EXPERIMENT- 1:

BOOK BANK SYSTEM.

1. 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 thesystem.

2. Preparation of Software Requirement Specification Document:

Users 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.

System Modules:

Log in: Secure registration of student and librarian by filling online registration form.

Book bank: Book bank contains all the books. New book added to the book bank with bookno, title name, author, edition, publisher name details to the database. Any book is deleted if damaged. Update of the book information also done.

Operations: student and administrator perform their operations like add book, delete book, update information, view book details are implemented in log in WebPages.

Non-functional requirements:

Privacy: privacy maintained for each and every user by providing user credentials username and password.

Portability: installation on multiple platforms and execution of software.

3.Preparation of Software Configuration Management

Software Requirements:

Operating sytem : windows 7/10

Front end : J2EE

Back end : My SQL Server

IDE used : Netbeans

Hardware Requirements:

Processor :i3 or higher

RAM : 4 GB

Hard Disk drive: 500 GB

4. Study and usage of any Design phase CASE tool

CASE Tool: STARUML

How to Install StarUML on Windows 10

Star UML is a UML (**Unified Modeling Language**) tool, introduce by MKLab. It is an open-source modeling tool that supports the UML framework for system and software modeling. StarUML is based on UML version 1.4, it provides 11 different types of diagram and it accepts UML 2.0 notation. Version 2.0 was released for beta testing under a property license.

StarUML is actively supporting the **MDA (Model Driven Architecture).** It approaches by supporting the UML profile concept and allowing it to generate code for multiple languages. It also provides a number of bug fixes and improved compatibility with the modern versions of the Windows Operating System.

StarUML is mostly used by the Agile and small development teams, professional persons and used by the educational institutes

Diagram Types in StarUML

1) Use Case Diagram
2) Class Diagram
3) Sequence Diagram
4) Collaboration Diagram
5) State chart Diagram
6) Component Diagram
7) Deployment Diagram
8) Composite Structure Diagram

Features of StarUML

1. It supports multi-platform such as macOS, Windows, and Linux.
2. It involves UML 2.x.standard compliant.
3. Includes Entity-Relationship diagram (ERD), Data-flow diagram (DFD), and Flowchart diagram.
4. It creates multiple windows.
5. It has modern UX and dark and light themes.
6. Featured with retina (High-DPI) display support.
7. Includes model-driven development.
8. It has open APIs.
9. Supports various third-party extensions.
10. Asynchronous model validation.
11. It can export to HTML docs.

Steps to Download and Install StarUML

Step 1: Go on the browser, type in the URL "StarUML"

Step 2: Click on the very first search "Download-StarUML".

Step 3: There will be 3 Operating Systems (OS) options, click on the option as per the devise OS.

Step 4: Now, right-click on the downloaded file, select "Show in Folder" option.

Step 5: Click on the open file, a popup window opens, click on the "Yes" button.

Step 6: Installation gets start. After installation popup opens to ask to buy a license. If you want to click on the "Buy Now" button or else close that window. StarUML is ready to use.

5. Performing the Design by using any Design phase CASE tools

CASE Tool: StarUML

Use_Case Diagram:

The book bank use cases are:

1. book_issue
2. book_return
3. book_order
4. book_entry
5. search book_details

Actors Involved:

1. Student
2. Librarian
3. Vendor

Usecase Name : Search Book_Details

The librarian initiates this use case when any member returns or request the book and checking if the book is available.

Precondition: The librarian should enter all Book details.

Normal Flow: Build message for librarian who search the book.

Post Condition: Send message to respective member who reserved the book.

Usecase Name : Book_ Issue

Initiated by librarian when any member wants to borrow the desired book. If the book is available, the book is issued.

Precondition: Member should be valid member of library.

Normal Flow: Selected book will be issued to the member.

Alternative Flow: If book is not available then reserved book use case should be initiate. **Post Condition:** Update the catalogue.

Usecase Name : Book_Order

Initiated by librarian when the requested book is not available in the library at that moment. The book is reserved for the future and issued to the person when it is available.

Precondition: Initiated only when book is not available.

Normal Flow: It reserved the book if requested.

Post Condition : Mention the entry in catalogue for reservation.

Usecase Name : Book_Return

Invoked by the librarian when a member returns the book.

Precondition: Member should be valid member of library.

Normal Flow: Librarian enters bookid and system checks for return date of the book. **Alternative Flow:** System checks for return date and if it returned late fine message will be displayed

Post Condition: Check the status of reservation.

Usecase Name : Book_Entry

The purchase book use-case when new books invoke it or magazines are added to the library.

Precondition: Not available or more copies are required.

Normal Flow: Enter bookid,author information, publication information, purchased date, prize and number of copies.

Post Condition: Update the information in catalogue.

