MODULE 1

1. What is software? What is software engineering?

—> software: It is a set of instructions that is given to a computer(what to do).
Program software: A software where we write our code.
Software engineering is a process that includes activities like designing, coding, testing, and maintaining software. With these activities it will create a code that is efficient, reliable and maintainable.

2. Explain types of software.

—>three types of software:
1. System software
2. Application software
3. Utility software

+   System software: It is a software that directly interacts with the hardware of the computer and manages the resources of the computer, also insures that hardware components work together smoothly.
e.g: Operating system(mac, windows…), device drivers(software that allows hardware components to communicate with the OS) …etc.
+   Application software: It is a software where people(you) directly interact to perform their tasks.
e.g.: web browser(chrome, edge…), word processors(microsoft word, google docs(the one that I am presently using is an application software), Games,photo editing software …etc. (all the types of software that we are using online)
+   Utility software: It is a software that performs specific tasks to optimize and maintain the computer system. In simple terms it is a set of tools that help people to run their computer smoothly.
e.g.: Anti- virus software, backup and recovery software...etc.

3. What is SDLC? Explain each phase of SDLC.

—> SDLC(software development life cycle)
It is a process of developing software that is reliable, scalable, efficient and maintainable.

- planning (invention of uber, driver will connect with the client)
- Analysis (the product that we are making is actually necessary in the market or not. to check its cataria analysis is necessary)

- design (ui/ux designer , like in uber there are many facilities like autorickshaw, car, bike , 6 person car etc... as per category people will choose its ride)
- Implementation(converting code)
- Testing and integration (main scalability(many people are logging in a website), security of the code)
- maintenance (on going maintenance (like daily update in amazon website/ one time maintenance(like occasionally need to update new data)

+ SDLC methodology

Requirement---> Analysis---> designing---> implementation---> testing--->maintenance.
working processor:
In this process, if there is a requirement, the design will be based on what that requirement is. After the design is created, the code will be developed, followed by verification, meaning testing to see if the software is ready for launch or not. If it is not ready, then the process will reverse, and the implementation team will be instructed to make changes, and then testing will be done again to verify if the requested changes are completed. After verification, the software will be launched and finally moved to maintenance.

4. What is DFD? Create a DFD diagram on flipkart.
—->The full form of DFD is Data flow diagram.
In DFD it will show, It shows how data moves through a system from start to finish.
The working process of a website, like how to buy , create, delete, payment in website. Each work is having a step – by – step .

 Example of flipkart:
Flipkart DFD:-

```
-----------------------------          -----------------------------
     Customer           ------------------>      Registration/Login
-----------------------------          -----------------------------
   Product search      ------------------>     Order Placement
-----------------------------          -----------------------------
  Payment process  <------------------     Payment Gateway
```

-----------------------------   -----------------------------
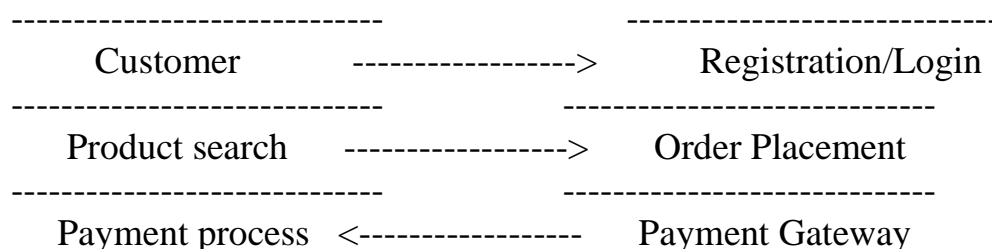
Explanation:

→ **Customer** is the starting point.
Customer searches for a product. This is the next step.
The customer then **confirms the product** they want to buy.
To pay, the process goes to a **payment gateway**.
Finally, the **payment is processed** and the order is placed.

5. What is Flow chart? Create a flowchart to make addition of two numbers.

➔ A flowchart is a type of diagram that represents a workflow or process. It displays step by step solutions to a problem, algorithm, or process.

