

DIGITAL BUS PASS GENERATION SYSTEM

Submitted in partial fulfillment of requirement for the award of the Degree

Bachelor of Computer Science

In the faculty of Computer Science of Bharathiar University, Coimbatore

Submitted by

K.KEERTHANA

(Reg.No.2022K0135)

Under the guidance of

Mrs.R.KOMALAVALLI MSc., M.Phil.,

Guest lecturer , Department of Computer Science



Department of Computer Science

L.R.G GOVERNMENT ARTS COLLEGE FOR WOMEN

(Affiliated To Bharathiar University)

TIRUPUR-4

APRIL-2023

CERTIFICATE

CERTIFICATE

This is to certify that the project work entitled “**DIGITAL BUSPASS GENERATION SYSTEM**” Submitted to Bharathiar University in partial fulfilled of the requirement for the award of the Degree of Bachelor of computer science is a record of the original work done by **Ms.K.KEERTHANA (Reg.No.2022K0135)** Under my supervisor and that project work has not formed the basis for the any Degree /Diploma /Association /Fellowship or similar title to any candidate of any university.

Internal Guide

Mrs.R.KOMALAVALLI MSc., M.Phil.,

Head of the Department

Dr.R.PARIMALA MSc.,M.Phil.,Ph.D.

Viva-voce examination is held on _____ L.R.G Government Arts College for Women, Tirupur-641604.

Internal Examiner

External Examiner

DECLARATION

DECLARATION

I hereby declare that the project work submitted to the **Department of Computer Science, L.R.G. Government Arts College for Women, Tirupur** , affiliated to Bharathiar University, Coimbatore in the partial fulfillment of the required for the award of Bachelor of Computer Science is an original work done by me during the sixth semester.

Place:

Signature of the Candidate

Date:

(K.KEERTHANA)

(Reg.No:2022K0135)

ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

As first and foremost I would like to external my thankfulness to the almighty for blessing the work of my hands, I am grateful to my parents for continued encouragement that they had given to me.

I would like to external my profound gratitude and sincere thanks to **Dr.M.R.YEZHILI MA.,M.Phil.,Ph.D** Principal, L.R.G Government Arts College For Women , for the encouragement rendered to me during this project.

It's my privilege to thank **DR.R.PARIMALA MSc.,M.Phil.,Ph.D** Incharge Head of the department of computer science for her valuable guidance and support throughout the project development work.

I express my deep sense of gratitude and sincere thanks to my guide **Mrs.R.KOMALAVALLI MSc., M.Phil.,**Lecturer, Department of computer science, for providing all sorts of facilities to complete my project work successfully.

I also extend my sincere thanks to all the other faculty member of the department and technical assistance for their co-operation and valuable guidance.

I thank our college library for providing me with many informative books that help me to enrich my knowledge to bring out the project successfully.

CONTENTS

CONTENTS

TITLE	PAGE NO
1. INTRODUCTION	1
1.1 ORGANIZATION PROFILE	2
1.2 SYSTEM SPECIFICATION	2
1.1.1 HARDWARE CONFIGURATION	4
1.1.2 SOFTWARE SPECIFICATION	5
2. SYSTEM STUDY	5
2.1 EXISTING SYSTEM	6
2.1.1 DRAWBACKS	6
2.2 PROPOSED SYSTEM	6
2.2.1 FEATURES	6
3. SYSTEM DESIGN AND DEVELOPMENT	7
3.1 FILE DESIGN	8
3.2 INPUT DESIGN	9
3.3 OUTPUT DESIGN	10
3.4 DATABASE DESIGN	10
3.5 SYSTEM DEVELOPMENT	11
3.5.1 DESCRIPTION OF MODULES	12
4. TESTING AND IMPLEMENTATION	13
5. CONCLUSION	22
BIBLIOGRAPHY	23
APPENDICES	24
A. DATA FLOW DIAGRAM	24
B. TABLE STRUCTURE	26
C. SAMPLE CODING	28
D. SAMPLE INPUT & OUTPUT	42

SYNOPSIS

SYNOPSIS

A digital buspass generation system, will be very helpful for managing the relationship between the passengers and conductors, why because the passengers no need to take care of the bus pass entry sheet, If the passenger forget to took the pass, they no need to worry about it. Because this system will be generating bus pass systematically. Here we have using five modules are User Registration, New bus pass registration, Renewal bus pass, Bus registration, Print or download pass. User registration module handle the user details, when user need new bus pass will be handle by the new bus pass registration, renewal bus pass can handle renewal the pass also we can able to print the bus pass in online. The main goal of this project is that reducing the man power and giving an accurate information to the passenger, the passenger can manually renewal the bus pass in online. The project is aimed to develop by JAVA as Front end and SQL as Back end..

INTRODUCTION

1.INTRODUCTION

1.1 ORGANIZATION PROFILE

Tata Consultancy Services Ltd (TCS), a subsidiary of Tata Sons Pvt Ltd, is a provider of information technology (IT) services. It offers IT infrastructure services, engineering, and industrial services, business intelligence, business process outsourcing, and consulting services, cloud services, quality engineering, block chain, enterprise solutions, and IoT. The company offers business solutions to various industries, including banking, financial services, communication, media, technology, insurance, life sciences and healthcare, retail, consumer goods and distribution, manufacturing, information services, Hi-Tech, education, energy and utilities, life sciences, healthcare, travel, transportation, and hospitality. It's software products comprise TCS BaNCS, Ignio, TAP, TCS iON, TCS TwinX, TCS Optumera, TCS OmniStore, TCS ADD, TCS HOBS, Quartz, Jile, and TCS MasterCraft. The company has operations across Latin America, North America, Europe, Asia-Pacific, the Middle East, and Africa. TCS is headquartered in Mumbai, Maharashtra, India.

TCS offers a consulting-led, cognitive-powered, integrated portfolio of business, technology, and engineering services and solutions. This is delivered through its unique Location Independent Agile™ delivery model, recognized as a benchmark of excellence in software development.

A part of the Tata group, India's largest multinational business group, TCS has over 592,000 of the world's best-trained consultants in 55 countries. The company generated consolidated revenues of US \$25.7 billion in the fiscal year ended March 31, 2022, and is listed on the BSE (formerly Bombay Stock Exchange) and the NSE (National Stock Exchange) in India.

1.2 SYSTEM SPECIFICATION

System Requirements Specification also known as Software Requirements Specification, is a document or set of documentation that describes the features and behavior of a software application

WINDOWS OS

Windows is a graphical operating system developed by Microsoft. It allows users to view and store files, run the software, play games, watch videos, and provides a way to connect to the internet. It was released for both home computing and professional works.

Microsoft introduced the first version as 1.0

It was released for both home computing and professional functions of Windows on 10 November 1983. Later, it was released on many versions of Windows as well as the current version, Windows 10.