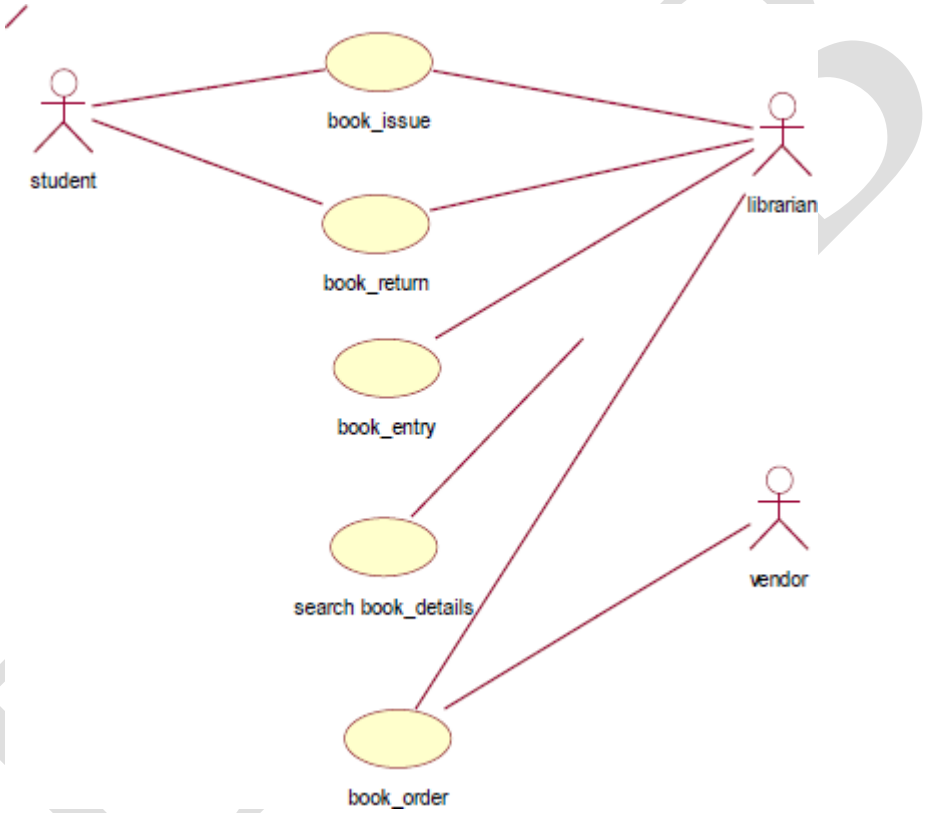


Figure 1. Usecase diagram for Book Bank System

Activity Diagram:

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified Modeling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control. An activity is shown as an rounded box containing the name of the operation.

This activity diagram describes the behaviour of the system.

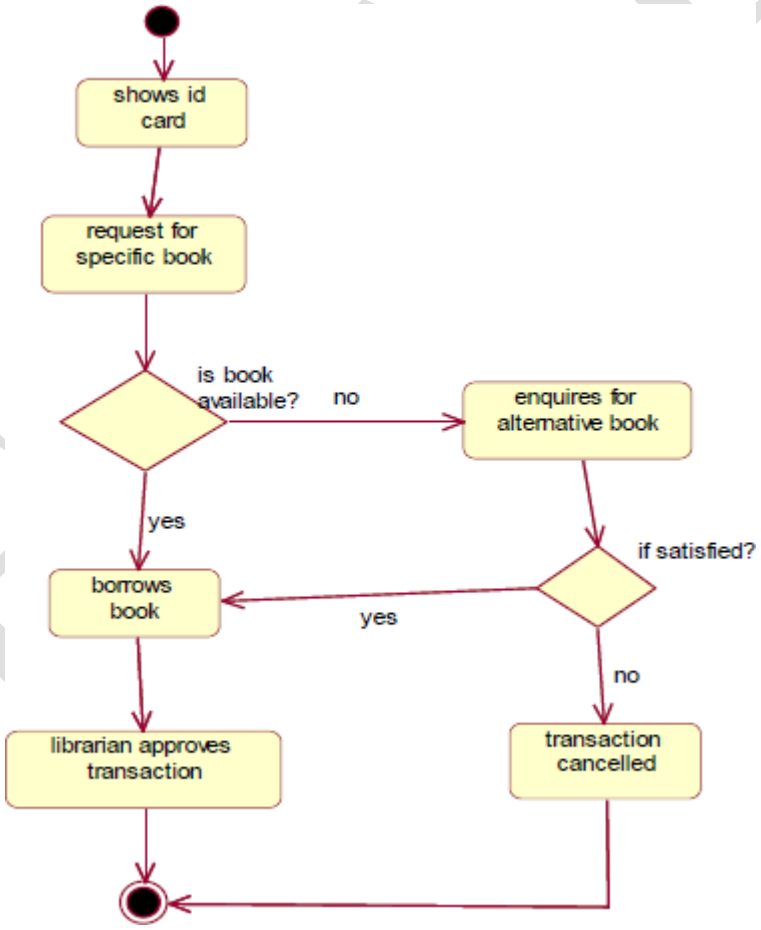


Figure 2. Activity Diagram for Book Bank System [borrow book]

