VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA, BELAGAVI

(Academic Year 2023-2024)

A Mini project report on

"AUTOMATION OF VEHICLE RESERVATION SYSTEM"

Submitted in the partial fulfillment of the requirement for 6th semester,

BACHELOR OF ENGINEERING

IN

CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Submitted by

ABHIJEET JADHAV (3RB21AI001)

AKSHAY HULSURE (3RB21AI004)

AMANULLAH (3RB21AI005)

AMBIKA GULSHETTY (3RB21AI006)

Under The Guidance Of

Prof. Vijeta D.

Department of CSE (AI & ML)

DEPARTMENT OF CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

BHEEMANNA KHANDRE INSTITUTE OF TECHNOLOGY,

Bhalki, Karnataka.

2023-24

S. V. E. Society's

BHEEMANNA KHANDRE INSTITUTE OF TECHNOLOGY,

Bhalki, Karnataka.

DEPARTMENT OF CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

CERTIFICATE

*This is to certify that the **Mini Project** entitled **"AUTOMATION OF VEHICLE RESERVATION SYSTEM"** has been successfully carried out by **Abhijeet Jadhav (3RB21AI001), Akshay Hulsure (3RB21AI004), Amanullah (3RB21AI005) & Ambika Gulshetty(3RB21AI006)** in partial fulfillment of the completion of 6th semester in Bachelor of Engineering in **CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)** of **Visvesvaraya Technological University, Belagavi** during the academic year **2023-2024**. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in report deposited in department library. The mini-project has been approved as it satisfies the academic requirements in respect of mini-project work prescribed for the bachelor of Engineering Degree.*

Mini-Project Guide
Prof. Vijeta D.
Dept. of CSE (AI&ML)

Mini project coordinators
Prof. Md Rafeeq
Prof. Mahesh Kanjikar

HOD
Dr. Shivkumar Anadur
Dept. of CSE (AI&ML)

Principal
Dr. UdayKumar Kalyane
BKIT, Bhalki

Examiner's

Name of Examiners:	Signature with Date
1) _____	_____
2) _____	_____

S. V. E. Society's

BHEEMANNA KHANDRE INSTITUTE OF TECHNOLOGY,

Bhalki-585328

DEPARTMENT OF CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

DECLARATION

We, **ABHIJEET JADHAV (3RB21AI001)**, **AKSHAY HULSURE (3RB21AI004), AMANULLAH (3RB21AI005) & AMBIKA GULSHETTY (3RB21AI006)** students of **6th semester** Bachelor of Engineering, in the Department of CSE (Artificial Intelligence and machine learning), **Bheemanna khandre Institute of Technology Bhalki-585328**, declare that the work on **Mini-Project** entitled **"AUTOMATION OF VEHICLE RESERVATION SYSTEM"** has been successfully completed under the mini-project guidance of **Prof. Vijeta D.** CSE(AIML) Dept. this work is submitted to **Visvesvaraya Technology University, Belagavi** in partial fulfillment of 6th semester of **Bachelor of Engineering** in CSE (Artificial Intelligence and machine learning) during the academic 2023-2024.

Place **Bhalki**

Date: 31-07-2024

ABHIJEET JADHAV (3RB21AI001)

AKSHAY HULSURE (3RB21AI004)

AMANULLAH (3RB21AI005)

AMBIKA GULSHETTY (3RB21AI006)

Acknowledgements

We would like to express our gratitude to the following people whose constant support helped immensely in the successful completion of our mini-project.

We are grateful to all those who have helped us in preparing our Mini-project.

Our sincere thanks to our Mini-project guide **Prof.Vijeta D.** for their guidance in the preparation of the project. Their constant and sincere guidance helped us in maintaining the tempo and thus helped us to complete the mini-project.

We wish to express our sincere thanks to **Dr. Shivkumar Anadur (H.O.D Dept of CSE(AI&ML))** and whole of the Computer Science & Engg. Department for the constant encouragement during the completion of the mini-project.

We would like to thank the **Dr. Udaykumar Kalyane**, principal, BKIT Bhalki, for providing such a congenial working environment.

Finally, we thank all our friends for their help in making our Mini-project a grand success.

ABHIJEET JADHAV (3RB21AI001)

AKSHAY HULSURE (3RB21AI004)

AMANULLAH (3RB21AI005)

AMBIKA GULSHETTY (3RB21AI006)

ABSTRACT

The automation of vehicle reservation systems represents a significant advancement in the management and allocation of transportation resources. This paper explores the development and implementation of an automated vehicle reservation system designed to streamline the booking process, enhance user experience, and optimize fleet utilization.

Leveraging modern technologies such as artificial intelligence, machine learning, and cloud computing, the proposed system offers a seamless and efficient solution for users to reserve vehicles through a user-friendly interface.

Key features include real-time availability checks, automated scheduling, dynamic pricing, and predictive maintenance alerts. By reducing manual intervention, the system aims to minimize booking errors, increase operational efficiency, and improve overall customer satisfaction.

Case studies and simulation results demonstrate the system's effectiveness in various scenarios, highlighting its potential to revolutionize vehicle reservation processes in both corporate and consumer markets.

INDEX

INTRODUCTION

Aim is to develop an online bike reservation system where online reservation of the bike service can be done.

