INDEX

		Name of the Activity/Experiment	Grade/ Marks	Faculty Signature

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Vision

To acknowledge quality education and instill high patterns of discipline making the students technologically superior and ethically strong which involves the improvement in the quality of life in human race.

Mission

To achieve and impart holistic technical education using the best of infrastructure, outstanding technical and teaching expertise to establish the students into competent and confident engineers.

Evolving the center of excellence through creative and innovative teaching learning practices for promoting academic achievement to produce internationally accepted competitive and world class professionals.

Quality Policy

To pursue continual improvement of teaching learning process of Undergraduate and Post Graduate programs in Engineering & Management vigorously.

To provide state of art infrastructure and expertise to impart the quality education.

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
Maisammaguda, Dhulapally Post, Via Hakimpet, Secunderabad – 500100

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1 – ANALYTICAL SKILLS :

To facilitate the graduates with the ability to visualize, gather information, articulate, analyze, solve complex problems, and make decisions. These are essential to address the challenges of complex and computation intensive problems increasing their productivity**.**

PEO2 – TECHNICAL SKILLS :

To facilitate the graduates with the technical skills that prepare them for immediate employment and pursue certification providing a deeper understanding of the technology in advanced areas of computer science and related fields, thus encouraging to pursue higher education and research based on their interest.

PEO3 – SOFT SKILLS :

To facilitate the graduates with the soft skills that include fulfilling the mission, setting goals, showing self-confidence by communicating effectively, having a positive attitude, get involved in team-work, being a leader, managing their career and their life.

PEO4 – PROFESSIONAL ETHICS:

To facilitate the graduates with the knowledge of professional and ethical responsibilities by paying attention to grooming, being conservative with style, following dress codes, safety codes, and adapting to technological advancements.

PROGRAM SPECIFIC OUTCOMES (PSOs)

1- Fundamentals and critical knowledge of the Computer System:- Able to Understand the working principles of the computer System and its components , Apply the knowledge to build, asses, and analyze the software and hardware aspects of it.

2- The comprehensive and Applicative knowledge of Software Development: Comprehensive skills of Programming Languages, Software process models, methodologies, and able to plan, develop, test, analyze, and manage the software and hardware intensive systems in heterogeneous platforms individually or working in teams.

3- Applications of Computing Domain & Research: Able to use the professional, managerial, interdisciplinary skill set, and domain specific tools in development processes, identify the research gaps, and provide innovative solutions to them.

PROGRAM OUTCOMES (PO)

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues andthe consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

GENERAL LABORATORY INSTRUCTIONS

1. Students are advised to come to the laboratory at least 5 minutes before (to the starting time),those who come after 5 minutes will not be allowed into the lab.
2. Plan your task properly much before to the commencement, come prepared to the lab with thesynopsis / program/ experiment details.
3. Student should enter into the laboratory with:

a. Laboratory observation notes with all the details (Problem statement, Aim, Algorithm,Procedure, Program, Expected Output, etc.,) filled in for the lab session.
b. Laboratory Record updated up to the last session experiments and other utensils (if any) neededin the lab.
c. Proper Dress code and Identity card.
d. Sign in the laboratory login register, write the TIME-IN, and occupy the computer system allotted to you by the faculty.

4. Execute your task in the laboratory, and record the results / output in the lab observation note book, and get certified bythe concerned faculty.
5. All the students should be polite and cooperative with the laboratory staff, must maintain the discipline and decency in the laboratory.
6. Computer labs are established with sophisticated and high-end branded systems, which should be utilized properly.
7. Students / Faculty must keep their mobile phones in SWITCHED OFF mode during the lab sessions. Misuse of the equipment, misbehaviors with the staff and systems etc., will attract severe punishment.
8. Students must take the permission of the faculty in case of any urgency to go out; if anybody found loitering outside the lab / class without permission during working hours will be treated seriously and punished appropriately.
9. Students should LOG OFF/ SHUT DOWN the computer system before he/she leaves the lab after completing the task (experiment) in all aspects. He/she must ensure the system / seat is kept properly.

HEAD OF THE DEPARTMENT **PRINCIPAL**

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech.CSE- I Sem **L/T/P/C**
0/0/2/1

(R24A0585) SOFTWARE ENGINEERING LAB

List of Experiments

Prerequisites

1. A course on "Programming for Problem Solving"

Co-requisite

1. A Course on "Software Engineering"

COURSEOBJECTIVES:

1.Understand the principles and practices of software engineering through hands-on projects.