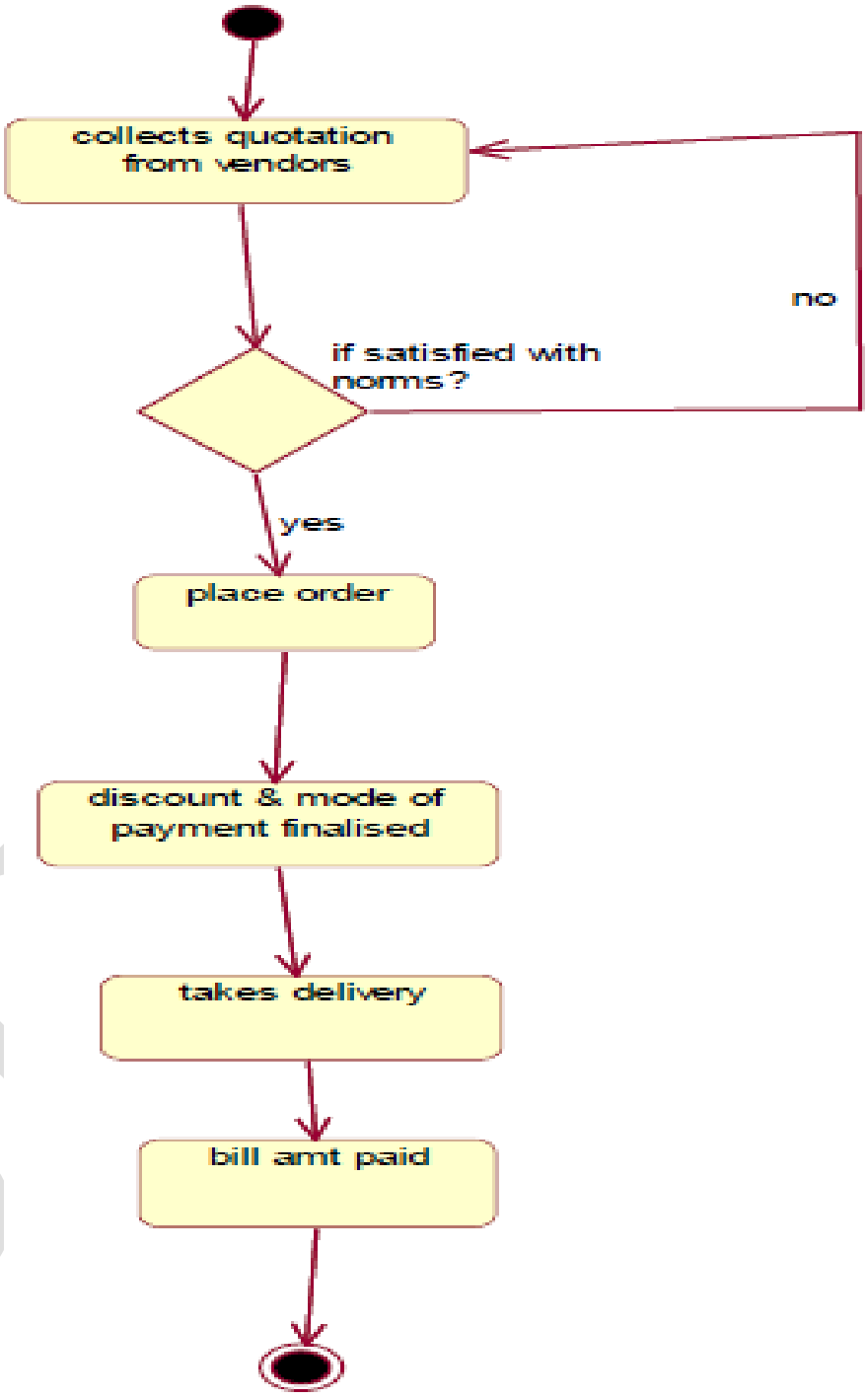


Figure 3. Activity Diagram for Book Bank System [order book]

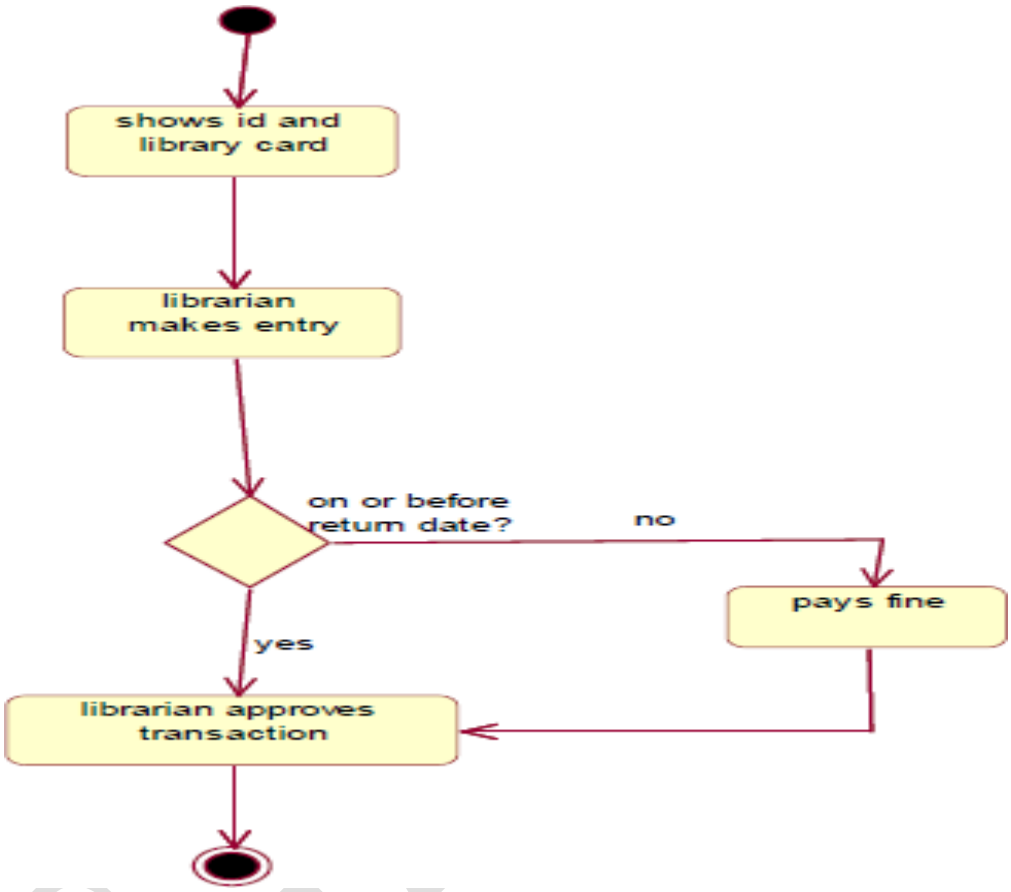


Figure 4. Activity Diagram for Book Bank System [Return book]

Sequence 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 events 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.

