Software Engineering Assignment

MODULE: 1

SE – Overview of IT Industry

1. **What is software? What is software engineering?**

What is software: -

Ans) Software is a collection of codes, documents, and triggers that perform a specific job or fill a specific requirement. It can be a program, which is executable code that serves a computational purpose, or it can be a software product, which is software made for a specific requirement. Software can also be a vehicle for delivering a product, providing system functionality, controlling other software, or helping build other software.

What is software engineering: -

Software engineering is a branch of computer science that involves the design, development, testing, and maintenance of software applications. It's an engineering approach that uses programming languages, platforms, and architectures to develop systems for a variety of purposes, including computer games, business applications, operating systems, and network control systems.

2. **Explain types of software**

Ans) Software can be categorized into several types based on various criteria such as purpose, usage, and development methodology. Here are

some common types of software:

System Software: This software manages and controls the hardware components of a computer system. Operating systems like Windows, macOS, Linux, and Unix fall under this category. They provide essential services to other software applications and manage resources such as memory, processors, and peripherals.

Application Software: This type of software is designed to perform specific tasks or solve particular problems for users. Application software includes a wide range of programs such as word processors, spreadsheets, web browsers, email clients, graphic design software, and multimedia players.

Programming Software: These tools are used by programmers and developers to create, debug, and maintain software applications. Integrated Development Environments (IDEs), text editors, compilers, debuggers, and version control systems are examples of programming software.

Utility Software: Utility software provides additional functionalities to enhance the performance of computer systems or assist users in managing tasks efficiently. Antivirus programs, disk defragmenters, backup software, file management utilities, and compression tools are examples of utility software.

Middleware: Middleware acts as a bridge between different software applications and enables communication and data exchange between them. It facilitates integration, interoperability, and communication in distributed computing environments. Examples include database middleware, messaging middleware, and transaction processing monitors.

Embedded Software: Embedded software is specifically designed to control embedded systems such as microcontrollers, microprocessors, and other specialized hardware devices. It is often built into the firmware of devices and performs dedicated functions like controlling machinery, appliances, automotive systems, and consumer electronics.

Enterprise Software: Enterprise software is designed to support the needs of large organizations and businesses. It includes applications for enterprise resource planning (ERP), customer relationship management (CRM), supply chain management (SCM), human resource management (HRM), and business intelligence (BI).

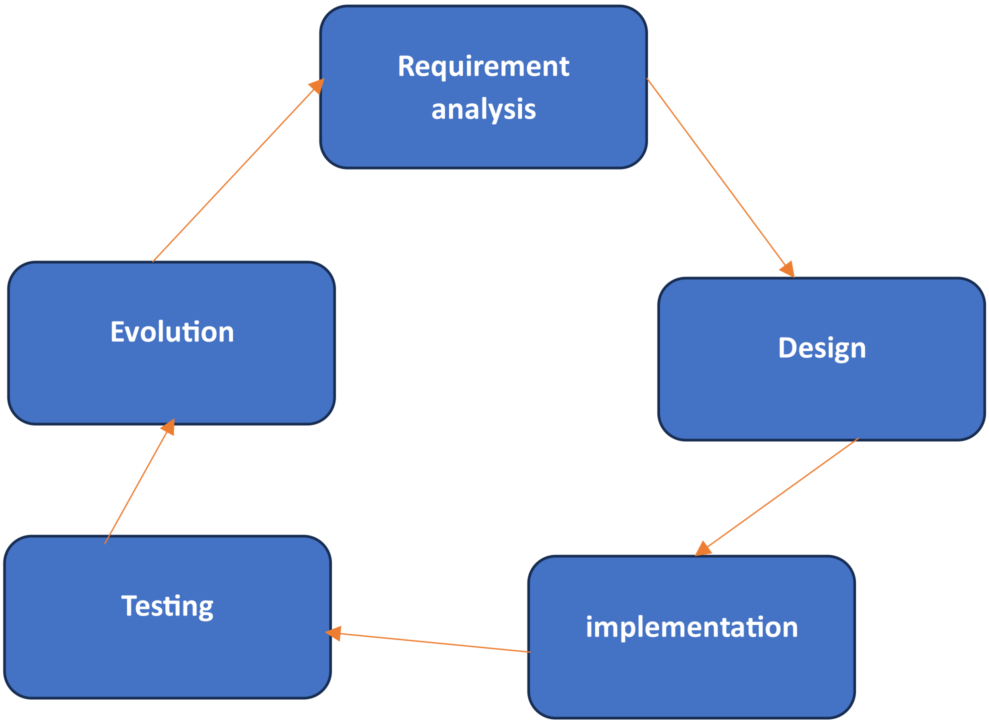
Web-based Software: This type of software operates through web browsers and is accessed over the internet. Web-based software includes web applications, online services, and cloud-based platforms that provide various functionalities such as collaboration tools, social networking sites, e-commerce platforms, and online productivity suites.