2. Apply software development life cycle (SDLC) models to real-world software projects.

3. Use tools and techniques for requirement gathering, design, implementation, testing, and documentation.

4. To enable students to learn and apply UML diagrams for modelling and designing software systems.

5. To learn how to develop test cases for systematically validating software requirements

Do the following 8 exercises for any two projects given in the list of sample projects or any other projects:

1) Development of problem statement.
2) Preparation of Software Requirement Specification Document, Design Documents and Testing Phase related documents.
3) Preparation of Software Configuration Management and Risk Management related documents.
4) Study and usage of any Design phase CASE tool.
5) Performing the Design by using any Design phase CASE tools.
6) Develop test cases for unit testing and integration testing.
7) Develop test cases for various white box and black box testing Techniques.

Sample Projects:

1. Passport automation System
2. Book Bank
3. Online Exam Registration
4. Stock Maintenance System
5. Online course reservation system
6. E-ticketing
7. Software Personnel Management System
8. Credit Card Processing
9. E-book management System.
10. Recruitment system

TEXTBOOKS:

1.Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition, Mc Graw Hill International Edition.

2.Software Engineering- Sommerville, 7th edition, PearsonEducation. Theunified modeling language userguide

3.Grady Booch, James Rambaugh, Ivar Jacobson, Pearson Education.

COURSE OUTCOMES:

1. Analyse and specify software requirements for a given problem.
2. Design software using UML and other modelling tools, adhering to software engineering principles.
3. Implement software components using modern development tools and practices.
4. Develop and execute test cases to validate software functionality and performance.
5. Use version control systems and collaboration platforms effectively during team-based software projects.
6. Prepare project reports and deliver effective presentations demonstrating project development processes and outcomes

TASK1: PASSPORT AUTOMATION SYSTEM

AIM: To create an automated system to perform the Passport Process

PROCEDURE:

I) PROBLEM STATEMENT

Passport Automation System is used in the effective dispatch of passport to all of the applicants. This system adopts a comprehensive approach to minimize the manual work and schedule resources, time in a cogent manner. The core of the system is to get the online registration form (with details such as name, address etc.,) filled by the applicant whose testament is verified for its genuineness by the Passport Automation System with respect to the already existing information in the database. This forms the first and foremost step in the processing of passport application. After the first round of verification done by the system, the information is in turn forwarded to the regional administrator's (Ministry of External Affairs) office. The application is then processed manually based on the report given by the system, and any forfeiting identified can make the applicant liable to penalty as per the law. The system also provides the applicant the list of available dates for appointment to 'document verification' in the administrator's office, from which they can select one. The system forwards the necessary details to the police for its separate verification whose report is then presented to the administrator. The administrator will be provided with an option to display the current status of application to the applicant, which they can view in theironline interface. After all the necessary criteria have been met, the original information is added to the database

II) SOFTWARE REQUIREMENT SPECIFICATION:

Passport Automation System is an interface between the Applicant and the Authority responsible for the Issue of Passport. It aims at improving the efficiency in the Issue of Passport and reduces the complexities involved in it to the maximum possible extent.

PURPOSE

If the entire process of 'Issue of Passport' is done in a manual manner then it would takes several months for the passport to reach the applicant. Considering the fact that the number of applicants for passport is increasing every year, an Automated System becomes essential to meet the demand. So this system uses several programming and database techniques to elucidate the work involved in this process. As this is a matter of National Security, the system has been carefully verified and validated in order to satisfy it.

SCOPE

- The System provides an online interface to the user where they can fil in their personal details and submits then necessary documents (may be by scanning).
- The authority concerned with the issue of passport can use this system to reduce his workload and process the application in a speedy manner.
- Provide a communication platform between the applicant and the administrator.
- Transfer of data between the Passport Issuing Authority and the

Local Police for verification of applicant's information.

- Users/Applicants will come to know their status of application and the date in which they must subject themselves form annual document verification.

DEFINITIONS, ACRONYMS AND THEABBREVIATIONS

- **Administrator**

  Refers to the super user who is the Central Authority with the privilege to manage the entire system. It can be any higher official in the Regional Passport Office of Ministry of External Affairs.

- **Applicant**

  One who wishes to obtain the Passport.

- **PAS**

  Refers to this Passport Automation System.

- **HTML**

  Markup Language used for creating web pages.

- **J2EE**

  Java 2 Enterprise Edition is a programming platform java platform for developing and running distributed java applications.