Some symbols for working of flowchart:-

➔ To start and to end the program.
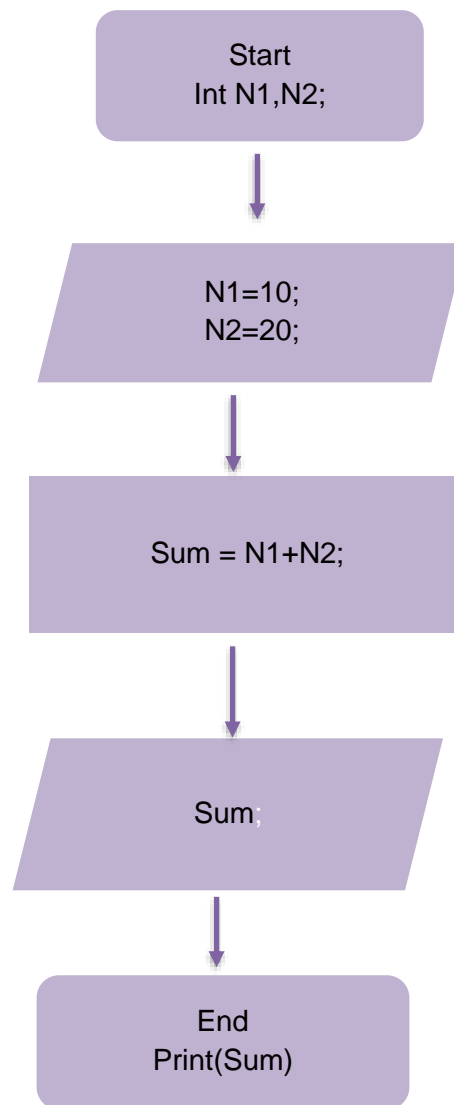
➔ To write Input data and output data.

➔ To write condition in program.

➔ To make process like addition of two numbers.

FLOWCHART :-

```
          ┌─────────────────┐
          │      Start      │
          │   Int N1,N2;    │
          └────────┬────────┘
                   │
                   ▼
         ╱───────────────────╲
        ╱      N1=10;          ╲
        ╲      N2=20;          ╱
         ╲───────────────────╱
                   │
                   ▼
          ┌─────────────────┐
          │                 │
          │  Sum = N1+N2;   │
          │                 │
          └────────┬────────┘
                   │
                   ▼
         ╱───────────────────╲
        ╱                      ╲
        ╲      Sum;            ╱
         ╲───────────────────╱
                   │
                   ▼
          ┌─────────────────┐
          │      End        │
          │   Print(Sum)    │
          └─────────────────┘
```

6. What is USE Case Diagram? Create a use-case on bill payment on paytm

→Use Case Diagram is a facility providing to a user.

Actors: User who interact with the system.

(e,g: User is using notepad, then for notepad user is a actor.)