In 1993, the first business-oriented version of Windows was released, which is known as Windows NT 3.1. Then it introduced the next versions, Windows 3.5, 4/0, and Windows 2000. When the XP Windows was released by Microsoft in 2001, the company designed its various versions for a personal and business environment. It was designed based on standard x86 hardware, like Intel and AMD processor. Accordingly, it can run on different brands of hardware, such as HP, Dell, and Sony computers, including home-built PCs.

Editions of Windows

Microsoft has produced several editions of Windows, starting with Windows XP. These versions have the same core operating system, but some versions included advance features with an additional cost. There are two most common editions of Windows:

- Windows Home
- Windows Professional

Windows Home is basic edition of Windows. It offers all the fundamental functions of Windows, such as browsing the web, connecting to the Internet, playing video games, using office software, watching videos. Furthermore, it is less expensive and comes pre-installed with many new computers.

JAVA

Java is a high-level programming language developed by Sun Microsystems. It was originally designed for developing programs for set-top boxes and handheld devices, but later became a popular choice for creating web applications.

The Java syntax is similar to C++, but is strictly an object-oriented programming language. For example, most Java programs contain classes, which are used to define objects, and methods, which are assigned to individual classes. Java is also known for being stricter than C++, meaning variables and functions must be explicitly defined. This means Java source code may produce errors or "exceptions" more easily than other languages, but it also limits other types of errors that may be caused by undefined variables or unassigned types.

Unlike Windows executable (.EXE files) or Macintosh applications (.APP files), Java programs are not run directly by the operating system. Instead, Java programs are interpreted by the Java Virtual Machine, or JVM, which runs on multiple platforms. This means all Java programs are multiplatform and can run on different platforms, including Macintosh, Windows, and Unix computers. However, the JVM must be installed for Java applications or applets to run at all. Fortunately, the JVM is included as part of the Java Runtime Environment (JRE),

SQL

Structured query language (SQL) is a programming language for storing and processing information in a relational database. A relational database stores information in tabular form, with rows and columns representing different data attributes and the various relationships between the data values. You can use SQL statements to store, update, remove, search, and retrieve information from the database. You can also use SQL to maintain and optimize database performance.

Relational database management systems use structured query language (SQL) to store and manage data. The system stores multiple database tables that relate to each other. MS SQL Server, MySQL, or MS Access are examples of relational database management systems. The following are the components of such a system.

A SQL table is the basic element of a relational database. The SQL database table consists of rows and columns. Database engineers create relationships between multiple database tables to optimize data storage space.

SQL statements, or SQL queries, are valid instructions that relational database management systems understand. Software developers build SQL statements by using different SQL language elements. SQL language elements are components such as identifiers, variables, and search conditions that form a correct SQL statement.

1.2.1 HARDWARE SPECIFICATION

- Processor : P 4 700 GHz.
- RAM : 4 GB RAM
- Hard Disk Drive : 180 GB

1.2.2 SOFTWARE SPECIFICATION

- Operating System : Windows 10
- Front End : JAVA
- Back End : SQL

SYSTEM STUDY

2. SYSTEM STUDY

2.1 EXISTING SYSTEM

The existing system is bus pass management is very hard to manage manually. In this system passenger should take the pass anywhere we go. It may sometime chance to miss the pass. Passenger only responsible to take the bus pass regularly. This may hard to use this system which is having some drawbacks.

2.1.1 DRAWBACKS

- Chance for missing pass
- Cheating the pass has to be possible
- Renewal the pass we have to waiting a long queue

2.2 PROPOSED SYSTEM

This proposed system will be overcome above mentioned all kind of issue. This will help to renewal pass manually. User no need to took the pass anywhere. Just give the request and it will be showing the current user details. The conductor also finds the details of the passenger.

2.2.1 FEATURES

- Avoid pass missing issue
- Renewal passes systematically by the passenger
- Attractive user interface

SYSTEM DESIGN & DEVELOPMENT

3. SYSTEM DESIGN AND DEVELOPMENT

3.1 FILE DESIGN

The selection of the file system design approach is done according to the needs of the developers what are the needed requirements and specifications for the new design. It allowed us to identify where our proposal fitted in with relation to current and past file system development. Our experience with file system development is limited so the research served to identify the different techniques that can be used. The variety of file systems encountered show what an active area of research file system development is. The file systems may be from one of the two fundamental categories. In one category, the file system is developed in user space and runs as a user process. Another file system may be developed in the kernel space and runs as a privileged process. Another one is the mixed approach in which we can take the advantages of both aforesaid approaches. Each development option has its own pros and cons. In this article, these design approaches are discussed.

A file system is the data structure designed to support the abstraction of the data blocks as an archive and collection of files. This data structure is unique because it is stored on secondary storage (usually the disk), which is a very slow device.

The file system structure is the most basic level of organization in an operating system. Almost all of the ways an operating system interacts with its users, applications, and security model are dependent upon the way it organizes files on storage devices.

File Design Information systems in business are file and database oriented. Data are accumulated into files that are processed or maintained by the system. The systems analyst is responsible for designing files, determining their contents and selecting a method for organizing the data.

The most important purpose of a file system is to manage user data. This includes storing, retrieving and updating data. Some file systems accept data for storage as a stream of bytes which are collected and stored in a manner efficient for the media.

3.2 INPUT DESIGN

The input design is the link between the information system and the user. It comprises the developing specification and procedures for data preparation and those steps are necessary to put transaction data in to a usable form for processing can be achieved by inspecting the computer to read data from a written or printed document or it can occur by having people keying the data directly into the system. The design of input focuses on controlling the amount of input required, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is designed in such a way so that it provides security and ease of use with retaining the privacy. Input Design considered the following things:’

- What data should be given as input?
- How the data should be arranged or coded?
- The dialog to guide the operating personnel in providing input.
- Methods for preparing input validations and steps to follow when error occur.

OBJECTIVES

- Input Design is the process of converting a user-oriented description of the input into a computer-based system. This design is important to avoid errors in the data input process and show the correct direction to the management for getting correct information from the computerized system.
- It is achieved by creating user-friendly screens for the data entry to handle large volume of data. The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.
- When the data is entered it will check for its validity. Data can be entered with the help of screens. Appropriate messages are provided as when needed so that the user
- will not be in maize of instant. Thus the objective of input design is to create an input layout that is easy to follow

3.3 OUTPUT DESIGN

The design of output is the most important task of any system. During output design, developers identify the type of outputs needed, and consider the necessary output controls and prototype report layouts.

External Outputs

Manufacturers create and design external outputs for printers. External outputs enable the system to leave the trigger actions on the part of their recipients or confirm actions to their recipients.

Some of the external outputs are designed as turnaround outputs, which are implemented as a form and re-enter the system as an input.

Internal outputs

Internal outputs are present inside the system, and used by end-users and managers. They support the management in decision making and reporting.

Output Integrity Controls

Output integrity controls include routing codes to identify the receiving system, and verification messages to confirm successful receipt of messages that are handled by network protocol.