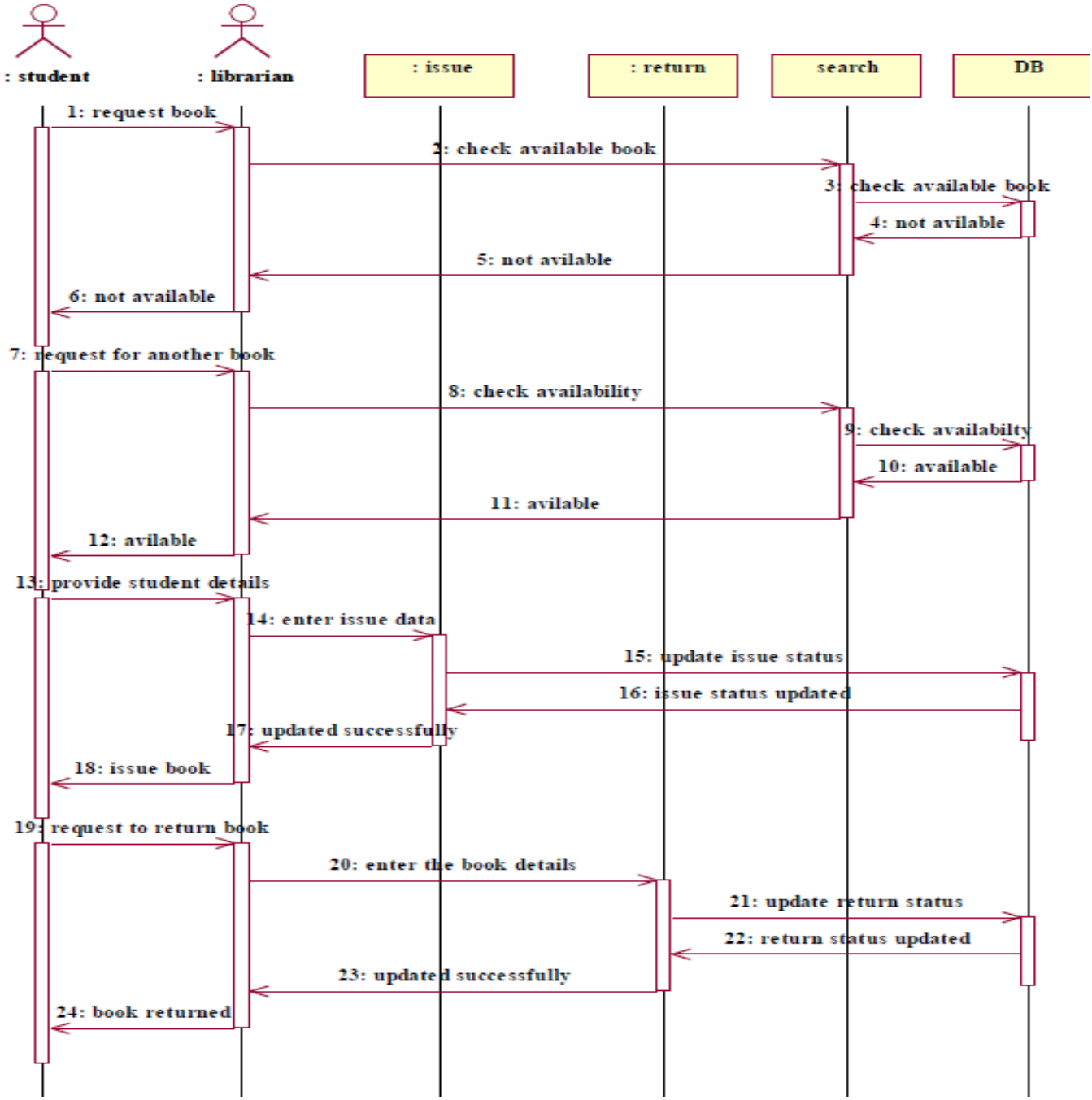


Figure 5. Sequence Diagram for Book Issue & Return

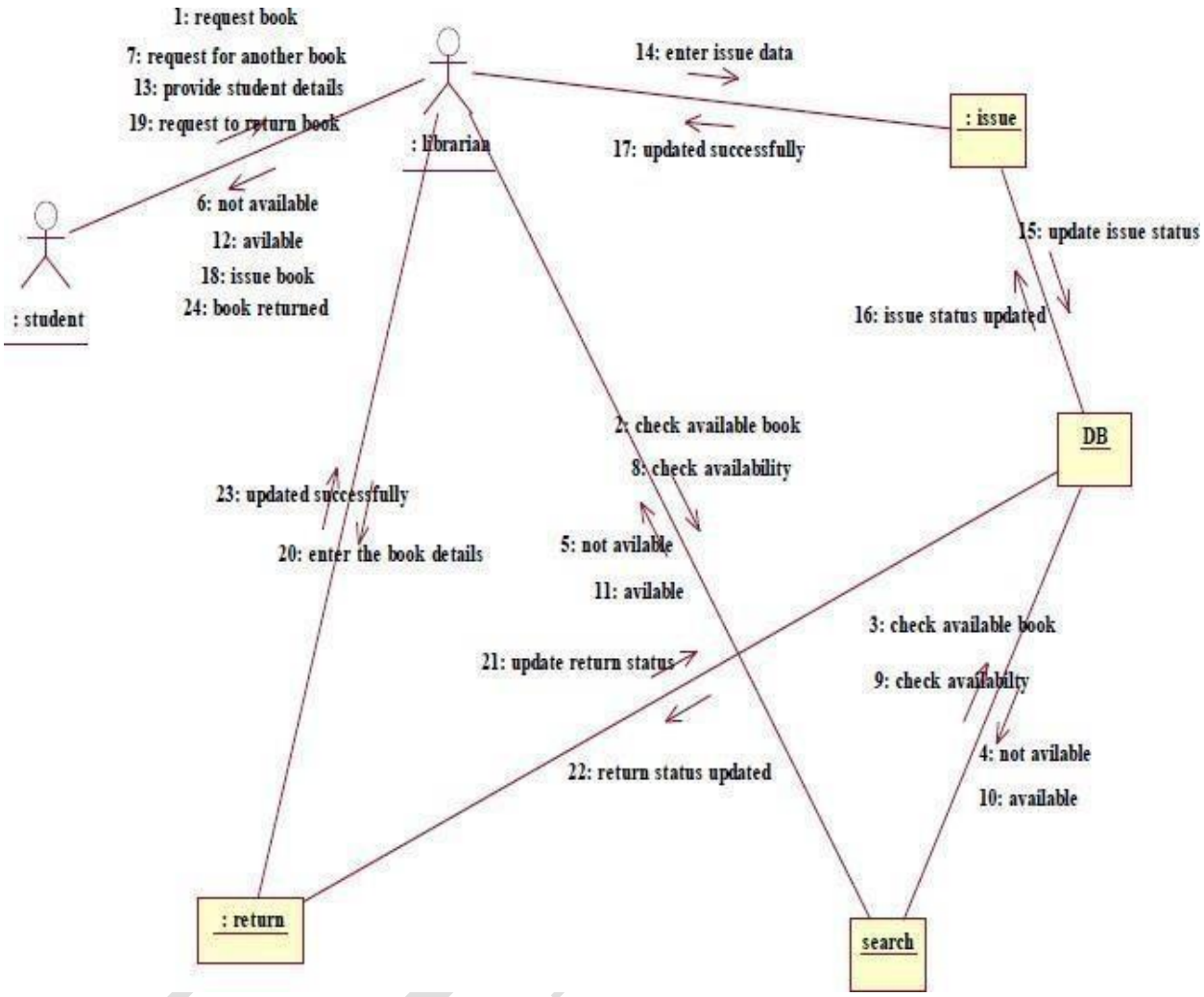


Figure 6. Collaboration Diagram for Book Issue & Return

Class Diagram:

The class diagram, also referred to as object modeling is the main 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 ATM system class diagram consists of four classes:

1. Student
2. Book
3. Issue
4. Return
5. Vendor
6. Details

1) Student:

It consists of twelve attributes and three operations. The attributes are enrollno, name, DOB, fathername, address, dept name, batch and book limits. The operations of this class are addStInfo(), deleteStInfo(), modifyStInfo().

