GOVERNMENT OF KARATAKA

MAHARANI CLUSTER UNIVERSITY

SHESHADRI ROAD, BANGALORE-560001

PROJECT REPORT

DIGITAL PARKING SYSTEM

A partially project report is submitted in fulfilment of the requirement

BACHELOR IN COMPUTER APPLICATION

Submitted By

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BANGALORE-01

ACKNOWLEDGEMENT

At the outset we express pure most sincere grateful acknowledgement to the holy sanction "MAHARANI CLUSTER UNIVERSITY", the temple of learning, for giving us opportunity to pursue the degree course in computer application, thus shaping our career. We wish to extend our gratitude to our beloved guide Mrs Rajeshwari for her encouragement throughout the project. We express our heartiest indebtedness to our head of department Mr. Sumanth S for his continues and tried less support and advice not only during the course of our project but also during the period of our stay in MAHARANI CLUSTER UNIVERSITY.

Finally, we express our gratitude to our guide, department of computer application. We are grateful to all of their corporation and their guidance in completing our task well on time. We thank one and all who have been helpful to us in one way or other in completing our project on time.

From

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DEPARTMENT OF COMPUTER SCIENCE

"CERTIFICATE"

This is to certify that the project entitled "DIGITAL PARKING SYSTEM" submitted to

MAHARANI CLUSTER UNIVERSITY is partial fulfillment for the degree of Bachelor of Computer Application in Computer Science is a Bonafede Original work carried out by Rabiya Basheera.S (20US1095), Saleha Begum (20US1108) and Vaidekhi.A (20US1142) Under my guidance and supervision during the year 2022-2023. The project Report as it satisfies in the academic requirements in respect of project work prescribed for BCA degree.

Head of the Department

(Mr.SUMANTH S)

Signature of project guide

(Mrs.Rajeshwari)

EXTERNAL EXAMINER

1……

2…….....

CONTENTS

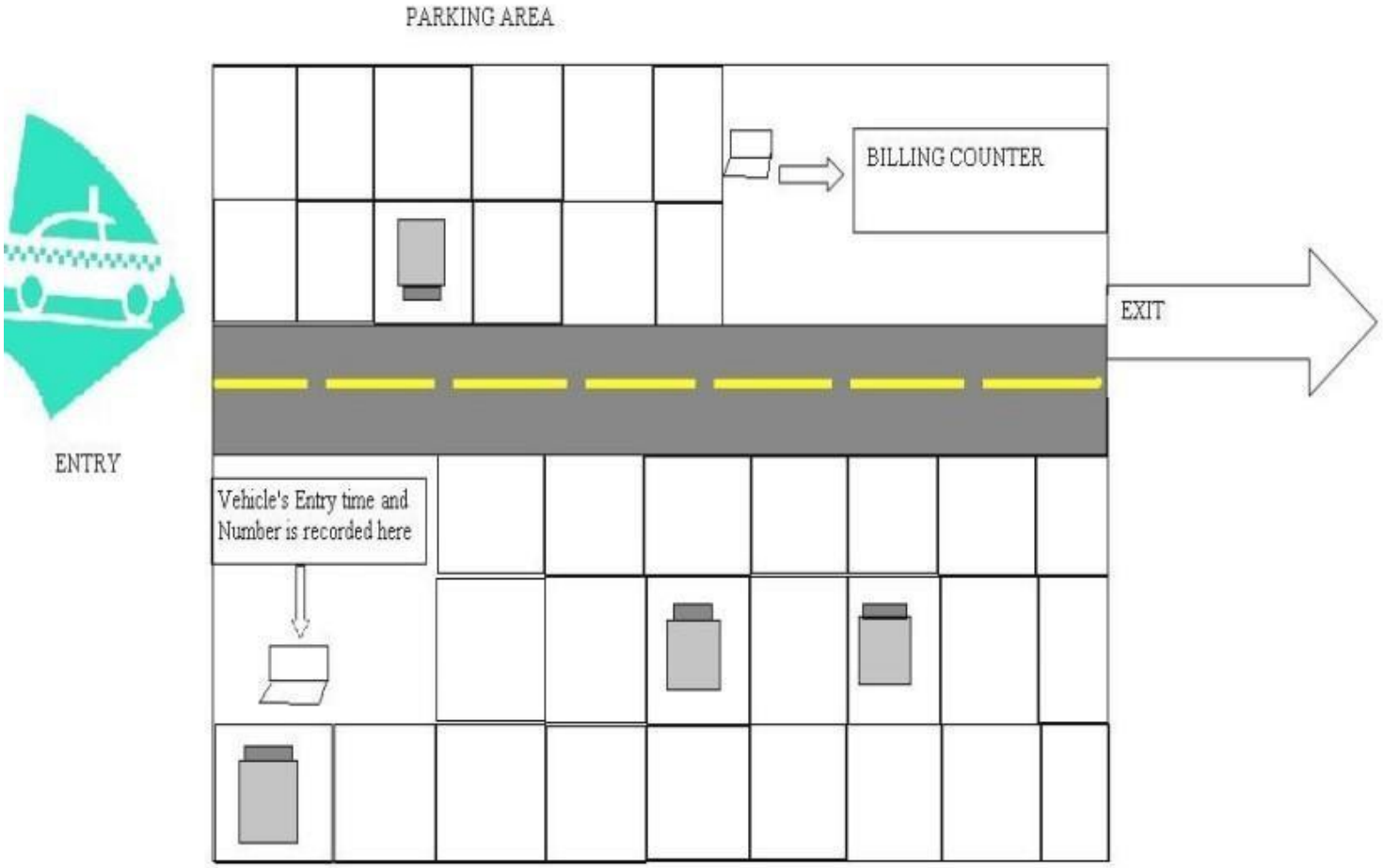
1. Title of Project

"Digital Parking Management System"

2. Introduction

This document is a proposal for the design and development of a Vehicle Parking management system. This is designed to maintain a good record of vehicles check in and checkout time. Both two wheeler & four wheeler can be managed by this system and have different pricing system .The system will comprise of two stand by PC (one in the entrance lane and one in the exit lane) to maintain record of vehicle while entering and exiting.

Figure: A General Overview of Vehicle Parking management system



3. Objective of the Project

The objective of this project is to build a Vehicle Parking management system that enables the time management and control of vehicles using number plate recognition. The system that will track the entry and exit of cars, maintain a listing of cars within the parking lot, and determine if the parking lot is full or not. It will determine the cost of per vehicle according to their time consumption.

4. Benefits and Feasibility

- **Benefits:-**

-Maintain records in short time of period.
-Determines the parking area is full or not. -enhances the visitor's experience.

- **Feasibility:-**

Many metropolitan areas have seen explosive growth in the number of visitors and patrons due to urban revitalization, extension of transit services into suburban areas, and the general trend

toward increased mobility of our society. As a result, Vehicle parking is becoming a major concern. Development of Computerized Vehicle parking system will be essential in this field.

5. Input/output/processing of the project

- **Input/output:-**

All the data entry will be made with the help of form.
System will provide provision to change/edit entered values.
System will provide search facility
System will display transactional detail and provide facility to print Token.
Processing:-
System will generate token.
System will manage access level and permissions.
Processing:-
System will generate token.
System will manage access level and permissions.

2.1 Requirement Specification

2.1 Hardware Requirements

The hardware requirements recommended for running this system and the minimum requirements for running the system are as fellow:

- 333 MHz processor (minimum) or 450 MHz (recommended) 32MB RAM (minimum) or 128MB RAM (recommended) 4 GB Hard Disk Drive or More.
- Printer.
- 512KB Cache.
- Mouse and Keyboard.

2.2 Software Requirements

Operating System: Windows Xp or Higher Version.

Database : SQL Server.

Font – End : Visual Studio 2010 Onwards.

Pathologically Laboratory software properly installed.

Reasons to choose vb.net

Vb.net is an industrial strength framework, this helps to make project scalable.

Vb.net is very feature rich environment out of the other softwares.

2.3 System Analysis

System analysis is the performance management and documentation of activities related to four life cycle phases of any software namely:

- The Study phase
- The Design phase
- The Development phase
- The Operators phase
- System analysis is vast field of study through which system analyst puts his thoughts and search for the solution of problem. He has to get a clear idea of what he has in hand and what he has to produce. He has to extract the essence of expressions. He has to satisfy the user in the very possible way. System analysis needs and should include the following step of study:
- Study of current methods, the basic inputs available and output desired.
- The splitting of variable input into (.dbf) file so as to reduce redundancy and increase consistency.
- Idea regarding code generation

Software Analysis starts with a preliminary analysis and later switches on to a detailed one. During the preliminary analysis the analyst takes a quick look at what is needed and whether the cost benefits. Detailed analysis studies in depth all the concerned factors, which builds and strengthens the software. A system study is a step-by-step process used to identify and then developed the software needed to control the processing of specific application. System study is also known as SDLC (Software Development Life Cycle) **Steps of SDLC are:**

- Problem Definition
- Feasibility study
- System analysis
- System design
- Implementation
- Post Implementation
- Maintenance

EXISTING SYSTEM OF PARKING SYSTEM:

In existing system the exams are done only manually but in proposed system we have to computerize the exams using this application.

Lack of security of data.

More man power.

Time consuming.

Consumes large volume of paper work.

Needs manual calculations.