The system provides an easy way of providing the reservation of bikes. Here if you want to buy the bike from some show room, then you can easily reserve the bike online without going to the show room.

Users access a booking page on the company intranet and place a "booking request". This is reviewed by the Fleet Manager, and at that time the request may be granted or denied, using the system's recommendation. If a booking is placed, the user is emailed with the confirmed details, and the VBS automatically records the vehicle booking.

A computer reservations system (CRS) is a computerized system used to store and retrieve information and conduct transactions related to air travel. Originally designed and operated by airlines, CRSes were later extended for the use of travel agencies. Major CRS operations that book and sell tickets for multiple airlines are known as **global distribution systems (GDS)**. Airlines have divested most of their direct holdings to dedicated GDS companies, who make their systems accessible to consumers through Internet gateways. Modern GDSes typically allow users to book hotel rooms and rental cars as well as airline tickets. They also provide access to railway reservations in some markets although these are not always integrated with the main system.

OBJECTIVE:

1. Develop an online application with highest security
2. The application has to be multiuser one.
3. The application should be able handle the queries of the customer in real time
4. The service has to be 24 X 7

SYSTEM ANALYSIS

As in any other system development model, system analysis is the first phase of development in case of Object Modeling too. In this phase, the developer interacts with the user of the system to find out the user requirements and analyses the system to understand the functioning.

Based on this system study, the analyst prepares a model of the desired system. This model is purely based on what the system is required to do. At this stage the implementation details are not taken care of. Only the model of the system is prepared based on the idea that the system is made up of a set of interacting objects. The important elements of the system are emphasized.

SYSTEM DESIGN

System Design is the next development stage where the overall architecture of the desired system is decided. The system is organized as a set of sub systems interacting with each other. While designing the system as a set of interacting subsystems, the analyst takes care of specifications as observed in system analysis as well as what is required out of the new system by the end user.

As the basic philosophy of Object-Oriented method of system analysis is to perceive the system as a set of interacting objects, a bigger system may also be seen as a set of interacting smaller subsystems that in turn are composed of a set of interacting objects. While designing the system, the stress lies on the objects comprising the system and not on the processes being carried out in the system as in the case of traditional Waterfall Model where the processes form the important part of the system.

EXISTING SYSTEM:

The existing system is manual one where a bike buyer has to visit the booking center for the reservation purpose. The maintenance about the booking is also done manually on the traditional file. Here the service is not available all the time since an office can be opened up to a time, after word it would be closed. Getting the details about the reservation which happened last year is a problematic task because one has to do lot of searching to get the information.

Disadvantages:

- Requires computer and internet knowledge
- If server is down then the application cannot be used
- Fast internet connectivity is required

PROPOSED SYSTEM:

The proposed system gives an online reservation capability where a bike reservation can be done online; hence we can avoid the drawback of going to the office and booking the bike.

When the VBS makes a recommendation for a booking, it automatically takes into account all other existing bookings and known bike unavailability. Where multiple vehicles are available to satisfy the booking request the VBS will present a list of options to the user.

As well as providing a full log of booking request and booking activity, the VBS provides a graphical overview of bookings, vehicle availabity and “hot spots” where future resource availability may not be sufficient to satisfy demand.

ADVANTAGES:

1. 24 X 7 availability of services
2. Information is secured
3. Multiple users can use the application without any limitation of the location
4. Since the application is placed on the server the data is distributed

MODULES:

1. **Vehicle:** The vehicle module contains the information of the vehicles available for the booking purpose along with the features. The vehicle description with the pricing and availability is given using this module
2. **Customers:** Using customer module, customer can provide there personal details to the system which is needed for the purpose of the booking the bike/vehicle

3. **Booking:** Customers can book the vehicle they needed using the booking module. The booking module gives ability to a customer to book the vehicle from their home comfort.
4. **Branches:** The vehicle company may have many branches, here using this module one can search the different branches for the purpose of knowing the availability of the bike/vehicle.
5. **Service:** after the vehicle has been taken, this module is used to provide the service to the customers for the common problem and also the maintenance details is given to the customers using this portal.

Software requirements:

Operating System	: Windows XP
Technology	: Java 1.6
Web Technologies	: Html, JavaScript
Web Server	: Tomcat 5.5
Database	: MySQL

Hardware requirements:

Processor	: Pentium Dual core 1.6
Hard Disk	: 160GB
RAM	: 512MB

SYSTEM DESIGN

System Design is the next development stage where the overall architecture of the desired system is decided. The system is organized as a set of sub systems interacting with each other. While designing the system as a set of interacting subsystems, the analyst takes care of specifications as observed in system analysis as well as what is required out of the new system by the end user.

As the basic philosophy of Object-Oriented method of system analysis is to perceive the system as a set of interacting objects, a bigger system may also be seen as a set of interacting smaller subsystems that in turn are composed of a set of interacting objects. While designing the system, the stress lies on the objects comprising the system and not on the processes being carried out in the system as in the case of traditional Waterfall Model where the processes form the important part of the system.