2) Book:

It consists of ten attributes and four operations. This class is used to keep book information such as author, title, vendor, price, etc

3) Issue:

It consists of eight attributes and two operations to maintain issue details such as, issue date, accno of issued book, name of the student who borrowed book.

4) Return:

It consists of eight attributes and two operations to maintain issue details such as, issue date, accno of issued book, name of the student who borrowed book.

5) Students:

The attributes of this class are name, dept ,year ,bcode no The operation is display students().

6) Detail:

The attributes of this class are book name, author, bcode no The operations are delete details().

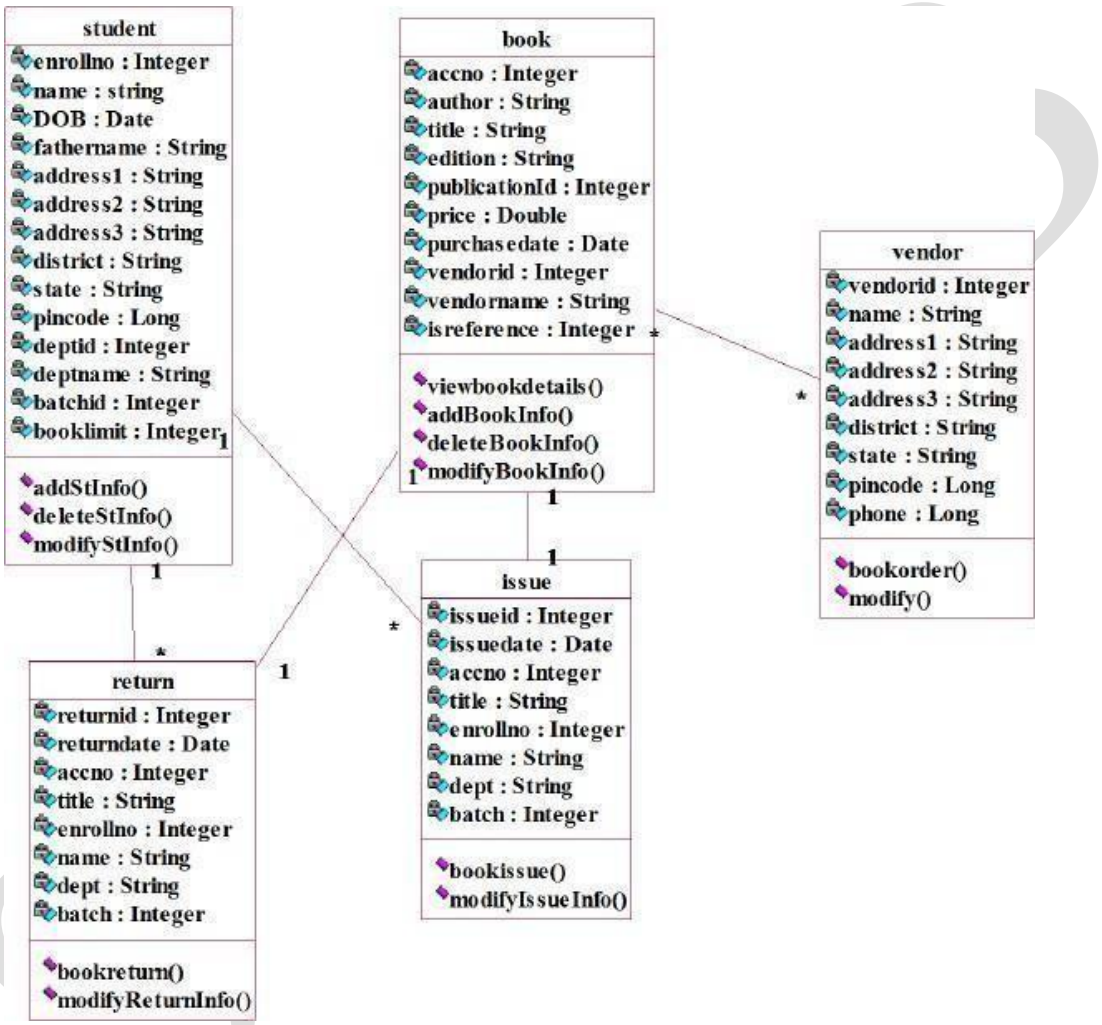


Figure 7. Class Diagram for Book Bank System

State Chart Diagram

It consists of state, events and activities. State diagrams are a familiar technique to describe the behavior of a system. They describe all of the possible states that a particular object can get into and how the object's state changes as a result of events that reach the object.