- **HTTP**

  Hyper Text Transfer Protocol.

- **TCP/IP**

  Transmission Control Protocol/Internet Protocol is the communication protocol used to connect hosts on the Internet.

TECHNOLOGIESTO BEUSED

- HTML
- JSP
- JavaScript
- Java

TOOLSTOBEUSED

- Eclipse IDÉ(Integrated Development Environment)
- Rational Rose tool(for developing UML Patterns)

OVERVIEW

SRS includes two sections overall description and specific requirements

Overall Description will describe major role of the system components and inter-connections.

Specific Requirements will describe roles &functions of the actors.

OVERALL DESCRIPTION

PRODUCT PERSPECTIVE

The PAS acts as an interface between the 'applicant' and the 'administrator'. This system tries to make the interface as simple as possible and at the same time not risking the security of data stored in. This minimizes the time duration in which the user receives the passport.

SOFTWARE INTERFACE

- **Front End Client** –The applicant and Administrator online Interface is built using JSP and HTML. The Administrator's local interface is built using Java.
- **Web Server** – Apache Tomcat application server (Oracle Corporation).
- **Back End** –Oracle11gdatabase.

HARDWARE INTERFACE

The server is directly connected to the client systems. The client systems have access to the database in the server.

SYSTEM FUNCTIONS

- Secure Registration of information by the Applicants.
- Schedule the applicants an appointment for manual verification of original documents.
- Panel for Passport Application Status Display by the Administrator.
- SMS and Mail updates to the applicants by the administrator.
- Administrator can generate reports from the information and is the only authorized personnel to add the eligible application information to the database.

USER CHARACTERISTICS

- **Applicant**

  These are the person who desires to obtain the passport and submit the information to the database.

- **Administrator**

  He has the certain privileges to add the passport status and to approve the issue of passport. He may contain a group of persons under him to verify the documents and give suggestion whether or not to approve the dispatch of passport.

- **Police**

  He is the person who upon receiving intimation from the PAS, perform a personal verification of the applicant and see if he has any criminal case against him before or at present. He has been vetoed with the power to decline an application by suggesting it to the Administrator if he finds any discrepancy with the applicant. He communicates via this PAS.

CONSTRAINTS

- The applicants require a computer to submit their information.
- Although the security is given high importance, there is always a chance of intrusion in the web world which requires constant monitoring.
- The user has to be careful while submitting the information. Much care is required.

ASSUMPTIONS AND DEPENDENCIES

- The Applicant sand Administrator must have basic knowledge of computers and English Language.
- The applicants may be required to scan the documents and send.

(III) USECASE DIAGRAM:

The Passport Automation system use cases are:

1. Login
2. Registration
3. Verification
4. Check status
5. Enquiry
6. Dispatch Passport

ACTORS INVOLVED:

1. Applicant
2. Passport Officer
3. Police

USE-CASENAME: LOGIN

The applicant log into the system to obtain a passport

USE-CASENAME: REGISTRATION

The Applicant enters his name and details for applying a Passport. The applicant initially give his/ her details for registration.

USE-CASENAME: VERIFICATION

The system verifies the applicant mandatory information given by him/her.

USE-CASENAME: CHECKS TATUS

The Applicant tries to check the status in which category applied. The system displays the message to the applicant.