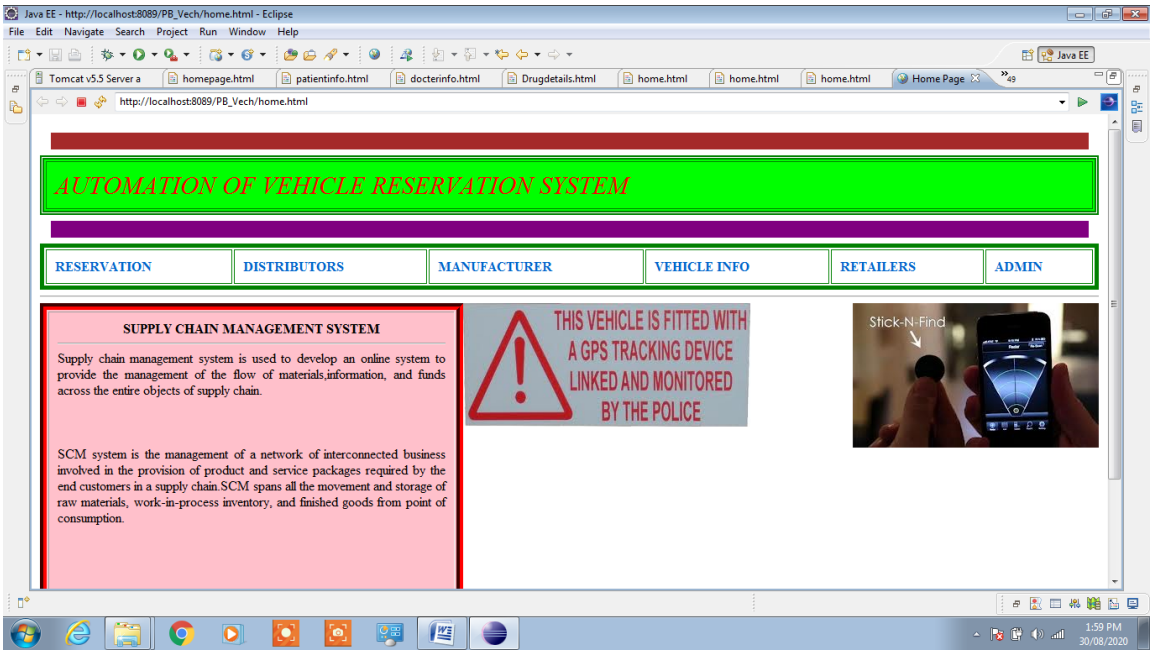
E R DIAGRAM

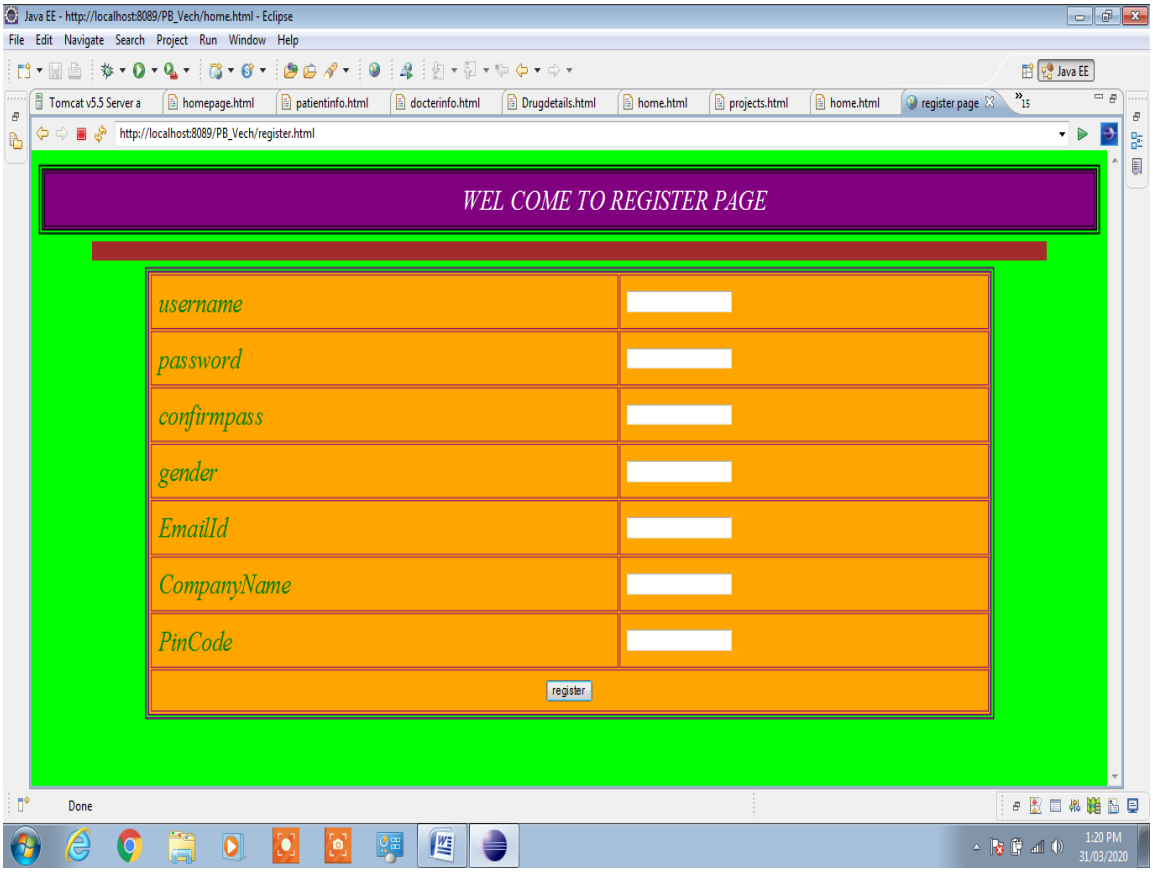
data-flow diagram (DFD) is a graphical representation of the "flow" of data through an information system. DFDs can also be used for the visualization of data processing (structured design).

