Practical-1

AIM: - Identify the development model for software with proper explanation.

Linear Sequential Model / Waterfall Model:

linear sequential model or be known as waterfall model is one of the approaches in Software Development Process Models that software engineer used to defined and design which are used during the development process of software. Parekh clearly stated that all these phases are cascaded to each other so that second phase is started as and when defined set of goals are achieved for first phase and it is signed off.

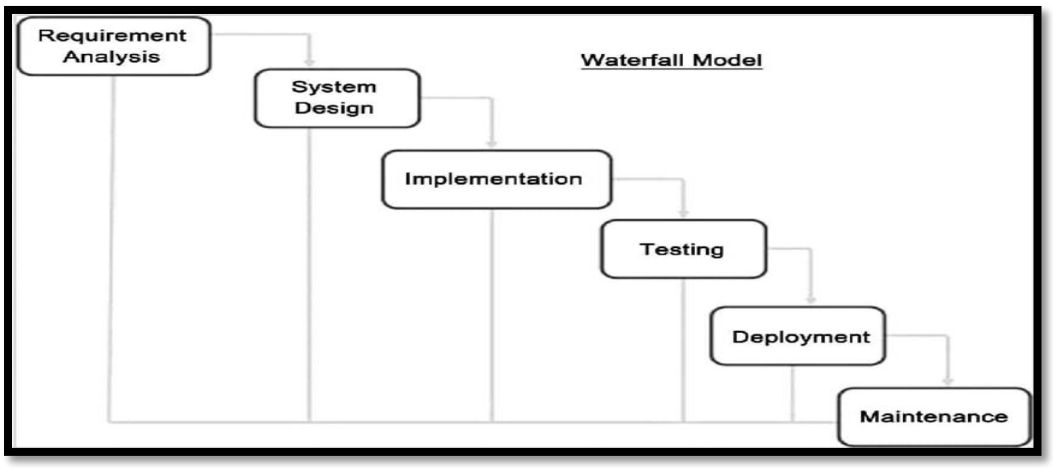
Phases of Linear Sequential Model

Requirement Analysis and Design – Analysis gathers the requirements for the system. This stage includes a detailed study of the business needs of the organization. Design focuses on high level design like, what programs are needed and how are they going to interact, low-level design, interface design and data design. The logical system of the product is developed in this phase.

Implementation – In this phase the designs are translated into code. Computer programs are written using a conventional programming language or an application generator.

Testing – In this phase the system test the program. The system is then tested as a whole. The system is tested to ensure that interfaces between modules work, the system works on the intended platform and with the expected volume of data and that the system does what the user requires.

Maintenance – It is cannot be avoided fact that a system will need maintenance. There are many reasons for the change. Change could happen because of some unexpected input values into the system.



Advantages of Linear Sequential Model

- Emphasizes requirements before design.
- Single system design phase emphasizes planning and design of the system architecture and technology before coding begins..
- Sequential progression is made

- Requirements of the customer is fixed
- Cost is low
- Model structure is readily understood and communicable to all stakeholders.

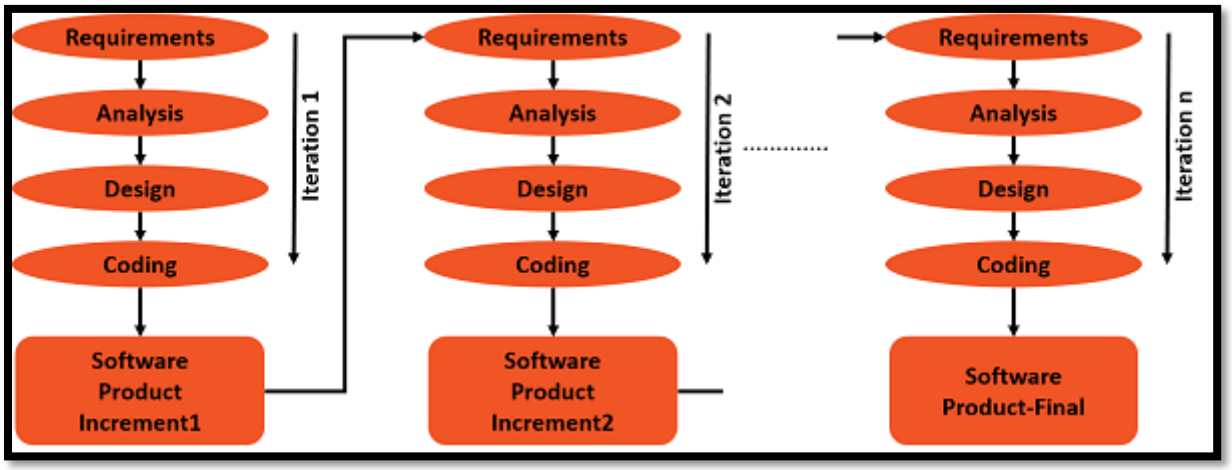
Disadvantages of Linear Sequential Model

- Testing does not receive focus until after the system has been specified, designed and coded.
- Customer involvement is not throughout so issues with requirements are not always realized until later in the lifecycle.
- Blocking stage is present
- The customer does not get to see the software until the very end.

Examples: - quiz management system, airline management system

Incremental model:

In an Iterative Incremental model, initially, a partial implementation of a total system is constructed so that it will be in a deliverable state. Increased functionality is added. Defects, if any, from the prior delivery are fixed and the working product is delivered. The process is repeated until the entire product development is completed. The repetitions of these processes are called iterations. At the end of every iteration, a product increment is delivered.



Advantages –

- you can develop prioritized requirements first.
- Initial product delivery is faster.
- Lowers initial delivery cost.

- Each release is a product increment, so that the customer will have a working product at hand all the time.
- Customer can provide feedback to each product increment, thus avoiding surprises at the end of development.
- Requirements changes can be easily accommodated.

Disadvantages −

- Requires effective planning of iterations.
- Requires efficient design to ensure inclusion of the required functionality and provision for changes later.
- Requires early definition of a complete and fully functional system to allow the definition of increments.
- Well-defined module interfaces are required, as some are developed long before others are developed.
- Total cost of the complete system is not lower.

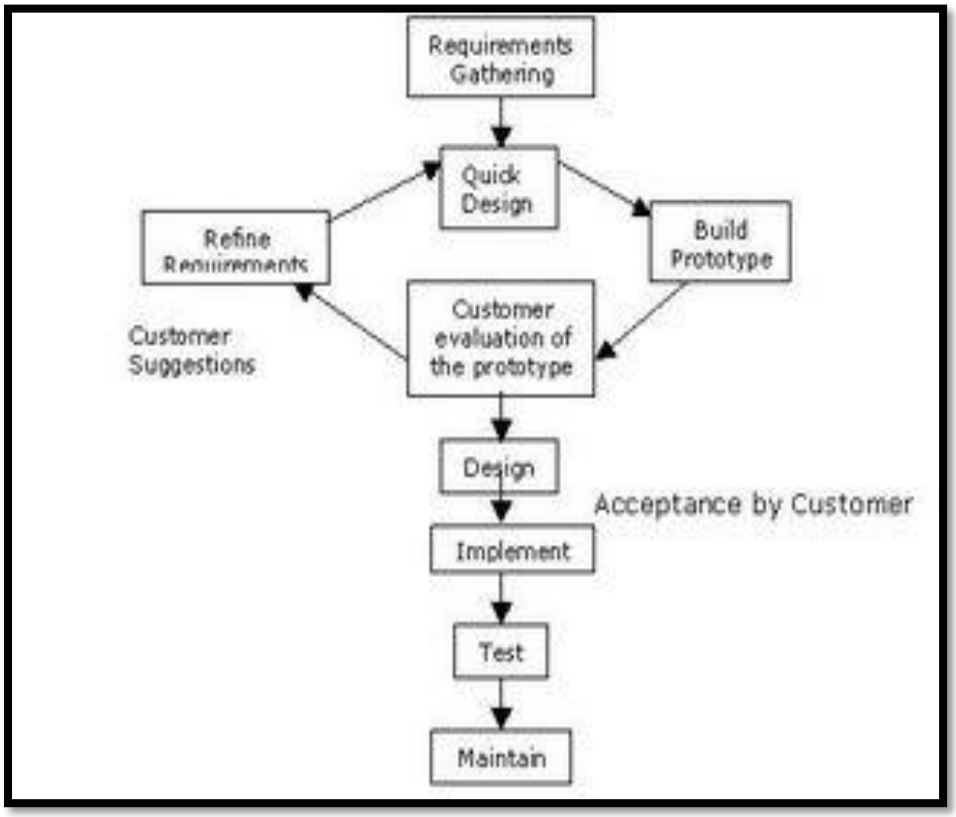
Examples: - M.S word, Excel

ITERATIVE MODELS

While developing the software systems, it is often needed to make modifications in earlier development phases or task sets. If the development process is linear then the end product will be unrealistic. In such cases, the iterative approach needs to be adopted.

Prototype model

- In prototype model initially, the requirement gathering is done.
- Developers and customer define all over objectives and identifies areas needing more requirement gathering.
- Then a quick design is prepared. This design represents what will be visible to user in input and output format.
- From the quick design a prototype is prepared. Customer or user evaluates the prototype in order to refine the requirements.
- This prototype is tuned for satisfy customer requirements which is changing continuously. If the customer is not satisfied then gives the feedback and fixes to develop again.



Advantages: -

- Error can be detected much earlier as the model is made step by step.
- Quicker user feedback is available leading to better solution.
- This provides user a better understanding about their system.
- Users are actively involved in the system, so more accurate user requirement is obtained.

