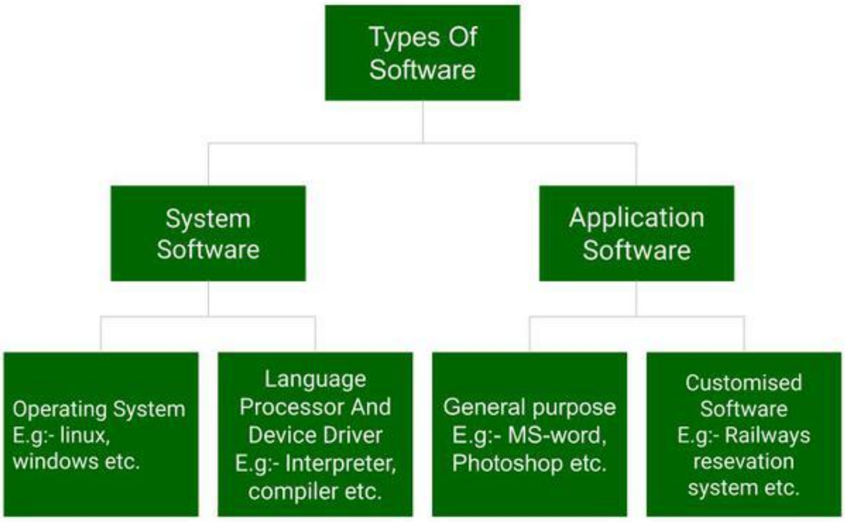
1) **What is software? What is software engineering?**

- Software is a set of instructions, data or programs used to operate computers and execute specific tasks. It is the opposite of hardware, which describes the physical aspects of a computer.

- Software engineering is the process of designing, developing, testing, and maintaining software. It is a systematic and disciplined approach to software development that aims to create high-quality, reliable, and maintainable software. Software engineering includes a variety of techniques, tools, and methodologies, including requirements analysis, design, testing, and maintenance.

2) **Explain types of software.**


Types Of Software
System Software
Application Software
Operating System E.g:- linux, windows etc.
Language Processor And Device Driver E.g:- Interpreter, compiler etc.
General purpose E.g:- MS-word, Photoshop etc.
Customised Software E.g:- Railways resevation system etc.

System Software:

- System software is software that directly operates the computer hardware and provides the basic functionality to the users as well as to the other software to operate smoothly. Or in other words, system software basically controls a computer's internal functioning and also controls hardware devices such as monitors, printers, and storage devices, etc. It is like an interface between hardware and user applications, it helps them to communicate with each other because hardware understands machine language (i.e., 1 or 0) whereas user applications are work in human-readable languages like English, Hindi, German, etc. so system software converts the human-readable language into machine language and vice versa.