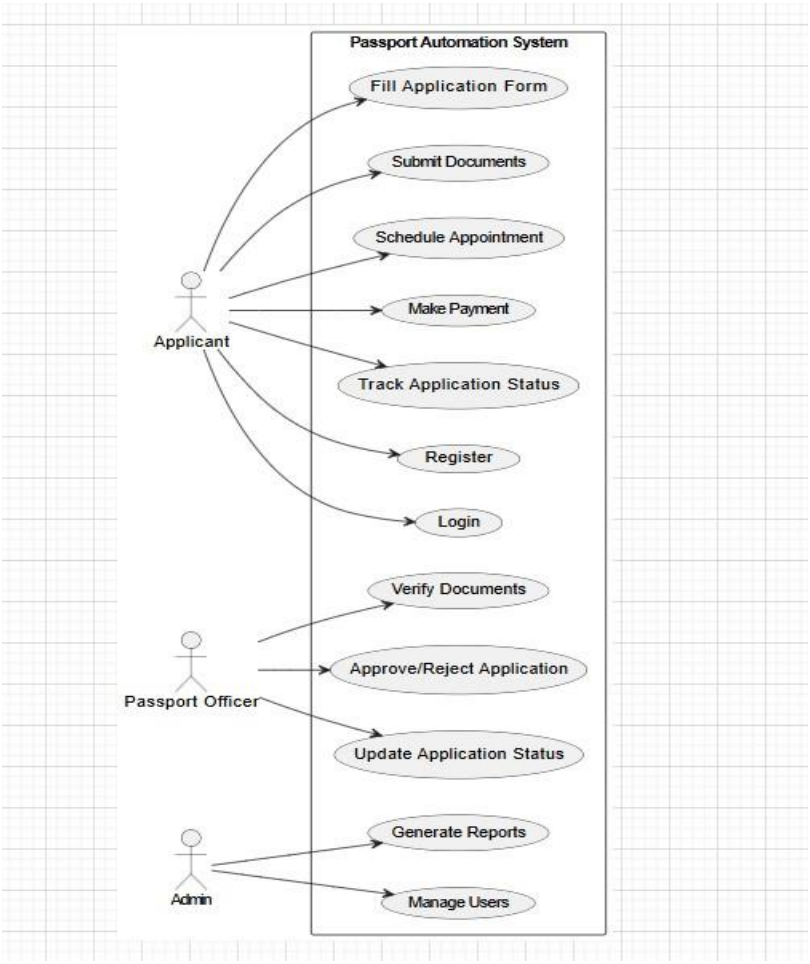
USE-CASENAME: ENQUIRY

The police receive intimation from the PAS, perform a personal verification of the applicant and see if he has any criminal case against him before or at present. He has been vetoed with the power to decline an application bysuggestingittotheAdministratorifhefindsanydiscrepancywiththeapplicant.H ecommunicates via this PAS.

USE-CASENAME: DISPATCH PASSPORT

The administrator check or process the application which are submitted by applicant .Process the application means the data which are given by the applicant is processed to create a passport for the applicant and finally dispatches the passport to the applicant

Fig.1.USECASEDIAGRAMFORPASSPORTAUTOMATIONSYSTEM



ACTIVITY DIAGRAM:

The activity diagram represents the series of activities that are occurring between the objects. Following is activity diagram which represents the Software personnel management system process.

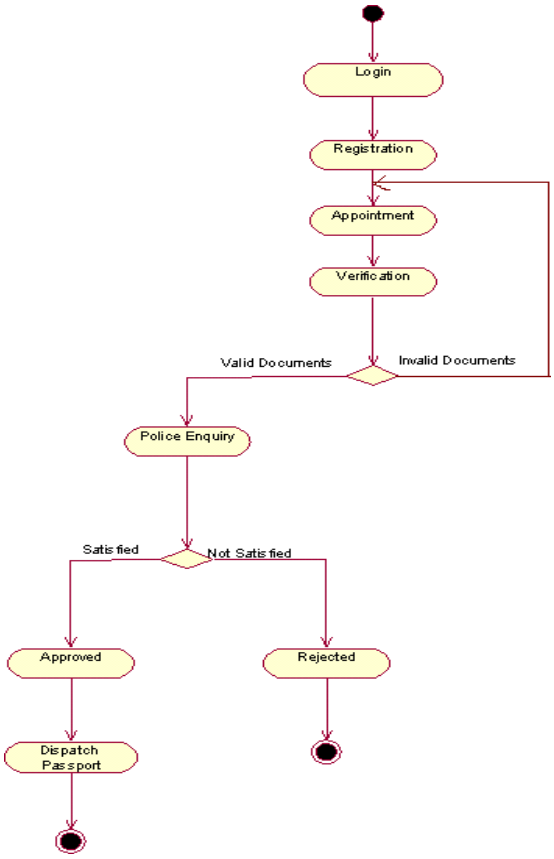


Fig.2.ACTIVITY DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

CLASSDIAGRAM:

The class diagram is referred as object modeling in the static analysis diagram. The main task of object modeling is to graphically show what each object will do in the problem domain. The problem domain describes the structure and the relationships among objects.

The Passport Automation system class diagram consists of five classes

1. Login class
2. Appointment class
3. Registration class
4. Authority class
5. Verification class

1) LOGINCLASS:

It consists of two attributes and two operations. The attributes are user name, and password. The operations of this class are creating login ( ),sign in ( ).

2) APPOINMENT CLASS:

The attributes of this class are appointment id,applicant id,date, time, and description. The operation of this class are get appointment ( ), get appointment status ( ), Modify (), cancel ().