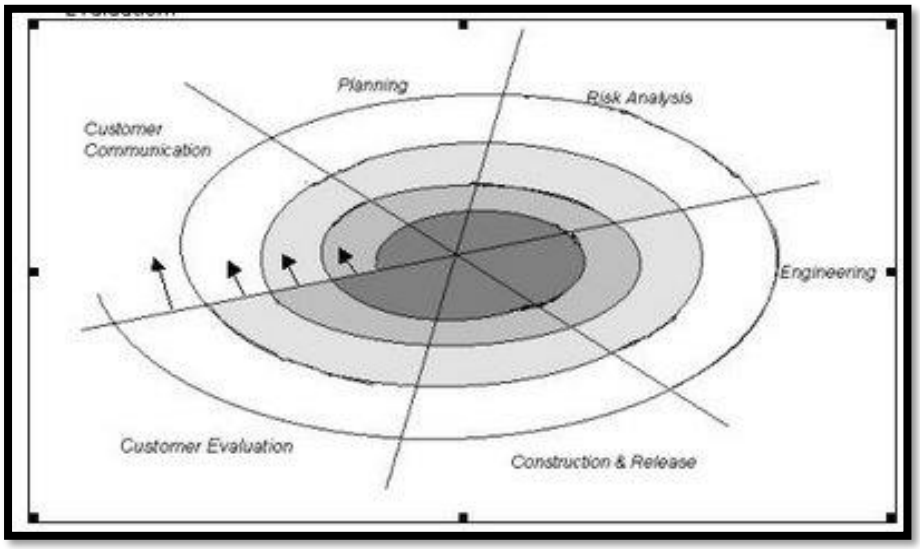
Disadvantages: -

- It requires extensive participation of customer which is always not possible.
- No fixed time of developing a desired project.
- The first version may have some compromises.
- Practically, this methodology may increase complexity.
- As doing fixes is continuous this increases the cost.

Spiral model

- The basic problem with the process model is they can not handle the uncertainty. So the project fails because of the neglected project risk.
- Spiral model is combination of three approaches- risk reducing, iterative incremental approach.
- The spiral model is divided into a number of framework activities. These framework activities are denoted by the task regions. usually there are six task regions.

- Spiral model is realistic approach to development of large scale systems and software. In the initial pass, product specification is built and in subsequent passes around the spiral the prototype gets developed and then more improved versions of software gets developed.



Task regions can be described as-

- **Customer communication**: - it is suggested to establish customer communication. Establishes an understanding of the system or product objectives namely- performance, functionality etc and investigate constraints namely-cost, schedule, support etc.
- **Planning**: - All planning activities are carried out in order to define resources timeline and other project related activities. Product's objective, alternatives and constraints are planned and understood here.
- **Risk analysis: -** the task required to calculate technical and management risk are carried out.
- **Engineering: -** in this task required to build one or more representations of applications are carried out.
- **Construct and release: -** necessary task required to construct, test, install, the application are conducted and user support are also carried out.
- **Customer evaluation: -** Customer's feedback is taken and based on that task are performed.
- In spiral model, the software engineering team moves around the spiral in a clockwise direction beginning at the core.

Advantages:

- Requirement changes can be made at every stage.

- Risk can be identified and rectified easily.
- The developer and client better understand and react to risk at each evolutionary level.
- Each phase is completed with a review by the people and documentation.

Disadvantages: -

- demands considerable risk assessment expertise.
- If major risk is not uncovered or solves then problem will be occur.
- It is not much proven model like linear or prototype model.
- Customer communication must be proper else the product will not be up to the mark.

Rapid Application Development (RAD) MODEL

In this model, with limited functionality the basic software product is created for user's understanding.

- This model is proposed by IBM in 1980s.
- The RAD Model is a type of incremental process model in which there is **extremely short development cycle**.
- The RAD model is a "high-speed" adaptation of the linear sequential model in which rapid development is achieved by using **component based construction**.
- Using the RAD model the fully functional system can be developed within **60 to 90 days**.

Various phases in RAD are

- Requirements Gathering
- Analysis and Planning
- Design
- Build or Construction and
- Deployment

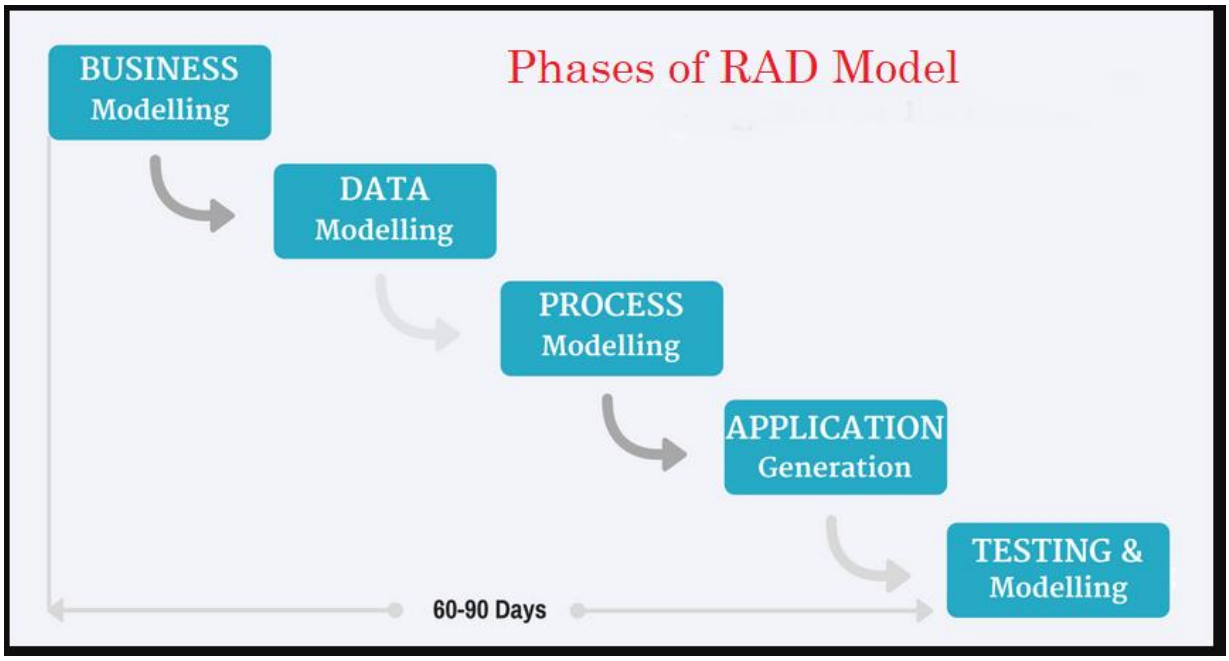
Multiple teams work on developing the software system using RAD model parallel.

1. Requirements Gathering :

In the Requirements Gathering phase the developers communicate with the users of the system and understand the business process and the requirements of the software system.

2. Analysis and Planning :

During analysis and planning phase, the analysis on the gathered requirements is made and a planning for various software development activities are done.



3. Design :

During the design phase various models are created. Those models are Business models, Data models and Process model.

4. Build or Constructions :

The build is an activity in which, using existing software components and automatic code generation tool the implement –tation code is created for the software system.

This code is well tested by its team.

The functionalities developed by all the teams are integrated to form a whole.

5. Deployment :

Finally the Deployment of all the software components is carried out.

Advantages :

- Short life span
- All the requirements are fixed

Disadvantages :

- Requires multiple teams or large number of people
- Requires heavily committed developer and customer
- This model requires heavy resources
- Lack of modularization results in project fail

- Difficult to adopt new technologies
- High cost

Comparisons of various models: -

Waterfall	**Spiral**	**Prototype**	**Incremental**	**RAD**
Requirements should be defined in the beginning stage	**Requirement analysis** is done in iterations because requirements get changed often.	**Requirement analysis** is done in later stages because requirements get changed often.	**Requirement analysis** is done in later because requirements get changed often.	**Requirements** should be defined in the beginning stage as it has short amount of time.
There is **no user involvement** in all the phases of development process	There **is user involvement** in all the phases of development process	There is **user involvement** in all the phases of development process	There is **user involvement** in all the phases of development process	There is **no user involvement** in all the phases of development process
The **development team** should be having adequate experience of working	The **development team** should be having less experience of working	The **development team** should be having less experience of working	The **development team** should be having adequate experience of working	The **development team** should be having more experience of working
Cost is **low**	**Cost** is **high**	**Cost** is **high**	**Cost** is **high**	**Cost** is **high**
It is **unrealistic**	It is **realistic**	It may be **realistic**	It is **unrealistic**	It can be **unrealistic**
It is **linear model**- we can not move back to previous phase	It is **iterative model** means we can move back to previous phase	It is **iterative model** means we can move back to previous phase	It is **iterative model** means we can move back to previous phase	It is **iterative model** means we can move back to previous phase
Time phase for developing a product is easy to define	**Time phase** for developing a product is hard to define	**Time phase** for developing a product is hard to define	**Time phase** for developing first version can be define	**Time phase** for developing product is easy to define ie- 60-90 days
Ex-	Ex-	Ex-	Ex-	Ex-

Practical-2

AIM: - Identify the development model for software with proper explanation

Topic- Bus Pass System

Purpose:

- The project entitled Bus Pass System will make you create temporary passes valid up to certain time Limit (monthly, yearly).
- Here, ticket system will be minimized and so the manual efforts, which will also save time of passengers from waiting in long queue for tickets.
- As it will be directly linked with the bank account then also no need of recharging the pass frequently.
- This can be widely implemented like for AMTS, local buses and by various travel agencies and in other states.
- So, this project is made for local areas of Gujarat i.e.- BRTS (Bus Rapid Transport System)
- This will make our work a bit faster and also a small step towards a **Cashless INDIA.**

Problem statement:

- In the existing system bus pass registration and renewal process are carried out manually. The person has to visit to the counter and to submit their details and have to wait for approval. Which is much time-consuming process and more importantly it is error prone.
- In this existing system the disadvantages are - lack of security, percentage of accuracy is less, consumes lot of manpower.
- This software will solve the mentioned problems.

Introduction to Bus pass system:

- This project is created to provide safe, efficient, less manual effort and affordable services for the users, The user can take a print-out of this bus pass from their mail-id and use them.
- Another way is to posting pass directly to the home of the consumer, by the address provided by the consumer, both of the method can be used by the user and easily done by scanning method in BRTS.
- Users don’t need to recharge their pass. As it will directly connect with their bank account and will act just like a credit card after scanning.
- Users can also use the preliminary method of recharging the bus pass.
- Their will be two kinds of passes- Student pass-which is provided for the students who is studying for the developing nations with 40% discount (if yearly) and second is- general pass-provided for the noble

citizens who is working and doing job for developing nation with 20% discount (if yearly). For less than a half year no discount, for half year 20% discount, for a year or more then it then 40% discount.

User's requirements

Related to view of software:

- The user interface should be light with black fonts, with a background of bus
- Software should be graphically designed with attractive background of front view.
- It should give a welcome message when opened.
- Icon of the software should be related to the topic.
- It should show a progress bar in registration module.

