

What is SDLC?

- SDLC or the **Software Development Life Cycle** is a process that produces software with the highest quality and lowest cost in the shortest time possible.
- SDLC provides a well-structured flow of phases that help an organization to quickly produce high-quality software which is well-tested and ready for production use.
- SDLC has 6 phase which is give below
 - 1) Requirement phase
 - 2) Design phase
 - 3) Build /Development phase
 - 4) Testing phase
 - 5) Deployment/deliver phase
 - 6) Maintenance.

What is testing?

- Software testing is a process of identifying the correctness of software by considering its all attributes (Reliability, Scalability, Portability, Re-usability, Usability) and evaluating the execution of software components to find the software bugs or errors or defects.
- Software testing is a process to identifying correctness, completeness and quality of developed computer software.

What is agile methodology?

- Agile is an iterative development methodology, where both development and testing activities are concurrent. Testing is not a separate phase; Coding and Testing are done interactively and incrementally, resulting in quality end product, which the meets customer requirements. Further, continuous integration results in early defect removal and hence time, effort and cost savings.

What is SRS?

- A software requirements specification (SRS) is a complete description of the behavior of the system to be developed.

What is oops?

- Object-oriented programming (OOP) is a computer programming model that organizes software design around data, or objects, rather than functions and logic. An object can be defined as a data field that has unique attributes and behavior.

Write Basic Concepts of oops

- Object
- Class
- abstraction,
- encapsulation,
- inheritance,
- polymorphism

What is object?

- An object represents an individual,
- Identifiable item, unit, or entity, either real or abstract,
- With a well-defined role in the problem domain.

What is class?

- In object-oriented programming, a class is a blueprint for creating objects (a particular data structure),
- providing initial values for state (member variables or attributes),
- Implementations of behavior (member functions or methods).

- The user-defined objects are created using the class keyword.

What is encapsulation?

- Encapsulation is a way to restrict the direct access to some components of an object, so users cannot access state values for all of the variables of a particular object.
- Encapsulation can be used to hide both data members and data functions or methods associated with an instantiated class or object.

What is inheritance?

- Inheritance means that one class inherits the characteristics of another class. This is also called a “is a” relationship.

What is polymorphism?

- Poly refers to many. That is a single function or an operator functioning in many ways different upon the usage is called polymorphism
 - Compile time polymorphism(Overloading)
 - Runtime polymorphism(Overriding)

Write SDLC phases with basic introduction?

- SDLC has 6 phase which is give below
 1. Requirement phase
 2. Design phase
 3. Build /Development phase
 4. Testing phase
 5. Deployment/deliver phase
 6. Maintenance.

1) Planning and Requirement Analysis.

- Requirement analysis is the most important and fundamental stage in SDLC.
- Information is then used to plan the basic project approach and to conduct product feasibility study in the economical, operational and technical areas.
- Planning for the quality assurance requirements and identification of the risks associated with the project is also done in the planning stage.
- The outcome of the technical feasibility study is to define the various technical approaches that can be followed to implement the project successfully with minimum risks.

2) Design phase /Defining Requirements

- Once the requirement analysis is done the next step is to clearly define and document the product requirements and get them approved from the customer or the market analysts.
- This is done through an SRS (Software Requirement Specification) document which consists of all the product requirements to be designed and developed during the project life cycle.

3) Designing the Product Architecture

- Based on the requirements specified in SRS, usually more than one design approach for the product architecture is proposed and documented in a DDS - Design Document Specification.
- This DDS is reviewed by all the important stakeholders and based on various parameters as risk assessment, product robustness, design modularity, budget and time constraints, the best design approach is selected for the product.
- A design approach clearly defines all the architectural modules of the product along with its communication and data flow representation with the external and third party modules (if any).

4) Building or Developing the Product

- In this stage of SDLC the actual development starts and the product is built.

- The programming code is generated as per DDS during this stage. If the design is performed in a detailed and organized manner, code generation can be accomplished without much hassle.