Open-Source Software: Open-source software is developed collaboratively by a community of developers and distributed with its source code freely available for modification and redistribution. Examples include the Linux operating system, the Apache web server, the Mozilla Firefox web browser, and the WordPress content management system.

3. What is SDLC? Explain each phase of SDLC

Ans) SDLC (Software Development Life Cycle): - It describes the sequence of phases or steps to develop any software

- **phase of SDLC**



1 Planning/Requirement Gathering (What): Develop a detailed project plan including timelines, quality, budget, and risk management strategies.

2. Analysis (How): The requirements for the target software are specified. These requirements get approval from customers and market analysts.

3. Design and Prototype: The design phase defines how a software application will work. During this phase, teams decide on the programming language, screen layouts, and relevant documentation they will use.

4. Implementation (Coding): Write the code according to the design documents and coding standards.

5. Testing: Often, testing happens in parallel with development, as developers write and test the code they've produced before moving on to the next coding task.

6. Deployment: The deployment process starts once the testing phase is over and there are no bugs or errors in the development backlog.

7. Maintenance: Implement new features and updates based on user feedback and changing requirements.

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

Ans) DFD stands for Data Flow Diagram. It's a graphical representation of the flow of data through a system or process. DFDs are commonly used in software engineering and systems analysis to model the flow of data within an information system.

In a DFD, processes, data sources, data destinations, and data storage are represented as nodes, and the flow of data between these elements is represented by arrows. There are typically four main components in a DFD:

External Entities: These represent sources or destinations of data outside the system being modelled. They interact with the system by sending data to it (input) or receiving data from it (output).

Processes: Processes represent activities or transformations that take place within the system. They describe how data is manipulated or transformed as it flows through the system.