3) REGISTRATION CLASS:

The attributes are applicant id, name, dob, gender, birthplace, fathername,addr1,addr2,district,state,country,pincode,mobile,emailid,qualification. The operation areadd( ), modify( ),view().

4) AUTHORITYCLASS:

The attributes of this class are officered, name, designation, and password. The operations are search ( ).

5) VERIFICATIONCLASS:

The attributes of this class are verification id, appointment id,applicant id, officer id, status id, description. The operation are verify().

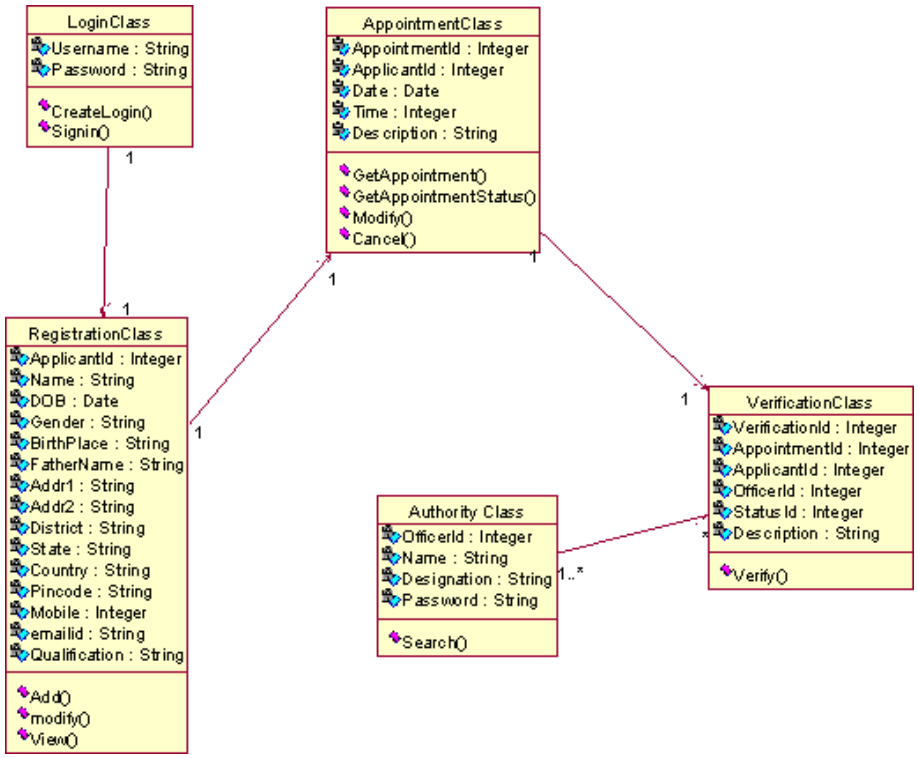


Fig.3.CLASS DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

SEQUENCE /INTERACTION DIAGRAM:

- A sequence diagram represents the sequence and interactions of a given USE-CASE or scenario. Sequence diagrams can capture most of the information about the system.
- Most object to object interactions and operations are considered events and event s include signals , inputs, decisions, interrupts, transitions and actions to or from users or external devices.
- An event also is considered to be any action by an object that sends information.
- The event line represents a message sent from one object to another, in which the "form" object is requesting an operation be performed by the "to" object. The "to" object performs the operation using a method that the class contains.
- It is also represented by the order in which things occur and how the objects in the system send message to one another.
- The sequence diagram for each USE-CASE that exists when a user administrator, check status and new registration about passport automation system are given.