5) Testing the Product

- This stage is usually a subset of all the stages as in the modern SDLC models, the testing activities are mostly involved in all the stages of SDLC.
- However, this stage refers to the testing only stage of the product where product defects are reported, tracked, fixed and retested, until the product reaches the quality standards defined in the SRS

6)Deployment in the Market and Maintenance

- Once the product is tested and ready to be deployed it is released formally in the appropriate market.
- Sometimes product deployment happens in stages as per the business strategy of that organization.
- The product may first be released in a limited segment and tested in the real business environment (UAT- User acceptance testing).
- Then based on the feedback, the product may be released as it is or with suggested enhancements in the targeting market segment.
- After the product is released in the market, its maintenance is done for the existing customer base.

Explain Phases of the waterfall model?

- The waterfall model phase are given below there are 6 phase
 1. Requirement Analysis
 2. System design.
 3. Implementations
 4. Testing
 5. Deployment
 6. Maintenance

1)Requirement Gathering and analysis –

- All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification document.

2)System Design –

- The requirement specifications from first phase are studied in this phase and the system design is prepared. This system design helps in specifying hardware and system requirements and helps in defining the overall system architecture.

3)Implementation –

- With inputs from the system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality, which is referred to as Unit Testing.

4)Integration and Testing –

- All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.

5)Deployment of system –

- Once the functional and non-functional testing is done; the product is deployed in the customer environment or released into the market.

6)Maintenance –

- There are some issues which come up in the client environment. To fix those issues, patches are released. Also to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

Write phases of spiral model?

Identification

- In the subsequent spirals as the product matures, identification of system requirements, subsystem requirements and unit requirements are all done in this phase.
- This phase also includes understanding the system requirements by continuous communication between the customer and the system analyst.
- At the end of the spiral, the product is deployed in the identified market.

Design

- The Design phase starts with the conceptual design in the baseline spiral and involves architectural design, logical design of modules, physical product design and the final design in the subsequent spirals.

Construct or Build

- The Construct phase refers to production of the actual software product at every spiral.
- In the baseline spiral, when the product is just thought of and the design is being developed a POC (Proof of Concept) is developed in this phase to get customer feedback.
- Then in the subsequent spirals with higher clarity on requirements and design details a working model of the software called build is produced with a version number. These builds are sent to the customer for feedback.

Evaluation and Risk Analysis

- Risk Analysis includes identifying, estimating and monitoring the technical feasibility and management risks, such as schedule slippage and cost overrun. After testing the build, at the end of first iteration, the customer evaluates the software and provides feedback.
- The following illustration is a representation of the Spiral Model, listing the activities in each phase.
- Based on the customer evaluation, the software development process enters the next iteration and subsequently follows the linear approach to implement the feedback suggested by the customer. The process of iterations along the spiral continues throughout the life of the software.

Write agile manifesto principles?

- Following are the Agile Manifesto principles –
- **Individuals and interactions** – In Agile development, self-organization and motivation are important, as are interactions like co-location and pair programming.
- **Working software** – Demo working software is considered the best means of communication with the customers to understand their requirements, instead of just depending on documentation.
- **Customer collaboration** – As the requirements cannot be gathered completely in the beginning of the project due to various factors, continuous customer interaction is very important to get proper product requirements.
- **Responding to change** – Agile Development is focused on quick responses to change and continuous development.

Explain working methodology of agile model and also write pros and cons?

- Agile model believes that every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release.
- Iterative approach is taken and working software build is delivered after each iteration.
- Each build is incremental in terms of features; the final build holds all the features required by the customer.