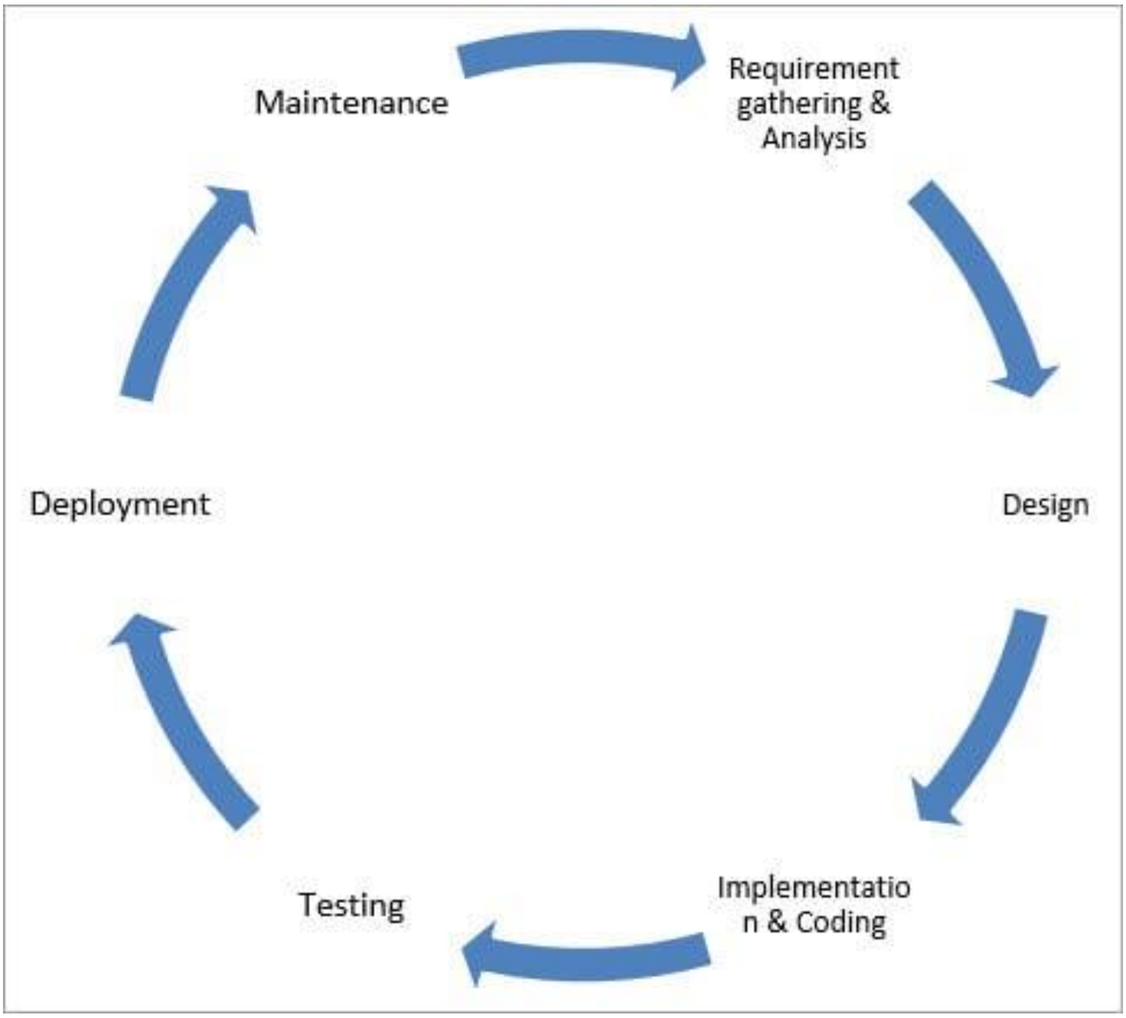
Application Software:

- Software that performs special functions or provides functions that are much more than the basic operation of the computer is known as application software. Or in other words, application software is designed to perform a specific task for end-users. It is a product or a program that is designed only to fulfil end-users' requirements. It includes word processors, spreadsheets, database management, inventory, payroll programs, etc.

Utility software:

Utility software is part of the system software and performs specific tasks to keep the computer running. Utility software is always running in the background. Examples of utility software are security and optimisation programs. Security programs include anti-virus software that scans and removes viruses. Most computers will include some sort of anti-virus software, but you can add your own. Optimisation programs can include tools for system clean-up, disk defragmentation, and file compression. These tools are typically installed as part of the operating system. They have access to the hard drive to keep it tidy.

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



SDLC is a process that defines the various stages involved in the development of software for delivering a high-quality product. SDLC stages cover the complete life cycle of a software i.e. from inception to retirement of the product.

SDLC Phases:

Given below are the various phases:

1. Requirement gathering and
2. analysis
3. Design Implementation or
4. coding
5. Testing
6. Deployment Maintenance

1) Requirement Gathering and Analysis:

During this phase, all the relevant information is collected from the customer to develop a product as per their expectation. Any ambiguities must be resolved in this phase only.

Business analyst and Project Manager set up a meeting with the customer to gather all the information like what the customer wants to build, who will be the end-user, what is the purpose of the product. Before building a product a core understanding or knowledge of the product is very important.