Printed or screen-format reports should include a date/time for report printing and the data. Multipage reports contain report title or description, and pagination. Pre-printed forms usually include a version number and effective date.

3.4 DATABASE DESIGN

Today's businesses depend on their databases to provide information essential for day-to-day operations, especially in case of electronic commerce businesses who has a definite advantage with up-to-date database access. Good design forms the foundation of any database, and experienced hands are required in the automation process to design for optimum and stable performance.

Software Solutions have been constantly working on these platforms and have attained a level of expertise. We apply proven methodologies to design, develop, integrate and implement database systems to attain its optimum level of performance and maximize security to meet the client's business model.

Business needs addressed:

- Determine the basic objects about which the information is stored
- Determine the relationships between these groups of information and the objects
- Effectively manage data and create intelligent information
- Remote database administration or on site administrative support
- Database creation, management, and maintenance
- Information retrieval efficiency, remove data redundancy and ensure data security

The most important consideration in designing the database is how the information will be used. The main objective of designing a database is Data Integration, Data Integrity and Data Independence.

Data Integration In a database, information from several files is coordinated, accessed and operated upon as through it is in a single file. Logically, the information is centralized, physically; the data may be located on different devices, connected through data communication facilities.

Data Integrity

Data integrity means storing all data in one place only and how each application accesses it. This approach results in more consistent information, one update being sufficient to achieve a new record status for all applications. This leads to less data redundancy that is data items need not be duplicated.

Data Independence

Data independence is the insulation of application programs from changing aspects of physical data organization. This objective seeks to allow changes in the content and organization of physical data without reprogramming of application and allow modifications to application programs without reorganizing the physical data.

3.5 SYSTEM DEVELOPMENT

Systems development is the process of defining, designing, testing, and implementing a new software application or program. It could include the internal development of customized systems, the creation of database systems, or the acquisition of third party developed software.

Systems development life cycle phases include planning, system analysis, system design, development, implementation, integration and testing, and operations and maintenance.

3.5.1 DESCRIPTION OF MODULES

New Passenger Registration

This module is used to create new user from this module. We can collect all the information about the users. This is helpful to search or manage the user details.

New Pass Registration

This pass registration module is used create pass to the user. After creating the pass it will be automatically generate digital pass.

Digital pass Generation

After creating the pass registration automatically digital pass will be generated. We can show it to the conductor then he/she will check it. No need to took pass in your hand.

Renewal pass

After completing the duration of pass this module will helpful to renewal pass. We no need to waiting in the queue as long time. We just login and renewal passes manually.

TESTING & IMPLEMENTATION

4. TESTING AND IMPLEMENTATION

TESTING METHODOLOGIES

System testing is state of implementation, which is aimed at ensuring that the system works accurately and efficiently as expect before live operation commences. It certifies that the whole set of programs hang together.

System testing requires a test plan that consists of several key activities and step for run program, string, system and user acceptance testing. The implementation of newly designed package is important in adopting a successful new system

Testing is the important stage in software development. the system test in implementation stage in software development process. The system testing implementation should be confirmation that all is correct and an opportunity to show the users that the system works as expected. It accounts the largest percentage of technical effort in the software development process.

Testing phase in the development cycle validates the code against the functional specification testing is vital to achievement of the system goals. The objective of the testing is to discover errors to fulfill this objective a series of test step unit, integration. Validation and system tests were planned and executed the test steps are:

SYSTEM TESTING

Testing is an integral part of any system development life cycle. Insufficient and untested applications may tend to crash and the result is loss of economic and manpower investment besides user's dissatisfaction and downfall of reputation. Software testing can be looked upon as one among many processes, an organization performs, and that provides the lost opportunity to correct any flaws in the developed system. Software testing includes selecting test data that have more probability of giving errors.

The first step in system testing is to develop a plan that tests all aspects of the system. Completeness, correctness, reliability and maintainability of the software are to be tested for the best quality assurance that the system meets the specification and requirements for its intended use and performance. System testing is the most useful practical process of executing a program with the implicit intention of finding errors that make the program fails. System testing is done in three phases.

- Unit Testing
- Integration Testing
- Validation Testing

UNIT TESTING

Unit testing focuses verification effort on the smallest unit of software the module. Using the detailed design and the process specification testing is done to registration by the user with in the boundary of the Login module. The login form receives the username and password details and validates the value with the database. If valid, the home page is displayed.

INTEGRATION TESTING

Integration Testing is the process of this activity can be considered as testing the design and hence module interaction. The primary objective of integration testing is to discover errors in the interfaces between the components. Login form and registration form are integrated and tested together. If the user is newly registered, the received details will be stored in the registration table. While logging in, the application will check for valid user name and password in the registration table and if valid the user is prompted for submitting complaints.

Data can be lost across an interface, one module can have adverse effect on another sub function when combined it may not produce the desired major functions. Integration testing is a systematic testing for constructing test to uncover errors associated within an interface.

The objectives taken from unit tested modules and a program structure is built for integrated testing. All the modules are combined and the test is made.

A correction made in this testing is difficult because the vast expenses of the entire program complicated the isolation of causes. In this integration testing step, all the errors are corrected for next testing process.

VALIDATION TESTING

Validation are independent procedures that are used together for checking that a product, service, or system meets requirements and specifications and that it fulfills its in purpose the actual result from the expected result for the complaint process. Select the complaint category of the complaint by user. The input given to various forms fields are validated effectively. Each module is tested independently. It is tested that the complaint module fields receive the correct input for the necessary details such as complaint category, complaint id, reference name, complaint description, and email for further process.s

After the completion of the integrated testing, software is completely assembled as a package; interfacing error has been uncovered and corrected and a final series of software test validation begins.

Validation testing can be defined in many ways but a simple definition is that validation succeeds when the software function in a manner that can be reasonably expected by the customer. After validation test has been conducted, one of two possible conditions exists.

OUTPUT TESTING

The next process of validation testing, is output testing of the proposed system, since no system could be successful if it does not produce the required output in the specified format. Asking the user about the format required, list the output to be generated or displayed by the system under considerations.

Output testing is a different test whose primary purpose is to fully exercise the computer based system although each test has a different purpose all the work should verify that all system elements have been properly integrated and perform allocated functions.

The output format on the screen is found to be corrected as the format was designed in the system design phase according to the user needs for the hard copy also; the output testing has not resulted in any correction in the system.

SYSTEM IMPLEMENTATION

When the initial design was done for the system, the client was consulted for the acceptance of the design so that further proceedings of the system development can be carried on. After the development of the system a demonstration was given to them about the working of the system. The aim of the system illustration was to identify any malfunction of the system.

After the management of the system was approved the system implemented in the concern, initially the system was run parallel with existing manual system. The system has been tested with live data and has proved to be error free and user friendly.

Implementation is the process of converting a new or revised system design into an operational one when the initial design was done by the system; a demonstration was given to the end user about the working system.