Agile Model - Pros and Cons

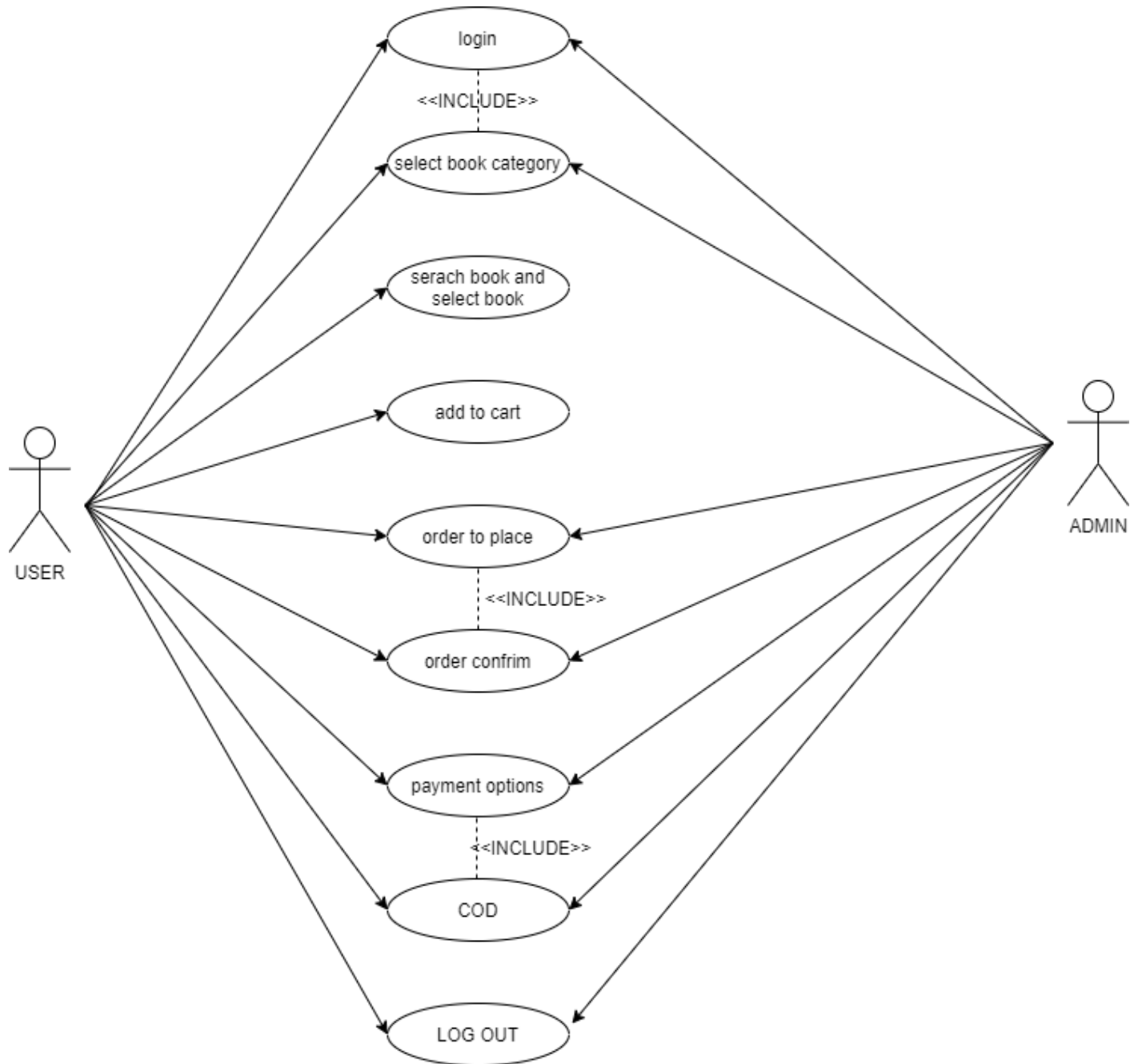
The advantages of the Agile Model are as follows

- Is a very realistic approach to software development?
- 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 flexibility to developers.