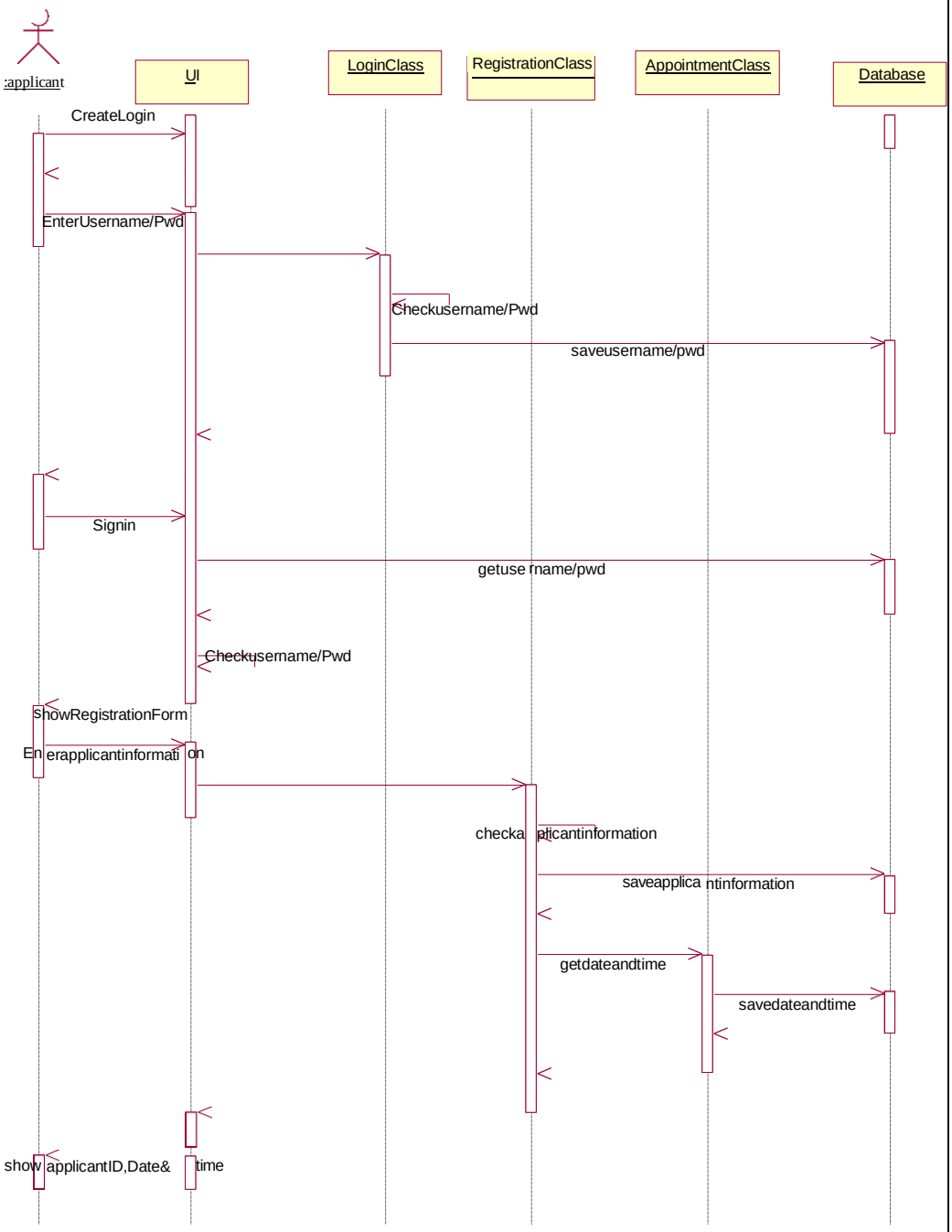


Fig.4.SEQUENCE DIAGRAM FOR LOGIN AND VERIFICATION

COLLABORATION DIAGRAM

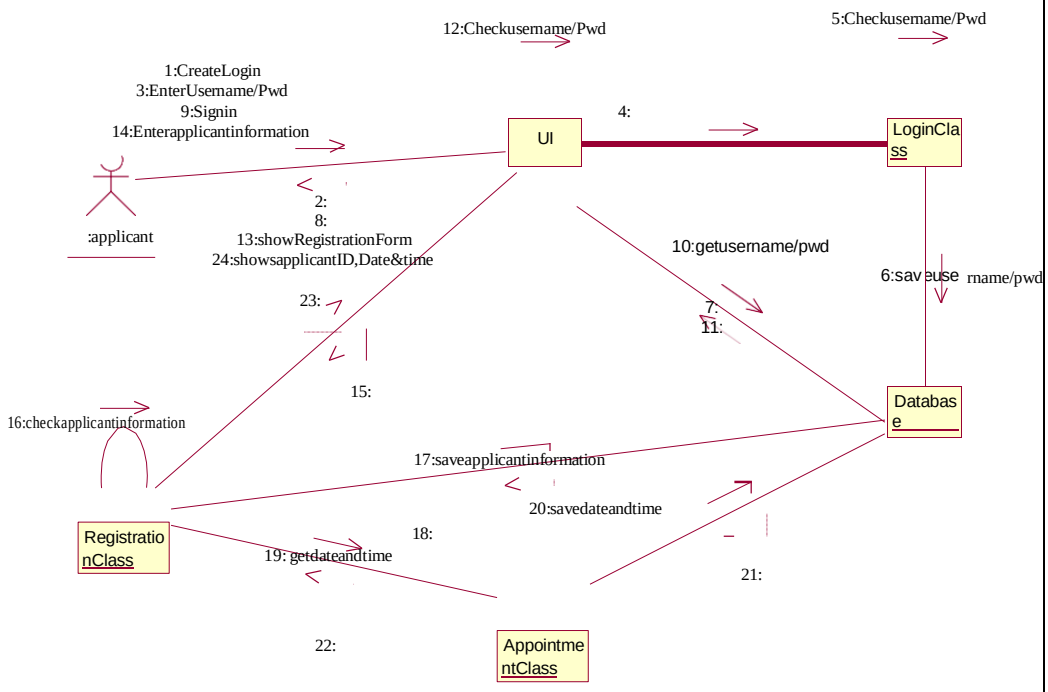


Fig.5. COLLABORATION DIAGRAM FOR LOGIN AND VERIFICATION

- The diagrams show the process done by the Passport Authority to the Passport Automation system. The applicant this to enter his details.
- The details entered are verified by the Passport Authority and theapplicantisapprovedifthedetailsmatchthenthepassportisdispatch, otherwise an appropriate error message is displayed.

STATECHART DIAGRAM:

- Every object undergoes through some state and on receiving some event the state gets changed. This transition of the state can be represented by the state transition n diagram.

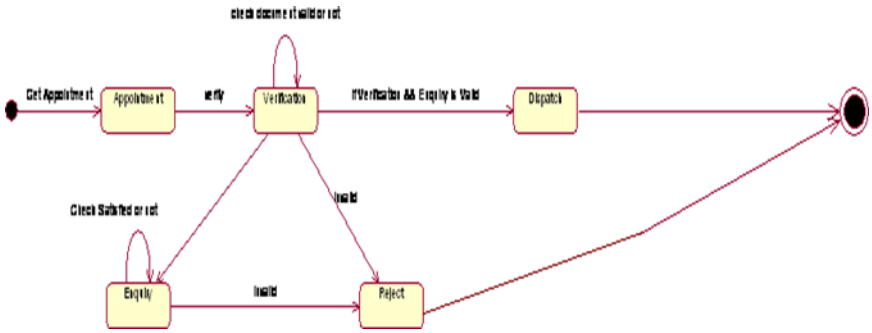


Fig.6.STATE CHART DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

DEPLOYMENT DIAGRAM

Deployment diagrams are used to visualize the topology of the physical components of a system where the software components are deployed.