This process is used to verify and identify any logical mess working of the system by feeding various combinations of test data. After the approval of the system by both end user and management the system was implemented.

System implementation is made up of many activities. The six major activities are as follows.

CODING

Coding is the process of whereby the physical design specifications created by the analysis team turned into working computer code by the programming team. A design code may be a tool which helps ensure that the aspiration for quality and quantity for customers and their requirements, particularly for large scale projects, sought by the water agency Design pattern are documented tried and tested solutions for recurring problems in a given context. So basically you have a problem context and the proposed solution for the same.

INSTALLATION

Installation is the process during which the current system is replaced by the new system. This includes conversion of existing data, software, and documentation and work procedures to those consistent with the new system.

DOCUMENTATION

Documentation is descriptive information that describes the use and operation of the system. The user guide is provided to the end user as the student and administrator. The documentation part contains the details as follows,

User requirement and water agency details administration has been made online. Any customer can request their water requirement details through online and also use of documentation, they can view the purpose of each purpose, The admin could verify the authentication of the users, users requirements and need to take delivery process, thus the documentation is made of full view of project thus it gives the guideline to study the project and how to execute also.

USER TRAINING AND SUPPORT

The software is installed at the deployment environment, the developer will give training to the end user of the regional transport officer and police admin officer in that software. The goal of an end user training program is to produce a motivated user who has the skills needed to apply what has been to apply what has been learned to perform the job related task. The following are the instruction which is specified the handling and un-handling events in the application,

- The authenticated user of admin and office workers only login in the application with authorized username and password.
- Don't make user waste their time to come straight to the water agency or make a phone call.
- It can easily track through online by the user.
- Very user friendliness software

IMPLEMENTATION PROCEDURES

Implementation includes all the activities that take place to convert the old system to the new one. Proper implementation is essential to provide a reliable system to meet the organization requirements. Implementation is the stage in the project where the theoretical design is turned into a working system. The most crucial stage is achieving a successful new system & giving the user confidence in that the new system will work efficiently & effectively in the implementation state.

IMPLEMENTATION PROCEDURES

PILOT RUNNING

Processing the current data by only one user at a time called the pilot running process. When one user is accessing the data at one system, the system is sets to be engaged and connected in network. This process is useful only in system where more than one user is restricted.

PARALLEL RUNNING:

Processing the current data by more than one user at a time simultaneously is said to be parallel running process. This same system can be viewed and accessed by more than one user at the time. Hence the implementation method used in the system is a pilot type of implementation.

Implementation is the stage in the project where the theoretical design is turned into a working system. The most crucial stage is achieving a successful new system & giving the user confidence in that the new system will work efficiently & effectively in the implementation state.

The stage consists of,

- Testing the developed program with sample data.
- Detection's and correction of error.
- Creating whether the system meets user requirements.
- Making necessary changes as desired by the user.
- Training user personnel.

USER TRAINING

User Training is designed to prepare the user for testing & consenting the system. .

- User Manual.
- Help Screens.
- Training Demonstration.

USER MANUAL

The summary of important functions about the system and software can be provided as a document to the user.

HELP SCREENS

This features now available in every software package, especially when it is used with a menu. The user selects the “Help” option from the menu. The system accesses the necessary description or information for user reference.

TRAINING DEMONSTRATION

Another User Training element is a Training Demonstration. Live demonstrations with personal contact are extremely effective for Training Users.

SYSTEM MAINTENANCE

Maintenance is actually the implementation of the review plan. As important as it is, many programmers and analysts are to perform or identify themselves with the maintenance effort. There are psychological, personality and professional reasons for this. Analysts and programmers spend far more time maintaining programs than they do writing them. Maintenance accounts for 50-80 percent of total system development

Maintenance is expensive. One way to reduce the maintenance costs are through maintenance management and software modification audits.

- Maintenance is not as rewarding as exciting as developing systems. It is perceived as requiring neither skill nor experience.
- Users are not fully cognizant of the maintenance problem or its high cost.
- Few tools and techniques are available for maintenance.
- A good test plan is lacking.
- Standards, procedures, and guidelines are poorly defined and enforced.
- Programs are often maintained without care for structure and documentation.
- There are minimal standards for maintenance.
- Programmers expect that they will not be in their current commitment by time their programs go into the maintenance cycle.

Corrective Maintenance

It means repairing, processing or performance failure or making changes because of previously uncovered problems or false assumptions. Task performed to identify, isolate, and rectify a fault so that the failed equipment, machine, or system can be restored to an operational condition within the tolerances or limits established for in-service operations.

Corrective maintenance can be subdivided into "immediate corrective maintenance" (in which work starts immediately after a failure) and "deferred corrective maintenance" (in which work is delayed in conformance to a given set of maintenance rules).

Perfective Maintenance

It means changes made to a system to add new features or to improve performance. Preventive maintenance is predetermined work performed to a schedule with the aim of preventing the wear and tear or sudden failure of equipment components. process or control equipment failure can have adverse results in both human and economic terms. In addition to down time and the costs involved to repair and/or replace equipment parts or components,

there is the risk of injury to operators, and of acute exposures to chemical and/or physical agents.

Time-based or run-based Periodically inspecting, servicing, cleaning, or replacing parts to prevent sudden failure .On-line monitoring of equipment in order to use important/expensive parts to the limit of their serviceable life. Preventive maintenance involves changes made to a system to reduce the chance of future system failure.

An example of preventive maintenance might be to increase the number of records that a system can process far beyond what is currently needed or to generalize how a system sends report information to a printer so that so that the system can adapt to changes in printer technology.

Preventive Maintenance

Changes made to a system to avoid possible future problems Perfective maintenance involves making enhancements to improve processing performance, interface usability, or to add desired, but not necessarily required, system features. The objective of perfective maintenance is to improve response time, system efficiency, reliability, or maintainability.

During system operation, changes in user activity or data pattern can cause a decline in efficiency, and perfective maintenance might be needed to restore performance. Usually, the perfective maintenance work is initiated by the IT department, while the corrective and adaptive maintenance work is normally requested by users.

CONCLUSION

5. CONCLUSION

Bus Pass Management Systems (BPMS) are critical tools for managing bus pass programs and ensuring efficient and effective transportation for commuters. These systems provide several benefits, including improved passenger experience, increased revenue, and enhanced operational efficiency.

BPMS ensures an improved passenger experience by streamlining the process of issuing and renewing bus passes, reducing wait times and paperwork, and providing real-time information on pass availability and usage. This helps to enhance the overall convenience and comfort of public transportation, encouraging more people to use public transit.

Moreover, BPMS provides increased revenue by enabling transit authorities to optimize their fare structures, implement dynamic pricing, and reduce fraud and misuse of bus passes. This leads to improved financial sustainability and the ability to invest in better infrastructure and services.

BPMS also enhances operational efficiency by leveraging technology to automate processes, manage data, and optimize resource allocation. This leads to improved service delivery, reduced costs, and enhanced performance.