Related to the functions of software:

- Verification should be done after registrations.
- There must be an enable option at very end in registration form for providing the copy of the registration through mails showing user their password and other details for their verification.
- The handling, updating of the software should be in the hands of admin.
- Software should contain various user-friendly menus like- frequency of the bus, particular bus details, create pass, renew pass, block a pass, route of bus should be graphically shown, stations a bus covering, forgot password and other user-friendly options and messages.
- The different menus for admin should be like- edit bus details, showing updated routes, changing frequencies of the bus, view users and other managing features.
- Search bar should be at the top in every menu. Bus details, frequencies of the bus, route of bus, stations should be in menu form when searched about any bus.
- The data of the user should be secured first with their passwords and so with the admins.
- An exclusive should be applied automatically when any of the admin is updating any information in particular menu of software which means none of the admin can make a change at that particular time and user can see the previous data.
- Whenever data is updating by admins a message box should be overviewed for users like 'wait for a while data is updating'.
- Before the completion of valid period of pass it should warn the consumer through a mail.
- Admins only can make other admins with verification.

- If a user forgot a password then user can send request for new password on its website, or can contact directly.
- If a user wants to block a pass then also can send a request, or can directly contact to janmitra number for blocking a pass in case lost and theft.
- It should also provide helpline number, and website address link to directly move onto the website.
- Admins can view the details of the user but with restrictions (not able to check the personal and bank information).

System requirements

Functional requirements:

- **Log in –** Users shall be able to load the login module in internet browser. This is the module where user can login. This can be a front view also for the users. Here user can access some of the menus like Particular bus details which includes name of bus, number of station covering, areas of bus, frequency of particular bus example- 4 numbered bus then frequency is 20 and station covering is 30, the charge of selected stations and route of bus which shall be graphically showed.

- For accessing other modules user has to login with necessary information like name, mail id, password. If forgot the password then options for creating another accounts and managing accounts should be given.

Admin- Admin is given a separate login using which each they can access, update the information, change the formatting, which will reflect in user module. But the main focus should be on creating, renewing a pass.

- View users- Admins can also view the users by entering their unique id numbers and can check the validity of their passes.
- Block pass- By here admin shall block the pass with the unique identification of user.
- Renew pass-By here admin shall also renew the pass with the unique identification of user. if blocked. Whenever the pass is renewed a mail shall be sent to the user with their new pass valid date.
- Create pass-Admin can create a pass of the user with their valid data stored in backend of the database.
- Edit bus details- Admins can edit the details of the bus like bus number, bus name, area it is covering, name of the stations, number of passenger should be load in bus, colour of bus, if any changing in the format of the strings is done it will reflect to users etc, it should be a persistent data.
- Add bus- here, admins can add the new bus with required details.

- Changing frequencies of the bus- As new bus arrives the frequency of bus changes (maximized). Or when the bus is sent for repairing the frequency changes(minimized). Well, it changes infrequently.
- Updating routes-Sometimes, because of the construction process the routes of the buses is changed that should be updated and sent to the user with a notification. Normally the routes are updated but the stations is not changed so it is persistent data.
- Make admin- Here admin shall make other person a admin.

User- These are the essential entities. In this module user can see their personal data with entering the password. Here the user who has registered can only enter in this module.

- My details- Here users shall check their details.
- Edit my details- Here user shall edit their necessary details.
- Create pass- Here, user shall create a pass by filling their valid identities like full name, gender, address, age, mobile no., bank account details, date of birth, aadhar card no., student/general pass if general pass then no requirements if a student then to fill necessary information about their study place, depend on type of the pass the discount is given and desired password of the pass, lastly to agree with agreement and submit. If a user forgot a password then user shall send request for new password on its website.
- Block a pass- Here pass shall be blocked with necessary user identity. If pass is blocked no user can use that pass.
- Renew pass- here user can add the request to renew the pass for this it should be blocked first.
- Particular bus details- This will show the name of the bus, the stations it is covering with areas frequency of particular bus ex- 4 numbered bus then frequency is 20 and station covering is 30, the charge of selected stations and route of bus which will be graphically showed
- All bus – This will make the user to see name, number, stations, areas of all buses of brts.

Non-Functional requirements:

- **Reliability:**
  The function should be reliable to adapt the changes, to update the information correctly with accuracy in user's module whenever any of the changes is done by the admins.
- **Available:**
  The application will be available all of the time. The application will be available in different languages i.e.- English, gujarati, hindi.
- **Security:**

Security is used to ensure bank details and other information as confidential and is not stored anywhere. The only location any user is visible is when users enter in their information. The privacy is also given with the password protection and a finger print scanner.

- **Quality assurance:**

  After each revision the system will be analysed and compared with the system requirements designed by the client. We will than try to break the programs with the test cases. Also the program will be tested verily with different inputs and observing the vary outputs. It will be tested various times before deploying it to the consumer. All final documents will be reviewed for spelling errors, broken line, and any other issues that affects the quality of the product.

- **Maintainability:**

  There shall be design documents, describing the maintenance of the system and database used to save user details as well as daily update and modification done in the system.

  There shall be an access on the control system by the admin to maintain it properly at front and backend.

Practical-3

AIM: -Prepare SRS document for Bus pass system software.

1) Purpose: -

- The project entitled Bus Pass System will make you create temporary passes valid up to certain time Limit (monthly, yearly).
- Here, ticket system will be minimized and so the manual efforts, which will also save time of passengers from waiting in long queue for tickets.
- As it will be directly linked with the bank account then also no need of recharging the pass frequently.
- This can be widely implemented like for AMTS, local buses and by various travel agencies and in other states.
- So, this project is made for local areas of Gujarat i.e.- BRTS (Bus Rapid Transport System)
- This will make our work a bit faster and also a small step towards a **Cashless INDIA.**

Scope:

- We have already known in offline bus pass system we face long queues for passes. So, if we can use online citizen buss pass generation system is an application for citizen to get bus passes online.
- This system is intended to develop an application to perform functions like accessing basic information for authentic and provide passes without the need to wait in any queue.
- Online bus pass system is for students and other daily travellers to get pass through online.

Overview:

- In overall description, it gives an overview of the over all perspective and requirement of the system. It describes the informal requirements and is used to establish the context for the technical requirements specification. While in specific requirements section it will show and describe the details of the requirements that a stakeholder needs to know, which comprise the domain model.

2)General section: -

Problem statement:

- In the existing system bus pass registration and renewal process are carried out manually. The person has to visit to the counter and to submit their details and have to wait for approval. Which is much time-consuming process and more importantly it is error prone.
- In this existing system the disadvantages are - lack of security, percentage of accuracy is less, consumes lot of manpower.
- This software will solve the mentioned problems.

Introduction to Bus pass system:

- This project is created to provide safe, efficient, less manual effort and affordable services for the users, The user can take a print-out of this bus pass from their mail-id and use them.
- Another way is to posting pass directly to the home of the consumer, by the address provided by the consumer, both of the method can be used by the user and easily done by scanning method in BRTS.
- Users don't need to recharge their pass. As it will directly connect with their bank account and will act just like a credit card after scanning.
- Users can also use the preliminary method of recharging the bus pass.
- There will be two kinds of passes- Student pass-which is provided for the students who is studying for the developing nations with 40% discount (if yearly) and second is- general pass-provided for the noble citizens who is working and doing job for developing nation with 20% discount (if yearly). For less than a half year no discount, for half year 20% discount, for a year or more then it then 40% discount.

3) System requirements: -

Functional requirements:

- Switching shall be smoothly.
- While buffering an image should be viewed changing verily after each buffering.
- It shall display the basic information of using the software for help of new users.
- With writing the first two-three words it shall display the guessed bus name, bank name, branch name etc.
- The name of the person, bank name shall not be case sensitive.
- The maximum character of first name and last name shall be 30 as string.
- Expiration date month- string, exactly two numeric character
- Expiration date month- string, exactly four numeric character

- Email- string, maximum length 30 characters, not case sensitive, with atleast one '@' symbol and one '.' symbol.
- Choosing the pass type shall be drop down menu.
- Credit card number- string, exactly 16 numeric characters.
- Credit card type- drop down menu with 'visa', 'discover', 'master card', 'American express'

- For accessing other modules user has to login with necessary information like name, mail id, password. If forgot the password then options for creating another accounts and managing accounts should be given.

- **Log in –** Users shall be able to load the login module in internet browser. This is the module where user can login. This can be a front view also for the users. Here user can access some of the menus like Particular bus details which includes name of bus, number of station covering, areas of bus, frequency of particular bus example- 4 numbered bus then frequency is 20 and station covering is 30, the charge of selected stations and route of bus which shall be graphically showed.

Admin- Admin is given a separate login using which each they can access, update the information, change the formatting, which will reflect in user module. But the main focus should be on creating, renewing a pass.

- View users- Admins can also view the users by entering their unique id numbers and can check the validity of their passes.
- Block pass- By here admin shall block the pass with the unique identification of user.
- Renew pass-By here admin shall also renew the pass with the unique identification of user. if blocked. Whenever the pass is renewed a mail shall be sent to the user with their new pass valid date.
- Create pass-Admin can create a pass of the user with their valid data stored in backend of the database.
- Edit bus details- Admins can edit the details of the bus like bus number, bus name, area it is covering, name of the stations, number of passenger should be load in bus, colour of bus, if any changing in the format of the strings is done it will reflect to users etc, it should be a persistent data.
- Add bus- here, admins can add the new bus with required details.
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- Make admin- Here admin shall make other person a admin.

User- These are the essential entities. In this module user can see their personal data with entering the password. Here the user who has registered can only enter in this module.

- My details- Here users shall check their details.
- Edit my details- Here user shall edit their necessary details.
- Create pass- Here, user shall create a pass by filling their valid identities like full name, gender, address, age, mobile no., bank account details, date of birth, aadhar card no., student/general pass if general pass then no requirements if a student then to fill necessary information about their study place, depend on type of the pass the discount is given and desired password of the pass, lastly to agree with agreement and submit. If a user forgot a password then user shall send request for new password on its website.
- Block a pass- Here pass shall be blocked with necessary user identity. If pass is blocked no user can use that pass.
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- All bus – This will make the user to see name, number, stations, areas of all buses of brts.