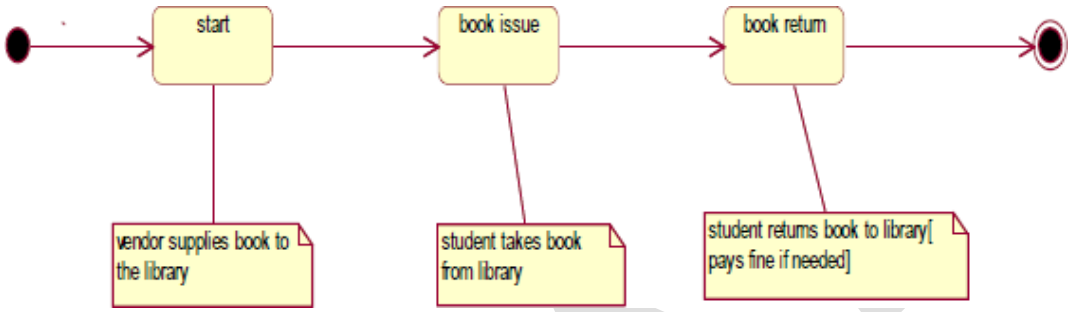


Figure 8. State Chart Diagram for Book Bank System

Deployment Diagram and Component Diagram

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

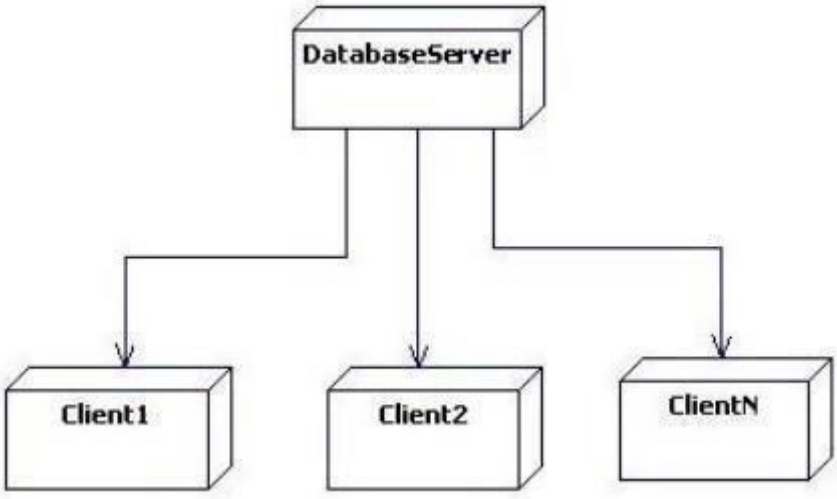


Figure 9: Deployment Diagram for Book Bank System

6. Develop test cases for unit testing and integration testing, &

7. Develop test cases for various white box and black box testing techniques.

LOGIN FORM:

SL.No	Test Case	Excepted Result	Test Result
1	Enter valid name and password & click on login button	Software should display main window	Successful
2	Enter invalid	Software should not display main window	successful

BOOK ENTRY FORM:

SL.No	Test Case	Excepted Result	Test Result
1	On the click of ADD button	At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering number instead of text..is found then it gives proper message otherwise Adds Record To the Database	successful
2.	On the Click of DELETE Button	This deletes the details of book by using Accession no.	Successful
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.	Successful
4.	On the Click of SEARCH Button	Displays the Details of book for entered Accession no. Otherwise gives proper Error message.	Successful
5.	On the Click of CLEAR Button	Clears all fields	Successful
6.	On the Click of EXIT button	Exit the current book details form	successful
7.	On the Click of NEXT button	Display the next form	successful

USER ACCOUNT FORM:

SL.No	Test Case	Excepted Result	Test Result
1	On the click of ADD button	At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering number instead of text..is found then it gives proper message otherwise Adds Record To the Database	successful
2.	On the Click of DELETE Button	This deletes the details of student by using Register no.	Successful
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.	Successful
4.	On the Click of SEARCH Button	Displays the Details of book for entered Register no. Otherwise gives proper Error message.	Successful
5.	On the Click of CLEAR Button	Clears all fields	Successful
6.	On the Click of EXIT button	Exit the current book details form	successful
7.	On the Click of NEXT button	Display the next form	successful

BOOK ISSUE FORM:

SL.No	Test Case	Excepted Result	Test Result
1	On the click of ADD button	At first user have to fill all fields with proper data ,if the accession number book is already issued then it will giving proper msg.	successful
2.	On the Click of DELETE Button	This deletes the details of book by using Register no.	Successful
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.	Successful
4.	On the Click of SEARCH Button	Displays the Details of issued book..Otherwise gives proper Error message.	Successful
5.	On the Click of CLEAR Button	Clears all fields	Successful
6.	On the Click of EXIT button	Exit the current book details form	successful
7.	On the Click of NEXT button	Display the next form	successful

BOOK RETURN FORM:

SL.No	Test Case	Excepted Result	Test Result
1	On the click of ADD button	At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering number instead of text..is found then it gives proper message otherwise Adds Record To the Database	successful
2.	On the Click of DELETE Button	Which deletes the details of book by using Register no.	Successful
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.	Successful

4.	On the Click of SEARCH Button	Displays the Details of returned book ... Otherwise gives proper Error message.	Successful
5.	On the Click of CLEAR Button	Clears all fields	Successful
6.	On the Click of EXIT button	Exit the current book details form	successful
7.	On the Click of NEXT button	Display the next form	successful
4.	On the Click of SEARCH Button	Displays the Details of returned book ... Otherwise gives proper Error message.	Successful
5.	On the Click of CLEAR Button	Clears all fields	Successful
6.	On the Click of EXIT button	Exit the current book details form	successful
7.	On the Click of NEXT button	Display the next form	successful

EXPERIMENT - 2:
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 applicationis 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 and the passport is sent to the applicant.

(II) SOFTWARE REQUIREMENT SPECIFICATION:

INTRODUCTION

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 fill in their personal details and submit the 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 for manual document verification.

DEFINITIONS, ACRONYMS AND THE ABBREVATIONS

- **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.

TECHNOLOGIES TO BE USED

- HTML
- JSP
- JavaScript
- Java

TOOLS TO BE USED

- Eclipse IDE (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** – Oracle11g database.

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 submitthe 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 theAdministrator if he finds any discrepancy with the applicant. Hecommunicates 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 Applicants and 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-CASE NAME: LOGIN

The applicant login to the system to obtain a passport

USE-CASE NAME: REGISTRATION

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

USE-CASE NAME: VERIFICATION

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

USE-CASE NAME: CHECK STATUS

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

USE-CASE NAME: 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 by suggesting it to the Administrator if he finds any discrepancy with the applicant. He communicates via this PAS.