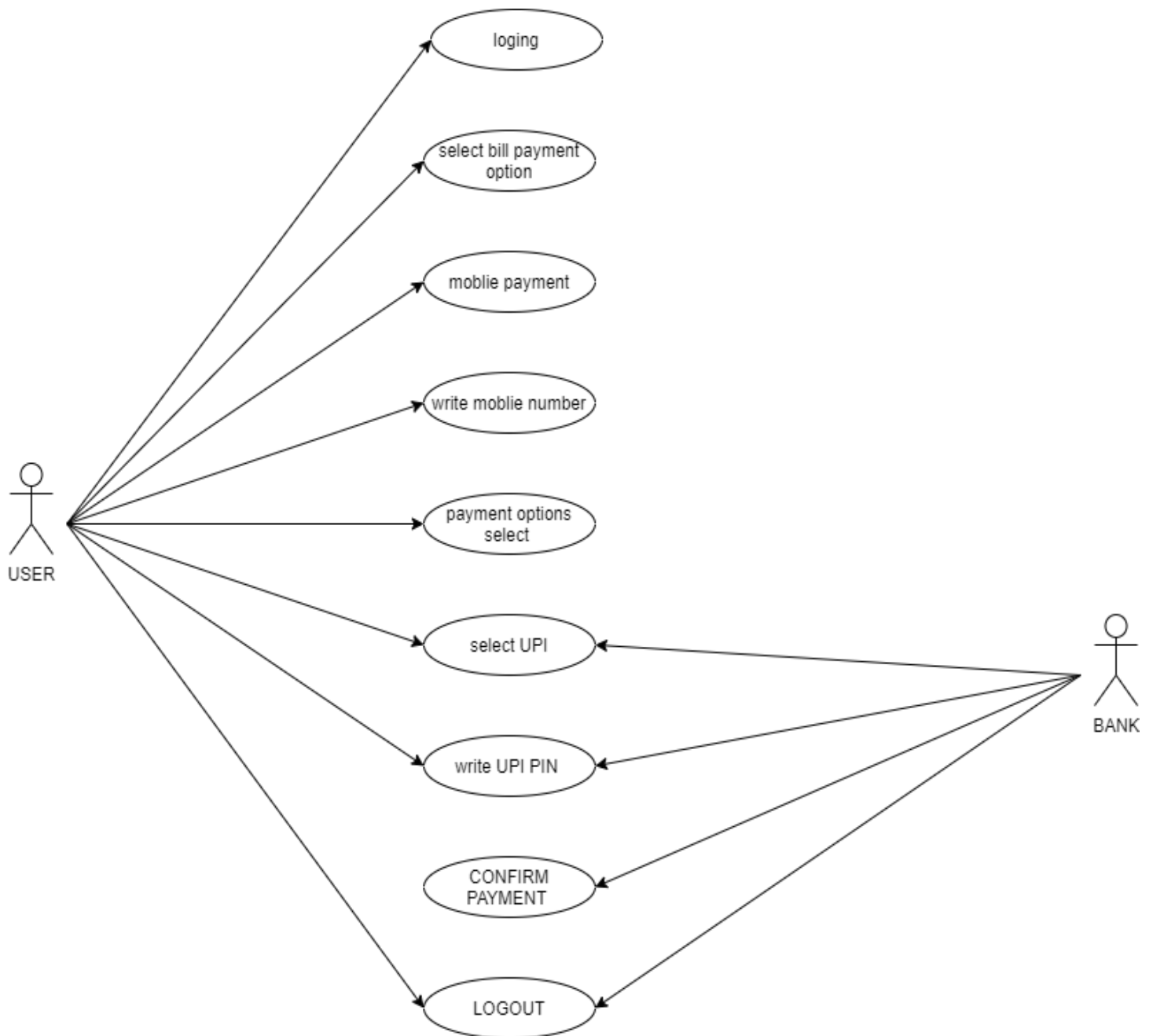
The disadvantages of the Agile Model are as follows –

- 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 a 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.