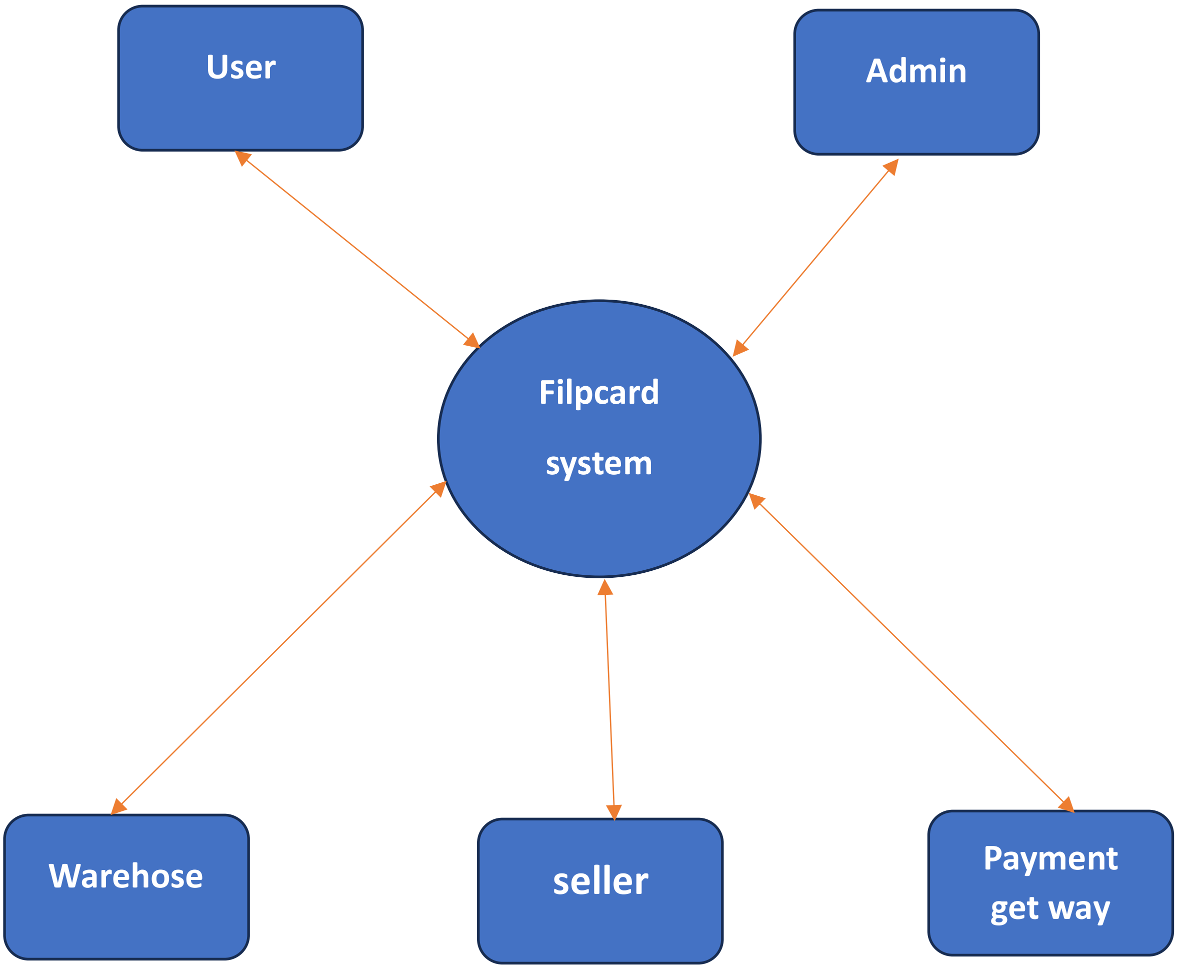
Data Stores: Data stores represent repositories where data is stored within the system. They can represent databases, files, or any other storage medium where data is persisted.

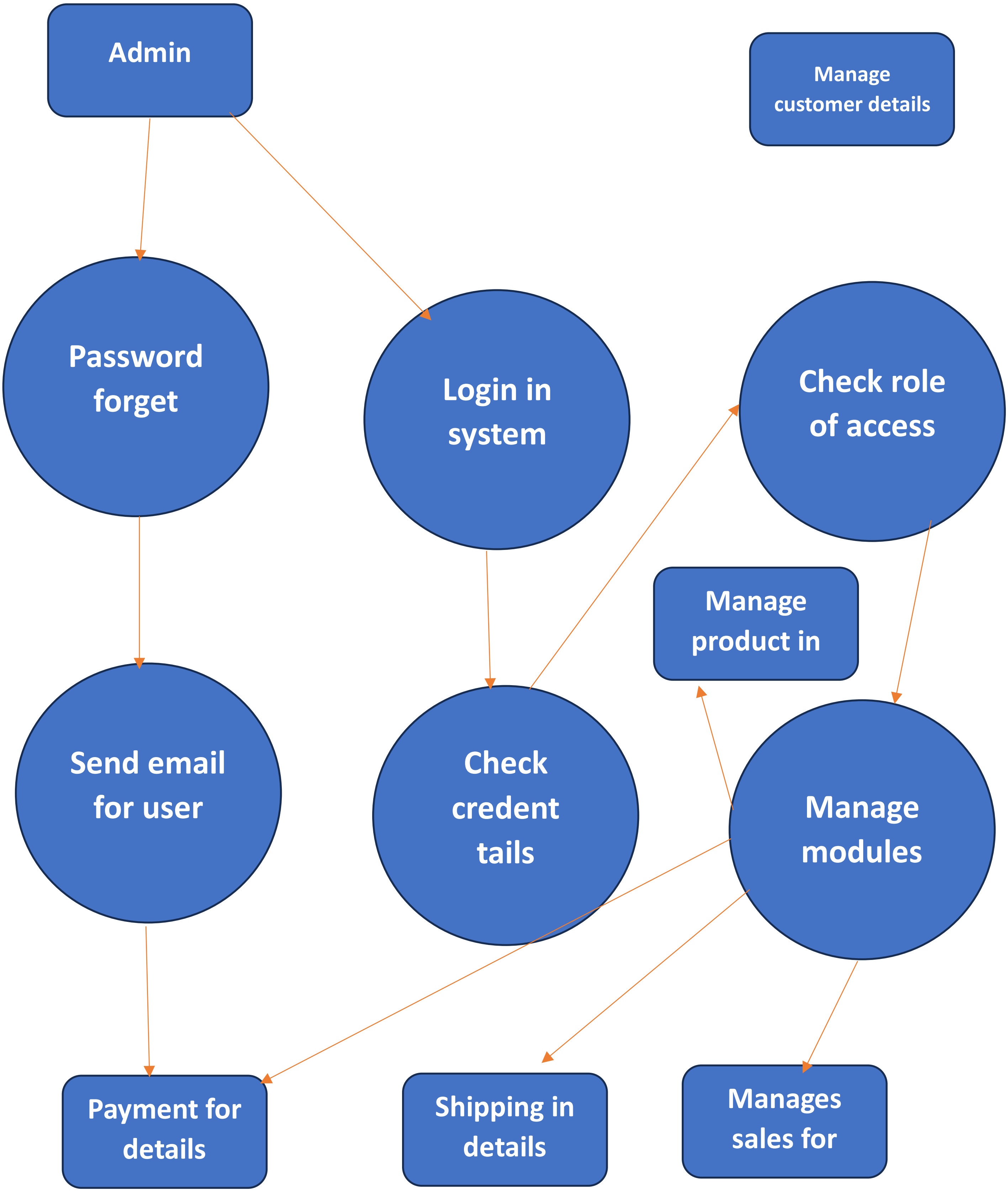
Data Flows: Data flows represent the movement of data between the different components of the system. They show how data is transferred from one element to another.