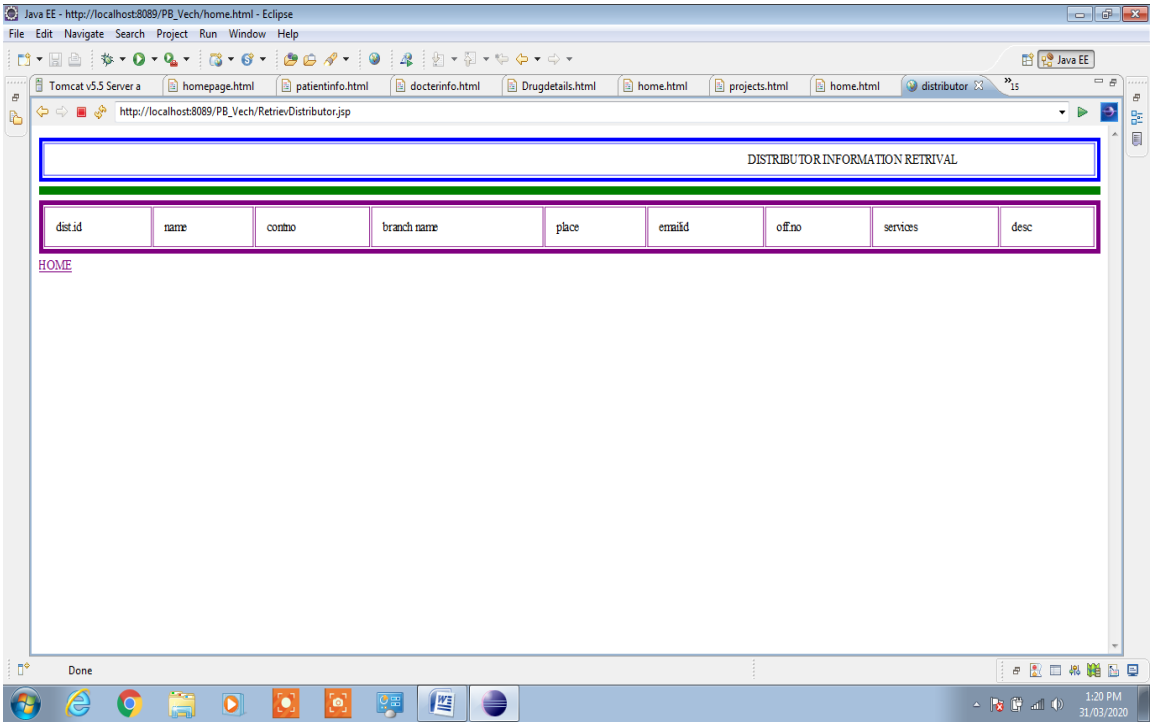
On a DFD, data items flow from an external data source or an internal data store to an internal data store or an external data sink, via an internal process.