4) Interface requirements: -

User interfaces:

- Since, the system is used by different users, the category of user interface depending on the functions the user is authorizes to perform.
- Users access such as login and then home page is provided to all users. Through this homepage all users function is shown and can be accessed after login.
- This interface will be very friendly which the new user log in and then to drop the feedback from the experience users before operating it**.**
- User requirement of the software shall be compatible to any browser such as internet explorer, mozilla, by which user can access the system**.**
- User interface should be light with the combination of yellow, black and orange with more proportion.
- It shall have an image of bus as a light background.

Graphical user interfaces:

- The menus and their pages should be graphically designed.
- The area of touch should be highlighted.
- The verification option should be in rectangular box.
- Phone application interfaces with user. Using touch input user can select, copy, paste.
- Buffering symbol should be colourful.

Hardware interfaces:

- Just like any other system, this system requires basic computer that consists of CPU, monitor, keyboard, mouse or laptop, smart phone for input and output and to access the software.
- Printer is needed for print function if needed.
- Besides this it should be connected with GPS device to get the bus details.

Software interfaces:

- The system will require visual studio, xampp for designing and coding and windows xp, windows 7.
- SQL 2008 for storing the data and needed for accessing and necessary coding.
- Database is used as front end and back end to store the data, access the data, update the data and only the particular user can access his particular information.
- It shall also communicate with bill pay system for managing the payments and process payment.
- The system shall also communicate with external tax system to calculate the tax.
- The system shall also communicate to credit management system to handle the financing system.

Communication interfaces:

- The system communication interface is completely depend on server software to ensure correct send and retrieves data from the database.
- Other than that it is an online protocol to connect between GPS and the system**.**

5) **Performance requirements: -**

- The product shall take initial time to load depend on the internet connection strength which also depend on the media from which the product is run.
- User satisfaction-The system is such that it stands up to the user expectation.

- Response time- The response of all operation shall be good that has been made possible by careful programming.
- User friendly-The system shall be very easy to learn and understand. A new user shall also use the system effectively without any difficulty.

6) Design constraints:-

- There are number of factors in client's environment that may restrict the choices of designer, such factors include standards that must be followed, resource limits, operating environment, reliability and security requirements and policies that may have an impact on design of the systems. An SRS should identify and specify all that constraints
- Standard compliance- This specify the requirements for the standards the system must follow. This include the report format and accounting properties.
- Standard development tools- The system shall be built using a standard web page development tool that conforms to either IBM's CUA standards or microsoft's GUI standards.
- The computer must be equipped with web browsers such as internet explorer. The product must be stored in such a way that allows the client easy to access to it.

7)Non-Functional requirements: -

Reliability:

The function should be reliable to adapt the changes, to update the information correctly with accuracy in user's module whenever any of the changes is done by the admins.

Available:

The application will be available all of the time. The application will be available in different languages i.e.- English, gujarati, hindi.

Security:

Security is used to ensure bank details and other information as confidential and is not stored anywhere. The only location any user is visible is when users enter in their information. The privacy is also given with the password protection and a finger print scanner.

Quality assurance:

After each revision the system will be analysed and compared with the system requirements designed by the client. We will than try to break the programs with the test cases. Also the program will be tested verily with different inputs and observing the vary outputs. It will be tested various times before deploying it to the consumer. All final documents will be reviewed for spelling errors, broken line, and any other issues that affects the quality of the product.

Maintainability:

There shall be design documents, describing the maintenance of the system and database used to save user details as well as daily update and modification done in the system.

There shall be an access on the control system by the admin to maintain it properly at front and backend.

8)Operational scenario: -

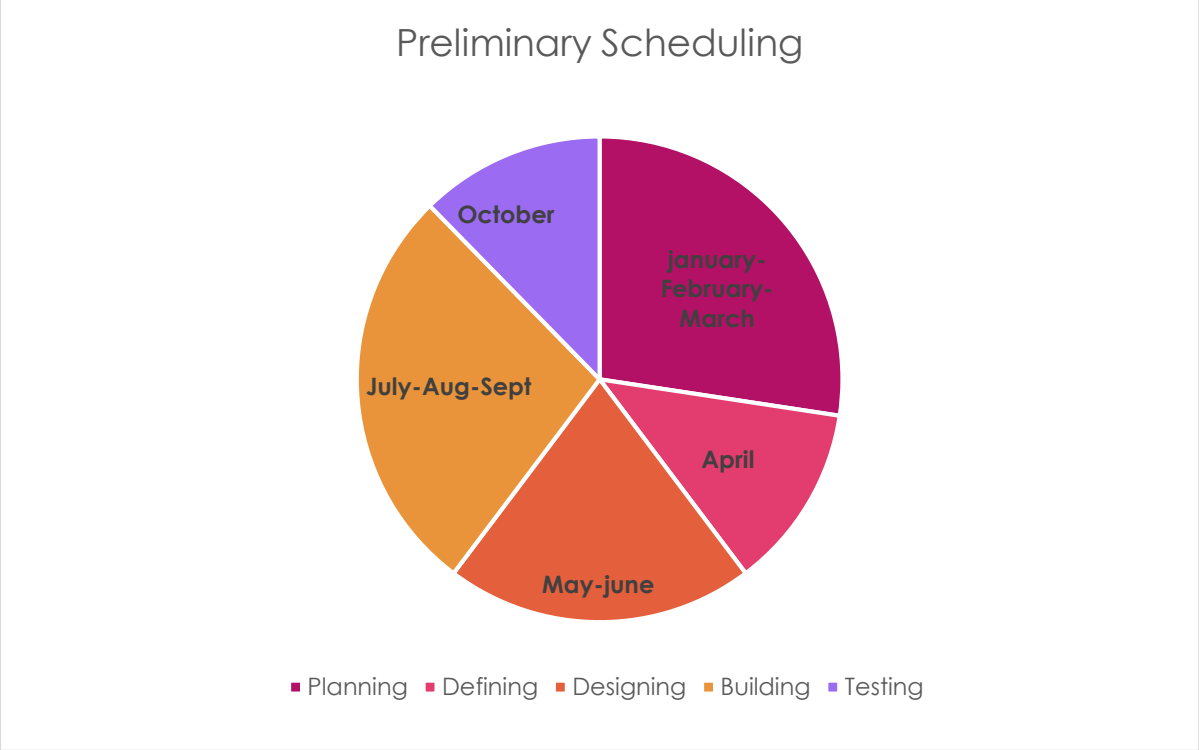
- In this section we should describe a set of scenarios that illustrate, from the user's perspective, what will be experienced when utilizing the system under various situations.
- The passenger logged in but if he/she forgot their passwords.
- The passenger recharges the pass but it doesn't show up in the balance.
- The passenger dropped their pass but the pass shows invalid at bus stop.
- If somebody has problem to login.
- If somebody had entered but forgot to submit.
- Somebody had entered in low balance and then they can't be exit.
- This problems can be solved by using the helpline number provided by the bus management.

9)Preliminary schedule:-

- This section provides an initial version of the project plan, the major tasks to be accomplished their interdependencies and their tentative start/stop date.
- The system must be implemented within nine months.
- Here, we gave two months of schedule timing for planning section and defining constraints, deadlines, cost, development team, dividing the team, risk analysis and other umbrella activities like tracking and system analysis. After then 1 month for defining section preparing an SRS according to the user requirement and verifying from the user. Then here is two months for design the product with various cases and depends on type of system like use case diagram, ER diagram, activity diagram etc which the best suits on the system should be taken. After we complete designing the product, we want to

build it using many programming languages like java, python, xampp and SQL etc... So, here we can build the product using .Net programming language. This section contains three months to complete. Then here is testing section to test your product. We gave 1 months to complete this section.
After this completion the last section is deployment or maintenance. So, we can deploy our product in market.

- Tentative start/stop date: 01/01/2020 to 10/10/2020



10)Preliminary budget:-

- This section provides initial budget for project. Here the budget should be depend on the developers and their team which is hired, resources going to be used and other technical helps, reviews by the experts and risk analysers.

11) Appendices: -

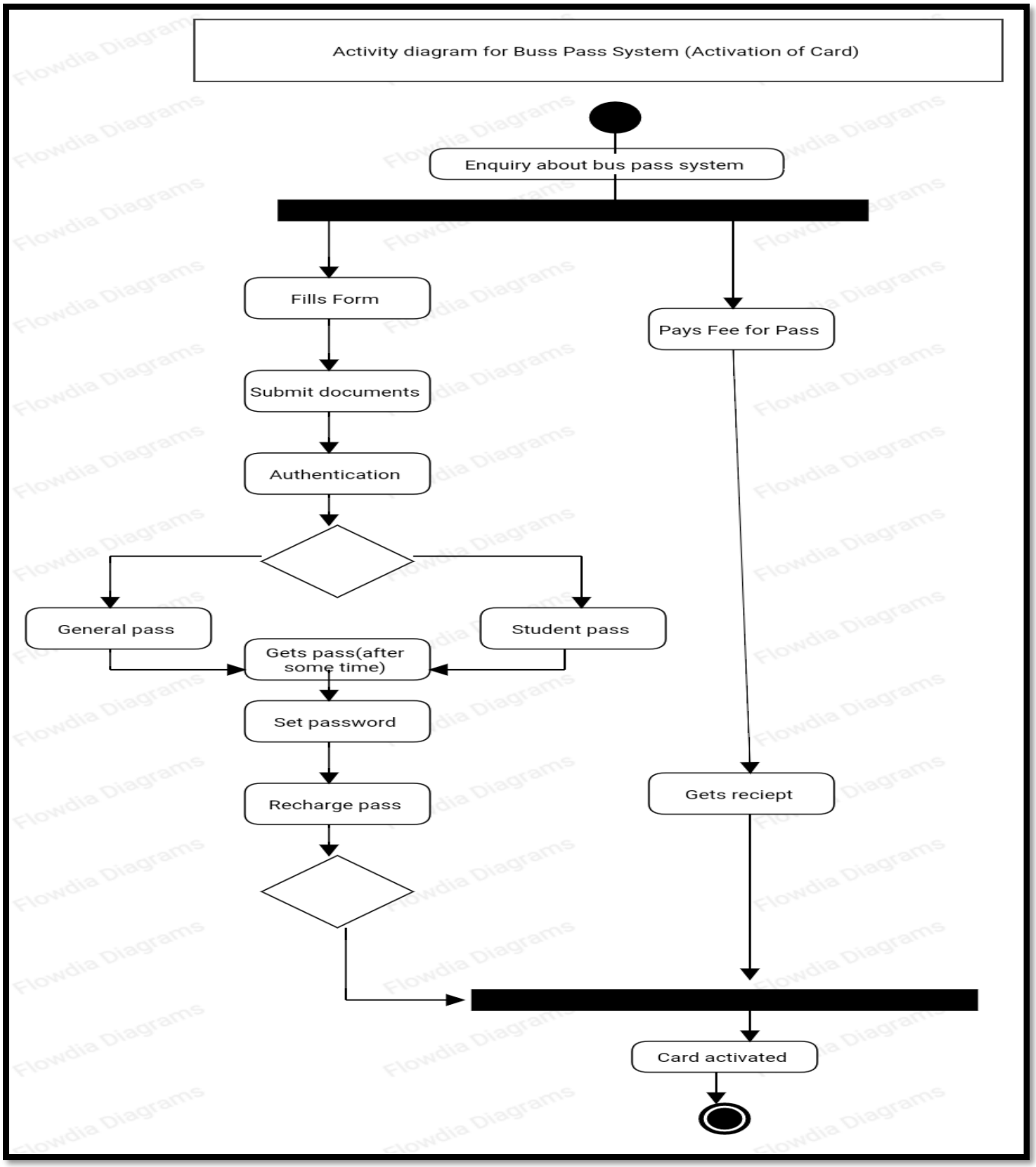
- Nowadays, bus agencies are taking important role in transportation and to make reservation reliable they need a strong system that they will make reservation easier, faster and safer. This project designed to meet requirements of a bus reservation system.

