Software Testing Assignment

Module–1(Fundamental)

1). what is SDLC.

A Software Development Life Cycle is essentially a series of steps, or phases, that provide a model for the development and lifecycle management of an application or piece of software.

- Requirement Gathering
- Analysis
- Design
- Implementation
- Testing
- Maintenance

2). what is software testing?

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

3). what is agile methodology?

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.

4). what is SRS

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

5). what is oops

An object-based programming language is one which easily supports object-orientation.

6). Write Basic Concepts of oops.

- Object
- Class
- Abstraction
- Encapsulation
- Inheritance
- Polymorphism

7). what is object

Any Entity which has own state and behavior that is called an object.

8). what is class

Collection of objects that is called class.

9). what is encapsulation

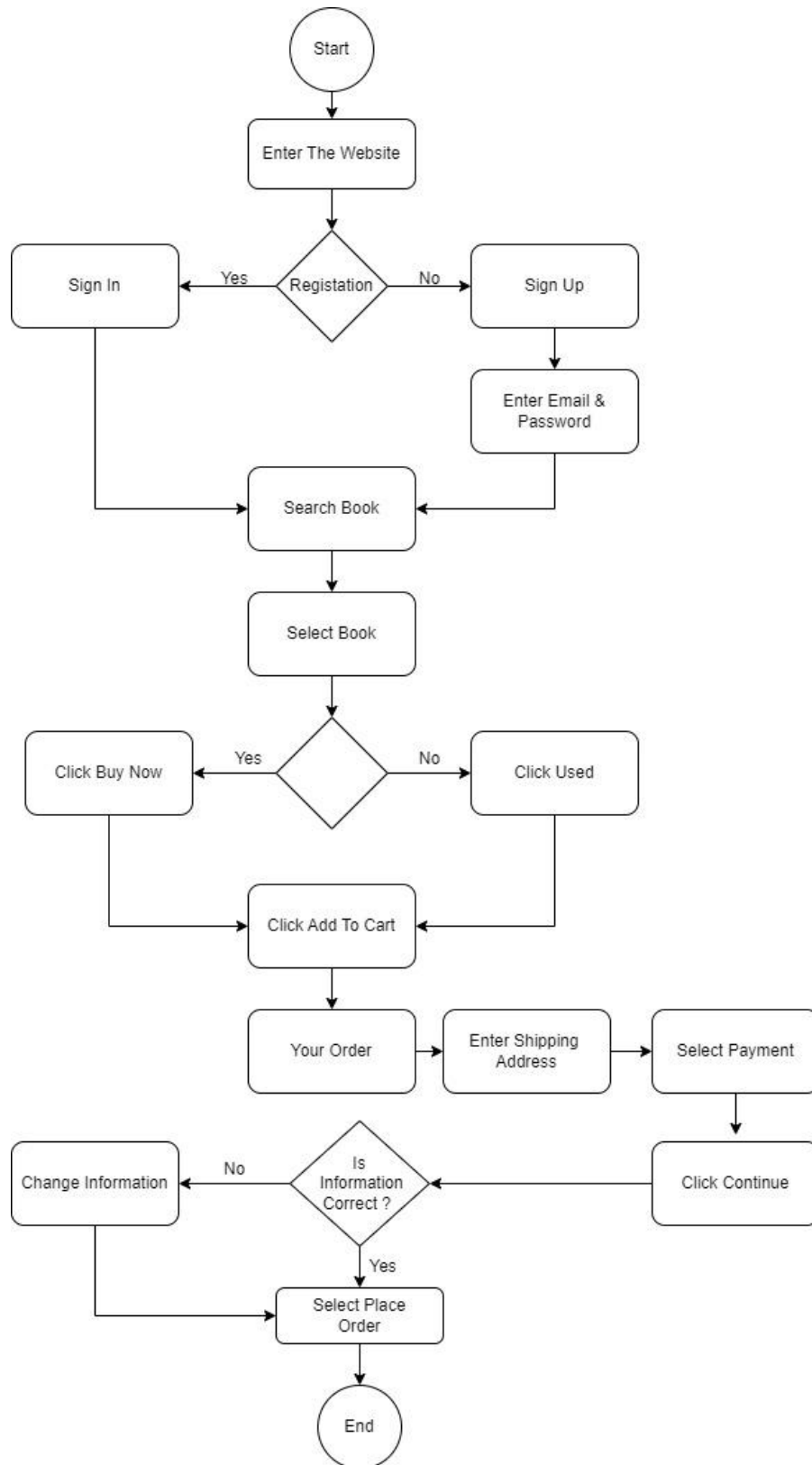Wrapping up of data or binding of data that is called encapsulation.