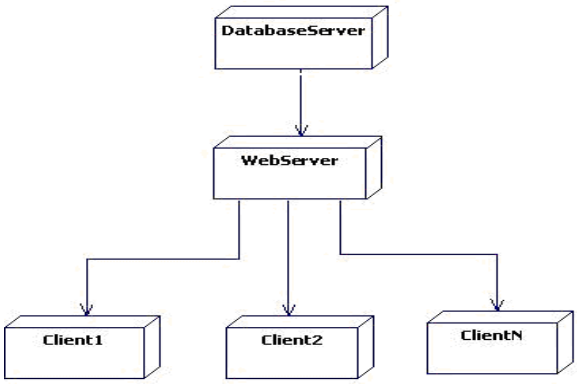


Fig.7.DEPLOYMENT DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

COMPONENT DIAGRAM

Component diagrams are used to visualize the organization and relationships among components in a system.

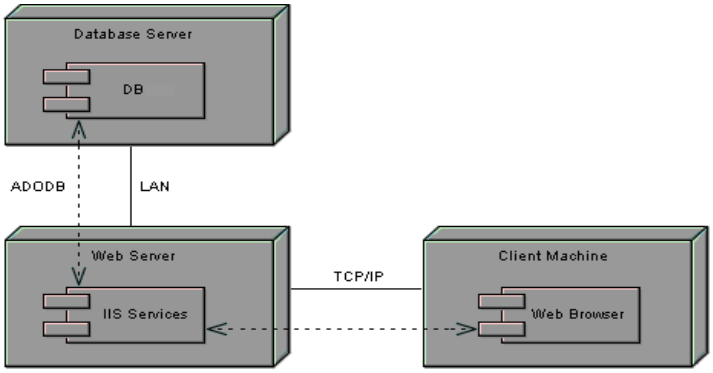


Fig.8.COMPONENT DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

TASK2: BOOK BANK SYSTEM

AIM: To create a system to perform book bank operation

(I) PROCEDURE:

PROBLEM STATEMENT

A Book Bank lends books and magazines to member, who is registered in the system. Also it handles the purchase of new titles for the Book Bank. Popular titles are brought into multiple copies. Old books and magazines are removed when they are out or date or poor in condition. A member can reserve a book or magazine that is not currently available in the book bank, so that when it is returned or purchased by the book bank, that person is notified. The book bank can easily create, replace and delete information about the tiles, members, loans and reservations from the system.

