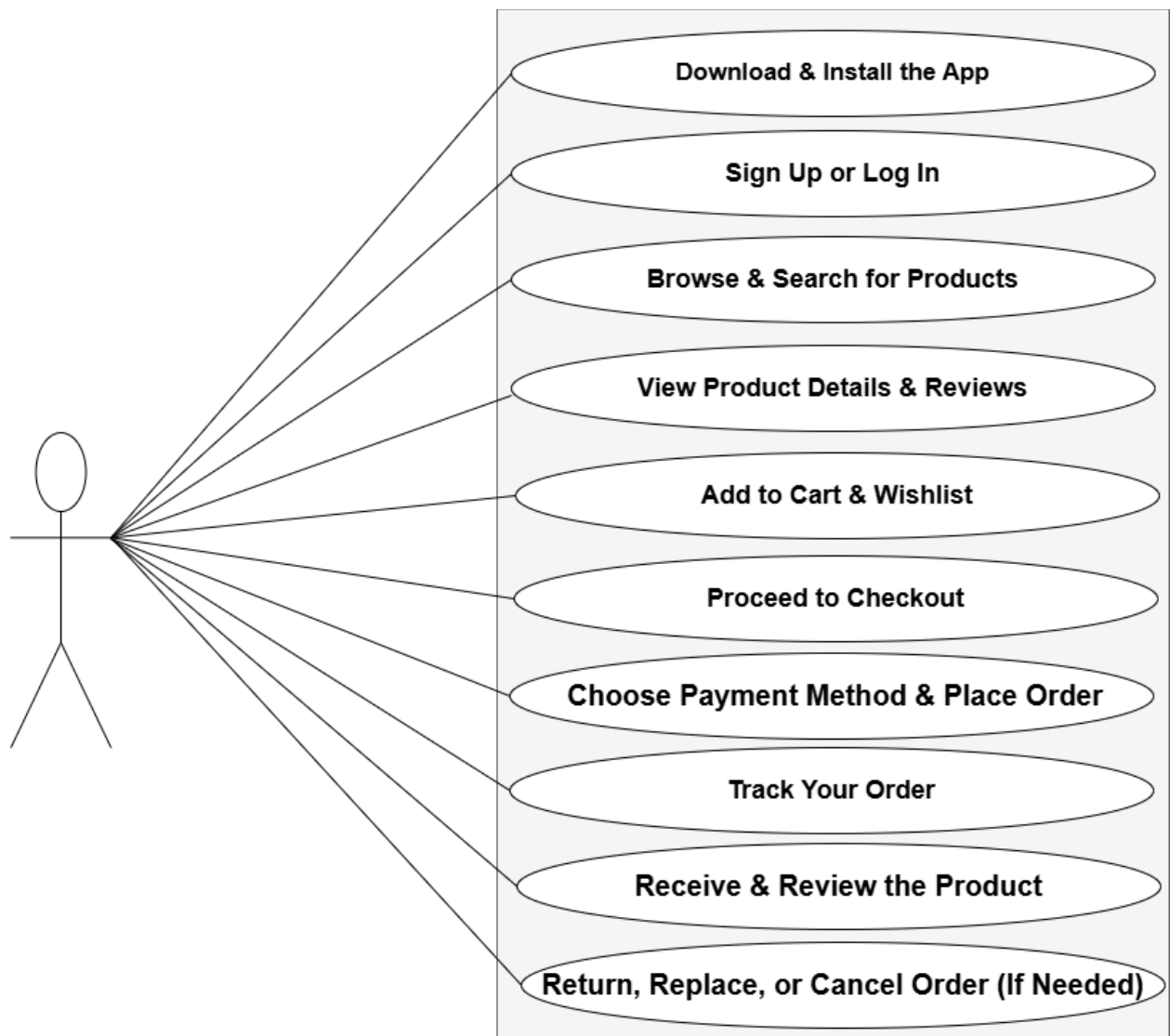
- Uncertain Project Scope
 - ✓ Frequent changes can lead to scope creep.
- Requires Active User Involvement
 - ✓ Needs continuous customer collaboration.
- Not Ideal for Large Teams
 - ✓ Can be challenging to coordinate big teams.
- Difficult to Predict Costs & Timeline
 - ✓ Since changes happen frequently.
- Lack of Proper Documentation
 - ✓ Focus is more on working software than detailed documentation.

