MODULE – 1

ASSIGNMENT

Q.1 What is software? What is software engineering?

Answer:-

Software:-

Software is a set of instructions, data, or programs used to operate a computer and execute specific tasks. In simpler terms, software tells a computer how to function. It's a generic term used to refer to applications, scripts, and programs that run on devices such as PCs, mobile phones, tablets, and other smart devices. Software contrasts with hardware, which is the physical aspects of a computer that perform the work.

Without software, most computers would be useless. For example, a web browser is a software application that allows users to access the internet. Without the web browser software, reading this page on Webopedia wouldn't be possible.

Software engineering:-

The term **software engineering** is the product of two words, **software**, and **engineering**.

The **software** is a collection of integrated programs.

Software subsists of carefully-organized instructions and code written by developers on any of various particular computer languages.

Computer programs and related documentation such as requirements, design models and user manuals.

Engineering is the application of **scientific** and **practical** knowledge to **invent, design, build, maintain**, and **improve frameworks, processes,etc.**

Q.2 Explain types of software?

Answer:-

- **Application software**
- **System software**
- **Driver software**
- **Middleware**
- **Programming software**

⋆ Explain:-

1. **Application Software:-**

The most common type of software, application software is a computer software package that performs a specific function for a user, or in some cases, for another application.

- An application can be self-contained, or it can be a group of programs that run the application for the user.

Examples of Modern Applications include office suites, graphics software, databases and database management programs, web browsers, word processors, software development tools, image editors and communication platforms.

2. **System Software:-**

- These software programs are designed to run a computer's application programs and hardware.

- System software coordinates the activities and functions of the hardware and software.

- It controls the operations of the computer hardware and provides an environment or platform for all the other types of software to work in.

- The OS is the best example of system software; it manages all the other computer programs. - Other examples of system software include the firmware, computer language translators and system utilities..

- Example: Notepad, Calculator etc...

1. **Driver Software :-**
   - Also known as device drivers, this software is often considered a type of system software.
   - Device drivers control the devices and peripherals connected to a computer, enabling them to perform their specific tasks.

- Every device that is connected to a computer needs at least one device driver to function.
- Examples include software that comes with any nonstandard hardware, including special game controllers, as well as the software that enables standard hardware, such as USB storage devices, keyboards, headphones and printers. Example: Audio Driver,Video Driver etc..

2. **Middleware:-**
   - The term middleware describes software that mediates between application and system software or between two different kinds of application software. For example, middleware enables Microsoft Windows to talk to Excel and Word.
   - It is also used to send a remote work request from an application in a computer that has one kind of OS, to an application in a computer with a different OS. It also enables newer applications to work with legacy ones.
   - Example: database middleware, application server middleware

3. **Programming Software:-**
   - Computer programmers use programming software to write code. Programming software and programming tools enable developers to develop, write, test and debug other software programs.
   - Examples of programming software include assemblers, compilers, debuggers and interpreters. Examples: Turbo c, Eclipse, Sublime etc..