Proposed system of parking system:

- The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome the limitations of the existing system. The system provide proper security and reduces the manual work.
- The proposed system takes care of all inefficient management of the existing system. The proposed system uses computerized software to handle all the transaction. The proposed system makes all the transaction entries easy and takes very less time.
- All the transaction details are entered in the database which provides a way for any future purposes. All the details regarding the clients are entered in the database.
- All the updating functions such as modification, detection, updating are made easily possible by just knowing the transaction details Security of data.
- Ensures data accuracy.
- Minimize manual data entry.
- Minimum time needed for the various processing.
- Greater efficiency.
- Better service.
- User friendly and interactive.
- Minimum time required.

3. SYSTEM DESIGN

3.1 Introduction

They are developed in user friendly way so that they can easily understand. Input and forms are designed such that the end-user can easily navigate the entire system.

Output forms are designed in a specific manner as the user requirements. Several queries of the user will be answered. Results are formatted to enhance clarity. Depending on the user input system would generate appropriate output. The out forms are designed such that the entire user requires data is presented.

3.2 Design Strategy

The design strategy is a vital aspect of the system to be developed. The design of the software reflects the basic understanding of the problem. For designing a good system which we have to be is to get correct definition of the problem and analyze the problem thoroughly.

The design of the system should be such that if a small portion is changed. The rest of the system should be unaffected. This is the flexibility of the system. Greater the system flexibility greater will be the system reliability. While carrying out the job of designing of a new system one has to consider many factors. These factors include the drawbacks and limitations of the present manual system as well as of the features and advantages of the proposed system. It should be designed in such a manner that even a layman can run it without any difficulty.

Design of input formats is equally important for any design. The output format should be designed in such a way that it must reflect all the required information in detail. The output format should be designed in such a way that it must reflect all the required information in detail. The design of the database itself such as type of data stored, size of the data etc.

Some of the decisions made during database design are:

- Which data item are to be recorded and in which database.
- Length of each record based on the characteristics of the data items on which is based.
- Data that's unauthorized change must be prevented. Data, which must be avoided from redundancy.
- Maintenance of data integrity etc..
- Avoids overwriting.
- Prevents invalid data access and changes.

Having all this, a positive interaction with clients at every stage of development is the core around which the software is built.

3.3 Input Design

Input design is the process of converting use-originate inputs to a computer-based format. The goal of design input data is to make data entry, logical and free. The most common source of data processing errors is inactive data.

Effective design of the input data minimizes the errors made by entry operators. Catching errors on input is far less costly than correcting after data storage is complete.

User-friendly input design enable quick error detecting and correction. Verification and validation is most important in input design. Since the system is used interactively, it has two type of input. Interactive input-which is the point contact of the user with the system and the input to the internal system i.e. database. For full efficiency of the system, it is necessary that the Input must be accurate. Since the user of the system may not be a

technical person and may not know input concept so it is required that he warn, prevent and correct invalid data entry.

3.4 Output design

Output design has been an ongoing from the very beginning of the project. The objective of output design is to convey the information of all past activities, current status and to emphasize important events. The output generally refers to the results and information that is generated from the system.

The output design of the system is accomplished keeping in mind the following activities:

- Determine what information is to display.
- Decide whether to display or print the information retrieved, processed, generated from the system.
- Arrange the presentation of information in an acceptable format.
- Decide how to distribute the output to the intended recipients.

In the output design phase one or more output media can be selected. Out of which the most common ones are CRT display and print out. Here only CRT display has been attempted.

A rapid enquiry is obtained from CRT displays. From design is made interesting and attractive. Easy understanding and effectiveness is made possible.

3.5 Implementation of the system design

Implementation includes all those activities that take place to convert from the old system to the new. The new system may be totally new, replacing an existing manual or it may be a major modification to an existing system. In either case, proper implementation may not guarantee improvement in the organization using the new system, but improper installation will prevent it.

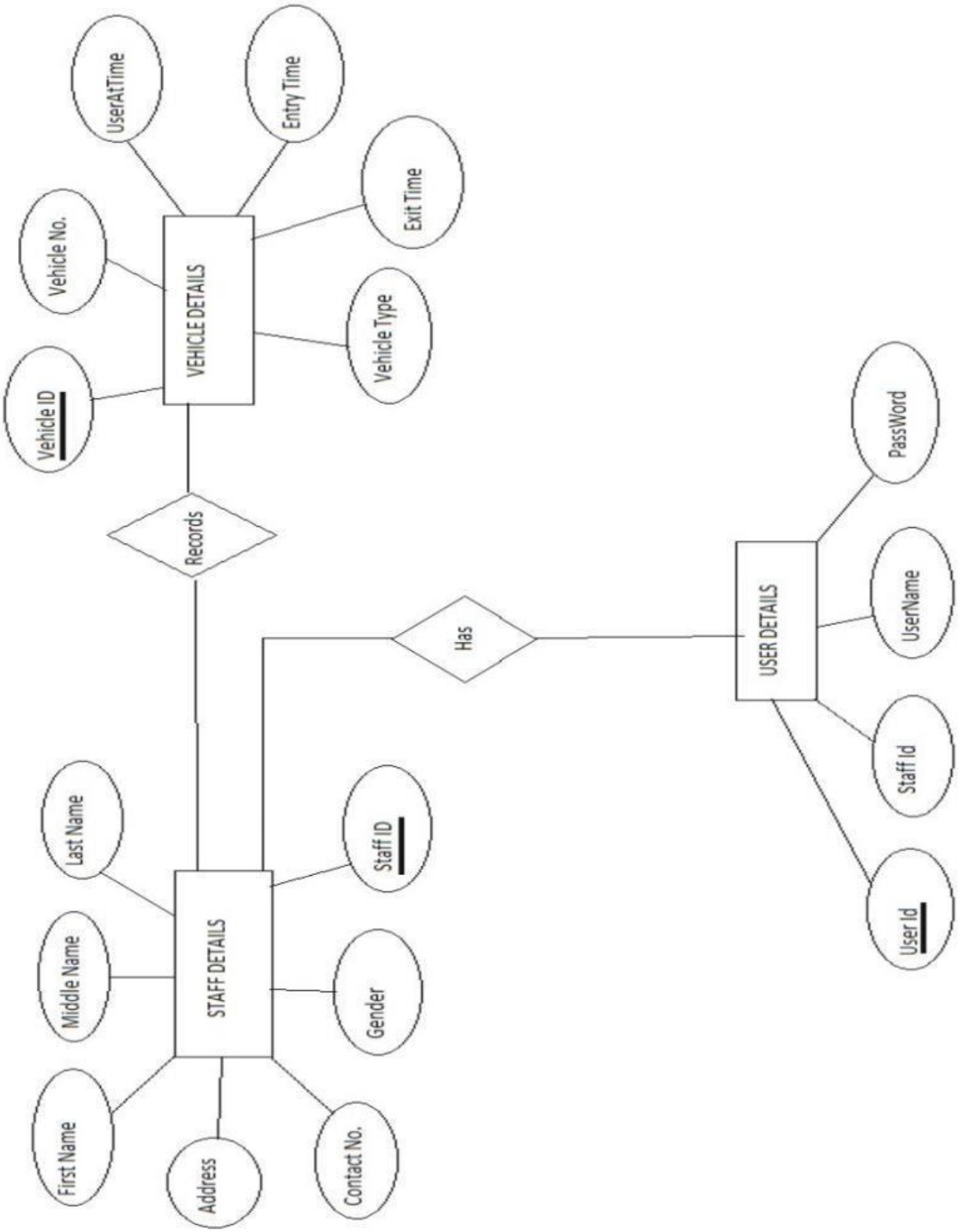
The system developed has been tested at the site of the end-user. The system did not come under any errors during its testing and it satisfied all requirements of the end-user. So the system has been implemented using MS ACCESS as its backend at present.

The system by itself provides for maintenance of its database automatically. Once the financial year is over the past data is converted to a text format and stored in a separate directory that need to be created at his time of implementation.

3.6 Database Design

The design of the database for this district grand lodge has been done using MYSQL as back end. The design process will begin from proposed system. The required data fields are analyzed from the proposed system and the database should be designed. The required tables for this database should be designed. The required tables for this database are proposed according to proposed system.

8E-R Diagram

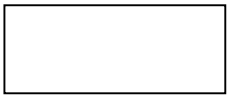


3.1 DATA FLOW DIAGRAM INTRODUCTION:

Data flow diagram (DFD) as called as data flow graphs are commonly used during problem analyses. It is useful in understanding a system and can be effectively used for portioning during problem analysis.

A DFD shows the flow of data through system. It shows the movement of data through the different transformations or process in the system. The processes are shown by named circle or "Bubbles" and data. An open –ended rectangle represents the data storage. A source or sink is outside main system of study. Most of the cases the DFD are very large; in such a case the DFD must be developed by step wise refinement. Level DFD set has a starting DFD, which is a very abstract representation of the system, identifying the major inputs and outputs major processes in the system. Then each bubble in the DFD is expanded into a DFD during refinement. It is important that the net inputs and outputs for a DFD for a process are the same as the input of the process in the higher level DFD. During the refinement, the data may be broken into its component for processing.