For Example, A customer wants to have an application which involves money transactions. In this case, the requirement has to be clear like what kind of transactions will be done, how it will be done, in which currency it will be done, etc.

Once the requirement gathering is done, an analysis is done to check the feasibility of the development of a product. In case of any ambiguity, a call is set up for further discussion.

Once the requirement is clearly understood, the SRS (Software Requirement Specification) document is created. This document should be thoroughly understood by the developers and also should be reviewed by the customer for future reference.

2) 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.

3) Implementation or Coding:

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.

4) 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.

5) 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.

6) 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.

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

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It can be manual, automated, or a combination of both.

It shows how data enters and leaves the system, what changes the information, and where data is stored.

The objective of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communication tool between a system analyst and any person who plays a part in the order that acts as a starting point for redesigning a system. The DFD is also called as a data flow graph or bubble chart.

The following observations about DFDs are essential:

1) All names should be unique. This makes it easier to refer to elements in the DFD.

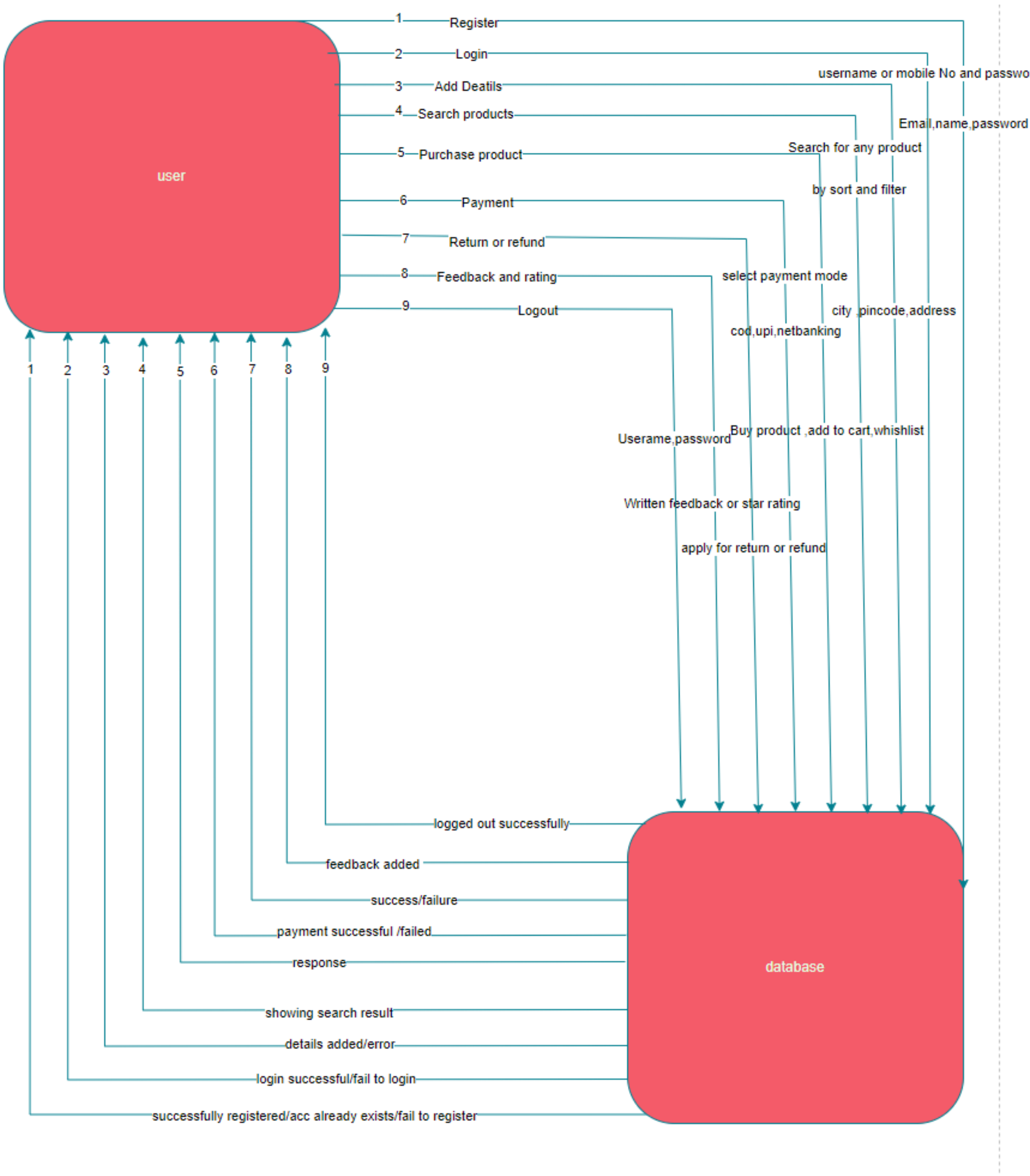
2) Remember that DFD is not a flow chart. Arrows is a flow chart that represents the order of events; arrows in DFD represents flowing data. A DFD does not involve any order of events.