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

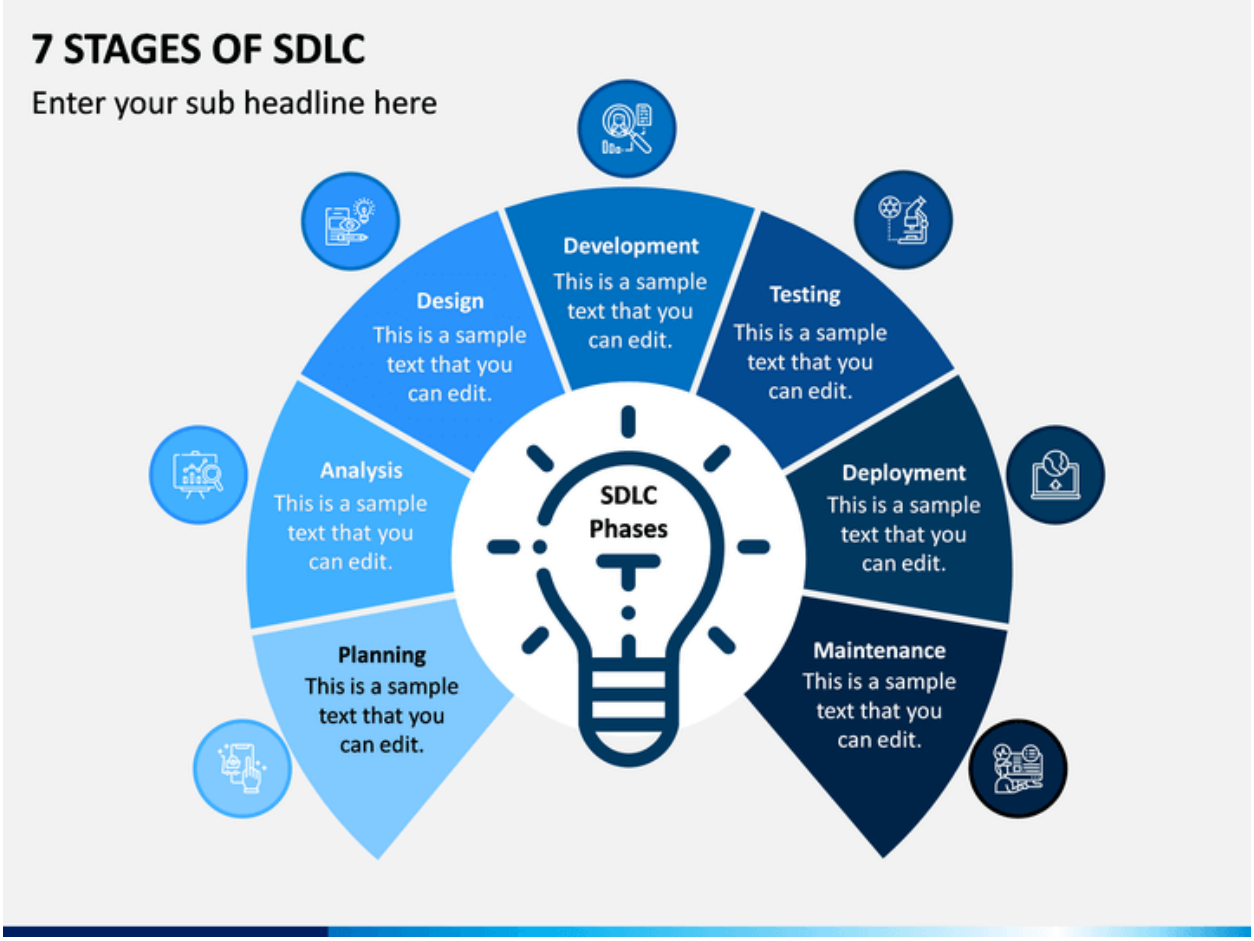
Answer:-

• The Software Development Life Cycle (SDLC) refers to a methodology with clearly defined processes for creating high-quality software. in detail, the SDLC methodology focuses on the following phases of software development:

1. **Requirement Gathering**

2. **Analysis**
3. **Designing**
4. **Implementation**
5. **Testing**
6. **Deployment**
7. **Maintenance**

★ Phase of SDLC:-



1) Planning (Requirement Gathering)

To make sure that all the steps mentioned above are appropriately executed, clear, concise, and correct requirements must be gathered from the customer. The customer should be able to define their requirements properly and the business analyst should be able to collect them in the same way the customer is intending it to convey them.

Example: In an organization, they develop an ADAS product (surround-view camera system for a prestigious OEM) that needs **Autosar stack** and **Bootloader** binaries that are received from another supplier.

2) Analysis

Post requirement gathering, analysis of requirement starts. At this stage, various stakeholders sit and do a brainstorming session. They analyze the requirements gathered and look for the feasibility to implement them. They discuss it with each other and any ambiguity is sorted out.

This step is important in the requirement analysis process due to the following main reasons:
(i) Customer may provide some requirements which could be impossible to implement due to various dependencies.

(ii) A business analyst might have understood the requirement from the **customer** differently than how a **programmer** would have interpreted it.

3) Design

In this phase, the requirement gathered in the SRS document is used as an input and software architecture that is used for implementing system development is derived.

4) Implementation or Coding or development

Implementation/Coding starts once the developer gets the Design document. The Software design is translated into source code. All the components of the software are implemented in this phase.

5) Testing

Testing starts once the coding is complete and the modules are released for testing. In this phase, the developed software is tested thoroughly and any defects found are assigned to developers to get them fixed.

Retesting, regression testing is done until the point at which the software is as per the customer's expectation. Testers refer SRS document to make sure that the software is as per the customer's standard.