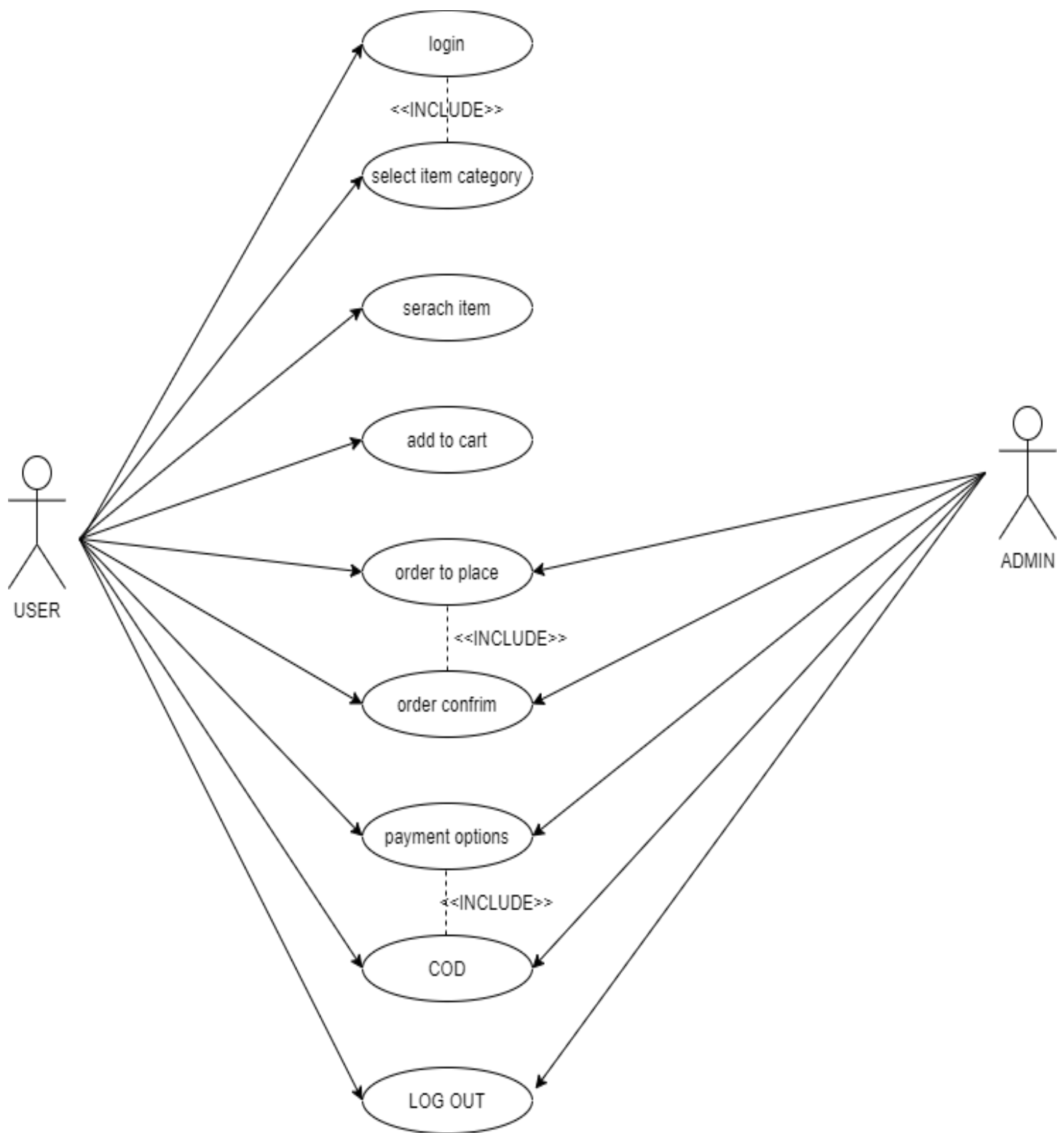
Draw Usecase on Online book shopping



Draw Usecase on online bill payment system (paytm)



Draw usecase on Online shopping product using COD.



Draw usecase on Online shopping product using payment gateway.