10). what is inheritance

When one object acquires all the properties and behavior of parent class.

11). what is polymorphism

Many ways to perform anything.

12). Draw Use case on Online book shopping

```
                              ┌─────────┐
                              │  Start  │
                              └────┬────┘
                                   │
                          ┌────────▼────────┐
                          │ Enter The Website│
                          └────────┬────────┘
                                   │
                                   ▼
              ┌─────────┐  Yes  ◇────────◇  No   ┌─────────┐
              │ Sign In │◄──────│Registation│───────►│ Sign Up │
              └────┬────┘       ◇────────◇        └────┬────┘
                   │                                   │
                   │                          ┌────────▼────────┐
                   │                          │  Enter Email &  │
                   │                          │    Password     │
                   │                          └────────┬────────┘
                   │       ┌─────────────┐             │
                   └──────►│ Search Book │◄────────────┘
                           └──────┬──────┘
                                  │
                                  ▼
                           ┌─────────────┐
                           │ Select Book │
                           └──────┬──────┘
                                  │
                                  ▼
         ┌──────────────┐  Yes  ◇─────◇  No   ┌─────────────┐
         │ Click Buy Now│◄──────│     │───────►│ Click Used  │
         └──────┬───────┘       ◇─────◇        └──────┬──────┘
                │          ┌────────────────┐         │
                └─────────►│ Click Add To Cart│◄───────┘
                           └────────┬─────────┘
                                    │
                                    ▼
                    ┌────────────┐   ┌──────────────────┐   ┌────────────────┐
                    │ Your Order │──►│ Enter Shipping   │──►│ Select Payment │
                    └────────────┘   │    Address       │   └───────┬────────┘
                                     └──────────────────┘           │
                                                                    ▼
      ┌────────────────────┐  No  ◇─────────────◇      ┌──────────────┐
      │ Change Information │◄─────│     Is      │◄──────│ Click Continue│
      └─────────┬──────────┘      │ Information │      └──────────────┘
                │                 │  Correct ?  │
                │                 ◇─────────────◇
                │                        │ Yes
                │                        ▼
                │                 ┌──────────────┐
                └────────────────►│ Select Place │
                                  │    Order     │
                                  └──────┬───────┘
                                         │
                                         ▼
                                    ┌─────────┐
                                    │   End   │
                                    └─────────┘
```