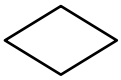
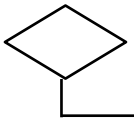
References-

- www.google.com
- www.Nevonprojects.com
- www.Slideshare .com
- Basic information of BRTS from google.

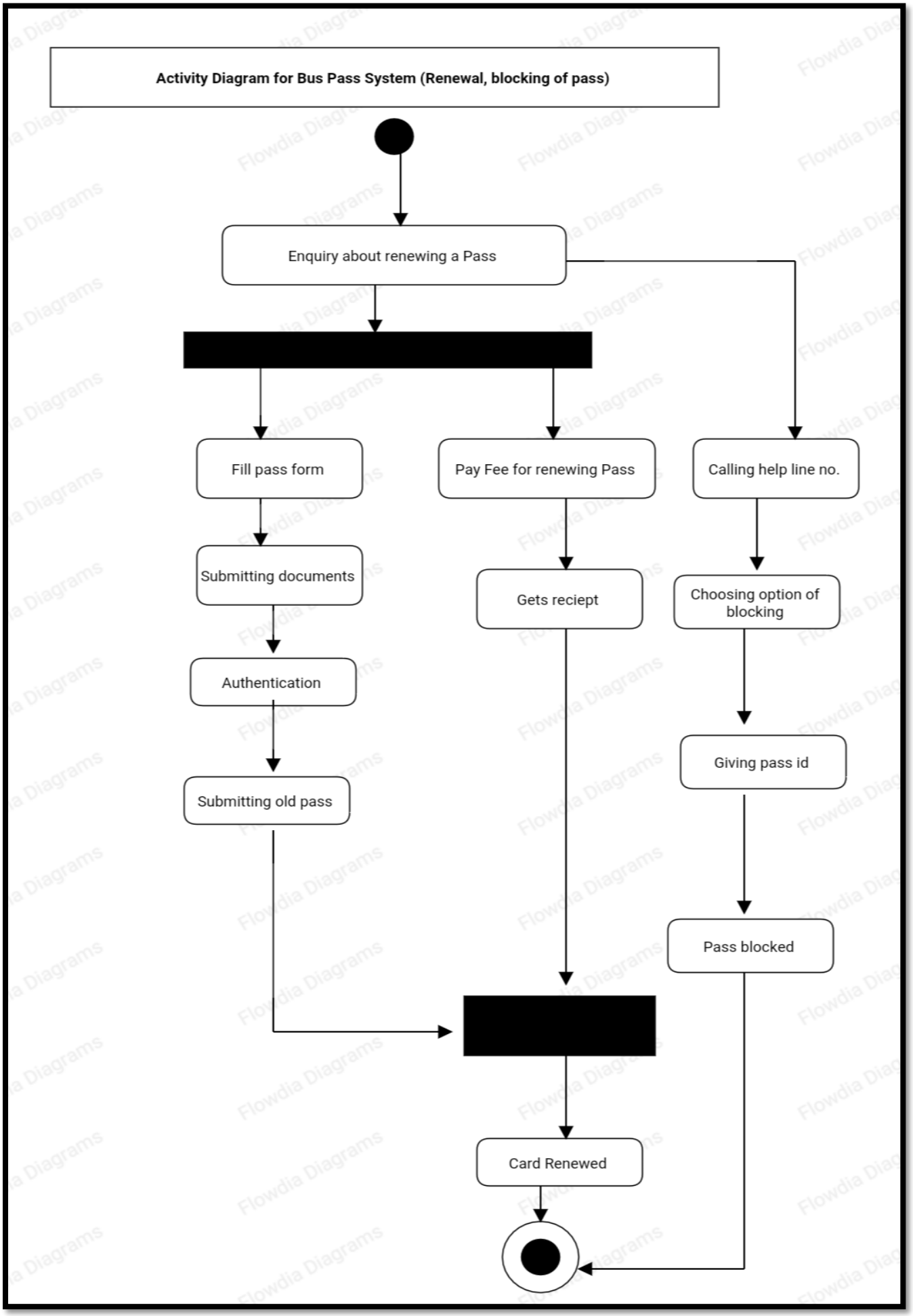
Practical-4

Aim- Design Activity Diagram for Bus Pass System.

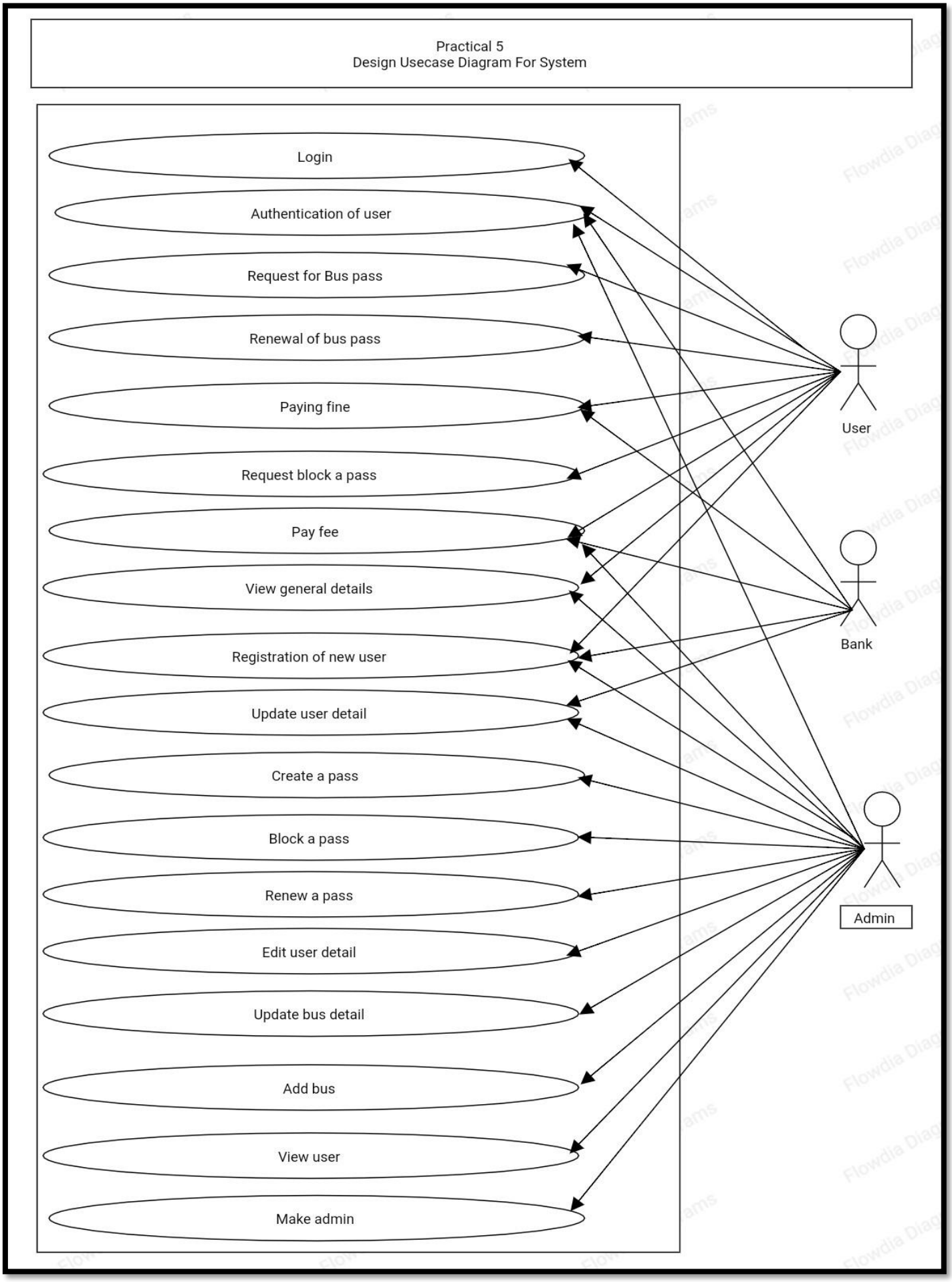


- The Activity diagram shows the activities to reach till the destination.
- It shows the task to perform to reach till the end point.
- The above activity diagram shows the activities to get the bus pass card.
-  Shows the activity to be perform
-  Shows the end of the diagram
-  Shows the start of the diagram
-  Fork- shows simultaneous activity
-  Join- joins the simultaneous activity, when fork is used join is must used.
- Arrow- shows the flow of activity
-  Branch- Decision making
-  Merge- merges the decision

- The activity diagram starts with starting symbol and then declares enquiry about the system.
- Filling form and paying fee can be done together so the fork is used to join the activities.
- Then to submit the documents and after authentication one has to decide which type of pass to make so branch is used as decision making from student or general pass.
- After some period of time user gets the pass and can set the password and recharge it
- Then merge is used to finish branch and then join is used for joining simultaneous activity.
- Lastly the card is activated and last symbol is the ending symbol.