DFDs are hierarchical and can be decomposed into multiple levels of detail. The highest level, Level 0, provides an overview of the entire system, while lower levels provide more detailed views of specific processes or subprocesses within the system.

DFDs are valuable for understanding the structure and behaviour of information systems, identifying data sources and destinations, clarifying data dependencies, and identifying opportunities for optimization or improvement in system design. They are also useful for communication between stakeholders, including developers, analysts, and end-users, as they provide a clear and visual representation of system functionality and data flow.

Data Flow Diagram (DFD)

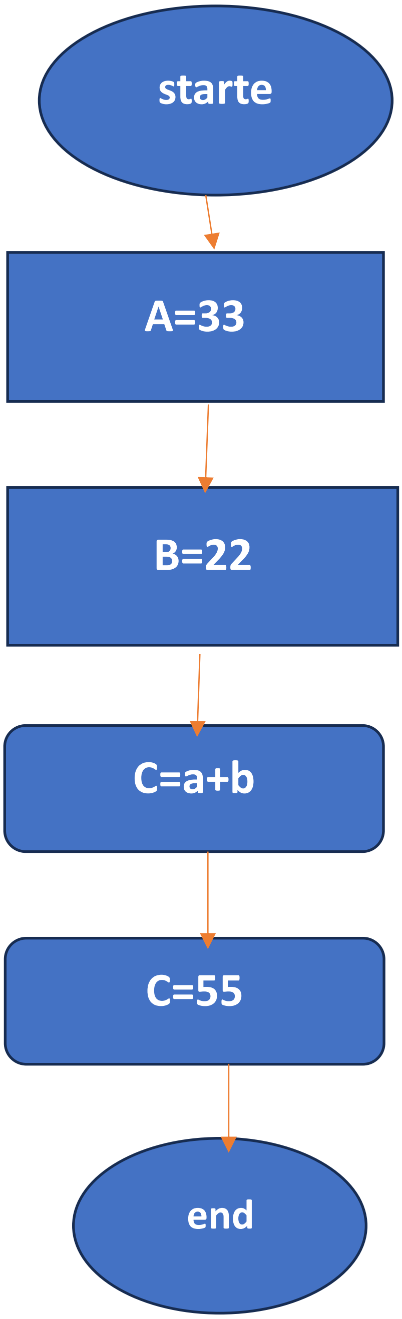



Admin
Manage customer details
Password forget
Login in system
Check role of access
Manage product in
Send email for user
Check credent tails
Manage modules
Payment for details
Shipping in details
Manages sales for

