MODULE: 1

SE – Overview of IT Industry

1. What is software? What is software engineering?

Ans:- Software is essentially the brain of a computer system. It's a collection of instructions, data, and programs that tell the computer what to do and how to do it. It's the intangible counterpart to the physical hardware components that make up the computer itself.

In simpler terms, imagine software as the recipes and the hardware as the kitchen appliances. The recipes instruct the appliances how to process ingredients to create a specific dish. Similarly, software instructs the hardware to perform specific tasks and functions to achieve desired outcomes.

*What is software engineering

Software engineering is the application of engineering principles and practices to the design, development, testing, deployment, and maintenance of software. It's a systematic and disciplined approach to creating high-quality software that meets the needs of its users.

Think of it like building a bridge. You wouldn't just throw together some materials and hope it holds up! You need a plan, specific materials, and careful construction methods to ensure the bridge is safe and functional. Similarly, software engineers use well-defined processes and tools to build software that is reliable, efficient, and secure.

2. Explain types of software

Ans:-

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.

Example:Microsoft Office, Paint, Powerpoint etc..

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..

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..

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

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..

3. What is SDLC? Explain each phase of SDLC

Ans:- The Software Development Life Cycle (SDLC) is a framework that defines the stages involved in building and maintaining software applications. It provides a structured approach to software development, from planning and design to testing and deployment.

Phases of SDLC:

1. Planning:

- In this phase, the project is defined and a plan is developed.
- This includes identifying the project goals, requirements, and stakeholders.
- Defining the scope of the project and creating a project timeline and budget.
- Identifying the resources needed for the project, such as personnel, software, and hardware.

2. Design:

- During the design phase, the software architecture is created.
- This includes designing the user interface, defining the system's functionality, and creating data models.
- Creating detailed technical specifications for the software.

3. Development:

- The development phase is when the software is actually built.
- This includes writing code, testing the software, and fixing bugs.
- Developers write code based on the design specifications.
- Unit testing is performed to ensure individual code components function as intended.

4. Testing:

- In the testing phase, the software is thoroughly tested to ensure that it meets all of the requirements.
- This includes functional testing, performance testing, and security testing.
- Integration testing ensures different components work together seamlessly.
- System testing verifies the entire system functions as planned.

5. Deployment:

- The deployment phase is when the software is released to users.
- This includes installing the software, training users, and providing support.
- Deploying the software to production environment where users can access it.
- Monitoring the software for performance and security issues.

6. Maintenance:

- The maintenance phase is when the software is updated and maintained.
- This includes fixing bugs, adding new features, and releasing new versions.
- Updating the software to address any issues or incorporate new features.
- Providing ongoing support to users.
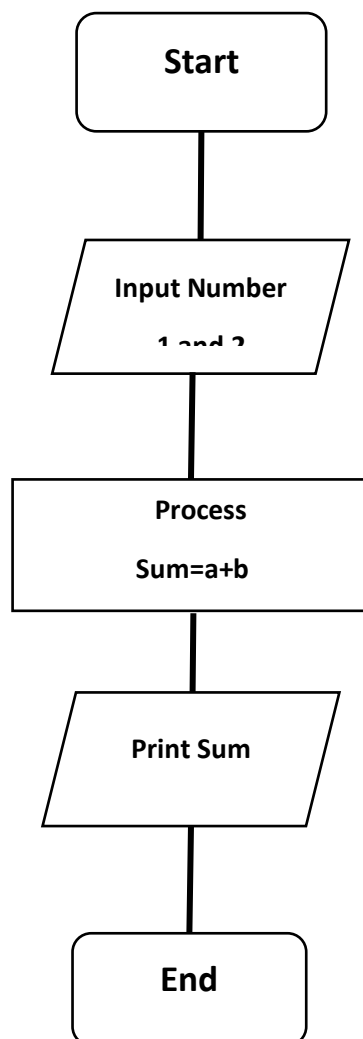
4. What is DFD? Create a DFD diagram on Flipkart