6) Deployment

Once the product is tested, it is deployed in the production environment or first UAT (User Acceptance testing) is done depending on the customer expectation. In the case of UAT, a replica of the production environment is created and the customer along with the developers does the testing. If the customer finds the application as expected, then sign off is provided by the customer to go live.

7) Maintenance

After the deployment of a product on the production environment, maintenance of the product i.e. if any issue comes up and needs to be fixed or any enhancement is to be done is taken care by the developers.

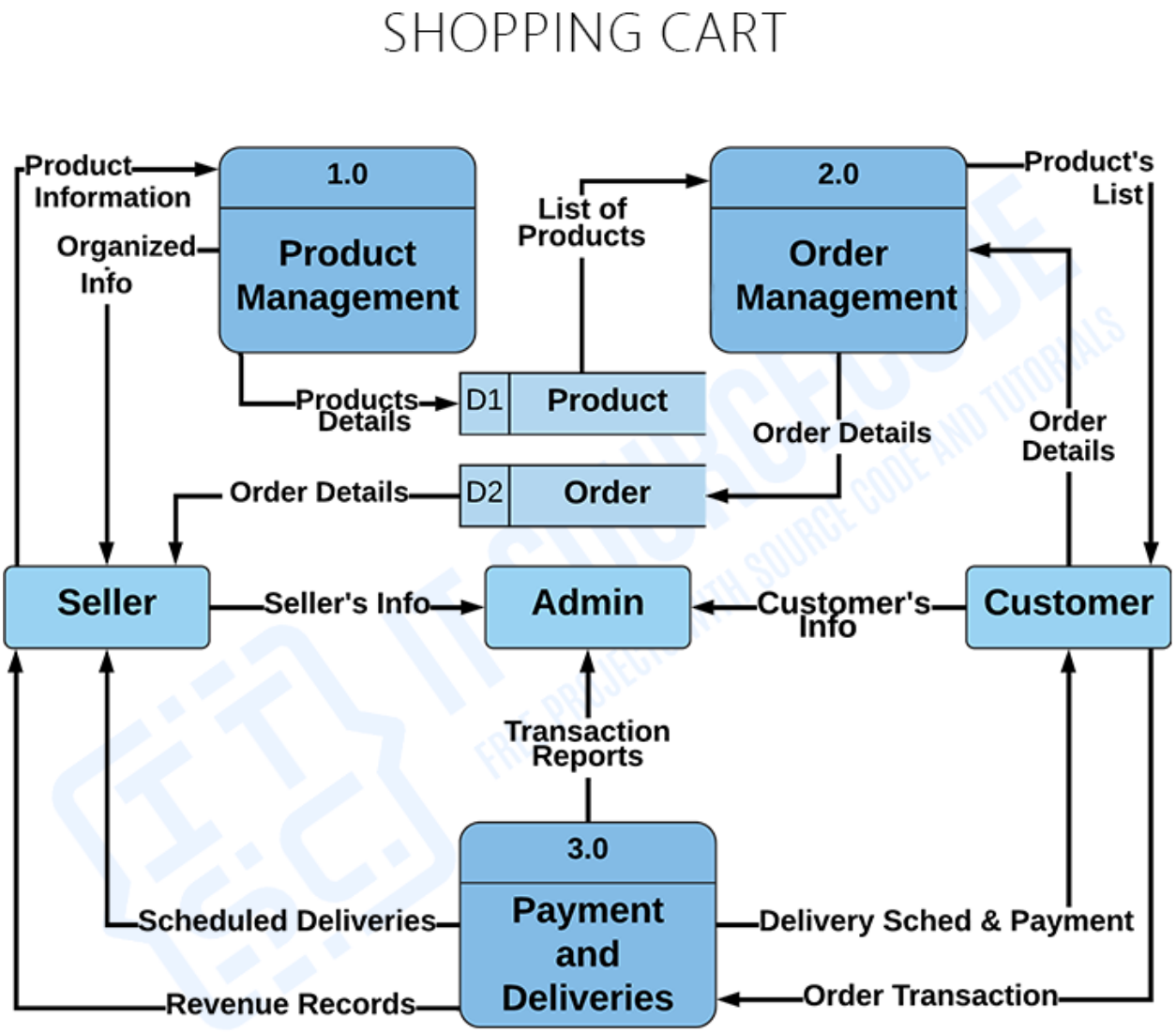
Q.4 What is DFD? Create a DFD diagram on Flipkart

Answer:-

A data flow diagram (DFD) is a graphical or visual representation using a standardized set of symbols and notations to describe a business's operations through data movement. **They are often elements of a formal**

methodology such as Structured Systems Analysis and Design Method (SSADM).