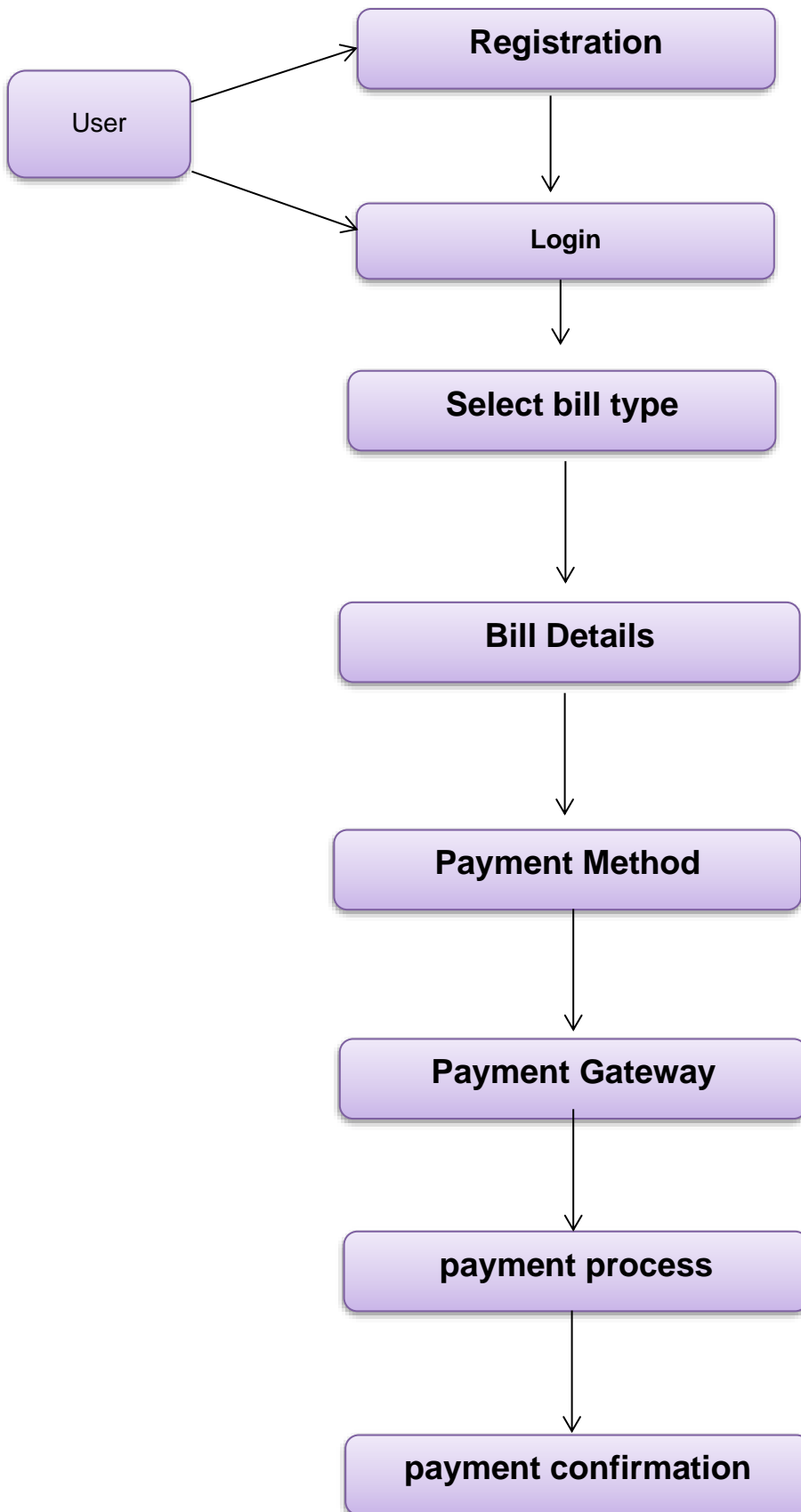**Use case:** Services provided by the system.

(e,g: Services provided by the notepad)

System Boundary : Scope of the system.

(e.g: like for notepad it will only store (.txt) file, here it will not convert in PDF form. However, in Word, it provides PDF facility. So, for notepad PDF making is a boundary.

Relations: Relation between Entities and user or themselves.

Use-case for bill payment on Paytm:-

```
                          ┌─────────────────────┐
                          │    Registration     │
                     ┌───▶│                     │
                     │    └──────────┬──────────┘
 ┌──────────────┐    │               │
 │              │    │               ▼
 │     User     │────┤    ┌─────────────────────┐
 │              │    │    │        Login        │
 └──────────────┘    └───▶│                     │
                          └──────────┬──────────┘
                                     │
                                     ▼
                          ┌─────────────────────┐
                          │   Select bill type  │
                          └──────────┬──────────┘
                                     │
                                     ▼
                          ┌─────────────────────┐
                          │    Bill Details     │
                          └──────────┬──────────┘
                                     │
                                     ▼
                          ┌─────────────────────┐
                          │   Payment Method    │
                          └──────────┬──────────┘
                                     │
                                     ▼
                          ┌─────────────────────┐
                          │   Payment Gateway   │
                          └──────────┬──────────┘
                                     │
                                     ▼
                          ┌─────────────────────┐
                          │   payment process   │
                          └──────────┬──────────┘
                                     │
                                     ▼
                          ┌─────────────────────┐
                          │ payment confirmation│
                          └─────────────────────┘
```

→Explanation:

1. Creating an Account: Sign up on Paytm by providing personal information and setting up login credentials.

2. Logging In: Log in using your existing credentials if you already have a Paytm account.

3. Linking Bank Details: Link your bank details to Paytm after logging in to enable online payments.

4. Bank Operations: For changes like updating phone number, signature, name, or ordering a checkbook, you must contact your bank directly.

5. Online Payments: Use Paytm to make online payments for various services and goods once your bank details are linked.

Use Case Boundaries:

  - Paytm System: Creating an account, logging in, linking bank details, and making payments.
  - Bank System: Changing phone numbers, signatures, names, or checkbooks.

Summary:
 Paytm facilitates account creation, login, bank detail linking, and online payments, while bank-related changes must be done directly with your bank.