(II) SOFTWAREREQUIREMENTSSPECIFICATION:

INTRODUCTION

Book Bank is the interface between the students and Librarian. It aims at improving the efficiency in the Issue of books or magazines and reduces the complexities involved in it to the maximum possible extent.

PURPOSE

If the entire process of 'Issue of Books or Magazines' is done in a manual manner then it would take several months for the books or magazines to reach the applicant. Considering the fact that the number of students for Book Bank is increasing every year, an Automated System becomes essential to meet the demand. So this system uses several programming and database techniques to elucidate the work involved in this process.The system has been carefully verified and validated in order to satisfy it.

SCOPE

The System provides an online interface to the user where they can fill in their personal details and submit the necessary documents (may be by scanning). The authority concerned with the issue of books can use this system to reduce his workload and process the application in a speedy manner.

DEFINITIONS, ACRONYMS AND THE ABBREVIATIONS

- **Librarian** –Refers to the super user who is the Central Authority who has been vested with the privilege to manage the entire system.
- **Student**-One who wishes to obtain the Books or Magazines.
- **HTML** –Markup Language used for creating web pages.
- **J2EE**-Java2EnterpriseEdition is a programming platform and it is the part of the java platform for developing and running distributed java applications.
- **HTTP**-Hyper Text Transfer Protocol
- **TCP/IP -** Transmission Control Protocol/Internet Protocol is the communication protocol used to connect hosts on the Internet.

TECHNOLOGIES TO BE USED

Visual Basic
Oracle11g

TOOLS TO BE USED

Visual Basic Tools
Rational Rose tool (for developing UML Patterns)

OVERVIEW

SRS includes two sections overall description and specific requirements.

Overall description will describe major role of the system components and inter-connections.

Specific requirements will describe roles &functions of the actors.

OVERALL DESCRIPTION:

It will describe major role of the system components and inter-connections.

PRODUCT PERSPECTIVE

The SRS acts as an interface between the 'Students' and the' Librarian'. This system tries to make the interface as simple as possible and at the same time not risking the security of data stored in. This minimizes the time duration in which the user receives the books or magazines.

SOFTWARE INTERFACE

Front End Client - The Student and Librarian online interface is built using Visual studio.
BackEnd-Oracle11gdatabase

HARDWARE INTERFACE

The server is directly connected to the client systems. The client systems have access to the database in the server.

SYSTEM FUNCTIONS

- Secure Registration of information by the Students.
- Librarian can generate reports from the information and is the only authorized personnel to add the eligible application information to the database.

USER CHARACTERISTICS

- **Student** - They are the people who desire to obtain the books and submit the information to the database.
- **Librarian** –He has the certain privileges to add the books and to approval of the reservation of books.

CONSTRAINTS

- The Students require a computer to submit their information.
- Although the security is given high importance, there is always a chance of intrusion in the web world which requires constant monitoring.
- The Students has to be careful while submitting the information. Much care is required.

ASSUMPTIONS AND DEPENDENCIES

- The Student and Librarian must have basic knowledge of computers and English Language.
- The Students may be required to scan the documents and send.

TASK3: EXAM REGISTRATION SYSTEM

AIM: To create a system to perform the Exam Registration system

.

TASK4: STOCK MAINTENANCE

AIM: To create a system to perform the Stock maintenance

TASK5: ONLINE COURSE RESERVATION SYSTEM

AIM: To create a system through which students can register to the courses desired by them.

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TASK 6: E-TICKETING

AIM: To create an automated system to perform E-ticketing.

TASK7: SOFTWARE PERSONNEL MANAGEMENT SYSTEM

AIM: To implement software for software personnel management system

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TASK 8: CREDIT CARD PROCESSING

AIM: To create a system to perform the credit card processing

- .

Task 9: E-BOOK MANAGEMENT SYSTEM

AIM: To create a system to perform E-book Management System.

Task 10: RECRUITMENT SYSTEM

AIM: To create a system to perform Recruitment System.