13). Draw Use case on online bill payment system (paytm)
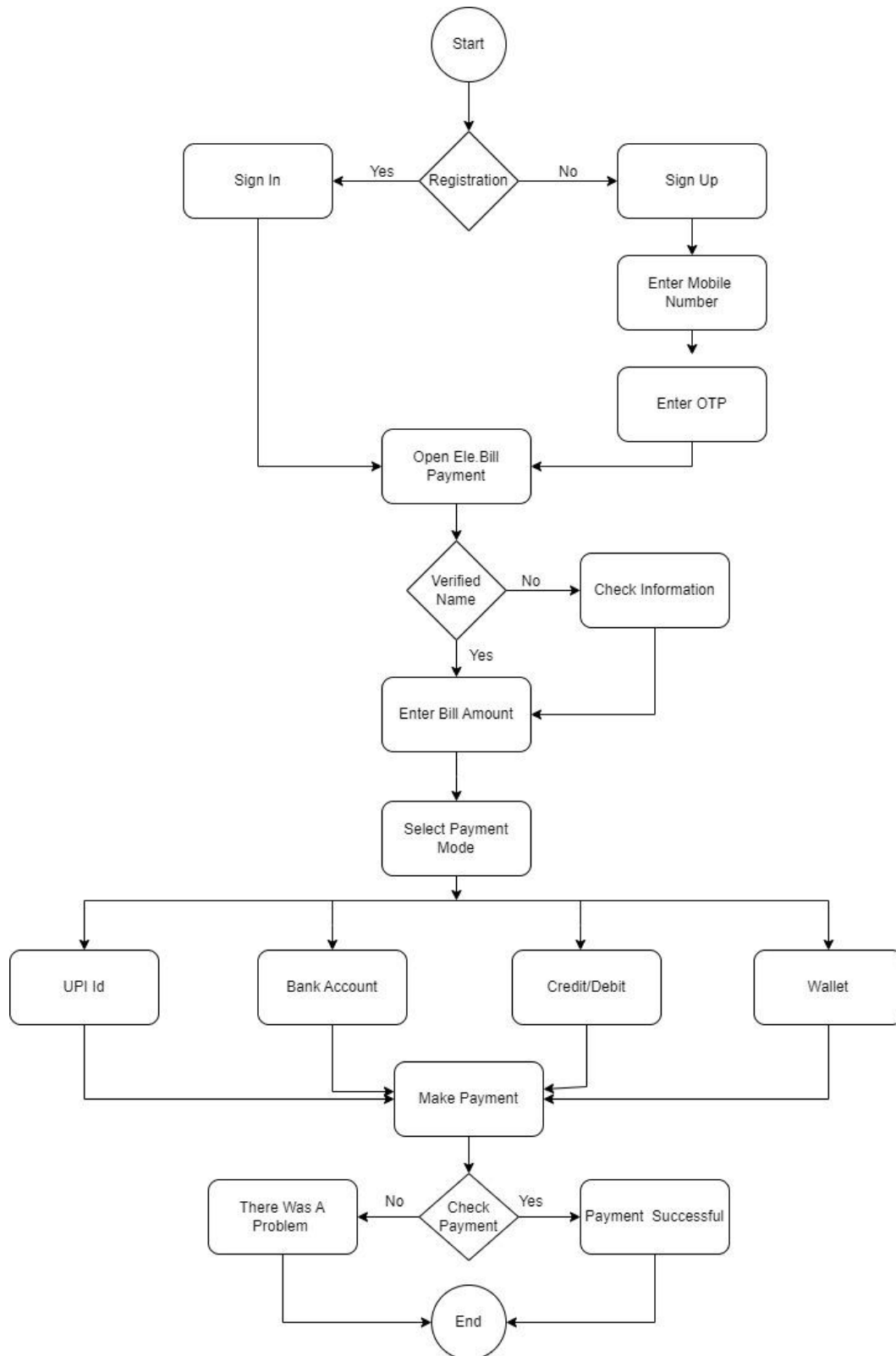
14). Write SDLC phases with basic introduction.

- Requirement Gathering
- Analysis
- Design
- Implementation
- Testing
- Maintenance

1). Requirement Gathering:-

- Although requirements may be documented in written form, they may be incomplete, unambiguous, or even incorrect.
- User and business needs change during the project
- Requirements definitions usually consist of natural language, supplemented by (e.g., UML) diagrams and tables.
- Non-functional requirements may be more critical than functional requirements.
- If these are not met, the system is useless!

2). Analysis:-

- The analysis phase defines the requirements of the system, independent of how these requirements will be accomplished.
- This phase defines the problem that the customer is trying to solve.
- The deliverable result at the end of this phase is a requirement document.
- This analysis represents the **"what"** phase.
- This phase represents the **"how"** phase.
- The design may include the usage of existing components.

3). Design:-

- The Design team can now expand upon the information established in the requirement document.

- The requirement document must guide this decision process.
- Performance Analysis
- Test Plan
- The architecture team also converts the typical scenarios into a test Plan.