★ DFD diagram on Flipkart:-



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

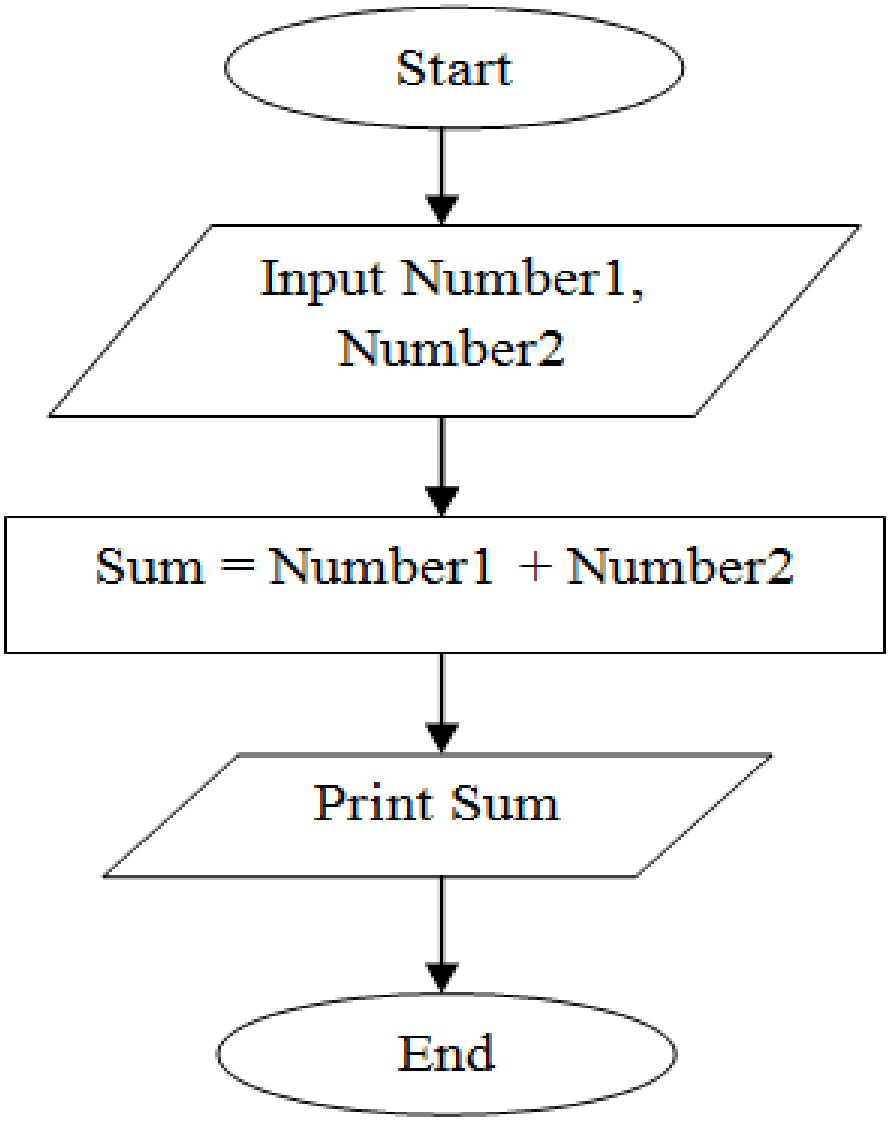
Answer: - A flowchart is a diagram that depicts a process, system or computer algorithm. They are widely used in multiple fields to document, study, plan, improve and communicate often complex processes in clear, easy-to-understand diagrams.

Flowcharts, sometimes spelled as flow charts, use rectangles, ovals, diamonds and potentially numerous other shapes to define the type of step, along with connecting arrows to define flow and sequence. They can range from simple, hand-drawn charts to comprehensive computer-drawn diagrams depicting multiple steps and routes. If we consider all the various forms of flowcharts, they are one of the most common diagrams on the planet, used by both technical and non-technical people in numerous fields.

Flowcharts are sometimes called by more specialized names such as Process Flowchart, Process Map, Functional Flowchart, Business Process Mapping, Business Process Modeling and Notation (BPMN), or Process Flow Diagram (PFD).

They are related to other popular diagrams, such as Data Flow Diagrams (DFDs) and Unified Modeling Language (UML) Activity Diagrams.