Activity Diagram for Bus Pass System (Renewal, blocking of pass)
Enquiry about renewing a Pass
Fill pass form
Pay Fee for renewing Pass
Calling help line no.
Submitting documents
Gets reciept
Choosing option of blocking
Authentication
Giving pass id
Submitting old pass
Pass blocked
Card Renewed

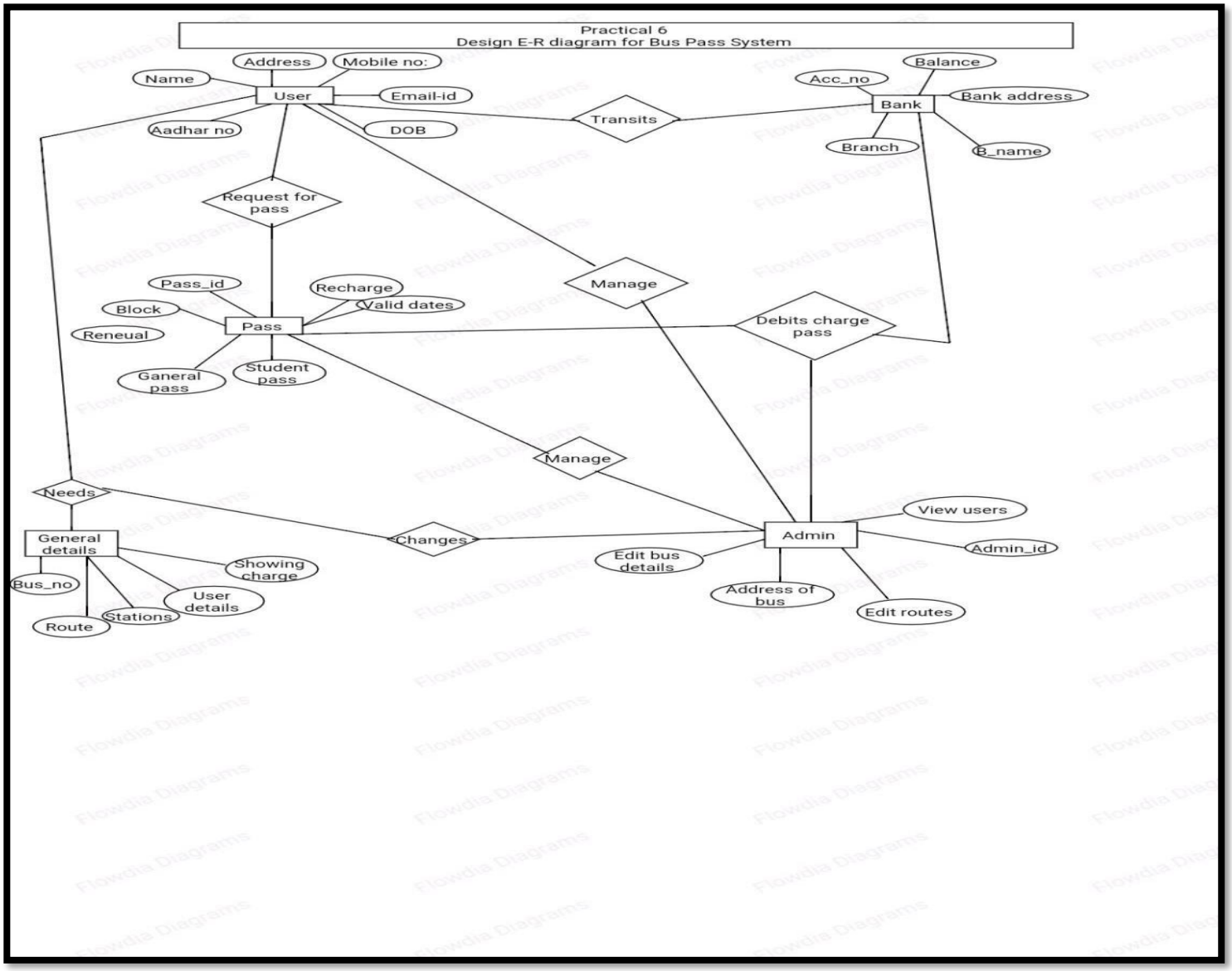
- The activity diagram starts with starting symbol and then declares enquiry about the system.
- A fork is used to specify the simultaneous activity that is paying fee and getting reciept for renewing a pass and filling form.
- Then submitting the documents and authentication
- A join is used to end the simultaneous activity and card is renewed.
- Another activity is blocking a pass which is online feature, calling helpline number then choosing a pass to be blocked after that providing the pass id and after some time the pass of specific id will be blocked.


Practical 5
Design Usecase Diagram For System
Login
Authentication of user
Request for Bus pass
Renewal of bus pass
Paying fine
Request block a pass
Pay fee
View general details
Registration of new user
Update user detail
Create a pass
Block a pass
Renew a pass
Edit user detail
Update bus detail
Add bus
View user
Make admin
User
Bank
Admin

- A use case is a written description of how users will perform tasks on your website or any application. It outlines from a user's point of view a system's behaviour as it responds to a request.
- Each use case is represented as a sequence of simple steps, beginning with a user's goal and ending when that goal is fulfilled.
- Use case diagrams are considered as high-level requirements of analysed.
- The first step in written use cases is to identify actors. Actors are entities that use the system or product within the context of function and behaviour of the system. actors represent the role of the people as the system gets operated. Those actors is anything that communicates with the system or product.
- Here, in above use-case diagram the user, bank and admin as actors.
- So, first of all the user requests for login.
- And after then user's complete their authentication.
- So, after completion of user's authentication user request for bus pass. And pays the fee for bus pass.
- If user wants to block their pass so again, he//she requests for a block pass. And paying the fee.
- The user can also see general details.
- After, all that again same process repeatedly for a registration of a new user.
- Here, there is another important actor in this system and that is "bank".
- The bank first of all authenticate of user.
- If the user paying fee directly from bank then user will directly pay the fee by bank.
- Bank can also update the user detail.
- The main third actor is "admin" in this system.
- First of all, admin authenticate of user and check if the fees were paid or not.
- Admin checks the general detail of user.
- After that the admin start the process for creating a pass. If any user requests for a blocking pass then admin also block this pass. Admin also renew the pass.
- If some user wants edit or update their detail then admin will be updating their detail.
- The admin can also add the bus.
- The admin can view user and also admin can make another admin.

Practical-6

Aim: - Design E-R Diagram for Bus Pass System



Relationship Diagram (ERD): The object relationship pair can be graphically represented by a diagram called Entity Relationship Diagram.

- The ERD is used in data design.
- The primary purpose of ERD is to represent the relationship between the objects. Various components of ERD are- Entity**:**
- An entity as an object that exists and is distinguishable.
- Similar to a record in a programming language with attributes.
- Draw as a rectangle.

Weak entity:

- When this entity dependent upon some another entity then it is called weak entity.

Relationship:

- An association among several entities.
- Relationship may have attributes.
- Relationships have cardinality.
- Draw as a diamond.

Attributes**:**

- To record fields in a programming language.
- Draw an ellipses.

Derived attributes:

- It is a kind of attribute which is based on another attribute.

Key attribute:

- A key attribute is a unique attribute representing distinguishing characteristics of entity.
- Primary key maybe record is a key attribute.

Multivalued attribute:

- A multivalued attribute have more than one value.

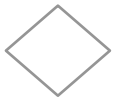
Notations to show cardinality:

- One to one
- One to many
- Many to One
- One to more
- One and only one
- Zero or more
- Zero or many

In the above ER diagram is for online bus pass system.

 Shows the entities.

Shows the attributes.



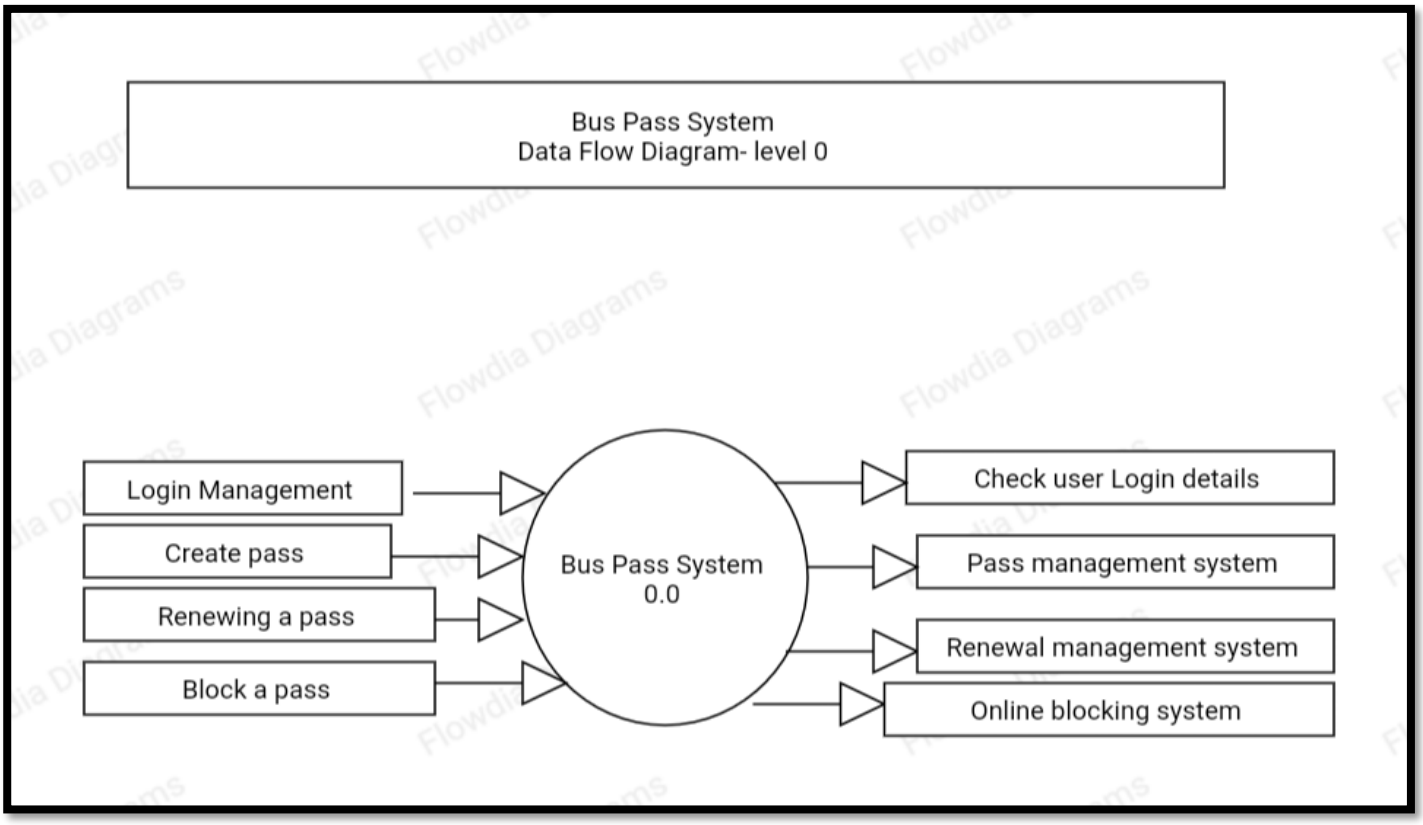
Shows the relationship between entities.