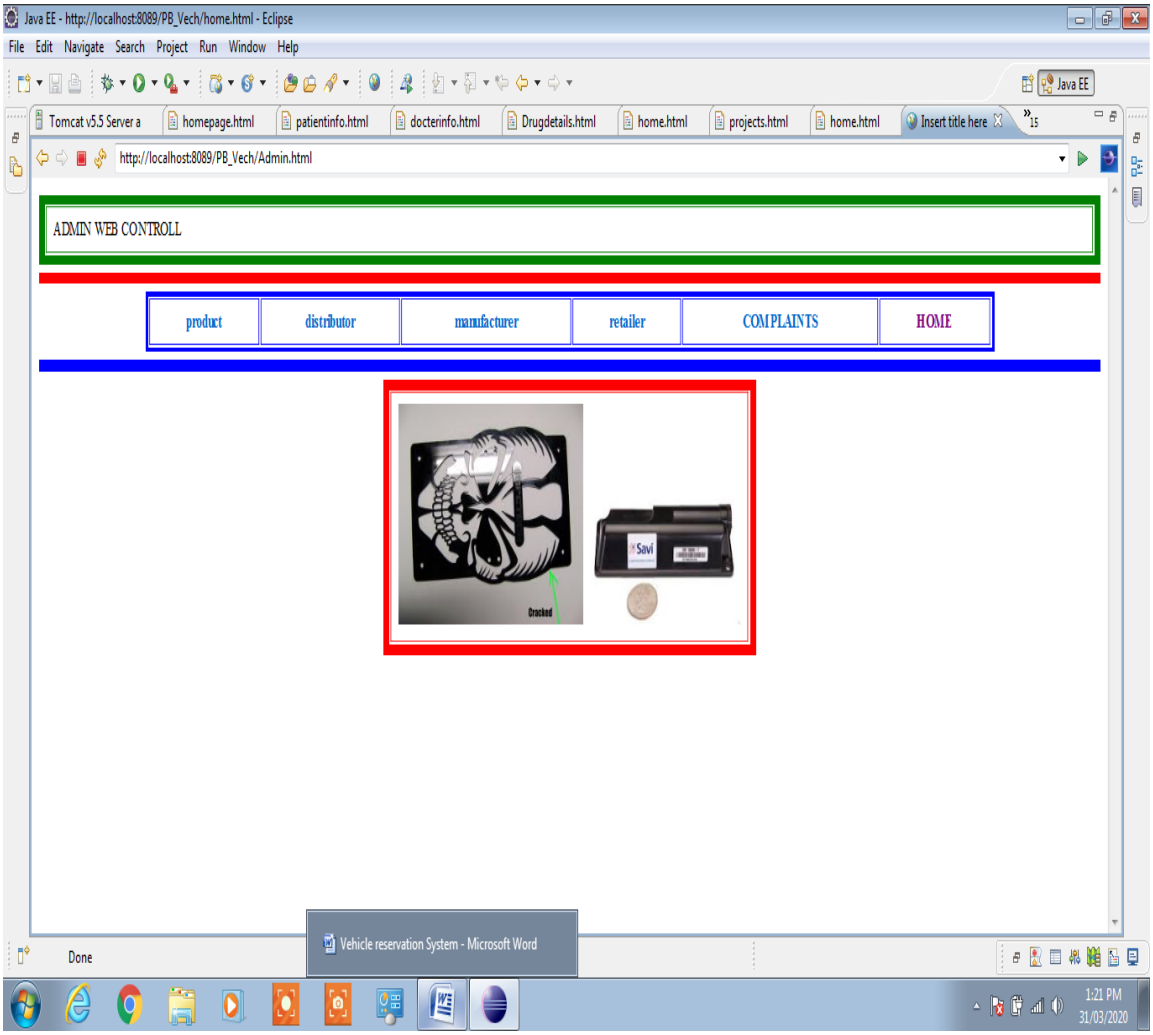
A DFD provides no information about the timing or ordering of processes, or about whether processes will operate in sequence or in parallel. It is therefore quite different from a flowchart, which shows the flow of control through an algorithm, allowing a reader to determine what operations will be performed, in what order, and under what circumstances, but not what kinds of data will be input to and output from the system, nor where the data ill come from and go to, nor where the data will be stored (all of which are shown on a DFD).

