

SE – OVERVIEW OF THE IT INDUSTRY

ASSIGNMENT – 1



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FULL STACK DEVELOPMENT | TOPS TECHNOLOGIES

Software Engineering Assignment

MODULE: 1 (SDLC)

1) What is software? What is software engineering?

→ Software:

- Software means a set of code/programs (sequence of instructions) that allows the users to perform a well-defined function or some specified task.
- In another words we can say that software commands the computer that what to do. For example like MS-Word, MS-Excel, PowerPoint, etc.
- Different high-level languages are used to build application software.

→ Software Engineering:

- Software Engineering means to develop software with designing principle of Engineering,
- Software Engineering is working for the process of designing, developing, testing, and maintaining software.
- Software engineering applies a disciplined and organized approach to software development with the stated goal of improving quality, time and budget

2) Explain types of software

- a) System software
- b) Application software
- c) Driver software
- d) Middleware

a) System Software:

- System software which is provided by System.
- In simple terms, you can say that the system acts as a middle man that checks and facilitates the operations flowing between the user and the computer hardware.
- System software is also known as "low-level software" because the end-users do not operate them. e.g notepad, clock , etc.

b) Application Software:

- Software developed or provided by developers. e.g whatsapp, instagram, facebook, M.s excel.
- Application software which we have to purchase it for our computer and after that you can use that application.
- Some of the well-known examples of application software are Microsoft Word, Excel and search engines like Opera and Google Chrome.

c) Driver software:

- Driver software is same as system software,
- Device should connected to a computer needs at least one device driver to function.
- Some common examples of such device drivers that connect hardware devices
- (Printers, sound cards, network cards, hard disks, floppy disk, keyboard, mouse, etc.) To a system.

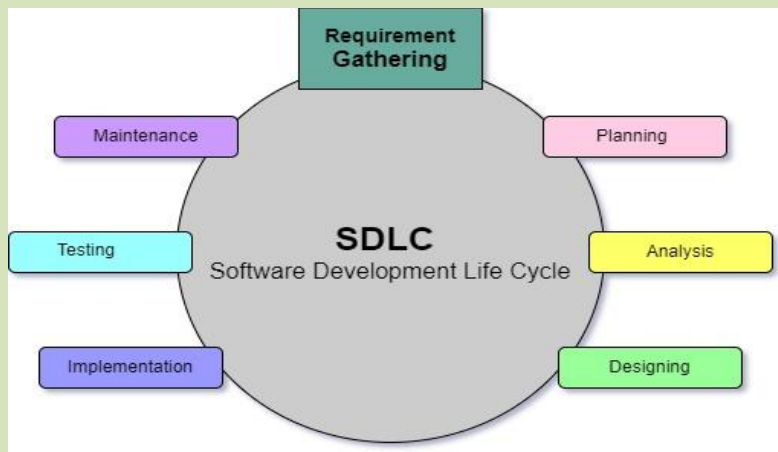
d) Middleware:

- Middleware is software that bridges gaps between other applications, tools, and databases in order to provide unified services to users.
- Data management, application services, messaging are all commonly handled by middleware.

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

- SDLC means Software Development Life Cycle.
- The software development lifecycle (SDLC) is the cost-effective and time-efficient to development/build high-quality software.
- A step by step approach to develop a software with high quality, at lowest cost with shortest possible time.

Time line + Budget + Quality = SDLC



SDLC describe as below,

- a) Planning / Requirement Gathering (What)
- b) Analysis (How)
- c) Designing (DFD, E-R Diagram, Use case , Flow chart)
- d) Implementation/ Coding/ Building (hardware & software requirement)
- e) Testing (QA)
- f) Maintenance

→ **Planning / Requirement Gathering (What):**

- The planning includes tasks like cost-benefit analysis, scheduling, estimation, and allocation.
- The development team collects requirements on behalf of customers from several stakeholders, internal and external experts, and managers to create a software requirement specification document.

→ **Analysis:**

- The team analysis estimates costs, creates a schedule, and has a detailed plan to achieve their goals.
- The document sets expectations and defines common goals that aid in project planning.

→ **Designing:**

- In the design phase, software engineers analyze requirements and identify the best solutions to create the software.

→ **Implementation/ Coding/ Building (hardware & software requirement):**

- In the Analysis phase, the development team codes the product.
- They analyze the requirements to identify smaller coding tasks to achieve the final result.

→ **Testing (QA):**

- Quality analysis includes testing the software for errors and checking if it meets customer requirements.
- Because many teams immediately test the code they write, the testing phase often runs parallel to the development phase.

→ **Maintenance:**

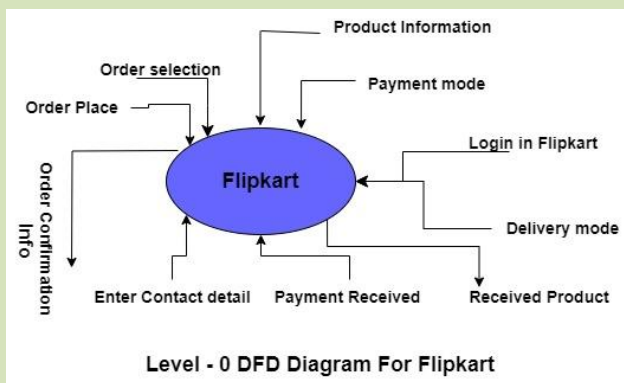
- In the maintenance phase, the team fixes bugs, resolves customer issues, and manages software changes.
- In addition, the team monitors overall system performance, security, and user experience to identify new ways to improve the existing software.