Here, the entities of bus pass system are user bank, pass, general details and admin.

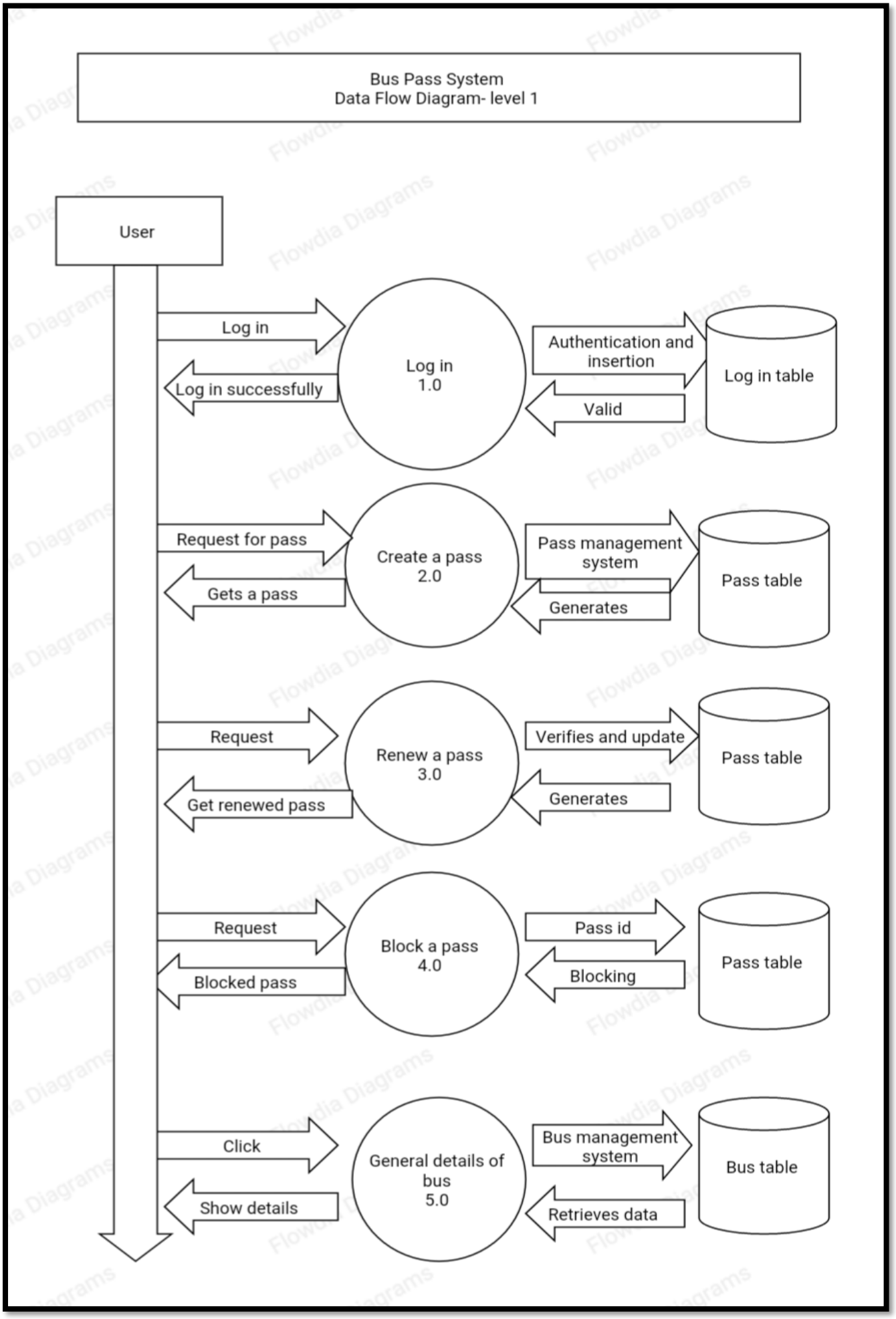
- The entity user have some own attributes like name, address, mobile no, email-id, date of birth and Aadhar no.
- The user is relationship with pass entity for requesting to create or block pass.
- The pass entity has attributes like pass_id, block, renewal a pass, general pass or student pass, recharge for card and valid dates.
- The user also relationship with bank for transits.
- The bank entity have attributes like acc_no, balance, bank address, bank name, branch.
- The user also have relationship needs with general details.
- General detail entity have attributes have like bus_no, route, stations, user details and showing charge.
- So, if the user have relation with general detail so the use can see all basic details.
- The entity admin have attributes like view users, admin_id, edit routes, address of bus, edit bus details.
- The entity admin is relationship with user so, admin can change, manage or update a user details.
- The admin also have relationship with bank entity for debits a bus charge.
- Admin manages also the pass. If some user wants to renew ,block, create general pass or student pass and recharges the pass. So, admin is also have relationship with pass entity.
- Admin can also changes the general details of user.

Practical-8

Aim- Design Data Flow Diagram for Bus Pass System.



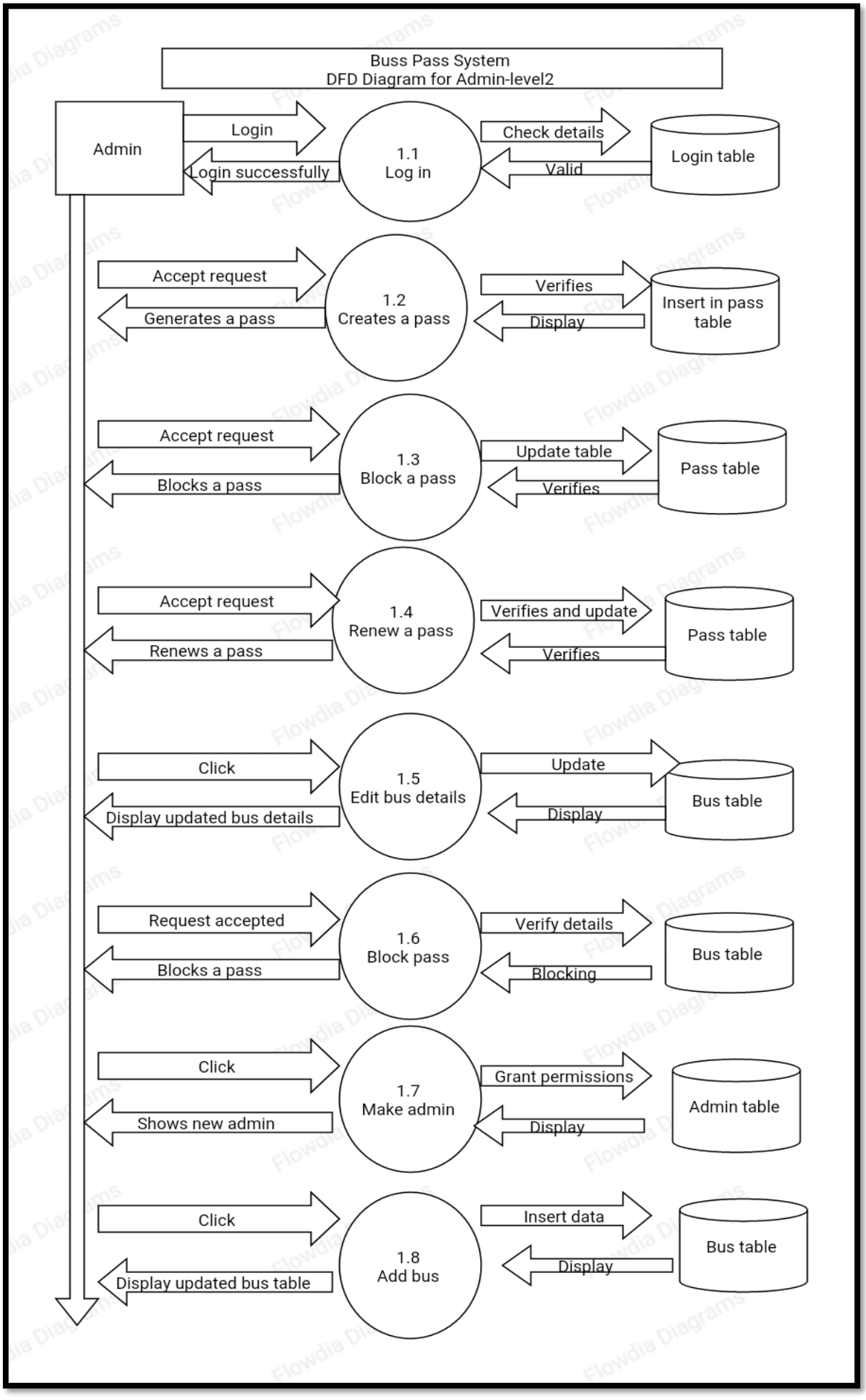
- Here, in this Data Flow Diagram bus pass system is the topic which is shown in the middle as the main system. This diagram shows the flow of the data from request to achieving the part.
- The rectangles show the inputs and outputs and arrows shows the processes to be done in between inputs and outputs.
- Entity to data store must have some process. No exchange of information in two entities, a process is must require.
- In the above level-0 DFD first is login management which checks user login details and handled by the login management system.
- Creating a pass is the second process done by the system and handled by Pass management system means to authenticate, provide pass then recharging etc.
- Renewing pass is handled by renewal management system means to authenticate, checking documents and renewing a pass.
- Last one is blocking a pass which is done online by online blocking system and management.