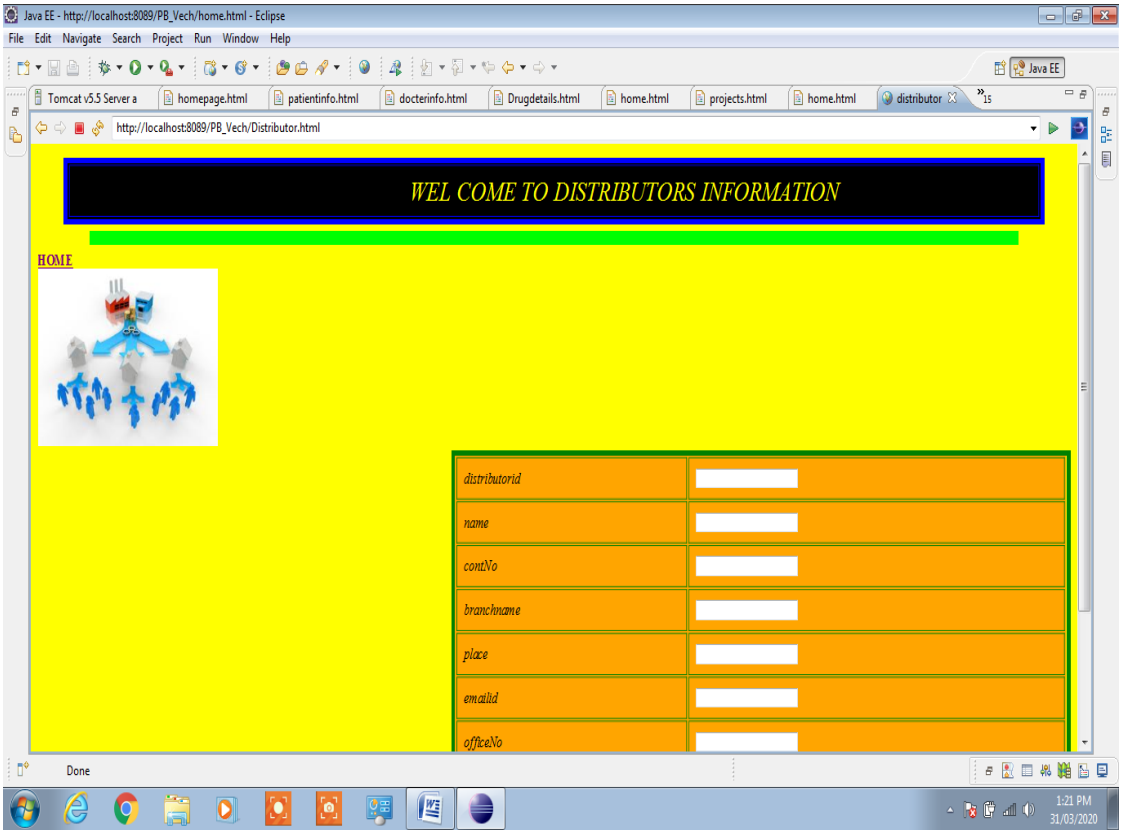
OUTPUT

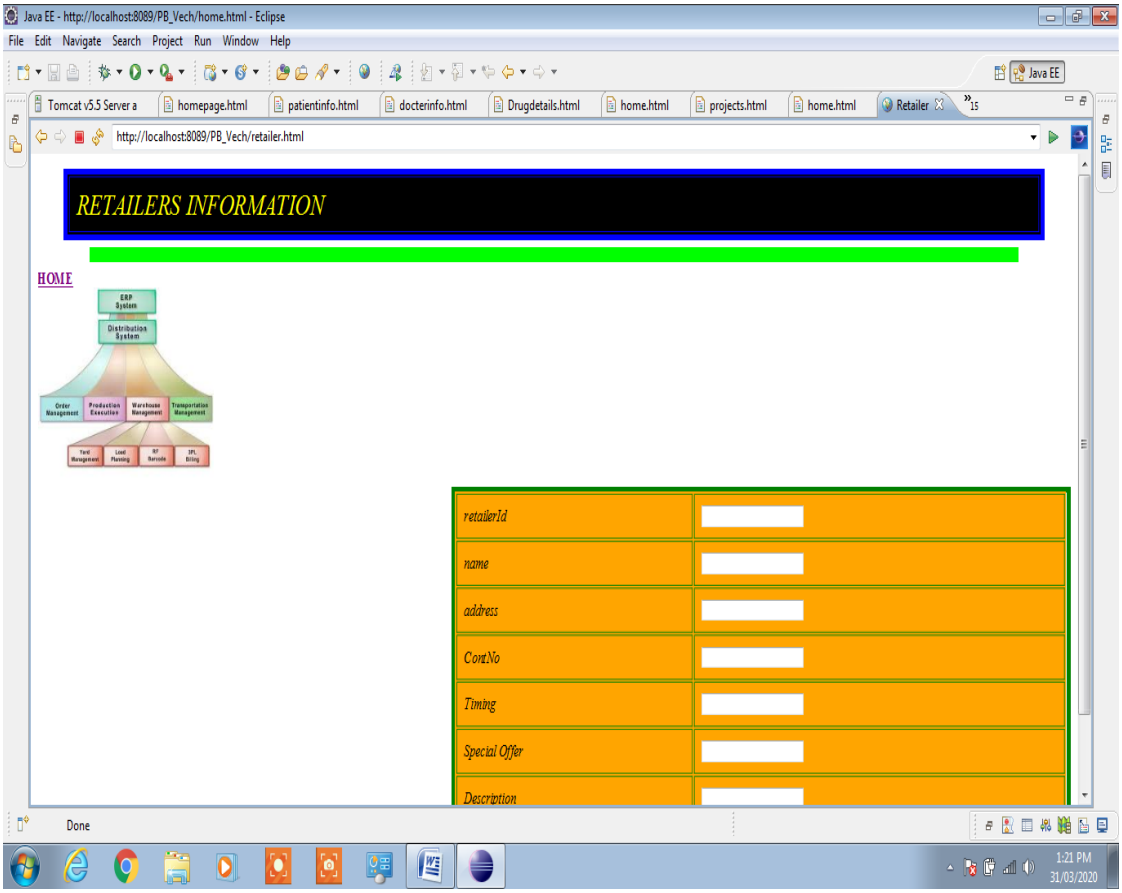

Java EE - http://localhost:8089/PB_Vech/home.html - Eclipse
File Edit Navigate Search Project Run Window Help
Tomcat v5.5 Server a
homepage.html
patientinfo.html
docterinfo.html
Drugdetails.html
home.html
home.html
home.html
Home Page
http://localhost:8089/PB_Vech/home.html
AUTOMATION OF VEHICLE RESERVATION SYSTEM
RESERVATION
DISTRIBUTORS
MANUFACTURER
VEHICLE INFO
RETAILERS
ADMIN
SUPPLY CHAIN MANAGEMENT SYSTEM
Supply chain management system is used to develop an online system to provide the management of the flow of materials,information, and funds across the entire objects of supply chain.
SCM system is the management of a network of interconnected business involved in the provision of product and service packages required by the end customers in a supply chain.SCM spans all the movement and storage of raw materials, work-in-process inventory, and finished goods from point of consumption.
THIS VEHICLE IS FITTED WITH A GPS TRACKING DEVICE LINKED AND MONITORED BY THE POLICE
Stick-N-Find
1:59 PM
30/08/2020


Java EE - http://localhost:8089/PB_Vech/home.html - Eclipse
File Edit Navigate Search Project Run Window Help
Tomcat v5.5 Server a
homepage.html
patientinfo.html
docterinfo.html
Drugdetails.html
home.html
projects.html
home.html
register page
http://localhost:8089/PB_Vech/register.html
WEL COME TO REGISTER PAGE
username
password
confirmpass
gender
EmailId
CompanyName
PinCode
register
Done
1:20 PM
31/03/2020