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

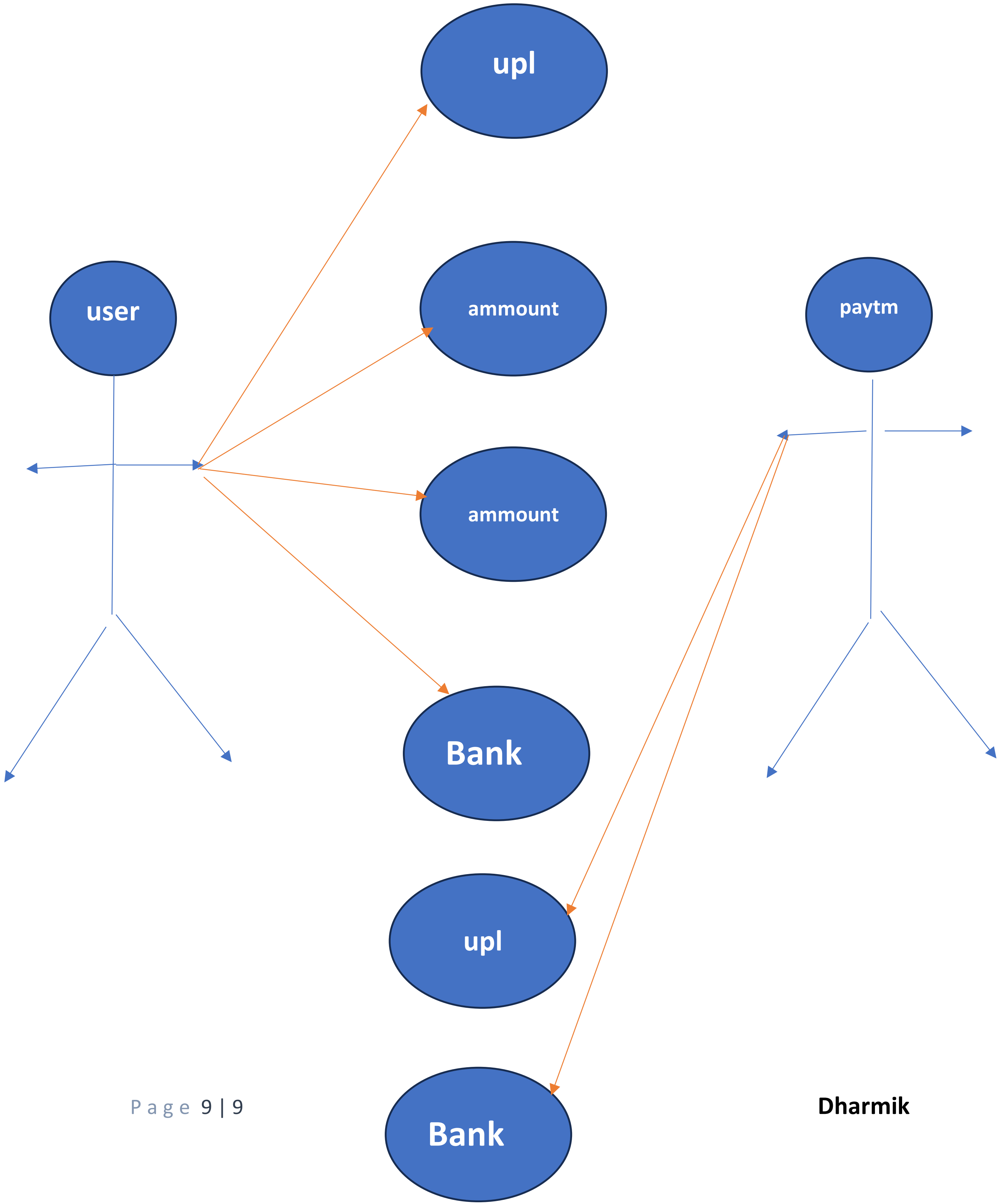
Ans) A flowchart is a graphical representation of a process, workflow, or algorithm. It uses various shapes and arrows to depict the steps involved in completing a task or achieving a specific objective. Flowcharts are widely used in various fields such as software development, business process management, engineering, education, and more

Flowchart



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

Ans) A Use Case Diagram is a vital tool in system design, it provides a visual representation of how users interact with a system.


upl
user
ammount
paytm
ammount
Bank
upl
Bank