15) Draw use case on OTT Platform



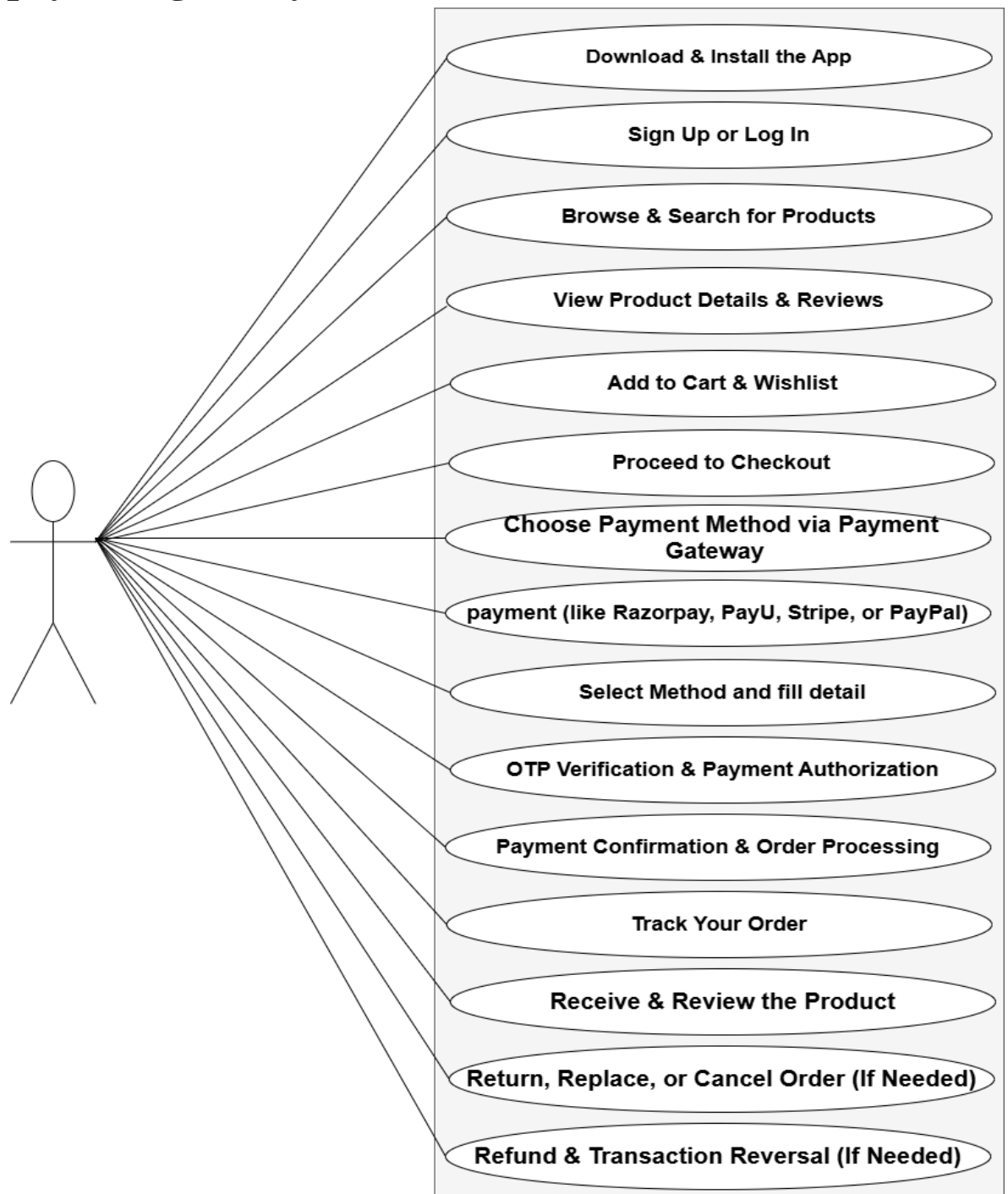
OTT Platform

16) Draw use case on E-commerce application



E-commerce application

17) Draw use case on Online shopping product using payment gateway.



Online shopping product using payment gateway