Java EE - http://localhost:8089/PB_Vech/home.html - Eclipse
File Edit Navigate Search Project Run Window Help
Tomcat v5.5 Server a
homepage.html
patientinfo.html
docterinfo.html
Drugdetails.html
home.html
projects.html
home.html
distributor
http://localhost:8089/PB_Vech/RetrievDistributor.jsp
DISTRIBUTOR INFORMATION RETRIVAL
dist.id
name
contno
branch name
place
emailid
off.no
services
desc
HOME
Done
1:20 PM
31/03/2020


Java EE - http://localhost:8089/PB_Vech/home.html - Eclipse
File Edit Navigate Search Project Run Window Help
Tomcat v5.5 Server a
homepage.html
patientinfo.html
docterinfo.html
Drugdetails.html
home.html
projects.html
home.html
Insert title here
http://localhost:8089/PB_Vech/Admin.html
ADMIN WEB CONTROLL
product
distributor
manufacturer
retailer
COMPLAINTS
HOME
Vehicle reservation System - Microsoft Word
Done
1:21 PM
31/03/2020


Java EE - http://localhost:8089/PB_Vech/home.html - Eclipse
File Edit Navigate Search Project Run Window Help
Tomcat v5.5 Server a
homepage.html
patientinfo.html
docterinfo.html
Drugdetails.html
home.html
projects.html
home.html
distributor
http://localhost:8089/PB_Vech/Distributor.html
WEL COME TO DISTRIBUTORS INFORMATION
HOME
distributorid
name
contNo
branchname
place
emailid
officeNo
Done
1:21 PM
31/03/2020


Java EE - http://localhost:8089/PB_Vech/home.html - Eclipse
File Edit Navigate Search Project Run Window Help
Tomcat v5.5 Server a
homepage.html
patientinfo.html
docterinfo.html
Drugdetails.html
home.html
projects.html
home.html
Retailer
http://localhost:8089/PB_Vech/retailer.html
RETAILERS INFORMATION
HOME
retailerId
name
address
ContNo
Timing
Special Offer
Description
Done
1:21 PM
31/03/2020

SYSTEM TESTING & IMPLEMENTATIONS

UNIT TESTING

The procedure level testing is made first. By giving improper inputs, the errors occurred are noted and eliminated. Then the web form level testing is made. For example, storage of data to the table in the correct manner.

In the company as well as seeker registration form, the zero-length username and password are given and checked. Also, the duplicate username is given and checked. In the job and question entry, the button will send data to the server only if the client-side validations are made.

The dates are entered in wrong manner and checked. Wrong email-id and web site URL (Universal Resource Locator) is given and checked.

INTEGRATION TESTING:

Testing is done for each module. After testing all the modules, the modules are integrated and testing of the final system is done with the test data, specially designed to show that the system will operate successfully in all its aspects conditions. Thus the system testing is a confirmation that all is correct and an opportunity to show the user that the system works.

VALIDATION TESTING:

The final step involves Validation testing, which determines whether the software function as the user expected. The end-user rather than the system developer conduct this

test most software developers as a process called “Alpha and Beta Testing” to uncover that only the end user seems able to find.

The compilation of the entire project is based on the full satisfaction of the end users. In the project, validation testing is made in various forms. In question entry form, the correct answer only will be accepted in the answer box. The answers other than the four given choices will not be accepted.

MAINTENANCE:

The objectives of this maintenance work are to make sure that the system gets into work all time without any bug. Provision must be for environmental changes which may affect the computer or software system. This is called the maintenance of the system. Nowadays there is the rapid change in the software world. Due to this rapid change, the system should be capable of adapting these changes. In our project the process can be added without affecting other parts of the system.

Maintenance plays a vital role. The system liable to accept any modification after its implementation. This system has been designed to favor all new changes. Doing this will not affect the system’s performance or its accuracy.

In the project system testing is made as follows:

The procedure level testing is made first. By giving improper inputs, the errors occurred are noted and eliminated. Then the web form level testing is made. For example, storage of data to the table in the correct manner.

In the form, the zero-length username and password are given and checked. Also, the duplicate username is given and checked. The client-side validations are made.

The dates are entered in wrong manner and checked. Wrong email-id is given and checked.

This is the final step in system life cycle. Here we implement the tested error-free system into real-life environment and make necessary changes, which runs in

an online fashion. Here system maintenance is done every month or year based on company policies, and is checked for errors like runtime errors, long run errors and other maintenances like table verification and reports.

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus, it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective.

The implementation stage involves careful planning, investigation of the existing system and its constraints on implementation, designing of methods to achieve changeover and evaluation of changeover methods.

Implementation is the process of converting a new system design into operation. It is the phase that focuses on user training, site preparation and file conversion for installing a candidate system. The important factor that should be considered here is that the conversion should not disrupt the functioning of the organization.

The application is implemented in the Internet Information Services 5.0 web server under the Windows 2000 Professional and accessed from various clients.

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test.[1] Software testing also provides an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. Test techniques include, but are not limited to, the process of executing a program or application with the intent of finding software bugs (errors or other defects).

Software testing can also be stated as the process of validating and verifying that a software program/application/product:

1. meets the business and technical requirements that guided its design and development;
2. works as expected; and
3. can be implemented with the same characteristics.

Software testing, depending on the testing method employed, can be implemented at any time in the development process. However, most of the test effort occurs after the

requirements have been defined and the coding process has been completed. As such, the methodology of the test is governed by the software development methodology adopted.