3) Suppress logical decisions. If we ever have the urge to draw a diamond-shaped box in a DFD, suppress that urge! A diamond-shaped box is used in flow charts to represents decision points with multiple exists paths of which the only one is taken. This implies an ordering of events, which makes no sense in a DFD.

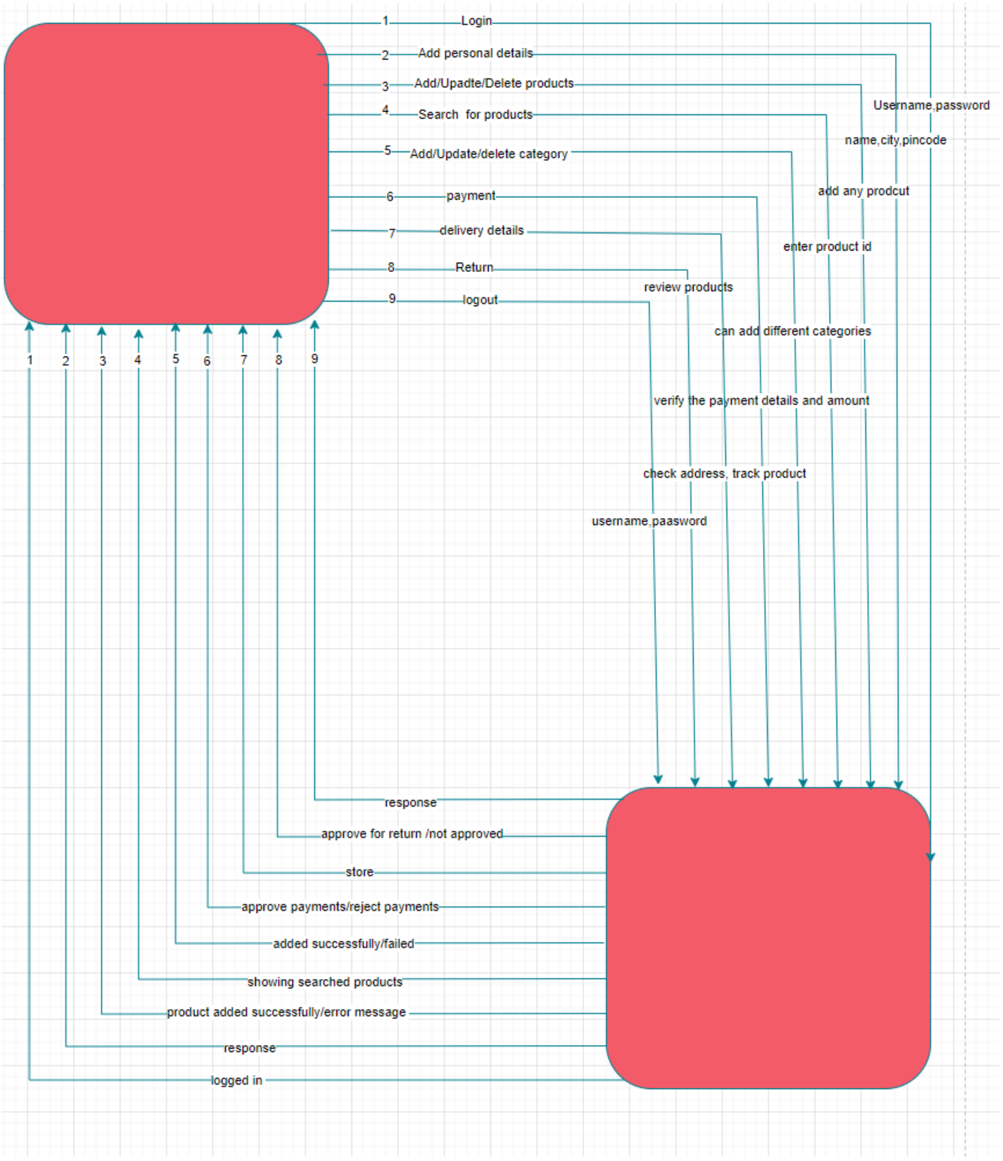
4) Do not become bogged down with details. Defer error conditions and error handling until the end of the analysis.