In conclusion, Bus Pass Management Systems are critical tools for managing bus pass programs and ensuring efficient and effective transportation for commuters. They offer several benefits, including improved passenger experience, increased revenue, and enhanced operational efficiency. By leveraging these benefits, transit authorities can improve services, encourage more people to use public transit, and enhance the overall mobility of people and goods.

BIBLIOGRAPHY

BIBLIOGRAPHY

Reference:

- Bloch, Joshua. Effective Java: Programming Language Guide. Addison-Wesley, 2017.
- Eckel, Bruce. Thinking in Java. Prentice Hall, 2006.
- Freeman, Eric, and Elisabeth Robson. Head First Java. O'Reilly Media, 2005.
- Horstmann, Cay S. Core Java Volume I—Fundamentals. Prentice Hall, 2018.
- Walrath, Kathy, et al. The Java Tutorial: A Short Course on the Basics. Addison-Wesley Professional, 2018.

Website:

- Baeldung. “Java Tutorials and Articles.” Baeldung, 2023, <https://www.baeldung.com/java-tutorials>.
- GeeksforGeeks. “Java Programming Language.” GeeksforGeeks, 2023, <https://www.geeksforgeeks.org/java/>.
- Stack Overflow. “Questions tagged [java].” Stack Overflow, <https://stackoverflow.com/questions/tagged/java>.
- Tutorials Point. “Java Tutorial.” Tutorials Point, 2023, <https://www.tutorialspoint.com/java/index.htm>.
- GitHub. “Java Repositories.” GitHub, <https://github.com/topics/java>

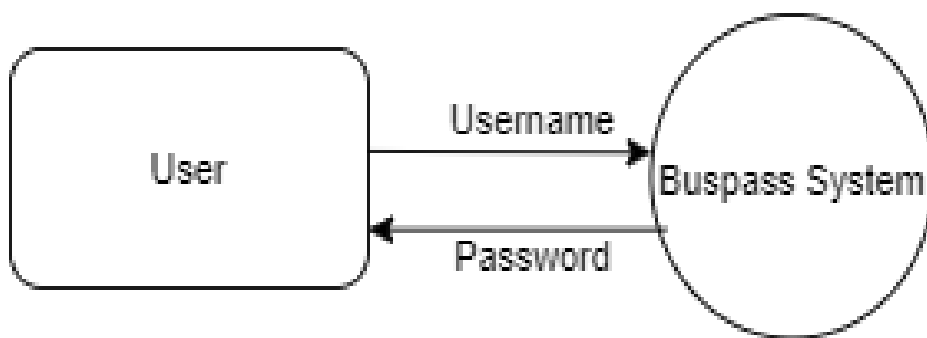
APPENDICES

APPENDICES

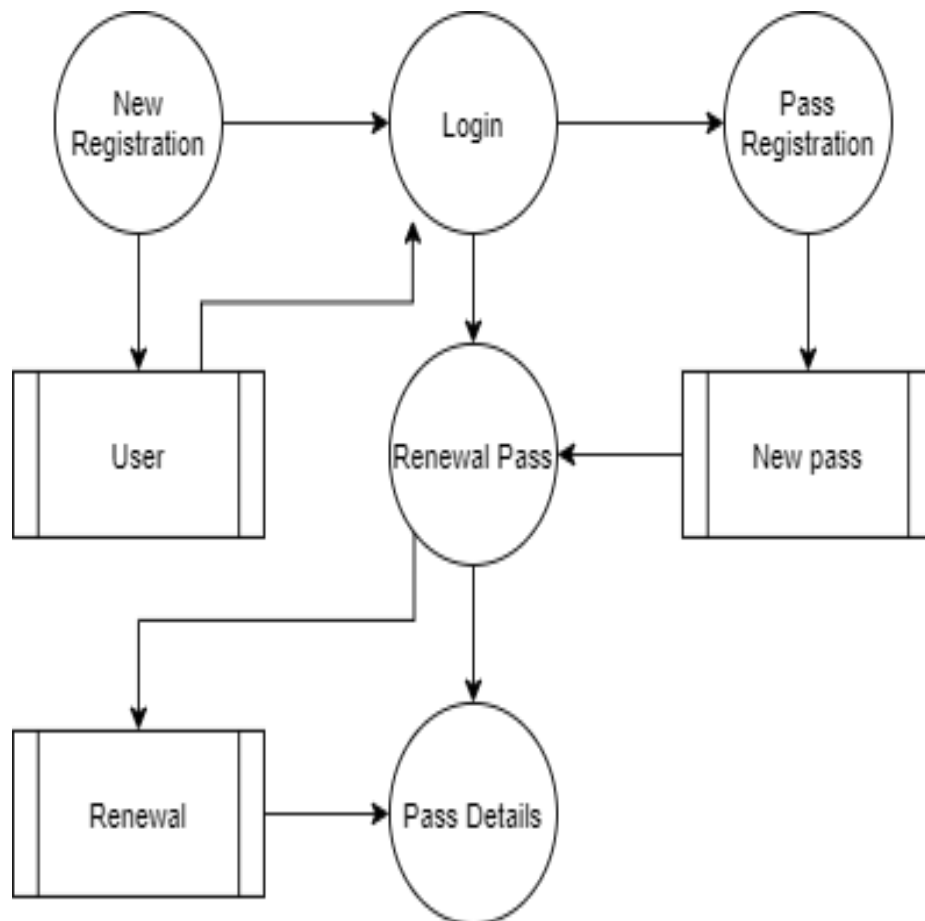
A.DATA FLOW DIAGRAM

A data-flow diagram (DFD) is a way of representing a flow of a data of a process or system. The DFD also provides information about the outputs and inputs of each entity and process itself. A data-flow diagram is a part of structured-analysis modeling tools.

LEVEL 0:



LEVEL 1:



B. TABLE STRUCTURE

The table needed for each module was designed and the specification of each and every column was given based on the records and details collected during record specification of the system study.