4). Implementation:-

- In the implementation phase, the team builds the components either from scratch or by composition.
- The implementation phase deals with issues of quality, performance, baselines, libraries, and debugging.
- The implementation phase deals with issues of quality, performance, baselines, libraries, and debugging.
- For example, a component may be narrowly designed for this particular system, or the component may be made more general to satisfy a reusability guideline.
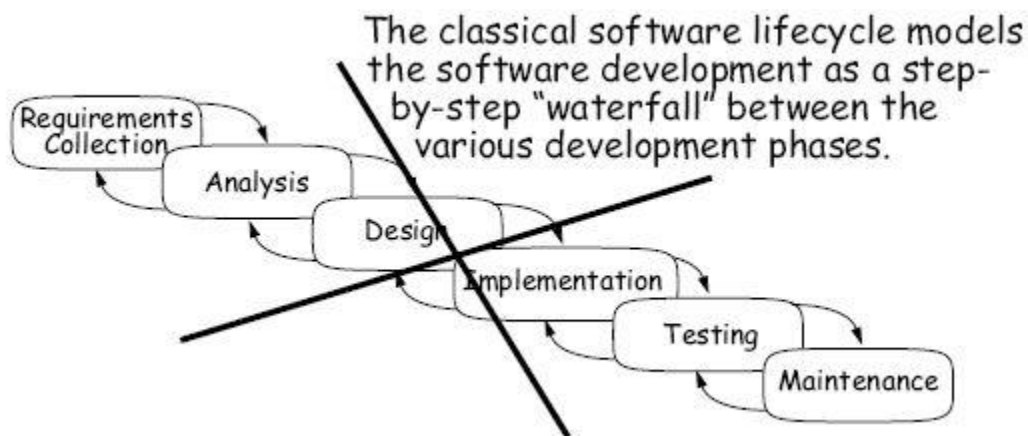   - Implementation – Code
    - Critical Error Removal

5). Testing:-

- Simply stated, quality is very important. Many companies have not learned that quality is important and deliver more claimed functionality but at a lower quality level.
- It is much easier to explain to a customer why there is a missing feature than to explain to a customer why the product lacks quality.
- A customer satisfied with the quality of a product will remain loyal and wait for new functionality in the next version.
- The testing phase is a separate phase which is performed by a different team after the implementation is completed.

6). Maintenance:-

- The developing organization or team will have some mechanism to document and track defects and deficiencies.
- updating all analysis, design and user documentation
- Maintenance is the process of changing a system after it has been deployed.
  - **Corrective maintenance**: **identifying and repairing defects**
  - **Adaptive maintenance**: adapting the existing solution to the **new platforms.**
  - **Perfective Maintenance**: implementing the **new requirements**

15). Explain Phases of the waterfall model

The classical software lifecycle models the software development as a step-by-step "waterfall" between the various development phases.

- **The waterfall is unrealistic for many reasons, especially:**
  - Requirements must be **"frozen"** to early in the life cycle
  - Requirements are **validated too late**

➢ **Applications (When to use?)**
- Requirements are very well documented, clear and fixed.
- Product definition is stable.
- Technology is understood and is not dynamic.
- There are no ambiguous requirements.
- The project is short.

➤ **Pros :-**

- Simple and easy to understand and use
- Easy to manage due to the rigidity of the model.
- Phases are processed and completed one at a time.
- Clearly defined stages.
- Well understood milestones.
- Easy to arrange tasks.
- Process and results are well documented.

➤ **Cons:-**

- No working software is produced until late during the life cycle.
- High amounts of risk and uncertainty.
- Not a good model for complex and object-oriented projects.
- Poor model for long and ongoing projects.
- It is difficult to measure progress within stages.
- Adjusting scope during the life cycle can end a project.