Flipkart DFD:

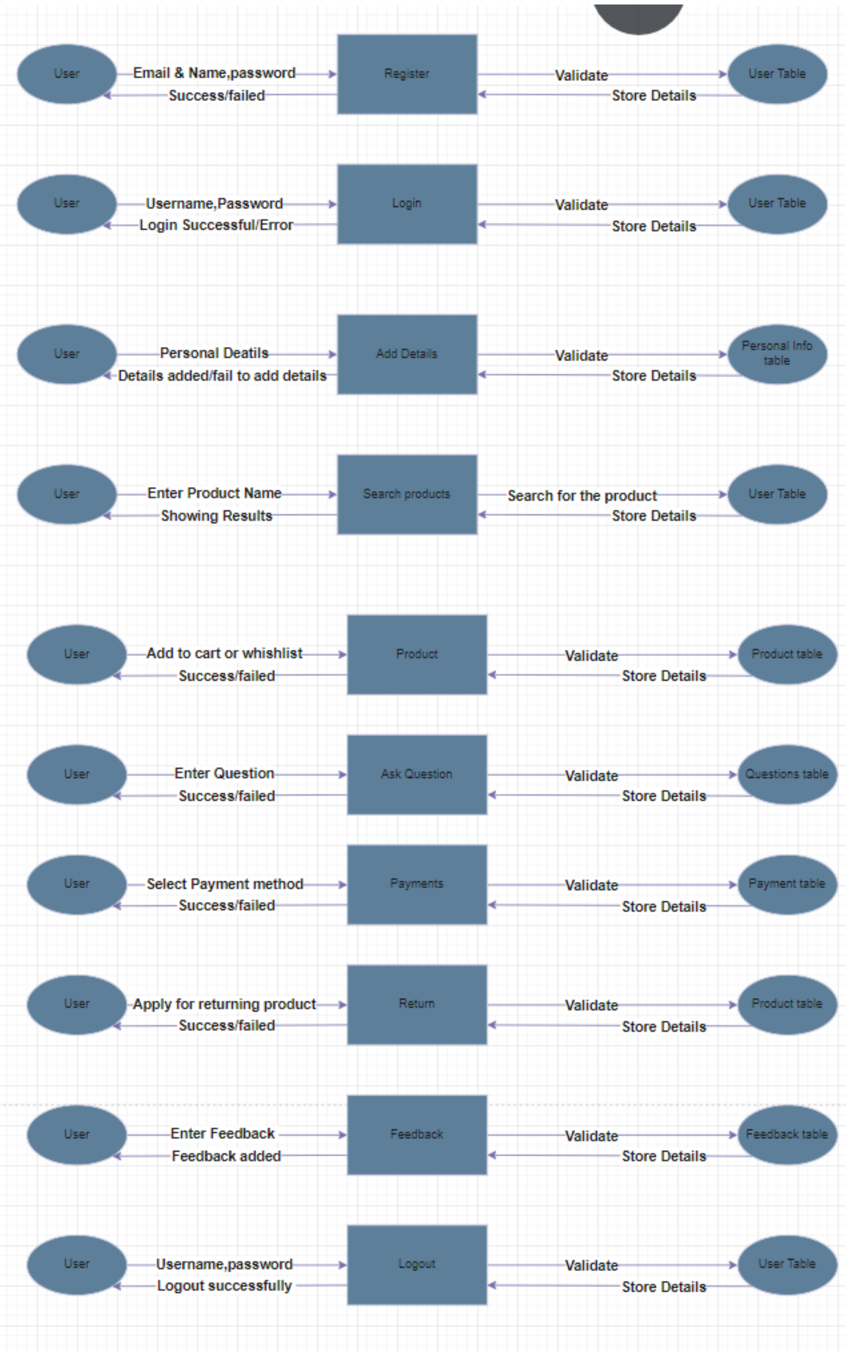
0-context level -User DFD:



0/context-level Admin DFD:


1
Login
2
Add personal details
3
Add/Upadte/Delete products
4
Search for products
5
Add/Update/delete category
6
payment
7
delivery details
8
Return
9
logout
Username,password
name,city,pincode
add any prodcut
enter product id
review products
can add different categories
verify the payment details and amount
check address, track product
username,paasword
1
2
3
4
5
6
7
8
9
response
approve for return /not approved
store
approve payments/reject payments
added successfully/failed
showing searched products
product added successfully/error message
response
logged in

1-level User DFD:



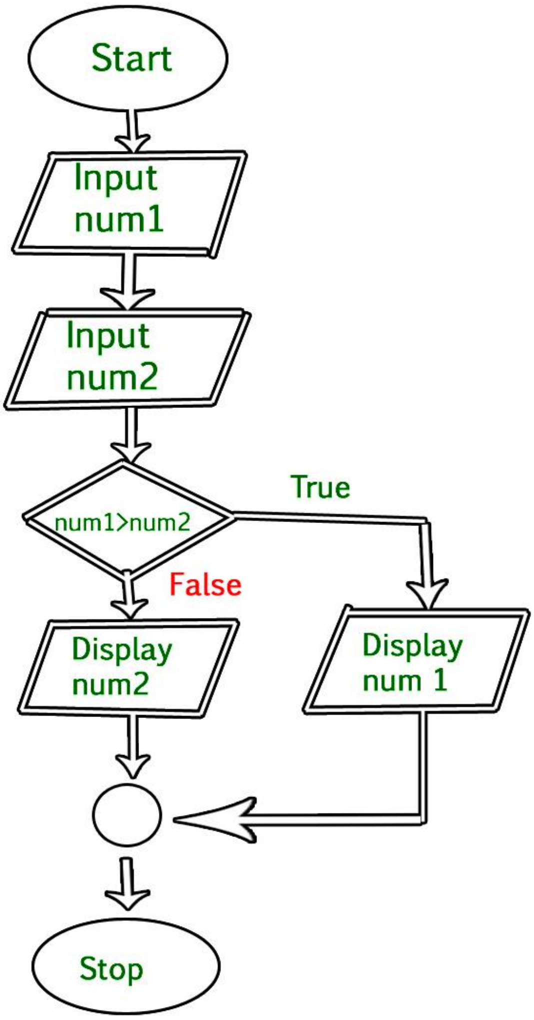
5) What is Flow chart? Create a flowchart to make addition of two numbers.

- Flowchart is a graphical representation of an algorithm. Programmers often use it as a program-planning tool to solve a problem. It makes use of symbols which are connected among them to indicate the flow of information and processing.
- The process of drawing a flowchart for an algorithm is known as "flowcharting".