TABLE NAME: ADMIN

FIELD	DATA TYPE	SIZE	CONSTRAINT
Id	Int	10	Primary key
Username	Varchar	20	Not null
Password	Varchar	20	Not null

TABLE NAME: PASSENGER

FIELD	DATA TYPE	SIZE	CONSTRAINT
Passenger id	Int	10	Primary key
Name	Varchar	30	Not null
Address	Varchar	30	Not null
Contact	Varchar	10	Not null
Aadhar	Varchar	30	Not null
Pincode	Varchar	10	Not null
Age	Int	3	Not null

TABLE NAME: BUS PASS

FIELD NAME	FIELD TYPE	SIZE	CONSTRAINT
Pass id	Int	10	Primary key
Aadhar	Varchar	30	Not null
From place	Varchar	30	Not null
To place	Varchar	30	Not null
Amount	Int	10	Not null

TABLE NAME: RENEWAL

FIELD	DATA TYPE	SIZE	CONSTRAINT
Renewal id	Int	10	Primary key
Aadhar	Varchar	30	Not null
From place	Varchar	30	Not null
To place	Varchar	30	Not null
Amount	Int	10	Not null

A. SAMPLE CODEING

```
import org.springframework.web.bind.annotation.*;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.jdbc.core.JdbcTemplate;
import org.springframework.jdbc.core.namedparam.MapSqlParameterSource;
import org.springframework.jdbc.core.namedparam.NamedParameterJdbcTemplate;
import org.springframework.jdbc.core.namedparam.SqlParameterSource;

@RestController
@RequestMapping("/")
public class PassengerController {

    @Autowired
    private JdbcTemplate jdbcTemplate;

    @Autowired
    private NamedParameterJdbcTemplate namedParameterJdbcTemplate;

    @PostMapping("/add_passenger")
    public String addPassenger(@RequestBody Passenger passenger) {
        String insertPassenger = "INSERT INTO `passenger` (`id`, `name`, `mobile`, `author`, `age`, `gender`, `address`, `pincode`, `image`) " +
            "VALUES (NULL, :name, :mobile, :author, :age, :gender, :address, :pincode, 'img')";
        SqlParameterSource parameters = new MapSqlParameterSource()
            .addValue("name", passenger.getName())
            .addValue("mobile", passenger.getMobile())
            .addValue("author", passenger.getAuthor())
            .addValue("age", passenger.getAge())
            .addValue("gender", passenger.getGender())
            .addValue("address", passenger.getAddress())
            .addValue("pincode", passenger.getPincode());
        namedParameterJdbcTemplate.update(insertPassenger, parameters);
        return "Passenger has been inserted";
    }
}
```

```
}
```

```
@GetMapping("/passenger_list")
```

```
public List<Passenger> getPassengerList() {  
    String query = "SELECT * FROM `passenger`";  
    return jdbcTemplate.query(query, (rs, rowNum) ->  
        new Passenger(  
            rs.getInt("id"),  
            rs.getString("name"),  
            rs.getString("mobile"),  
            rs.getString("author"),  
            rs.getInt("age"),  
            rs.getString("gender"),  
            rs.getString("address"),  
            rs.getString("pincode"),  
            rs.getString("image")  
        )  
    );  
}
```

```
@GetMapping("/pass_list")
```

```
public List<PassDetails> getPassList() {  
    String query = "SELECT * FROM `pass` left join passenger  
on(passenger.author=pass.author)";  
    return jdbcTemplate.query(query, (rs, rowNum) ->  
        new PassDetails(  
            rs.getInt("id"),  
            rs.getString("author"),  
            rs.getString("from_place"),  
            rs.getString("to_place"),  
            rs.getInt("amount"),  
            rs.getString("name"),  
            rs.getString("mobile"),  
            rs.getInt("age"),  
            rs.getString("gender"),  
            rs.getString("address"),
```

```

        rs.getString("pincode")
    )
};
}

```

```

@GetMapping("/renewal_list")
public List<Renewal> getRenewalList() {
    String query = "SELECT * FROM `renewal`";
    return jdbcTemplate.query(query, (rs, rowNum) ->
        new Renewal(
            rs.getInt("id"),
            rs.getString("author"),
            rs.getDate("from_date"),
            rs.getDate("to_date"),
            rs.getString("from_place"),
            rs.getString("to_place"),
            rs.getInt("amount"),
            rs.getString("name"),
            rs.getString("mobile"),
            rs.getString("gender"),
            rs.getString("address"),
            rs.getInt("age"),
            rs.getString("pincode")
        )
    );
}

```

```

@PostMapping("/search_passenger")
public List<Renewal> searchPassenger(@RequestParam String author) {
    String query = "SELECT * FROM `renewal` where author=:author";
    SqlParameterSource parameters = new MapSqlParameterSource().addValue("author",
author);
    return namedParameterJdbcTemplate
}

@RestController
@RequestMapping("/api")
public class PassengerController {

```

@Autowired

private JdbcTemplate jdbcTemplate;

@PostMapping("/update_passenger")

```
public ResponseEntity<?> updatePassenger(@RequestBody Map<String, Object> payload)
{
    String author = (String) payload.get("author");
    String query = "SELECT * FROM passenger WHERE author = ?";
    List<Map<String, Object>> result = jdbcTemplate.queryForList(query, author);
    return ResponseEntity.ok(result);
}
```

@PostMapping("/update_passenger_renewal")

```
public ResponseEntity<?> updatePassengerRenewal(@RequestBody Map<String, Object>
payload) {
    String author = (String) payload.get("author");
    String query =
        "SELECT    pass.from_place,    pass.to_place,    pass.amount,    passenger.name,
passenger.mobile, "
        + "passenger.age, passenger.gender, passenger.address, passenger.pincode "
        + "FROM passenger "
        + "LEFT JOIN pass ON (pass.author = passenger.author) "
        + "WHERE passenger.author = ?";
    List<Map<String, Object>> result = jdbcTemplate.queryForList(query, author);
    return ResponseEntity.ok(result);
}
```

@PostMapping("/add_pass")

```
public ResponseEntity<String> addPass(@RequestBody PassRequest request) {
    String query =
        "INSERT INTO `pass` (`id`, `author`, `from_place`, `to_place`, `amount`) VALUES
(NULL, ?, ?, ?, ?)";
    jdbcTemplate.update(query, request.author, request.from, request.to, request.amount);
    return ResponseEntity.ok("Pass successfully created");
}
```



```

@PostMapping("/add_renewal")
public ResponseEntity<String> addRenewal(@RequestBody RenewalRequest request) {
    String query =
        "INSERT INTO `renewal` (`id`, `author`, `from_date`, `to_date`, `from_place`,
`to_place`, `amount`, "
        + "`name`, `mobile`, `gender`, `address`, `age`, `pincode`) "
        + "VALUES (NULL, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?)";
    jdbcTemplate.update(
        query,
        request.author,
        request.from,
        request.to,
        request.fromPlace,
        request.toPlace,
        request.amount,
        request.name,
        request.mobile,
        request.gender,
        request.address,
        request.age,
        request.pincode);
    return ResponseEntity.ok("Pass successfully renewed");
}

```

```

private static class PassRequest {
    public String author;
    public String from;
    public String to;
    public int amount;
}

```

```

private static class RenewalRequest {
    public String author;
    public LocalDate from;
    public LocalDate to;
}