16). Write phases of spiral model
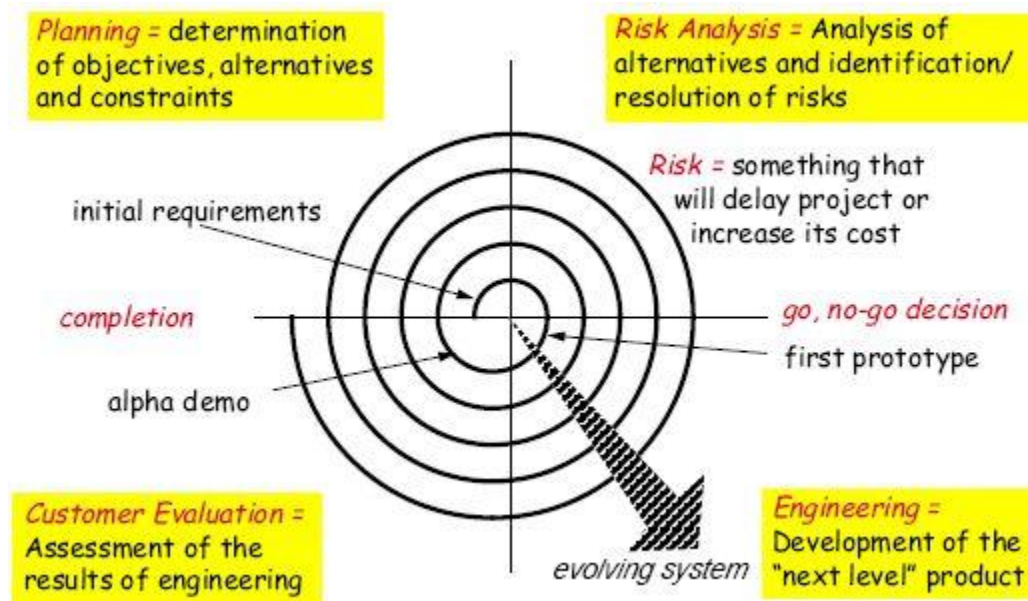
- ➢ **Application :-**
  - Spiral Model is very widely used in the software industry.
  - When costs there are a budget constraint and risk evaluation is important.
  - For medium to high-risk projects
  - Long-term project commitment because of potential changes to economic priorities as the requirements change with time.
  - Customer is not sure of their requirements which are usually the case.
  - Requirements are complex and need evaluation to get clarity.
  - Significant changes are expected in the product during the development cycle.

- ➢ **Pros:-**
  - Changing requirements can be accommodated.
  - Allows for extensive use of prototypes
  - Requirements can be captured more accurately.
  - Users see the system early.
  - Development can be divided into smaller parts and more risky parts
  - Can be developed earlier which helps better risk management.

- ➢ **Cons:-**
  - Management is more complex.
  - End of project may not be known early.
  - Not suitable for small or low risk projects and could be expensive for Small projects.
  - Process is complex
  - Spiral may go indefinitely.
  - Large number of intermediate stages requires excessive documentation.

17). Write agile manifesto principles.

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.

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

- 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.
- Each iteration typically lasts from about one to three weeks.
- At the end of the iteration a working product is displayed to the customer and important stakeholders.

➢ **Pros:-**
- Is a very realistic approach to software development
- Promotes teamwork and cross training.
- Resource requirements are minimum.
- Suitable for fixed or changing requirements
- Delivers early partial working solutions.
- Little or no planning required
- Easy to manage
- Gives flexibility 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.
- There is very high individual dependency, since there is minimum documentation generated.