USE-CASE NAME: 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

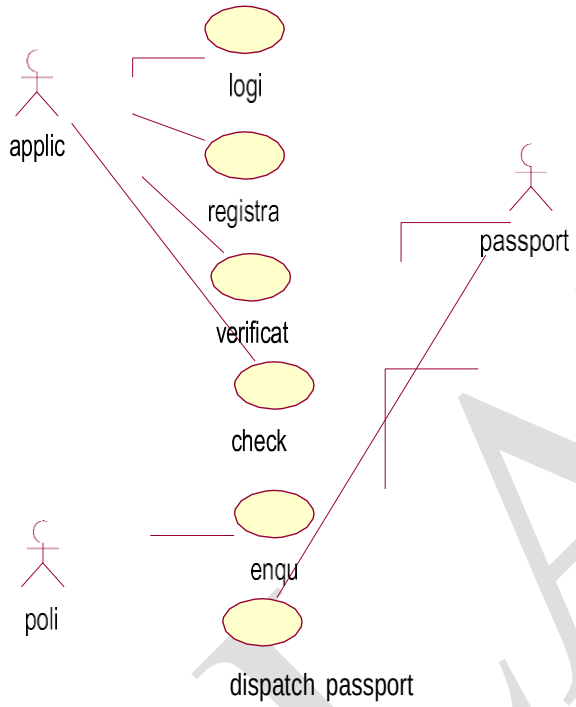


Fig.1. USECASE DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

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.

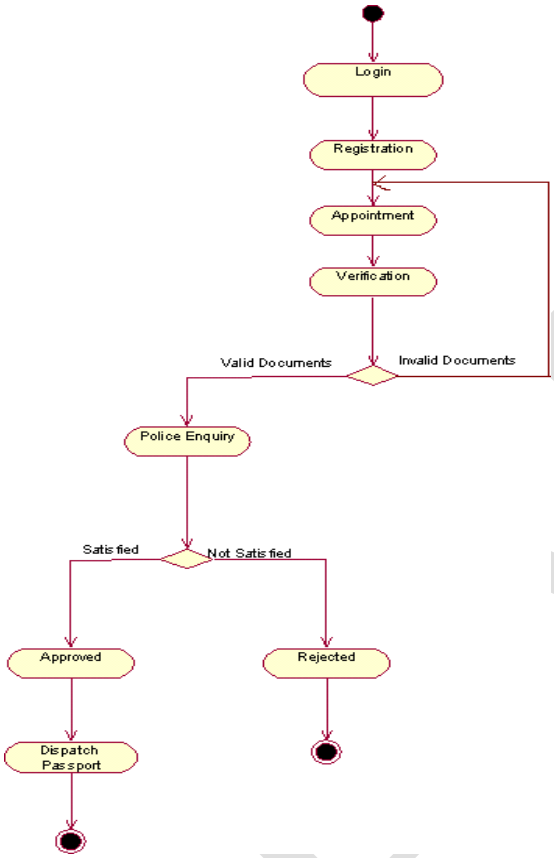


Fig.2. ACTIVITY DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

CLASS DIAGRAM:

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) LOGIN CLASS:

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, father name, addr1, addr2, district, state, country, pin code, mobile, email id, qualification. The operation are add ( ), modify( ), view( ).

4) AUTHORITY CLASS:

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

5) VERIFICATION CLASS:

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

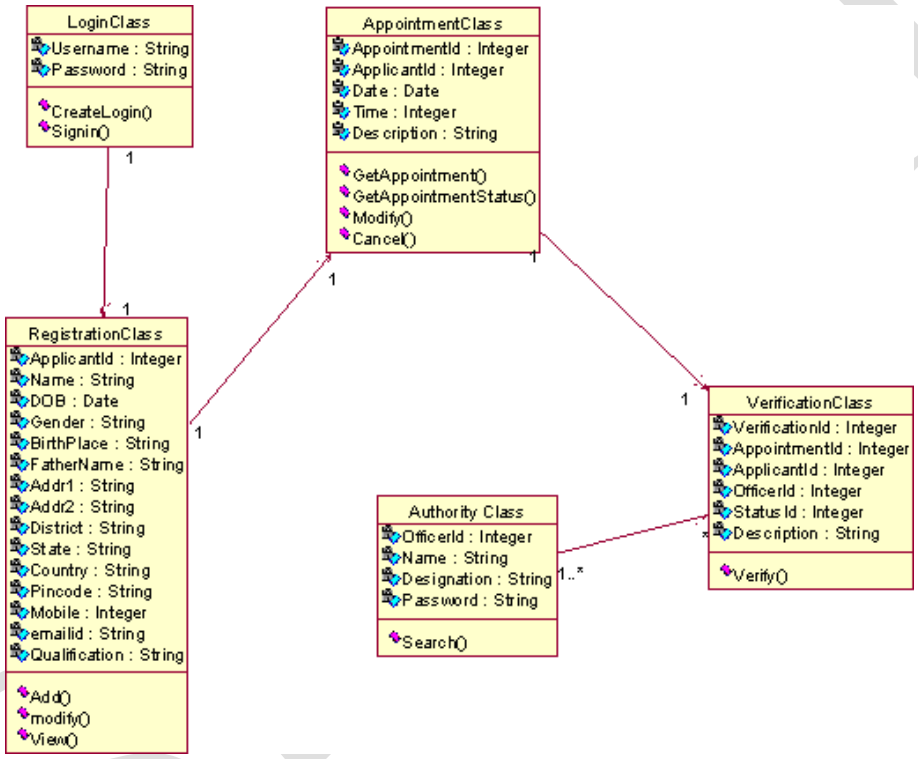


Fig.3.CLASS DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

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 events 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