```

```

    public String fromPlace;
    public String toPlace;
    public int amount;
    public String name;
    public String mobile;
    public String gender;
    public String address;
    public int age;
    public String pincode;
}
}
// Material Design example
$(document).ready(function () {
    $('#adduser_table').DataTable();
    $('#passgeneration').DataTable();
    $('#renewal_table').DataTable();
    $('#billing_table').DataTable();
    $('.dataTables_length').addClass('bs-select');
    $("#author2").on('change', function () {
        var author = $("#author2").val();
        $.ajax({
            type: 'POST',
            url: '/api/update_passenger',
            data: {
                author: author,
            },
        }).done(function (datas) {
            var data = datas[0];
            $("#name2").val(data.name);
            $("#mobile2").val(data.mobile);
            $("#author2").val(data.author);
            $("#gender2").val(data.gender);
            $("#address2").val(data.address);
            $("#age2").val(data.age);
            $("#pincode2").val(data.pincode);
        });
    });

```

```

}))
$("#author3").on('change', function () {
    var author = $("#author3").val();
    $.ajax({
        type: 'POST',
        url: '/api/update_passenger_renewal',
        data: {
            author: author,
        },
    }).done(function (datas) {
        var data = datas[0];
        $("#fromplace3").val(data.from_place);
        $("#toplace3").val(data.to_place);
        $("#amount3").val(data.amount);
        $("#name3").val(data.name);
        $("#mobile3").val(data.mobile);
        $("#gender3").val(data.gender);
        $("#address3").val(data.address);
        $("#age3").val(data.age);
        $("#pincode3").val(data.pincode);
    });
}))

$("#adduser1").on('click', function () {
    var name = $("#name1").val();
    var mobile = $("#mobile1").val();
    var author = $("#author1").val();
    var address = $("#address1").val();
    var age = $("#age1").val();
    var pincode = $("#pincode1").val();
    var gender = $("#gender1 option:selected").html();
    $.ajax({
        type: 'POST',
        url: '/api/add_passenger',
        data: {
            name: name,
            mobile: mobile,

```

```

        author: author,
        address: address,
        age: age,
        pincode: pincode,
        gender: gender
    },
    }).done(function (datas) {
        alert(datas);
        update();
        $("#name1").val("");
        $("#mobile1").val("");
        $("#author1").val("");
        $("#address1").val("");
        $("#age1").val("");
        $("#pincode1").val("");
    });
});
$("#add2").on('click', function () {
    var author = $("#author2").val();
    var name = $("#name2").val();
    var mobile = $("#mobile2").val();
    var address = $("#address2").val();
    var age = $("#age2").val();
    var pincode = $("#pincode2").val();
    var gender = $("#gender2").val();
    var from = $("#from2").val();
    var to = $("#to2").val();
    var amount = $("#amount2").val();
    $.ajax({
        type: 'POST',
        url: '/api/add_pass',
        data: {
            author: author,
            name: name,
            mobile: mobile,
            address: address,

```

```

        age: age,
        pincode: pincode,
        gender: gender,
        from: from,
        to: to,
        amount: amount,
    },
}).done(function (datas) {
    alert(datas);
    update();
    $("#name2").val("");
    $("#mobile2").val("");
    $("#author2").val("");
    $("#address2").val("");
    $("#age2").val("");
    $("#gender2").val("");
    $("#pincode2").val("");
    $("#from2").val("");
    $("#to2").val("");
    $("#amount2").val("");
});
});
$("#add3").on('click', function () {
    var author = $("#author3").val();
    var from = $("#from3").val();
    var to = $("#to3").val();
    var from_place = $("#fromplace3").val();
    var to_place = $("#toplace3").val();
    var amount = $("#amount3").val();
    var name = $("#name3").val();
    var mobile = $("#mobile3").val();
    var gender = $("#gender3").val();
    var address = $("#address3").val();
    var age = $("#age3").val();
    var pincode = $("#pincode3").val();
    $.ajax({

```

```

type: 'POST',
url: '/api/add_renewal',
data: {
    author: author,
    from: from,
    to: to,
    from_place: from_place,
    to_place: to_place,
    amount: amount,
    name: name,
    mobile: mobile,
    gender: gender,
    address: address,
    age: age,
    pincode: pincode,
},
}).done(function (datas) {
    alert(datas);
    update();
    $("#author3").val("");
    $("#from3").val("");
    $("#to3").val("");
    $("#fromplace3").val("");
    $("#toplace3").val("");
    $("#amount3").val("");
    $("#name3").val("");
    $("#mobile3").val("");
    $("#gender3").val("");
    $("#address3").val("");
    $("#age3").val("");
    $("#pincode3").val("");
});
});
$("#search").on('click', function () {
    var author = $("#author4").val();
    $.ajax({

```

```

type: 'POST',
url: '/api/search_passenger',
data: {
  author: author,
},
}).done(function (datas) {
  var html = ``;
  for (var i in datas) {
    var data = datas[i];
    html += `<div class="col-xs-12 col-sm-6 col-md-4">
      <div class="image-flip" ontouchstart="this.classList.toggle('hover');">
        <div class="mainflip">
          <div class="frontside">
            <div class="card">
              <div class="card-body text-center">
                <h4 class="card-title">NAME : `+data.name+`</h4>
                <h4 class="card-text">MOBILE : `+data.mobile+`</h4>
                <h4 class="card-text">GENDER : `+data.gender+`</h4>
                <h4 class="card-text">ADDRESS : `+data.address+`</h4>
                <h4 class="card-text">AUTHOR : `+data.author+`</h4>
                <a href="#" class="btn btn-primary btn-sm"><i class="fa fa-
plus"></i></a>
              </div>
            </div>
          </div>
        </div>
      <div class="backside">
        <div class="card">
          <div class="card-body text-center">
            <h4 class="card-text">FROM DATE : `+data.from_date+`</h4>
            <h4 class="card-text">TO DATE : `+data.to_date+`</h4>
            <h4 class="card-text">FROM PLACE : `+data.from_place+`</h4>
            <h4 class="card-text">TO PLACE : `+data.to_place+`</h4>
            <h4 class="card-text">AMOUNT : `+data.amount+`</h4>
            <a href="#" class="btn btn-primary btn-sm"><i class="fa fa-
plus"></i></a>
          </div>
        </div>
      </div>
    </div>
  `;
}

```

```

        </div>
    </div>
</div>
</div>
</div>`;
    }
    $("#search_passenger").html(html)
});
});
update();
});
function update() {
    view_passengers();
    view_pass();
    view_renewal();
}
function view_passengers() {
    $.ajax({
        type: 'GET',
        url: '/api/passenger_list',
    }).done(function (datas) {
        var html = ``;
        for (var i in datas) {
            var row = datas[i];
            html += `<tr>
<td>` + (++i) + `</td>
<td>` + row.name + `</td>
<td>` + row.mobile + `</td>
<td>` + row.author + `</td>
<td>` + row.age + `</td>
<td>` + row.gender + `</td>
<td>` + row.address + `</td>
<td>` + row.pincodes + `</td>
</tr>`;
        }
        $("#passenger_body").html(html)
    });
}