19). Draw use case on Online shopping product using COD.

```
                          ┌─────────┐
                          │  Start  │
                          └────┬────┘
                               │
                     ┌─────────▼─────────┐
                     │ Enter the website │
                     └─────────┬─────────┘
                               │
              Yes          ◇ Registration ◇          No
       ┌─────────┐◄────────                ────────►┌─────────┐
       │ Sign in │                                  │ Sign Up │
       └────┬────┘                                  └────┬────┘
            │                                            │
            │                              ┌─────────────▼──────────────┐
            │                              │  Enter Mobile Number       │
            │                              └─────────────┬──────────────┘
            │                                            │
            │                              ┌─────────────▼──────────────┐
            │                              │  Sign in with OTP          │
            │                              └─────────────┬──────────────┘
            │                                            │
            │        ┌──────────────────┐               │
            └───────►│  Search Product  │◄──────────────┘
                     └────────┬─────────┘
                              │
            Yes          ◇ Buy Now ◇          No
   ┌──────────────┐◄────────         ────────►┌──────────────┐
   │ Click Buy Now│                           │ Clicked Used │
   └──────┬───────┘                           └──────┬───────┘
          │          ┌──────────────────┐           │
          └─────────►│ Click add to cart│◄──────────┘
                     └────────┬─────────┘
                              │
                     ┌────────▼─────────┐
                     │   Your Order     │
                     └────────┬─────────┘
                              │
                     ┌────────▼─────────┐
                     │ Select Shopping  │
                     │  Information     │
                     └────────┬─────────┘
                              │
        ┌──────────┬──────────┼──────────┬──────────┐
        ▼          ▼          ▼           ▼          ▼
    ┌───────┐ ┌──────────┐ ┌───────────┐ ┌─────┐
    │  COD  │ │Credit/Debit│ │Net Banking│ │ EMI │
    └───┬───┘ └────┬─────┘ └─────┬─────┘ └──┬──┘
        │          └─────┐  ┌────┘           │
        └────────►┌──────▼──▼──┐◄────────────┘
                  │ Place Order │
                  └──────┬──────┘
                         │
                    ┌────▼────┐
                    │   End   │
                    └─────────┘
```
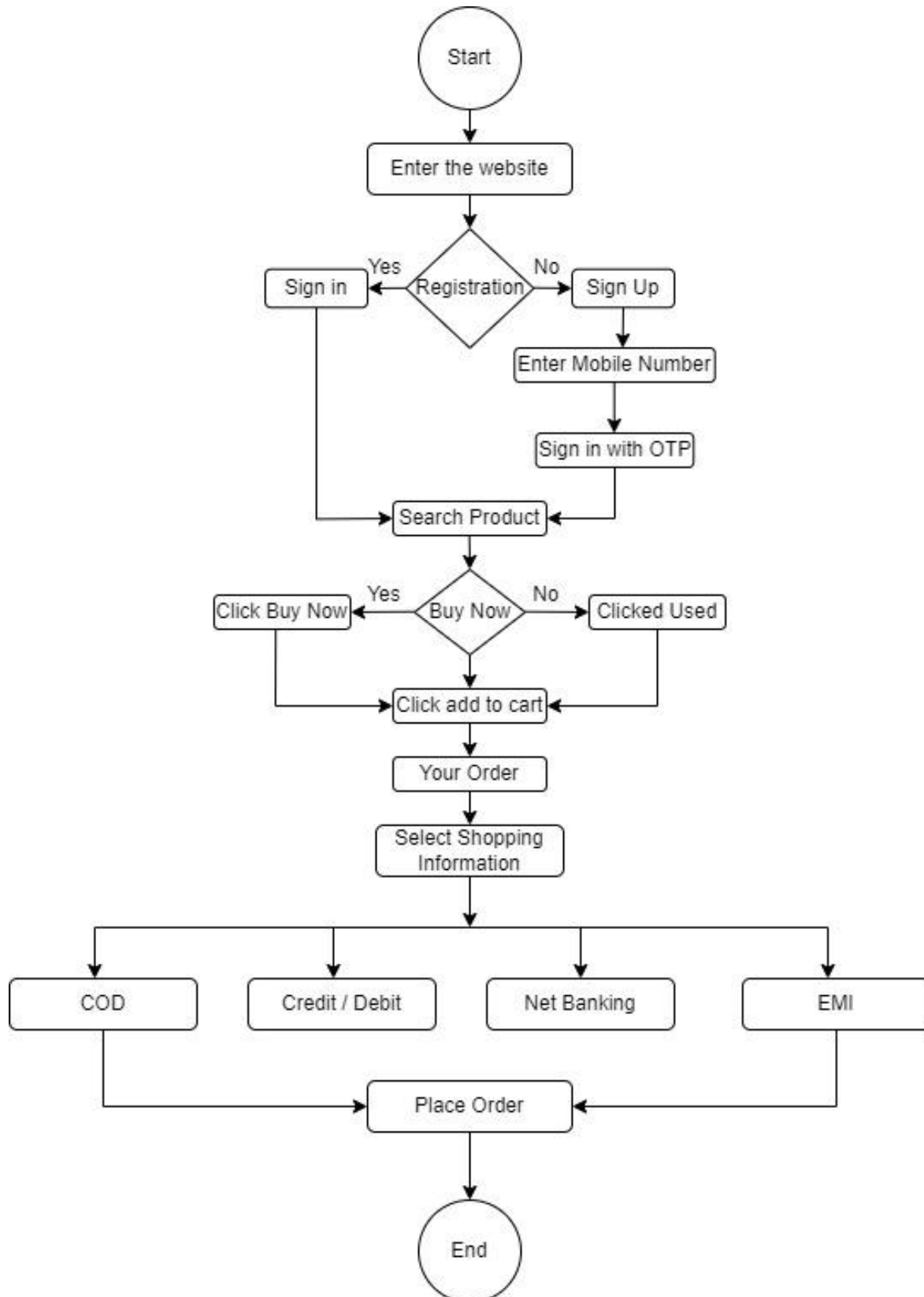
20).Draw use case on Online shopping product using payment gateway.