DATA FLOW DIAGRAM SYMBOL



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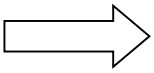
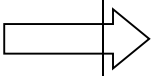


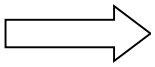
A rectangle defines a source

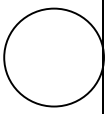
Or destination of system diagram

An arrow data flow in motion. It is pipeline



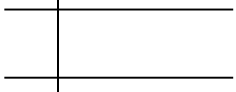
Through which information's flow

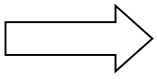




A circle or a "bubble" represents a process That transforms incoming dataflow into

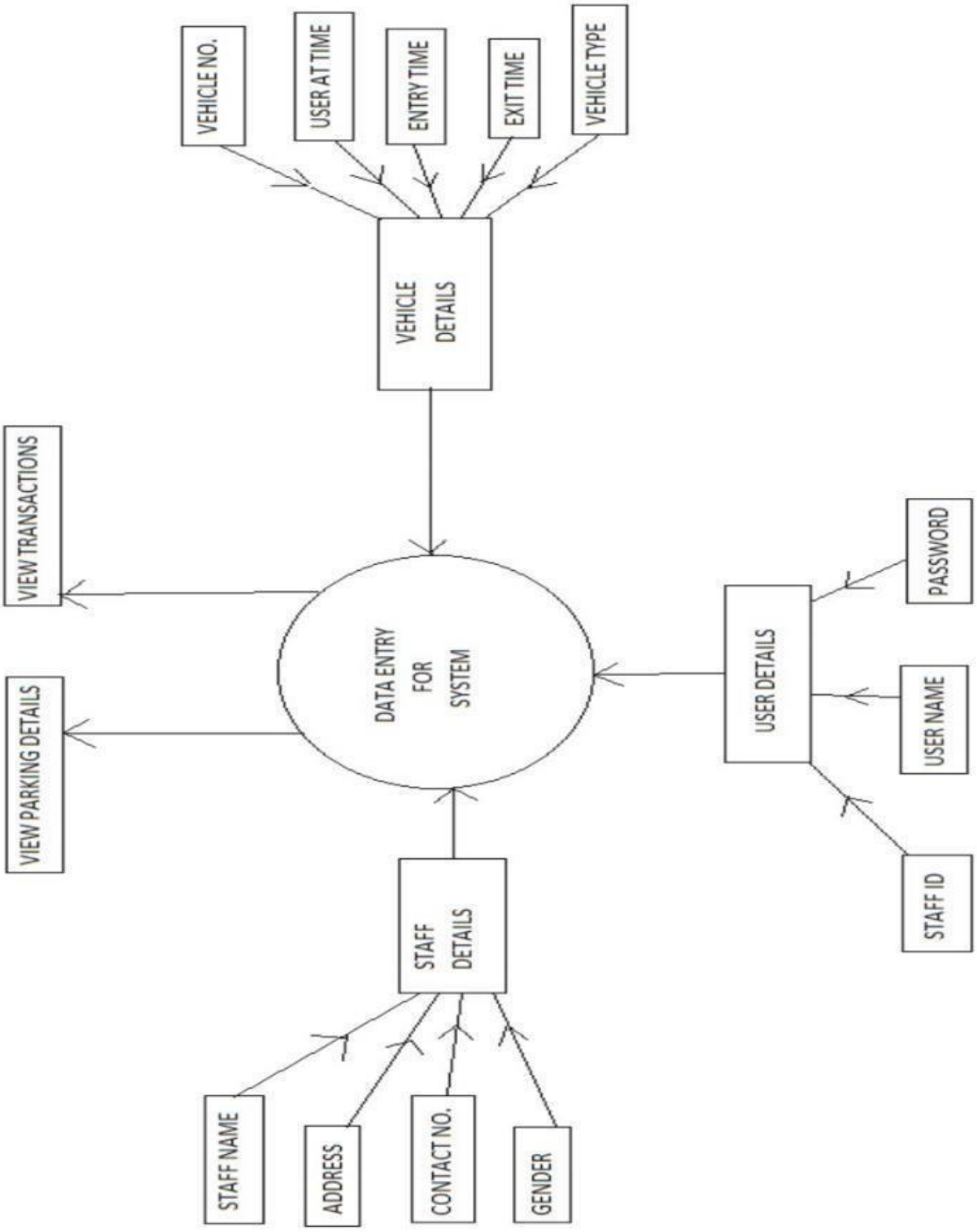
Outgoing data flow.





An open rectangle is data store data reset Or a temporary repository of data.

9. Data flow diagram first level dfd



10. Description of the different modules

a) Data Records

Staff records: - It helps to provide details of staff that uses the Vehicle parking management System. It provides the descriptions of staffs like:

-Staff first, middle and last name

-Address

-Contact Number -Gender.

User Records: - This record helps for the authorization for using Vehicle Parking Management System. It Provides the Username and Password for the User (staff). It also includes the level of authority that means it separates the normal users and administrator.

Vehicle Records: - This most important record which focuses in our Vehicle Parking Management System. It stores the essential Vehicle records like:

-Vehicle Number

-Vehicle Type

-Vehicle Entry Time

-Vehicle Exit Time -User at

Time of Transaction b).Reports

Vehicle Parking Detail: - This report is very essential in this system. This report provides a brief summary of vehicle activities. It shows the overall Entry and Exit time. It shows the User at time of Entry and exit .It also provides the facility for examining the total vehicle details according to date wise.

Transaction Detail:-This report will show the Transaction between the customer and the System. . It shows the cost of the vehicle after using the facility of parking. It will show the number of transaction by date wise. It will also have User at time of the Transaction.

11. Steps of Transactions

Customer (Vehicle) Approaches
User verifies the vehicle type
User passes the token to the customer (vehicle)
Vehicle is parked in empty parking slot
Vehicle that wants to make an exit comes to the exit point
Customer (vehicle) passes the token to the user
User verifies the time consumed by the vehicle and determines the price according to the time & vehicle type.
Customer (vehicle) pays the amount (price)
User prints the bill and gives it to the customer (vehicle) Now, Customer (vehicle) is free to go.

3.7 Implementation

Implementation includes all those activities that take place to convert from the old system to the new. The new system may be totally new, replacing an existing manual or it may be a major modification to an existing system. In either case, proper implementation may not guarantee improvement in the organization using the new system, but improper installation will prevent it.

The system developed has been tested at the site of the end-user. The system did not come under any errors during its testing and it satisfied all requirements of the enduser. So the system has been implemented using SQL server as its back-end at present.

The system by itself provides for maintenance of its database automatically. Once the financial year is over the past data is converted to a text format and stored in a separate directory that need to be created at his time of implementation.

3.8 Maintenance

Maintenance is far more than fixing mistakes. The maintenance can be defined using four activities that are undertaken after a program is released for use.

The first maintenance activity occurs because it is unreasonable to assume that software testing will uncover all latent errors in a large software system. The process that includes the diagnosis and correction and correction of one or more errors is called corrective maintenance.

The second activity that contributes to a definition of maintenance occurs because of the rapid change that encountered in every aspect of computing. Adaptive maintenance as activity that modifies software to properly interface with a changing environment is both necessary and common place.

The third activity that may be applied to as definition of maintenance occurs when a software package is successful. As the software is used new recommendations for new capabilities, modifications to existing functions and general enchantments are received from the users to satisfy this request perceptive maintenance is used.

The fourth maintenance activity occurs when software is changed to improve future maintainability or reliability or to provide a better basis for future enhancements. This id often celled preventive maintenance, which is characterized by reverse engineering and reengineering techniques. When these tasks are applied to existing program, it is called maintenance.

Maintenance Procedure

The system has been tested in the location of the developer. But it is possible to find all errors here. It may be that after thorough testing, the user will find errors. In such a case the user when reports the errors it is possible to correct these errors as the coding has been documented and it is possible to find out the location where the error is occurring and the reason for the error can be analyzed and corrected. Thus we can say the system supports for corrective maintenance.

As this software can be run with the requirements given above and it does not involve any particular hardware as such can be run with rapid developments that is being encountered in the counterpart in the computer industry.

Relating to the requirements of the software as it uses the GUI principles it can be run any version of windows operating system or the Windows NT system.

Relating to the database used it is necessary that we need them to only store data and all operations are carried out using the applications. A new version of the database system will always support the older version activities.

This shows that the system developed is adaptive to changes in hardware or software. So the system supports adaptive maintenance.

It may be that end-user may want some modifications to be made to the existing functions and enhance the capabilities of the existing system. It is possible to do these activities in the existing system and as the coding has been properly documented it is easy to make these changes to the existing functions. This shows that the system supports for perfect maintenance.

Finally relating to the preventive maintenance, the software is to be changed to improve further maintainability and reliability of the system. As the documentation of the system provides for all the details that are taken care of while developing the system. Using these we can carry out the above activities. This shows that the system supports for carrying out the maintenance activities on the software.

4.3 About Front End

Visual Basic .NET (VB.NET) is an object-oriented computer programming language implemented on the .NET Framework. Although it is an evolution of classic Visual Basic language, it is not backwards-compatible with VB6, and any code written in the old version does not compile under VB.NET.

Like all other .NET languages, VB.NET has complete support for object-oriented concepts. Everything in VB.NET is an object, including all of the primitive types (Short, Integer, Long, String, Boolean, etc.) and user-defined types, events, and even assemblies. All objects inherits from the base class Object.

VB.NET is implemented by Microsoft's .NET framework. Therefore, it has full access to all the libraries in the .Net Framework. It's also possible to run VB.NET programs on Mono, the open-source alternative to .NET, not only under Windows, but even Linux or Mac OSX.

The following reasons make VB.Net a widely used professional language:

- Modern, general purpose.

- Object oriented.
- Component oriented.
- Easy to learn.
- Structured language.
- It produces efficient programs.
- It can be compiled on a variety of computer platforms.
- Part of .Net Framework.