```



```

    });
}
function view_pass() {
    $.ajax({
        type: 'GET',
        url: '/api/pass_list',
    }).done(function (datas) {
        var html = ``;
        for (var i in datas) {
            var row = datas[i];
            html += `<tr>
<td>` + (++i) + `</td>
<td>` + row.name + `</td>
<td>` + row.mobile + `</td>
<td>` + row.author + `</td>
<td>` + row.age + `</td>
<td>` + row.gender + `</td>
<td>` + row.address + `</td>
<td>` + row.pincodes + `</td>
<td>` + row.from_place + `</td>
<td>` + row.to_place + `</td>
<td>` + row.amount + `</td>
</tr>`;
        }
        $("#pass_body").html(html)
    });
}
function view_renewal() {
    $.ajax({
        type: 'GET',
        url: '/api/renewal_list',
    }).done(function (datas) {
        var html = ``;
        for (var i in datas) {
            var row = datas[i];
            html += `<tr>

```

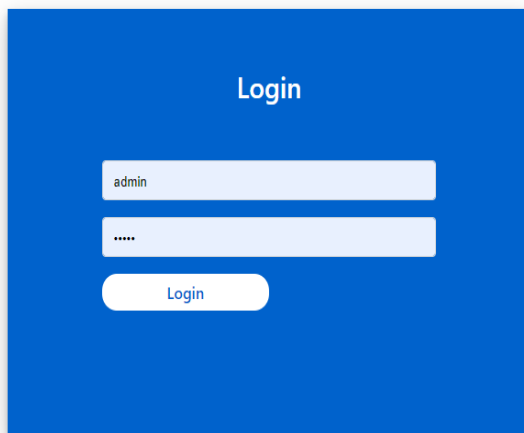
```

        <td>`+ (++i) + `</td>
        <td>`+ row.name + `</td>
        <td>`+ row.author + `</td>
        <td>`+ row.from_date + `</td>
        <td>`+ row.to_date + `</td>
        <td>`+ row.from_place + `</td>
        <td>`+ row.to_place + `</td>
        <td>`+ row.amount + `</td>
    </tr>`;
}
$("#renewal_body").html(html)
});
}
$('.nav-tabs-dropdown').each(function (i, elm) {
    $(elm).text($(elm).next('ul').find('li.active a').text());
});
$('.nav-tabs-dropdown').on('click', function (e) {
    e.preventDefault();
    $(e.target).toggleClass('open').next('ul').slideToggle();
});
$('#nav-tabs-wrapper a[data-toggle="tab"]').on('click', function (e) {
    e.preventDefault();
    $(e.target).closest('ul').hide().prev('a').removeClass('open').text($(this).text());
});

```

D.SAMPLE INPUT & OUTPUT

Login page:

A screenshot of a login page with a blue background. The word "Login" is centered at the top in white. Below it are two light blue input fields. The first field contains the text "admin". The second field contains five dots, indicating a password. Below the input fields is a white rounded button with the text "Login" in blue.

Login

admin

.....

Login

Add User:

Bus Pass Management

Add UserCreate PassRenewal PassView Bus PassLogout

Add User

Name:

Dhanam

Mobile Number:

7395825774

Aadhar Number:

887066705570

Age

23

Select Gender:

Female

Address:

2/142thekkalur,avinashi

Pincode:

541654

Image:

Choose File

No file chosen

Add User

Passenger Details

Show

1

 entries

Search:

ID	NAME	MOBILE	AADHAR NUMBER	AGE	GENDER	ADDRESS	PINCODE
1	keerthi	8870121183	kavitha	25	Female	xxxxxxxxxxxx	123456
2	divya	123456789	6979096898	21	Female	4162 gandhinager	641654
3	Renu	9500841143	123456789	20	Female	xxxxxxxxxxxxxxxxxxxx	641653
4	Dhanam	7395825774	887066705570	23	Female	2/142 thekkalur,avinashi	641654
5	Dhanam	7395825774	887066705570	23	Female	2/142thekkalur,avinashi	541654

Showing 0 to 0 of 0 entries

Previous

Next

Create pass:

Bus Pass Management

Add UserCreate PassRenewal PassView Bus PassLogout

Create Pass

Aadhar Number:
887066705570

Name:
Dhanam

Mobile Number:
7395825774

Age:
23

Select Gender:
Female

Address:
2/142 thekkalur,avinashi

Pincode:
641654

FROM PLACE:
gandhinager

TO PLACE:
tirupur

AMOUNT:

Passenger Details

Show 0 entries

Search:

ID	NAME	MOBILE	Aadhar NUMBER	AGE	GENDER	ADDRESS	PINCODE	FROM PLACE	TO PLACE	AMOUNT
1	keerthi	8870121183	kavitha	25	Female	xxxxxxxxxxxx	123456	tirupur	palladam	
2	divya	123456789	6979096898	21	Female	4162 gandhinager	641654	gandhinager	tirupur	
3	Renu	9500841143	123456789	20	Female	xxxxxxxxxxxxxxxxxxxx	641653	gandhinager	avinashi	200
4	Dhanam	7395825774	887066705570	23	Female	2/142 thekkalur,avinashi	641654	thekkalur	avinashi	150
5	Dhanam	7395825774	887066705570	23	Female	2/142 thekkalur,avinashi	641654	thekkalur	avinashi	150
6	Dhanam	7395825774	887066705570	23	Female	2/142thekkalur,avinashi	541654	thekkalur	avinashi	150
7	Dhanam	7395825774	887066705570	23	Female	2/142thekkalur,avinashi	541654	thekkalur	avinashi	150

Showing 0 to 0 of 0 entries

PreviousNext

Renewal pass:

Bus Pass Management

[Add User](#) [Create Pass](#) [Renewal Pass](#) [View Bus Pass](#) [Logout](#)

Renewal Pass

Aadhar Number:
887066705570

FROM DATE:
03/sep/2022

TO DATE:
03/sep/2023

FROM PLACE:
thekkalur

TO PLACE:
avinashi

AMOUNT:
150

Name:
Dhanam

Mobile Number:
7395825774

Age
23

Select Gender:

Passenger Details

Show entries

Search:

ID	NAME	AADHAR NUMBER	FROM DATE	TO DATE	FROM PLACE	TO PLACE	AMOUNT
1	keerthi	kaviltha	mar/27	aug/3	tirupur	palladam	
2	divya	6979096898	january03/2023	janauary03/2024			
3	divya	6979096898	jan03/2023	jan03/2024	gandhinager	tirupur	
4	Renu	123456789	feb/07/2023	sep07/2023	gandhinager	avinashi	200
5	Dhanam	887066705570	13-aug-2022	13-aug-2023			

Showing 0 to 0 of 0 entries

Previous

Next

View Bus Pass

Bus Pass Management

[Add User](#) [Create Pass](#) [Renewal Pass](#) [View Bus Pass](#) [Logout](#)

View Bus Pass

Aadhar Number:

887066705570

Search

NAME : Dhanam
MOBILE : 7395825774
GENDER : Female
ADDRESS : 2/142 thekkalur,avinashi
AADHAR : 887066705570