- **Rules For Creating Flowchart:**

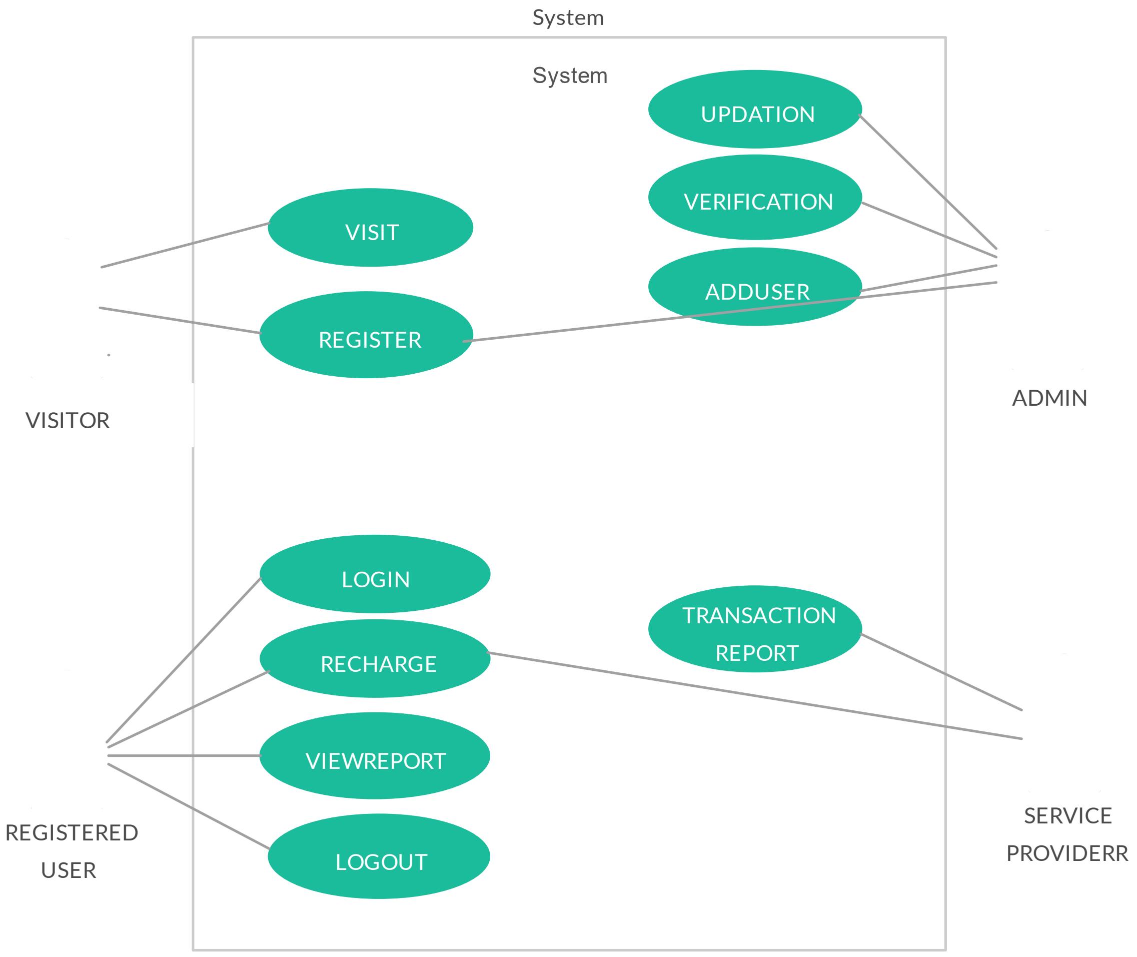
- A flowchart is a graphical representation of an algorithm.it should follow some rules while creating a flowchart
- Rule 1: Flowchart opening statement must be 'start' keyword.
- Rule 2: Flowchart ending statement must be 'end' keyword.
- Rule 3: All symbols in the flowchart must be connected with an arrow line.
- Rule 4: The decision symbol in the flowchart is associated with the arrow line.

Flowchart to make addition of two numbers is given below:



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

- 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 thebg actors use it, but not how the system operates internally.


System
System
UPDATION
VERIFICATION
VISIT
ADDUSER
REGISTER
ADMIN
VISITOR
LOGIN
TRANSACTION REPORT
RECHARGE
VIEWREPORT
LOGOUT
REGISTERED USER
SERVICE PROVIDERR