Different software development models will focus the test effort at different points in the development process. Newer development models, such as Agile, often employ test driven development and place an increased portion of the testing in the hands of the developer, before it reaches a formal team of testers. In a more traditional model, most of the test execution occurs after the requirements have been defined and the coding process has been completed.

White box testing is when the tester has access to the internal data structures and algorithms including the code that implement these.

Types of white box testing

The following types of white box testing exist:

- API testing (application programming interface) - testing of the application using public and private APIs
- Code coverage - creating tests to satisfy some criteria of code coverage (e.g., the test designer can create tests to cause all statements in the program to be executed at least once)
- Fault injection methods - improving the coverage of a test by introducing faults to test code paths
- Mutation testing methods
- Static testing - White box testing includes all static testing

Test coverage

White box testing methods can also be used to evaluate the completeness of a test suite that was created with black box testing methods. This allows the software team to examine parts of a system that are rarely tested and ensures that the most important function points have been tested.[21]

Two common forms of code coverage are:

- Function coverage, which reports on functions executed

- Statement coverage, which reports on the number of lines executed to complete the test

They both return a code coverage metric, measured as a percentage.

[edit]**Black box testing**

Main article: Black box testing

Black box testing treats the software as a "black box"—without any knowledge of internal implementation. Black box testing methods include: equivalence partitioning, boundary value analysis, all-pairs testing, fuzz testing, model-based testing, exploratory testing and specification-based testing.

Specification-based testing: Specification-based testing aims to test the functionality of software according to the applicable requirements.[22] Thus, the tester inputs data into, and only sees the output from, the test object. This level of testing usually requires thorough test cases to be provided to the tester, who then can simply verify that for a given input, the output value (or behavior), either "is" or "is not" the same as the expected value specified in the test case.

Specification-based testing is necessary, but it is insufficient to guard against certain risks.[23]

Advantages and disadvantages: The black box tester has no "bonds" with the code, and a tester's perception is very simple: a code must have bugs. Using the principle, "Ask and you shall receive," black box testers find bugs where programmers do not. On the other hand, black box testing has been said to be "like a walk in a dark labyrinth without a flashlight," because the tester doesn't know how the software being tested was actually constructed. As a result, there are situations when (1) a tester writes many test cases to check something that could have been tested by only one test case, and/or (2) some parts of the back-end are not tested at all.

CODE EFFICIENCY

MEASURES OF CODE EFFICIENCY

The code is designed with the following characteristics in mind.

Uniqueness: The code structure must ensure that only one value of the code with a single meaning is correctly applied to a give entity or attribute.

Expandability: The code structure are designed for in a way that it must allow for growth of it's set of entities or attributes, thus providing sufficient space for the entry of new items with in each classification.

Conciseness: The code requires the fewest possible number of positions to include and define each item.

Uniform size and format: Uniform size and format is highly desirable in mechanized data processing system. The addition of prefixes and suffixes to the root code should not be allowed especially as it is incompatible with the uniqueness requirement.

Simplicity: The codes are designed in a simple manner to understand and simple to apply.

Versatility: The code allows modifying easily to reflect necessary changes in conditions, characteristics and relationship of the encoded entities. Such changes must result in a corresponding change in the code or coding structure.

Storability: Reports are most valuable for user efficiency when sorted and presented in a predetermined format or order. Although data must be sorted and collaged, the representative code for the date does not need to be in a sortable form if it can be correlated with another code that is sortable.

Stability: Codes that do not require to be frequently updated also promote use efficiency. Individual code assignments for a given entity should be made with a minimal likelihood of change either in the specific code or in the entire coding structure.

Meaningfulness: Code is meaningful. Code value should reflect the characteristics of the coded entities, such as mnemonic features unless such a procedure results in inconsistency and inflexibility.

CONCLUSION

The system provides an easy way of providing the reservation of bikes. Here if you want to buy the bike from some show room, then you can easily reserve the bike online without going to the show room.

Users access a booking page on the company intranet and place a "booking request". This is reviewed by the Fleet Manager, and at that time the request may be granted or denied, using the system's recommendation. If a booking is placed, the user is emailed with the confirmed details, and the VBS automatically records the vehicle booking.

A computer reservations system (CRS) is a computerized system used to store and retrieve information and conduct transactions related to air travel. Originally designed and operated by airlines, CRSes were later extended for the use of travel agencies. Major CRS operations that book and sell tickets for multiple airlines are known as **global distribution systems (GDS)**. Airlines have divested most of their direct holdings to dedicated GDS companies, who make their systems accessible to consumers through Internet gateways. Modern GDSes typically allow users to book hotel rooms and rental cars as well as airline tickets. They also provide access to railway reservations in some markets although these are not always integrated with the main system.

REFERENCES

References for the Project Development were taken from the following Books and Web Sites.

1. **JAVA Complete reference**
2. **Java Script Programming** by Yehuda Shiran
3. **Mastering JAVA Security**
4. **Java2 Networking** by pistoria
5. **JAVA Security** by Scotloaks
6. **J2EE Professional** by Shadab Siddiqui
7. **JAVA server pages** by Larne Pekowsley
8. **JAVA Server pages** by Nick Todd
9. **HTML Black Book** by Holzner
10. **Java Database Programming with JDBC** by Patel moss
11. **Software Engineering** by Roger Pressman