Strong Programming Features VB.Net

VB.Net has numerous strong programming features that make it endearing to multitude of programmers worldwide. Let us mention some of these features:

- Boolean Conditions
- Automatic Garbage Collection
- Standard Library
- Assembly Versioning
- Properties and Events
- Delegates and Events Management
- Easy-to-use Generics

- Indexers
- Conditional Compilation
- Simple Multithreading

VB.Net is an object-oriented programming language. In Object-Oriented Programming methodology, a program consists of various objects that interact with each other by means of actions. The actions that an object may take are called methods. Objects of the same kind are said to have the same type or, more often, are said to be in the same class.

When we consider a VB.Net program, it can be defined as a collection of objects that communicate via invoking each other's methods. Let us now briefly look into what do class, object, methods and instance variables mean.

Object - Objects have states and behaviors. Example: A dog has states - color, name, breed as well as behaviors - wagging, barking, eating, etc. An object is an instance of a class.

Class - A class can be defined as a template/blueprint that describes the behaviors/states that objects of its type support.

Methods - A method is basically a behavior. A class can contain many methods. It is in methods where the logics are written, data is manipulated and all the actions are executed.

Instance Variables - Each object has its unique set of instance variables. An object's state is created by the values assigned to these instance variables.

4.4 About Back End

INTRODUCTION TO MICROSOFT SQL SERVER

- SQL is invented and developed by IBM in early 1970's.SQL stands for Structured Query Language. IBM was able to demonstrate how to control relational databases using SQL. The SQL implemented by ORACLE CORPORATION is 100% compliant with the ANSI/ISO.
- Standard SQL Data Language. Oracle's database language is SQL, which is used for strong storing and retrieving information on oracle. A table is primary database object of SQL that is used to store data. A table holds data in the form of rows and columns.

Benefits of SQL:

- Non-procedural language, because more than one record can be accessed rather than one record at a time.
- It is the common language for all relational databases. In other words it is portable.
- And it requires very few modifications so that it can work on other databases.
- Very simple commands for querying, inserting, deleting and modifying data and objects.

Database Concepts

Database is the method to store data. If you have an application that has to store and retrieve data, your application must be using a database.

A file is the simplest form of saving the data in the disk, but is not most efficient way of managing application data. A database is basically a collection of one more files, but in a custom format, and data is organized in a specific format such a way that it can be retrieved and stored very efficiently.

Some examples for database are:

- MS access
- SQL Server
- Oracle

MS Access is a very light weight database provided by Microsoft for application with less number of user and relatively small quantity of data.MS access saves data into database files with the extension mdb. Usually, MS Access comes along with MS office package. If you already have the mdb database file, you can freely use it with your application and do not need MS Access software. The MS Access software is required only if you want to directly open the database and manipulate the data or change the database schema.

SOL server (Microsoft product) and oracle (Oracle Corp.)Are most complex, advanced, relational database and they are much more expensive. It can support large number of users and very high quality of data. If you are developing a software, which may be accessed simultaneously by 100s of users or if you expect your data may grow 100s of MBs, you may consider one of these. (We are provides special data access components!!)

In this tutorial, we will be using only MS Access for simplicity. Most of the samples provided in this site uses MS Access database for simplicity and easy download.

SQL COMMAND METHODS

Sql Command. Begin Execute Non Query Method: Initiates the asynchronous execution of the Transact-SQL statement or procedure that is described by this Sql Command.

This member is overloaded. For complete information about this member, including syntax, usages, and examples, click a name in the overload list.

Sql Command. Begin Execute Reader Method: Initiates the asynchronous execution of the transact SQL statement or stored procedure that is described by this Sql Command, and retrieves one or more results sets from the server.

This member is overloaded. For complete information about this member, including syntax, usages, and examples, click a name in the overload list.

Sql Command. Clone Method: Creates a new Sql Command object that is a copy of the current instance.

Sql Command. Dispose Method: this member is overloaded. For complete information about this member, including syntax, usage and. examples, click a name in the overload list.

Sql Command. End Execute Non Query Method: Finishes asynchronous execution of transact - SQL statement.

Sql Command. End Execute Reader Method: Finishes asynchronous execution of transact-SQL statement, returning the requested Sql Data Reader.

Sql Command. Execute Non Query Method: Executes a transact-SQL statement against the connection and returns the number of rows affected.

Sql Command. Execute reader Method: This member is overloaded. For complete information about this member, including syntax, usages, and examples, click a name in the overload list.

Sql Command. Execute Scalar Method: Executes the query, and returns the first columns of the first row in the result set returned by the query, additional columns or rows are ignored.

Data Adapter Class: Represents the set of data commands and a database connection that are used to fill the data set and update the data source.

Retrieving Data Using the Data Reader: You can use the ado.net data reader to retrieve a read-only, forward-only stream of data from a database. Results are returned as the query executes, and are stored in the network buffer on the client until you request them using the read method of the data reader. Using the data reader can increase application performance both by retrieving data as soon as it is available, rather than waiting for the entire results of the query to be returned, and (by default) storing only one row at a time in memory reducing system overhead.

What is Dataset?

A Data Set is an in memory representation of data loaded from any data source. Even though the most common data source is database, we can use dataset to load data from other data sources including XML files etc. in this article, we will talk about the role of data set in manipulating data from database. In .NET, a dataset is a class provided by the .NET Framework.

4. Tables

LOGIN

NAME	TYPE	DESCRIPTION
User Name	VARCHAR2(20)	User Name for Login.
Password	VARCHAR2(20)	Password for Login.

NEW REGISTRATION

NAME	TYPE	DESCRIPTION
Emp/attender ID	Varchar2(20)	Registration number for new registration.
Emp/attender Name	Varchar2(20)	Name of the person who will registration.
	Varchar2(20)	
	Varchar2(20)	
	Varchar2(20)	
	Varchar2(20)	
	Varchar2(20)	
	Varchar2(20)	

Vehicle_type

T id	V type
1	Car
2	Bike

Rates

R id	R_per hour	R s
1	0.00 - 1.10	10
2	0.00 - 2.00	20
3	0.00 - 3.00	30
4	0.00 - 4.00	40
5	0.00 - 5.00	50

Vehicle info:

Sl no	T id	Registration no	Date	time in	Time out
1	1	LEX - 1313	From SYS	From SYS	From SYS
2	1	LZY - 1790	From SYS	From SYS	From SYS

5. Normalization

Normalization:

Normalization is one of the powerful methods used in the design process. It ensures that redundancy of the database is reduced to reasonable level. It ensures that the database is integrated by the way of reducing the redundancy. Hence it is the best method to design effective database. The normalized database is later converted to a physical database. Relations are normalized so that when relations in a database are to be altered during the life time of the database, we do not lose information or introduce inconsistency. The type of alterations normally needed for relations are:

Insertion of new data values to a relation. This should be possible without being forced to leave blank fields for some attributes.

Deletion of a tuple – a row in a relation. This should be possible without losing vital information unknowingly.

Updating or changing a value of an attribute in a tuple. This should be possible without exhaustingly searching all the tuples in the relation.

FIRST NORMAL FORM:

This form is also called as flat file. A relation is said to be in the first normal form if there are no composite attributes, and every attribute is single and describes one property.

SECOND FORM NORMAL:

A relation is said to be in the second normal form if it is in the first normal form and nonkey attributes are functionally dependent on the key attribute(s).

THIRD NORMAL FORM:

A third normal form will be needed where all attributes in a relation tuple are not functionally dependent only on the key attribute.

Third normal form (3NF) requires that there are no functional dependencies of non-key attributes on something other than a candidate key.

A table is in 3NF if all of the non-primary key attributes are mutually independent.

There should not be transitive dependencies.

8. SYSTEM TESTING AND VALIDATION

VALIDATION:

The goals of verification and validation activities are to access and improve the quality of the work products generate during development and modification of software. Quality attributes of interest include correctness, completeness, consistence, reality, usefulness, efficiency, and conformance of standards, and overall cost effectiveness.

Verification and validation involve assessment of work products to determine conformance to specification. Specification include the requirements specification, the design documentation, and various stylistic guidelines, implementation languages standards, project standards, organization standards, and user expectation, as well as the meta-specification for formats and notations used in the various product specifications. The requirements must be examined for conformance to user needs, environmental constraints and notational standards. The design documentation must be verified with respect to the requirements and notational convections, and the source code must be examined for conformance to the requirements, the design documentation standards. In addition, the supporting documents (user's manual, test plan, principle of operation, etc.) must be examined for correctness, completeness, consistency, and adherence to standards.

Validation is the process of evaluating the software at the end of software development testing is a common method of validation.

Testing and validation Testing:

Testing is vital to the success of the system. System makes a logical assumption that if all the parts of the system are correct, the goal will be successfully achieved. Inadequate testing or non-testing leads to error that may not appear until months later.

This creates two problems:

- The time between the cause and the appearance of the problem (the longer the interval the more complicated the problem has become)
- The defect of the system error on files and records within the system.

A small system error can conceivably explore into a much larger problem. Effective testing early in the process translates directly into long-term costs savings from reduced number of errors. The main purpose of the system testing is to identify and correct errors in the proposed system. The performance criteria include turnaround time, back up, data protection and the human factors with focus on ergonomics. Some testing currently exist assist in this effort, but the problem being faced in testing requires an entirely new approach to the testing process. They are test relative to the System Development Cycle (SDLC).