Ans:-

DFD (Data Flow Diagram):-A DFD is a visual representation of the flow of data through a system. It shows the processes, data stores, and external entities that interact with the system, as well as the flow of data between them. DFDs are a valuable tool for understanding and analyzing systems, and can be used for a variety of purposes.
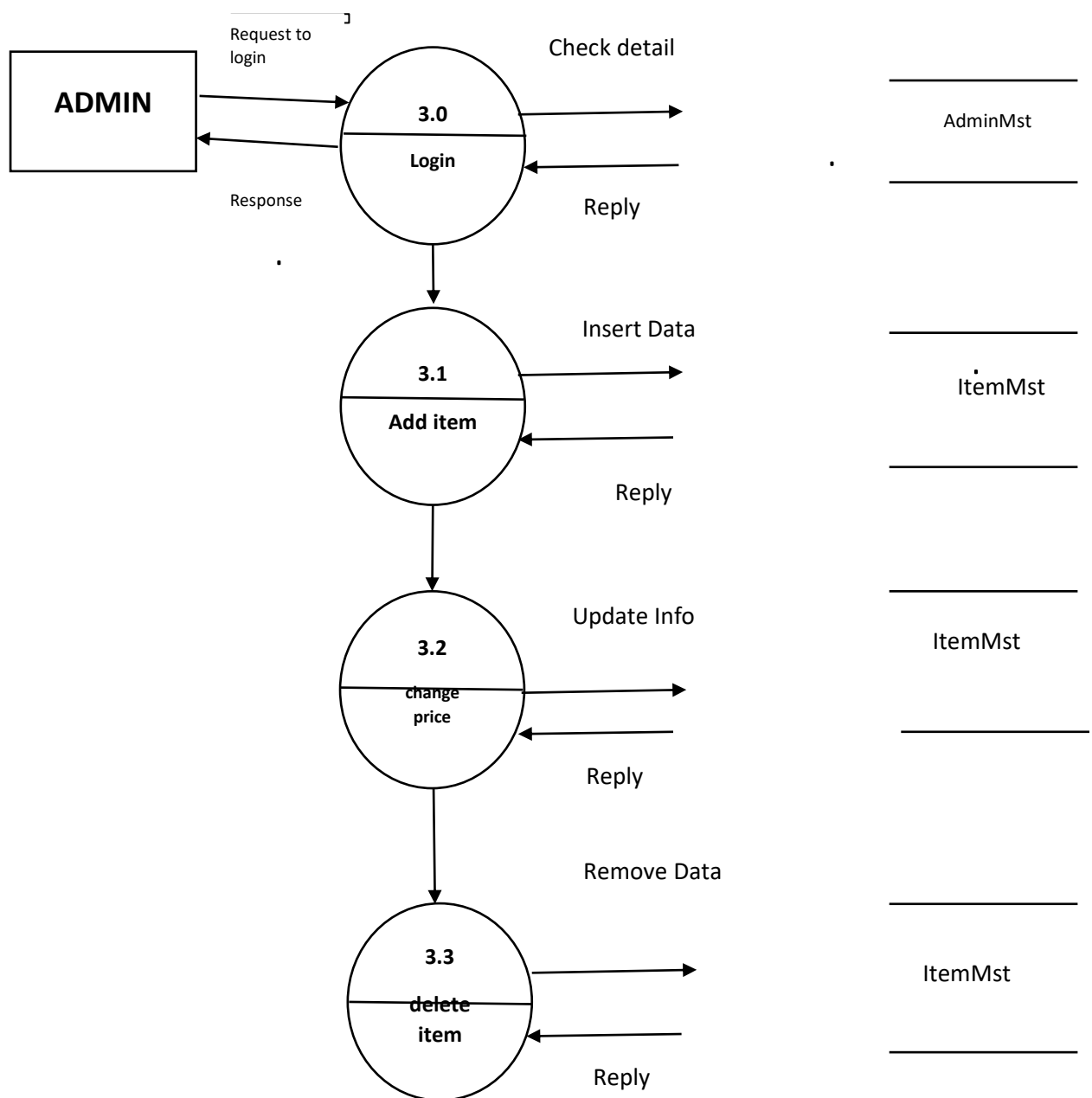
5. What is Flow chart? Create a flowchart to make addition of two numbers

Ans:- A flowchart is a visual representation of a process, algorithm, or workflow. It shows the steps in a process, the decisions that need to be made, and the flow of data between them. Flowcharts are a powerful tool for communication, documentation, and problem solving.

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        ┌─────────────┐
        │    Start    │
        └─────────────┘
               │
         ╱───────────╲
        ╱ Input Number ╲
        ╲   1 and 2    ╱
         ╲───────────╱
               │
        ┌─────────────┐
        │   Process   │
        │  Sum=a+b    │
        └─────────────┘
               │
         ╱───────────╲
        ╱  Print Sum   ╲
         ╲───────────╱
               │
        ┌─────────────┐
        │     End     │
        └─────────────┘
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6. What is Use case Diagram? Create a use-case on bill payment on paytm.

Ans:-

Use Case Diagram:-A use case diagram is a graphical representation of the interactions between actors and a system. It shows the different ways that actors can use the system to achieve their goals. Use case diagrams are a valuable tool for understanding and documenting the requirements of a system.