Bus Pass System
Data Flow Diagram- level 1
User
Log in
Log in successfully
Log in
1.0
Authentication and insertion
Valid
Log in table
Request for pass
Gets a pass
Create a pass
2.0
Pass management system
Generates
Pass table
Request
Get renewed pass
Renew a pass
3.0
Verifies and update
Generates
Pass table
Request
Blocked pass
Block a pass
4.0
Pass id
Blocking
Pass table
Click
Show details
General details of bus
5.0
Bus management system
Retrieves data
Bus table

- The diagram is level-1 Data Flow Diagram of Bus pass system.
- The level-1 diagram shows all the main process of the system that it is going to perform mainly and this system is going to perform—
- Login of user
- Create pass
- Renew pass
- Block pass
- View General details of Bus.

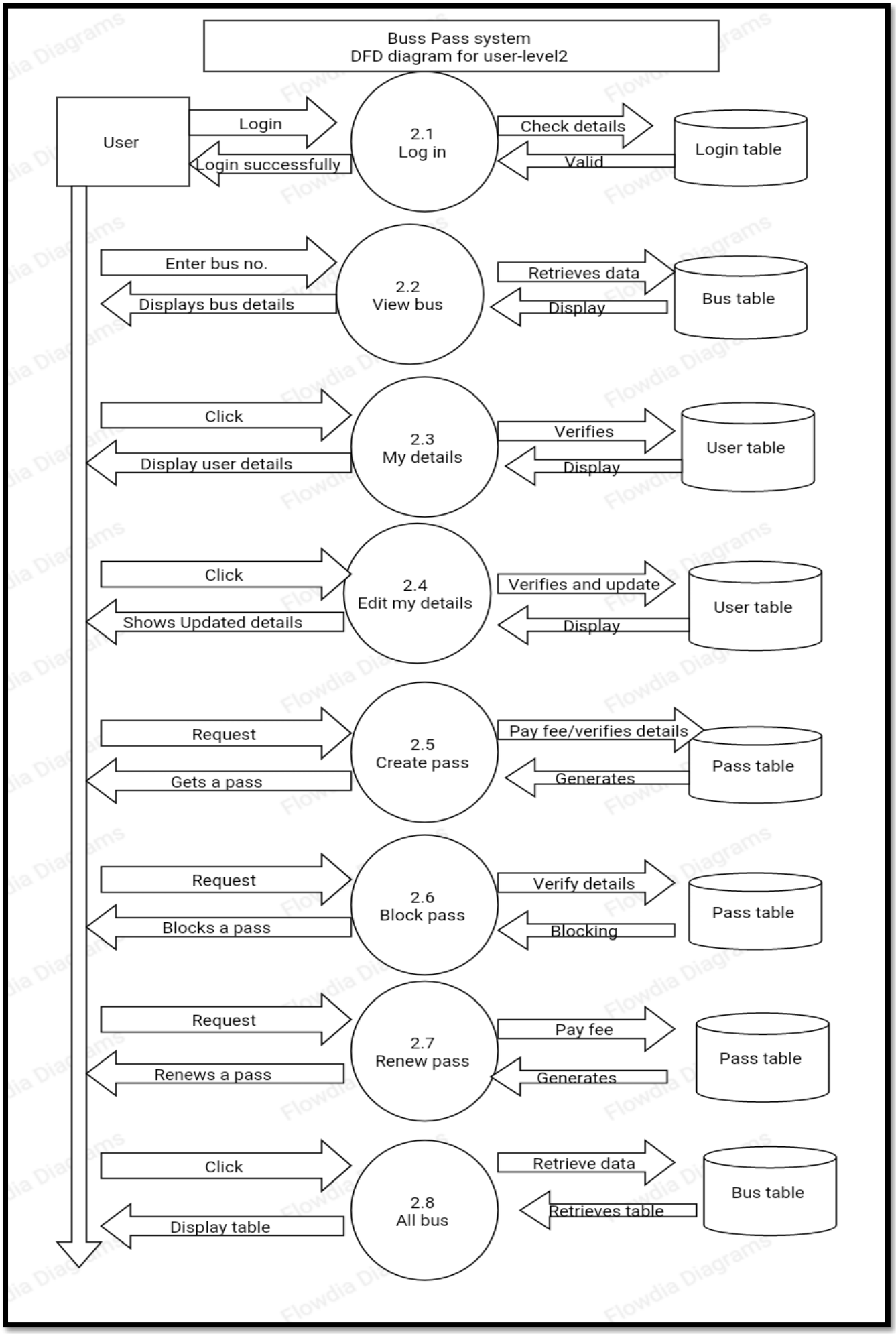
- Here, the entity is the user shown in the rectangle, arrows shows the processes to be done in between inputs and outputs.
- The circle is the main processes of the system and the box is the symbol of the database which is to be manipulated.

- The first main process is Login, so the user will login and the system will authenticate and insert in Login table and will show the message- Log in successfully to the user.
- The second main process is create a pass so the user will request for the pass and the pass management system will authenticate and insert and update the Pass table and will show the message- Authenticated successfully to the user and user will get a pass after some time.
- The third main process is Renew a pass so the user will request to renew the pass and the pass management system will authenticate, renews the pass, and update the Pass table. After some time user will get the renewed pass.
- The fourth main process is Block a pass so the user will request to block the pass and the blocking management system will authenticate, block the pass instantly and update the Pass table. After some time, user's pass will get blocked.
- The fifth main process is view general details of the bus so the user will click on this menu and easily able to view the buses, time, route, stations and fee of tickets and pass. This will be handled by bus management system.


Buss Pass System
DFD Diagram for Admin-level2
Admin
Login
Login successfully
1.1
Log in
Check details
Valid
Login table
Accept request
Generates a pass
1.2
Creates a pass
Verifies
Display
Insert in pass table
Accept request
Blocks a pass
1.3
Block a pass
Update table
Verifies
Pass table
Accept request
Renews a pass
1.4
Renew a pass
Verifies and update
Verifies
Pass table
Click
Display updated bus details
1.5
Edit bus details
Update
Display
Bus table
Request accepted
Blocks a pass
1.6
Block pass
Verify details
Blocking
Bus table
Click
Shows new admin
1.7
Make admin
Grant permissions
Display
Admin table
Click
Display updated bus table
1.8
Add bus
Insert data
Display
Bus table

- The diagram is level-2 Data Flow Diagram for Bus pass system.
- The level-2 diagram shows all the deep process of level-1. So these are the processes that is going to perform by the Admin in the system.
- The main process that Admin is going to perform is—
- Login
- Create pass
- Renew pass
- Block pass
- Edit bus details
- All bus
- Make Admin
- Add bus

- Here, the entity is the Admin shown in the rectangle, arrows shows the processes to be done in between inputs and outputs.
- The circle is the main processes of the system and the box is the symbol of the database which is to be manipulated.
- The first main process is Login, so the user will login and the system will authenticate and insert in Login table and will show the message- Log in successfully to the user.
- The second process is create a pass so the user will request for the pass and the pass management system will authenticate and insert and update the Pass table and will show the message- Authenticated successfully to the user and user will get a pass after some time.
- The third process is Renew a pass so the user will request to renew the pass and the pass management system will authenticate, renews the pass, and update the Pass table. After some time user will get the renewed pass.
- The fourth process is Block a pass so the user will request to block the pass and the blocking management system will authenticate, block the pass instantly and update the Pass table. After some time, user's pass will get blocked.
- The fifth process is Edit bus detail, when admin clicks here they are able to change and update the details of the bus. This will update the bus table. After then updated information will be shown to the user.
- The sixth process is Make admin by here Admin can give the grants to other person for making an admin. This will update the Admin table.
- The last process is Add bus from here Admin can add the new bus and can specify the information of new bus that is going to appear to user.


Buss Pass system
DFD diagram for user-level2
User
Login
Login successfully
2.1
Log in
Check details
Valid
Login table
Enter bus no.
Displays bus details
2.2
View bus
Retrieves data
Display
Bus table
Click
Display user details
2.3
My details
Verifies
Display
User table
Click
Shows Updated details
2.4
Edit my details
Verifies and update
Display
User table
Request
Gets a pass
2.5
Create pass
Pay fee/verifies details
Generates
Pass table
Request
Blocks a pass
2.6
Block pass
Verify details
Blocking
Pass table
Request
Renews a pass
2.7
Renew pass
Pay fee
Generates
Pass table
Click
Display table
2.8
All bus
Retrieve data
Retrieves table
Bus table

- The diagram is level-2 Data Flow Diagram for Bus pass system.
- The level-2 diagram shows all the deep process of level-1. So these are the processes that is going to perform by the User in the system.
- The main process that User is going to perform is—
- Login
- Request to Create pass
- Request to Renew pass
- Request to Block pass
- View bus
- My details
- Edit my details
- All bus

- Here, the entity is the User shown in the rectangle, arrows shows the processes to be done in between inputs and outputs.
- The circle is the main processes of the system and the box is the symbol of the database which is to be manipulated.

- The first main process is Login, so the user will login and the system will authenticate and insert in Login table and will show the message- Log in successfully to the user.
- The second process is create a pass so the user will request for the pass and the pass management system will authenticate and insert and update the Pass table and will show the message- Authenticated successfully to the user and user will get a pass after some time.
- The third process is Renew a pass so the user will request to renew the pass and the pass management system will authenticate, renews the pass, and update the Pass table. After some time user will get the renewed pass.
- The fourth process is Block a pass so the user will request to block the pass and the blocking management system will authenticate, block the pass instantly and update the Pass table. After some time, user's pass will get blocked.
- The fifth process is view the bus from here user can see the buses, their routes, frequencies, stations etc and these all things will be retrieved from the bus table.
- The sixth process is my details from here user can check and verify their own details and data, information will be retrieved by User table.
- Similarly, for the seventh process i.e- edit my details updated information will be stored in user table.