APPLICATION TEST STAGE

- Unit Testing
- Integration Testing
- External Interface Testing
- Security/Error testing
- System Testing
- Black box Testing

UNIT TESTING

Unit testing is an interactive process that is not complete until all the test cases have been tested and should be managed closely to facilitate integration testing. While box testing uses knowledge of the internal design of unit to develop test cases usually for interfaces, logical paths and logical data structures.

Black box testing, with no knowledge of the internal design of units focus on testing functional and performance requirements.

INTEGRATION TESTING

Integration testing is a systematic technique for combining unit testing modules and building the program structure according to system design, while at the same time conducting tests to uncover errors associated with combining these units. String testing combines units that have directly related inputs and outputs. Volume and stress tests of interacted units are done with simulated input and environmental condition. Integration testing should be limited to internal interfaces only.

EXTERNAL INTERFACE TESTING

This testing is done to ensure that the interface to other system is functioning properly. The external interfaces tests are external interfaces that extend beyond the users workstation i.e., when there are application running on remote servers on remote servers or other workstations.

SECURITY/ERROR TESTING

Testing is a set of activities that can be planned in advance and conducted systematically. For this reason template for software testing is a set of steps into which we can place specific test case design technique and testing methods should be defined for that software process. Testing is done to locate any errors in the application. The common view of testing is that it is performed to prove that there are no errors in a program. Test cases have been developed for this purpose.

SYSTEM TESTING

System testing is the stage of implementation that is aimed at ensuring that the system works accurately and efficiently before live operation commences.

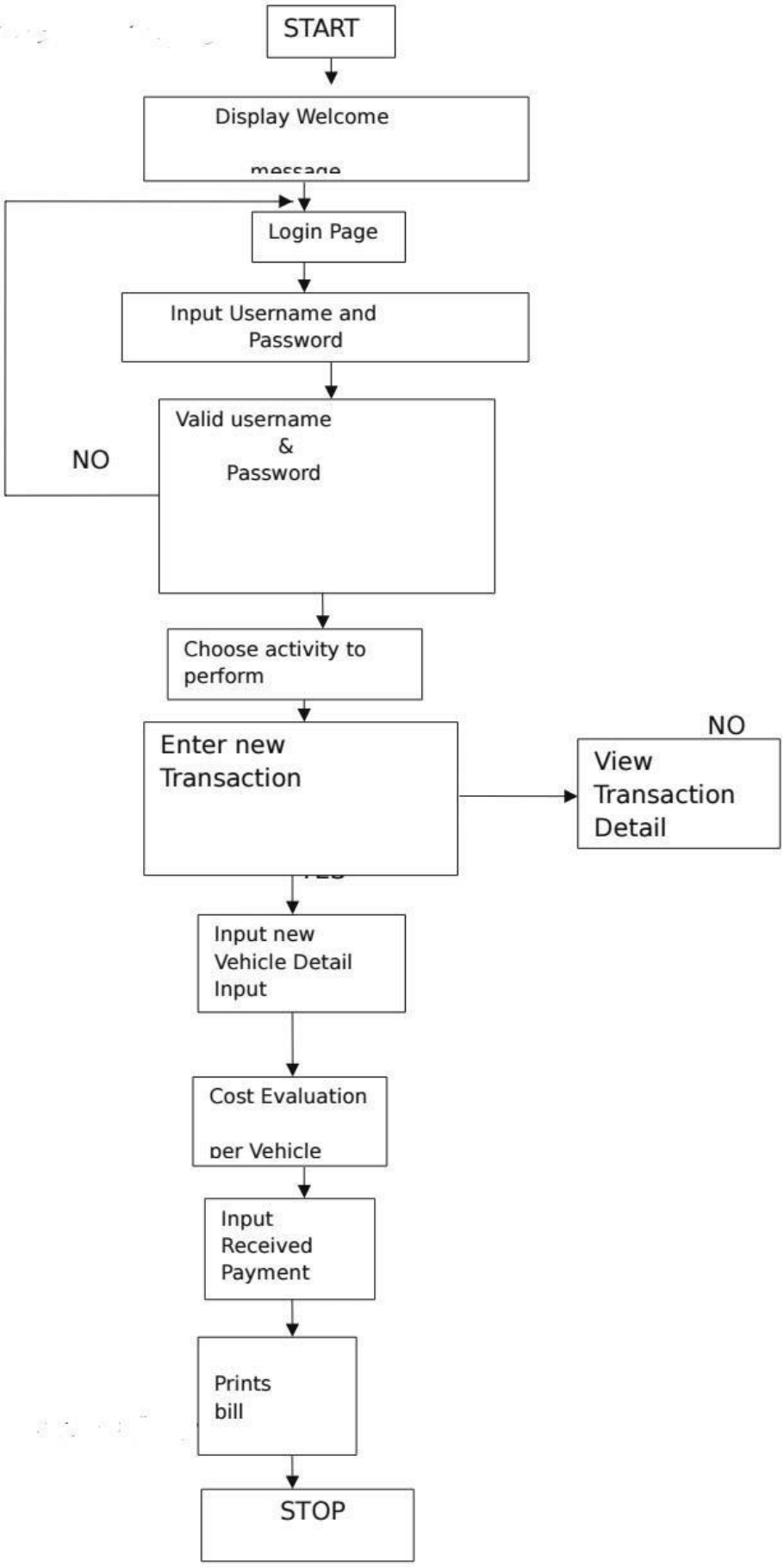
The logical design and the physical design are thoroughly and continually examined on paper to ensure that they will work when implemented. Thus the system test in implementation was a confirmation that all is correct and an opportunity to show the users was conducted for each module separately.

BLACK BOX TESTING

Black box testing methods focus on the functional requirements of the software. That is black box testing enabled us to derive sets of input condition that will fully exercise all functional requirement for program. Black box testing is not an alternatively to white box technique; rather it is a complementary approach that is likely to uncover different classes of errors than white box methods. Black box testing attempts to find errors in the following categories:

- Incorrect or missing functions
- Interface errors

Programming logic


START
Display Welcome
message
Login Page
Input Username and
Password
Valid username
&
Password
NO
Choose activity to
perform
Enter new
Transaction
NO
View
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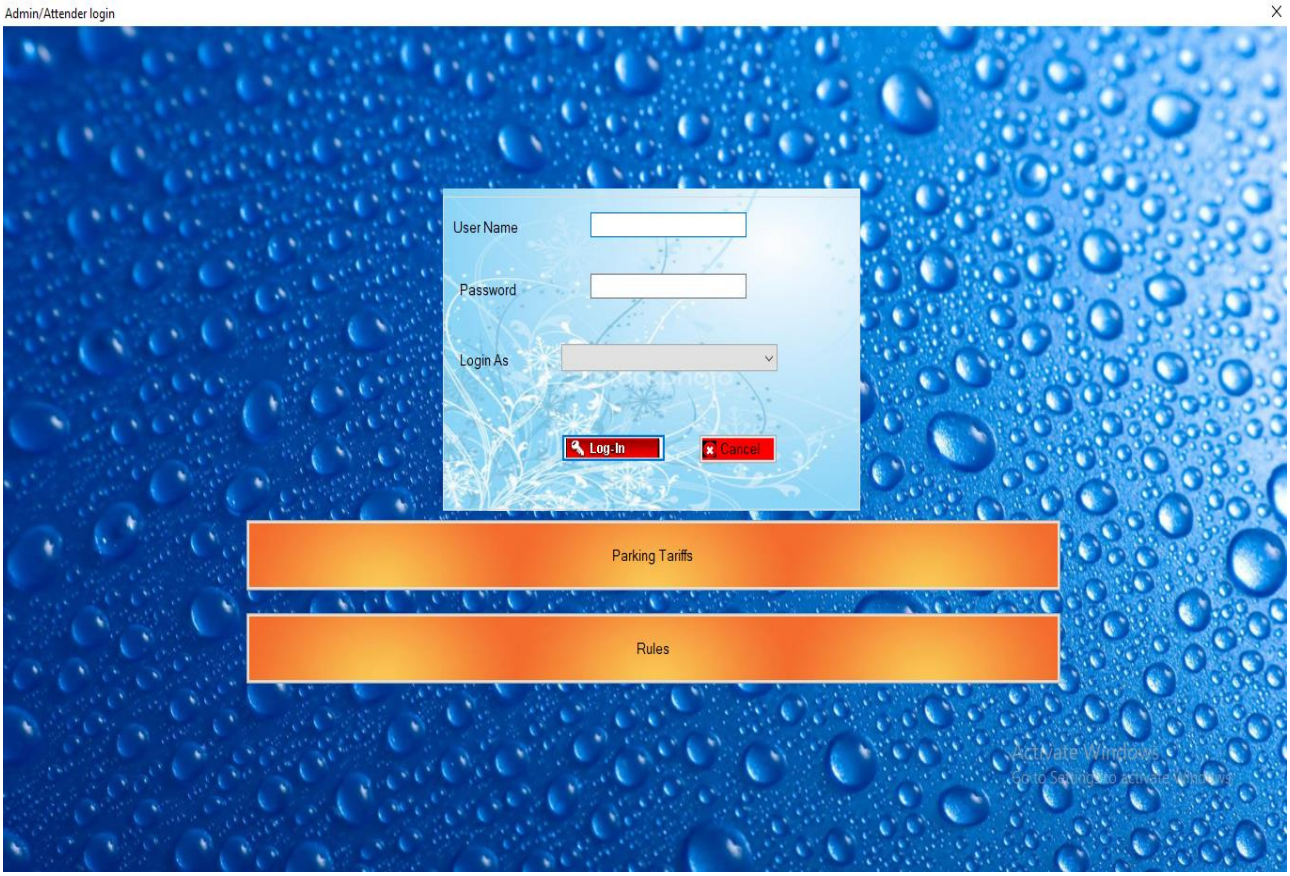
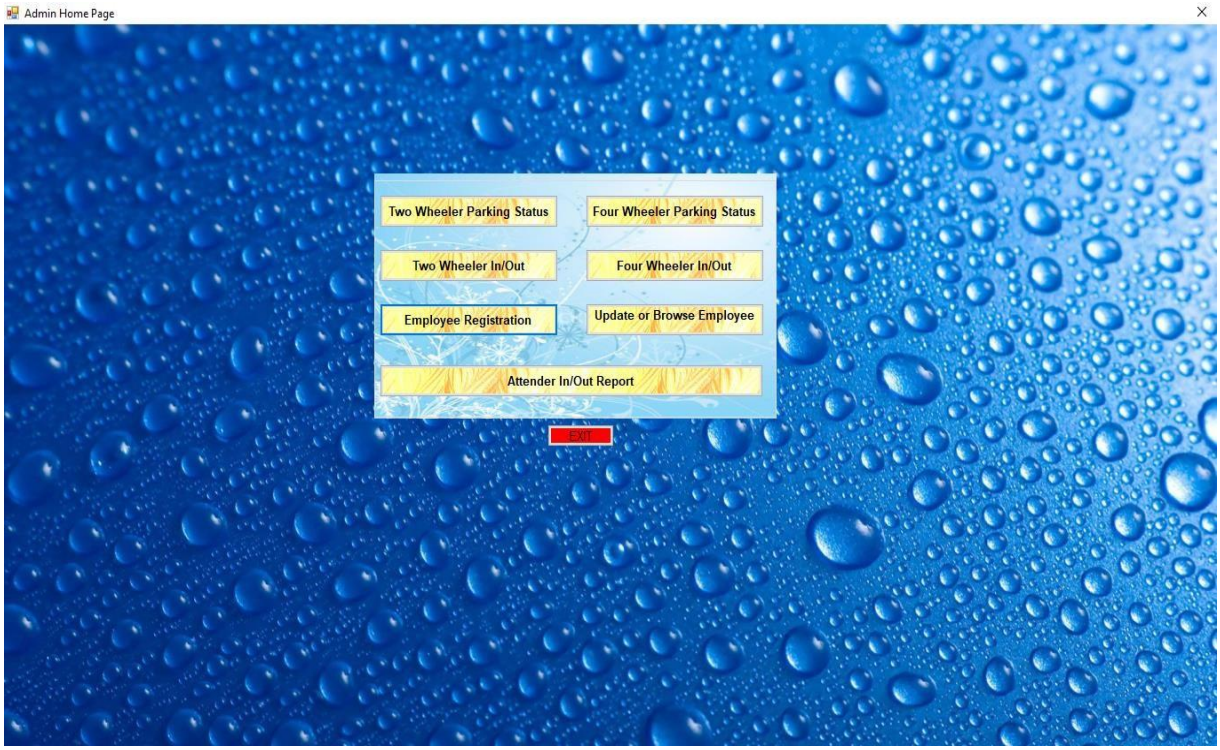
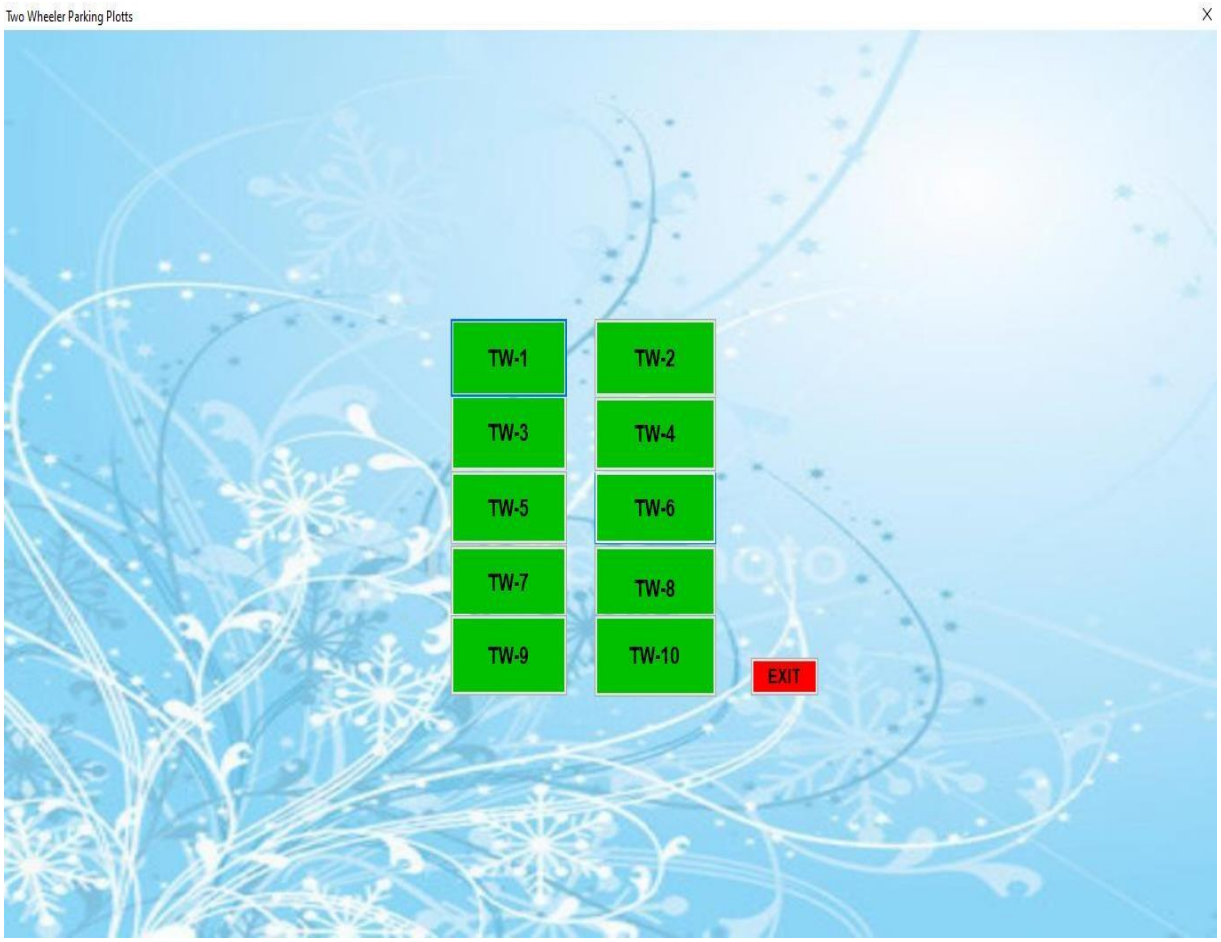
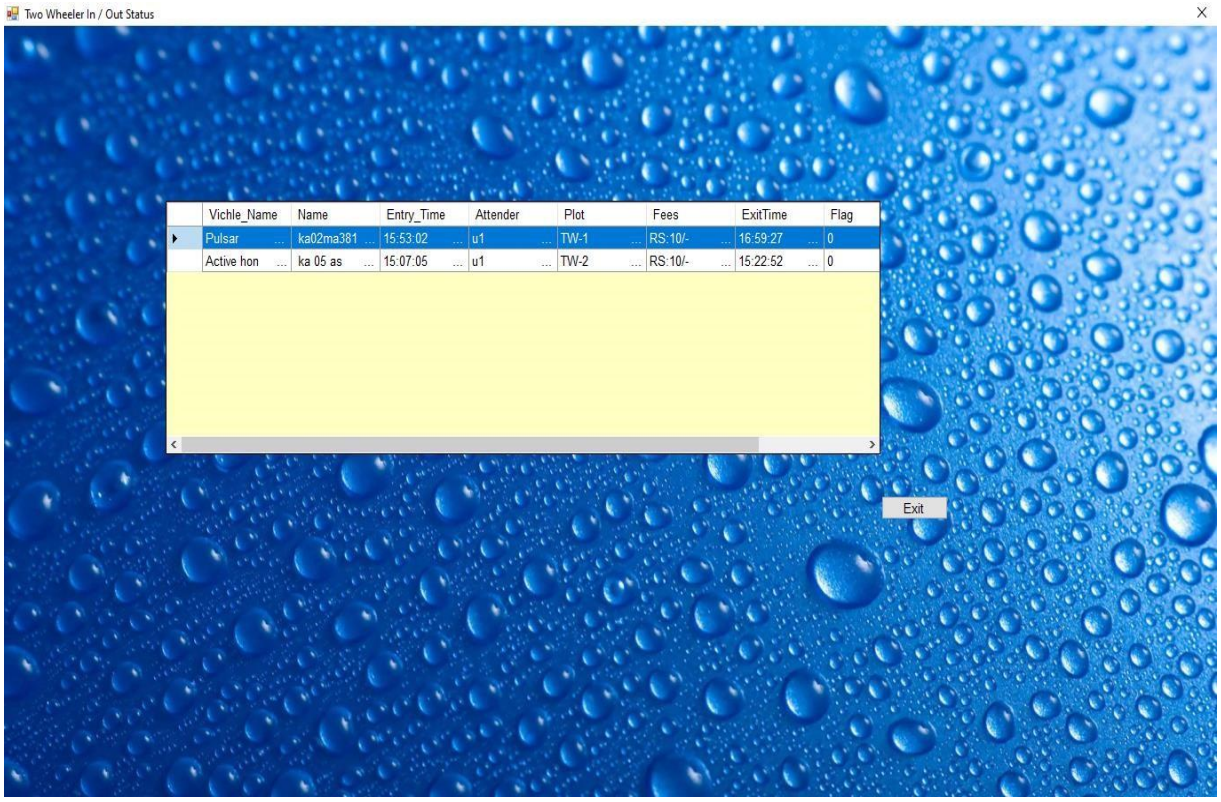
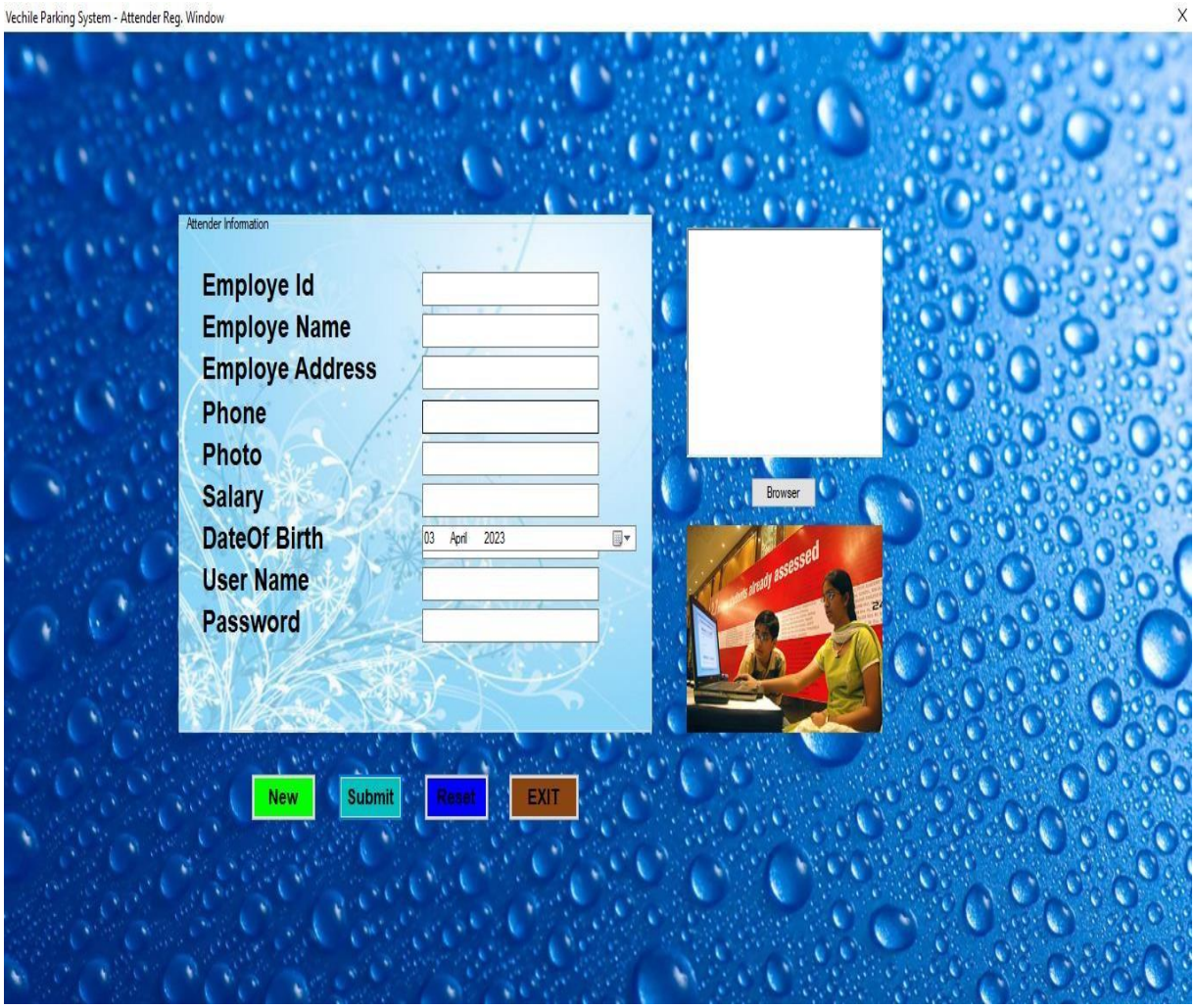
Input new
Vehicle Detail
Input
Cost Evaluation
per Vehicle
Input
Received
Payment
Prints
bill
STOP