★ **Flowchart to make addition of two numbers** :-

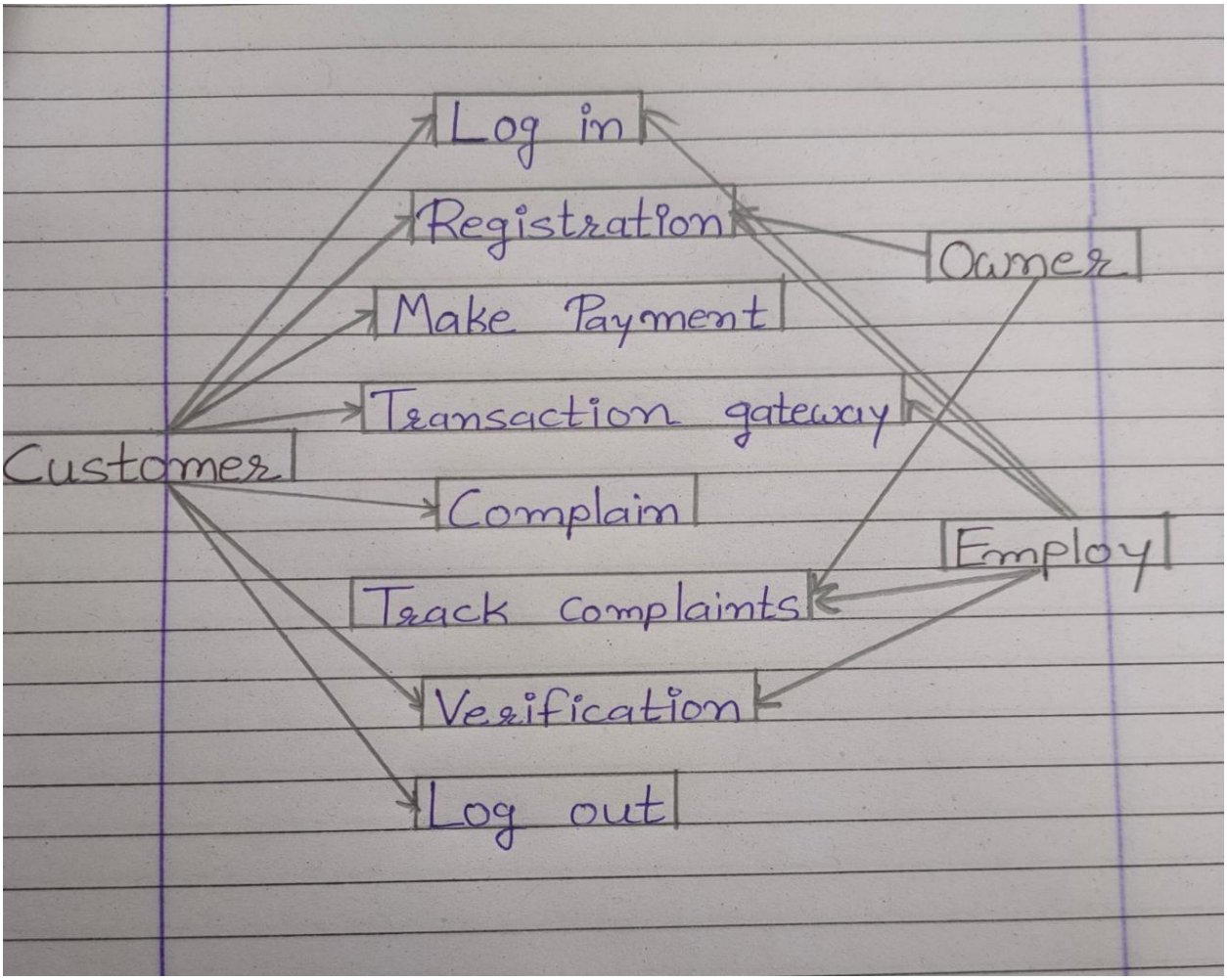


Q.6 What is Use case Diagram? Create a use-case on bill payment on paytm.

Answer:-

Use-case diagrams describe the high-level functions and scope of a system. These diagrams also identify the interactions between the system and its actors. The use cases and actors in use-case diagrams describe what the system does and how the actors use it, but not how the system operates internally.

★ Use-case on bill payment on paytm :-



CREATED BY SHUBHANGI PARMAR..... **DATE :- 03/07/2023**