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

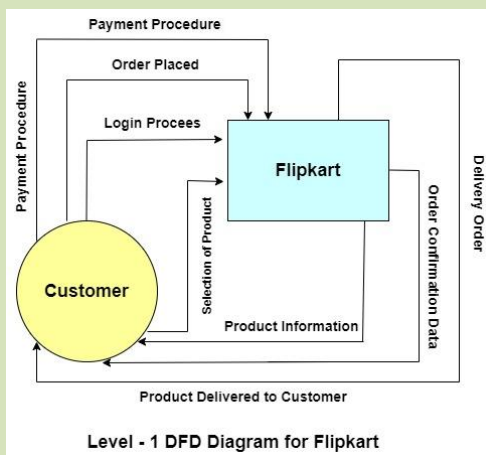
- A data flow diagram (DFD) is a graphical representation of data flow through a system. DFD diagram created to understand how data is processed, stored, and communicated within a system. It's also called a bubble chart.
- Also known as DFD, Data flow diagrams are used to graphically represent the flow of data in a business information system.
- Data flow diagrams can be shown as logical and physical.
- The logical data flow diagram describes flow of data through a system to perform functionality of a business and
- The physical data flow diagram describes the implementation of the logical data flow.

→ DFD Diagram for Flipkart.

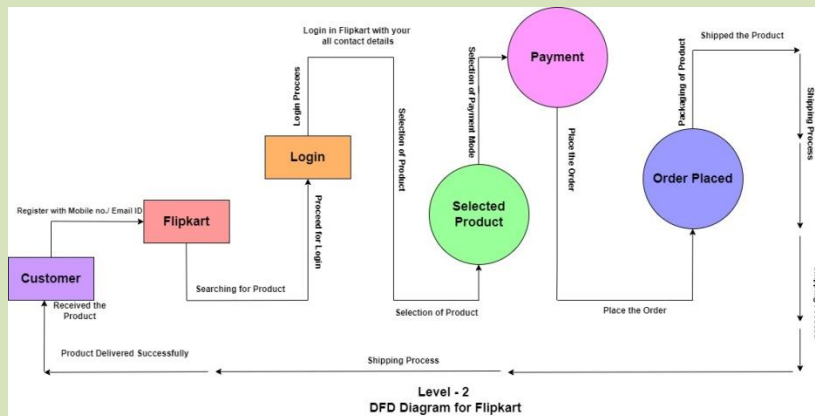
Level – 0 DFD Diagram for Flipkart



Level – 1 DFD Diagram for Flipkart



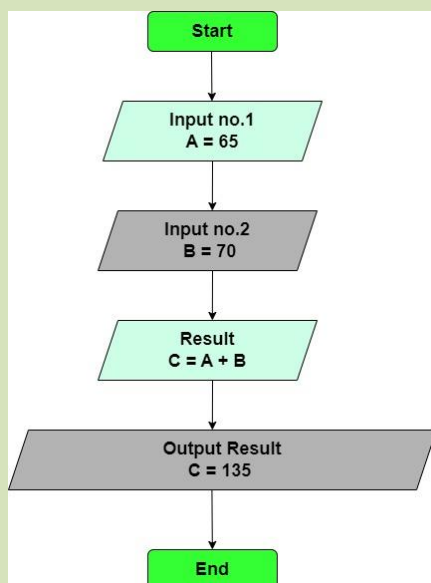
Level – 2 DFD Diagram for Flipkart



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

- Flowchart diagram represents a workflow or process. It describes a process with a fixed sequence of steps and Work flow step-by-step in an understandable way.
- It also defines a number of procedures, including administrative, service, and project planning procedures as well as manufacturing processes.
- E.g. Different steps, decision points, and courses through a process are displayed using flowcharts, which are visual representations of processes and systems.
- A well-made flowchart should be simple to understand and show the stages in a logical order.

A Flowchart for two numbers



6) What is Use case Diagram? Create a use-case on bill payment on Paytm.

- Use case is used for Specify the context of a system, Capture the requirements of a system and Developed by analysts together with domain experts.
- A use-case diagram can help provide a higher-level view of the system. In a Use Case Diagram, relationships play a crucial role in depicting the interactions between actors and use cases.



➔ **Actors:**

- Actors are external entities that interact with the system. These can include users, other systems, or hardware devices.
- Proper identification and understanding of actors are crucial for accurately modelling system behaviour.

➔ **Use Cases:**

- Use cases are like scenes in the play. They represent specific things your system can do. In the online shopping system,
- Examples of use cases could be "Place Order," "Track Delivery," or "Update Product Information".

➔ **System Boundary:**

- The system boundary is a visual representation of the scope or limits of the system you are modelling.
- The system boundary is typically represented by a rectangular box that surrounds all the use cases of the system.
 - ⇒ There are two boundary as below,
- Scope Definition: Indicating which components are internal to the system and which are external actors or entities interacting with the system.
- Focus on Relevance: The diagram can focus on illustrating the essential functionalities provided by the system without unnecessary details about external entities.