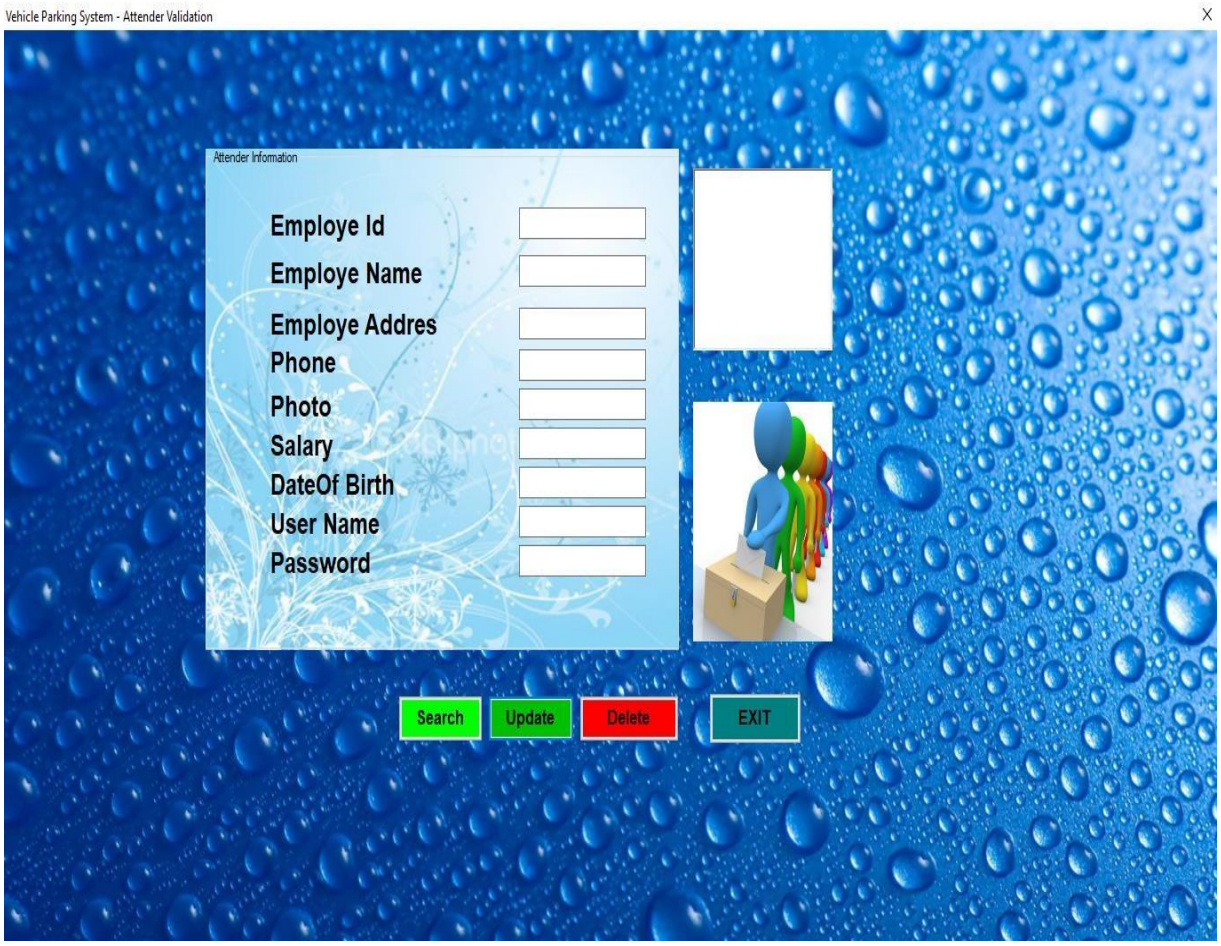

Admin/Attender login
User Name
Password
Login As
Log-In
Cancel
Parking Tariffs
Rules
Activate Windows


Admin Home Page
Two Wheeler Parking Status
Four Wheeler Parking Status
Two Wheeler In/Out
Four Wheeler In/Out
Employee Registration
Update or Browse Employee
Attender In/Out Report
EXIT


Two Wheeler Parking Plotts
X
TW-1
TW-2
TW-3
TW-4
TW-5
TW-6
TW-7
TW-8
TW-9
TW-10
EXIT


Two Wheeler In / Out Status
Vichle_Name
Name
Entry_Time
Attender
Plot
Fees
ExitTime
Flag
Pulsar
ka02ma381
15:53:02
u1
TW-1
RS:10/-
16:59:27
0
Active hon
ka 05 as
15:07:05
u1
TW-2
RS:10/-
15:22:52
0
Exit


Vechile Parking System - Attender Reg. Window
X
Attender Information
Employe Id
Employe Name
Employe Address
Phone
Photo
Salary
DateOf Birth
03 April 2023
User Name
Password
Browser
New
Submit
Reset
EXIT


Vehicle Parking System - Attender Validation
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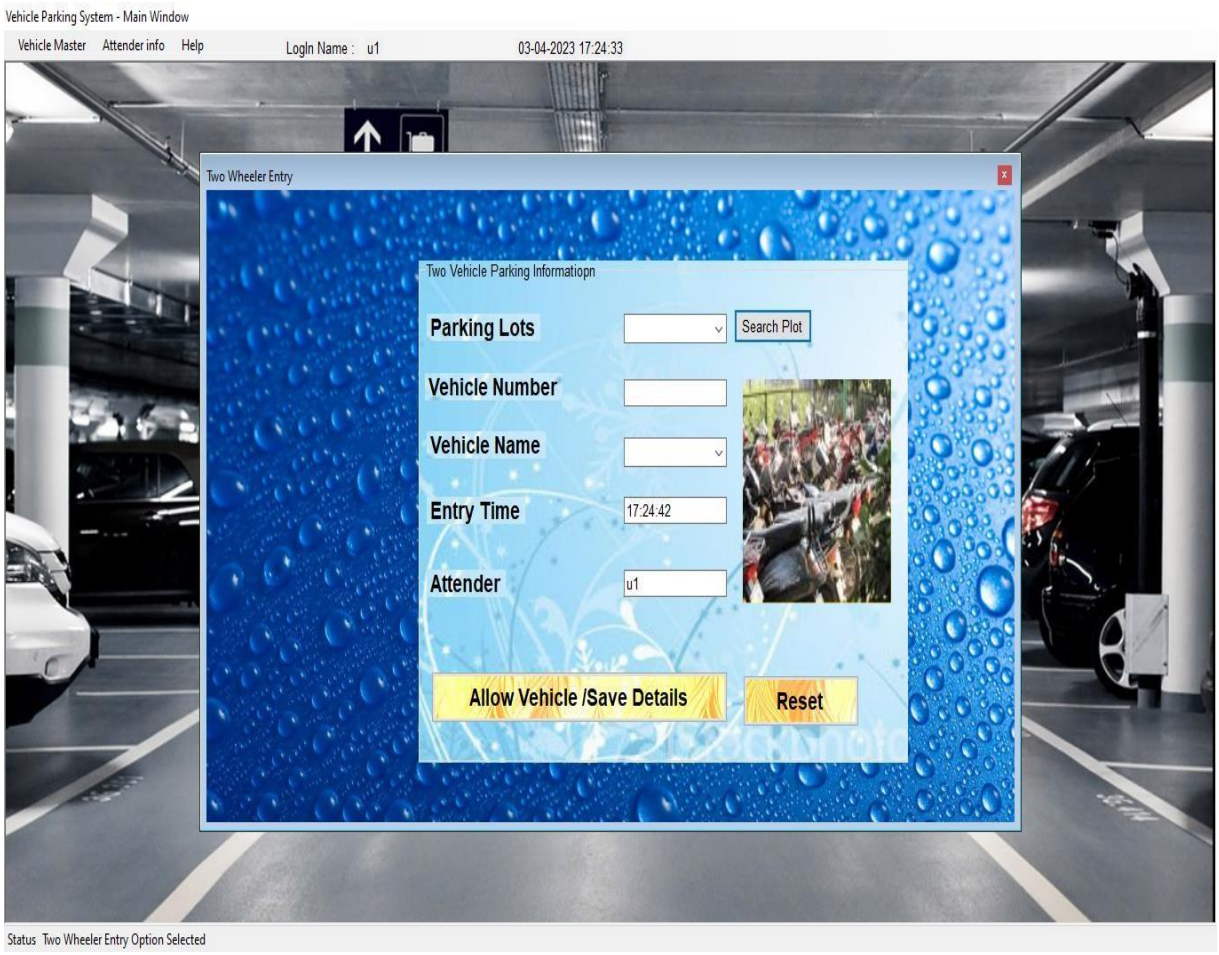
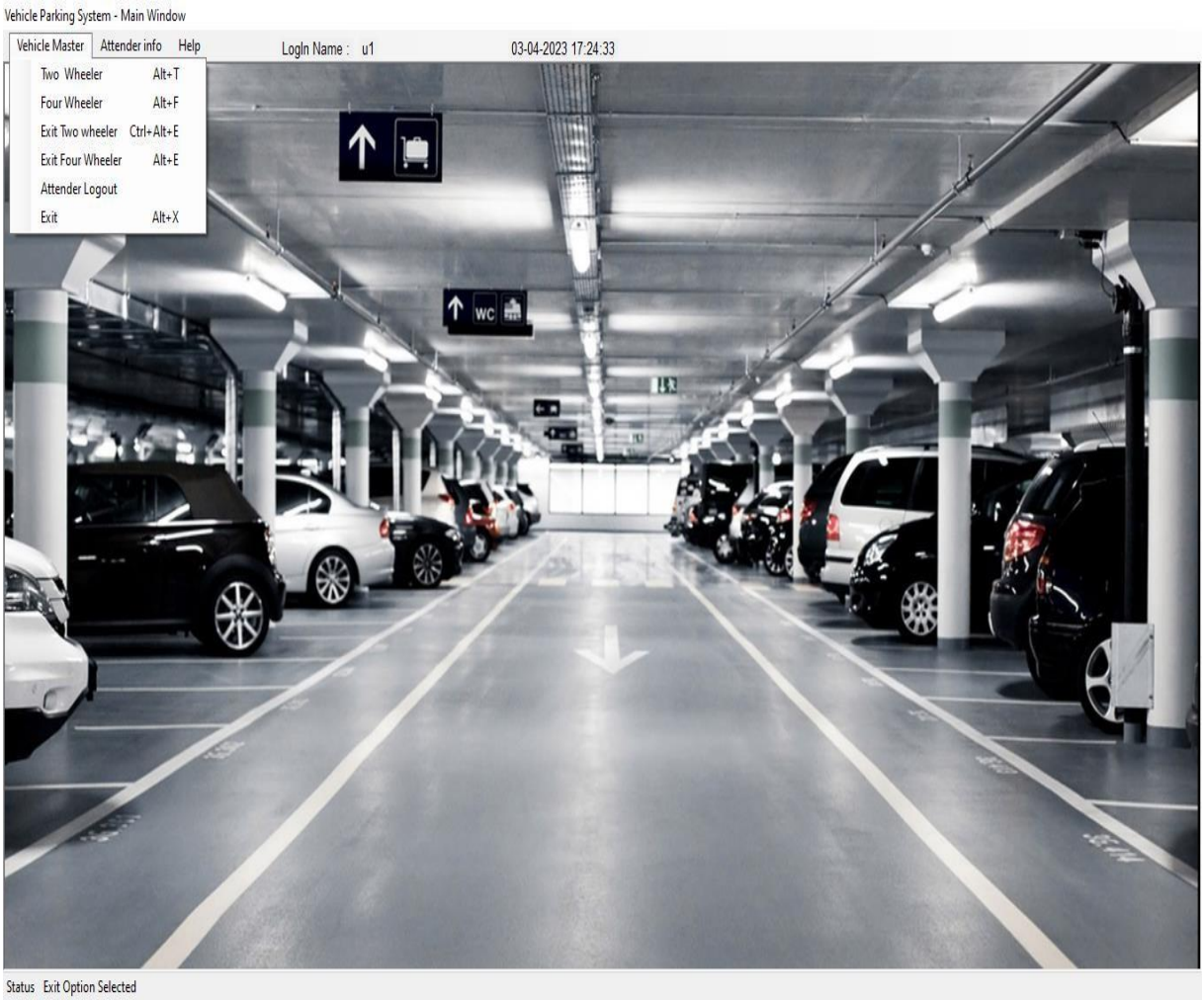
Attender Infomation
Employe Id
Employe Name
Employe Addres
Phone
Photo
Salary
DateOf Birth
User Name
Password
Search
Update
Delete
EXIT


Vehicle Parking System - Main Window
Vehicle Master
Attender info
Help
LogIn Name : u1
03-04-2023 17:24:33
Two Wheeler Entry
Two Vehicle Parking Informatiopn
Parking Lots
Search Plot
Vehicle Number
Vehicle Name
Entry Time
17:24:42
Attender
u1
Allow Vehicle /Save Details
Reset
Status Two Wheeler Entry Option Selected


Vehicle Parking System - Main Window
Vehicle Master
Attender info
Help
LogIn Name : u1
03-04-2023 17:24:33
Two Wheeler Alt+T
Four Wheeler Alt+F
Exit Two wheeler Ctrl+Alt+E
Exit Four Wheeler Alt+E
Attender Logout
Exit Alt+X
WC
Status Exit Option Selected

Conclusion:

Future enhancements:

This is the modern age many people have vehicles. Vehicles is now a basic need. Every place is under the process of urbanisation there are many corporate offices and shopping centres etc. there are many recreational places where people used to go for refreshment.so, all these places need a parking space where people can park their vehicles safely and easily. Every parking area needs a system that records the detail of vehicles to give the facility. These systems might be computerized or non-computerized. With the help of computerized system we can deliver a good service to customer who wants to park their vehicle into the any organization's premises.

Vehicle parking management system is an automatic system which delivers data processing in very high speed in systematic manner.

Parking is a growing need of the time development of this system is very useful in this area of field. We can sell this system to any organisation. By using our system they can maintain records very easily. Our system covers the every area of parking management. In coming future there will be excessive need of vehicle parking management system.