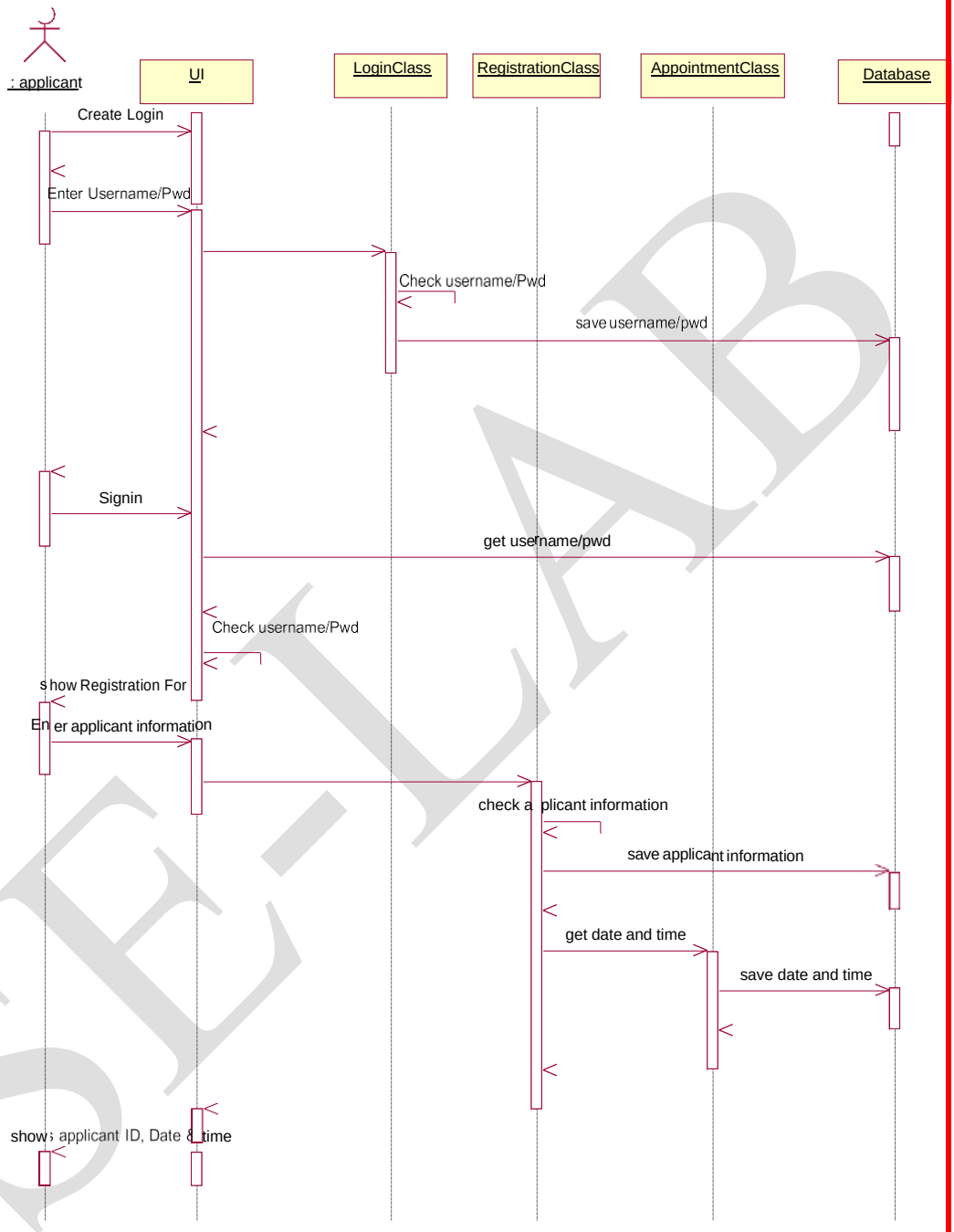


Fig.4.SEQUENCE DIAGRAM FOR LOGIN AND VERIFICATION

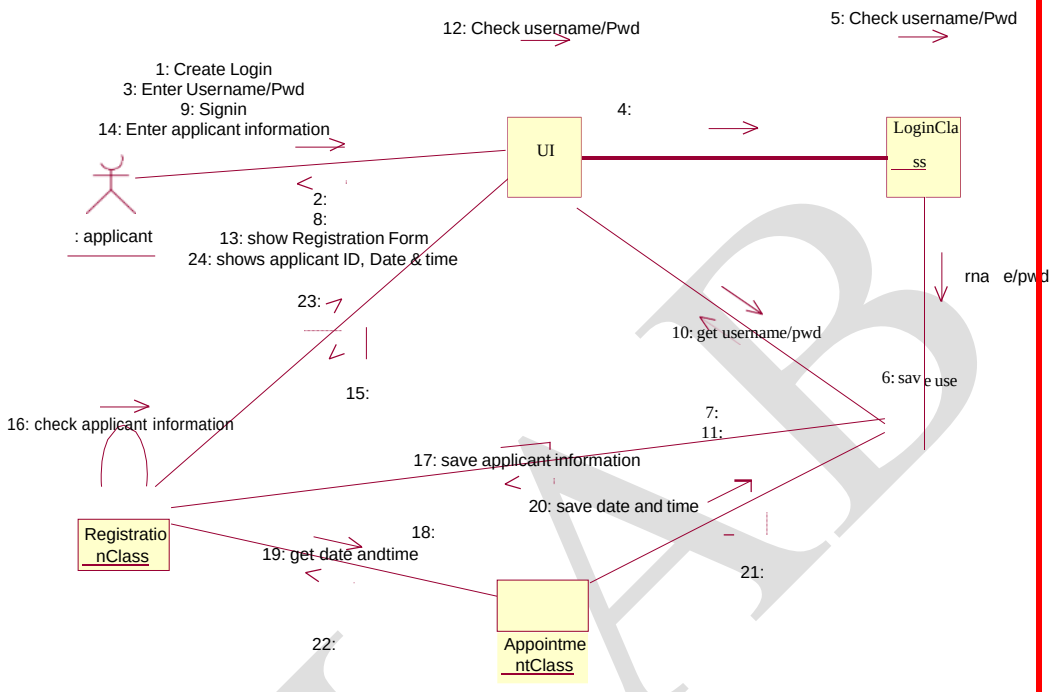


Fig.5.COLLABORATION DIAGRAM FOR LOGIN AND VERIFICATION

- The diagrams show the process done by the Passport Authority to the Passport Automation system. The applicant has to enter his details.
- The details entered are verified by the Passport Authority and the applicant is approved if the details match then the passport is dispatch, otherwise an appropriate error message is displayed.

STATE CHART 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 diagram.

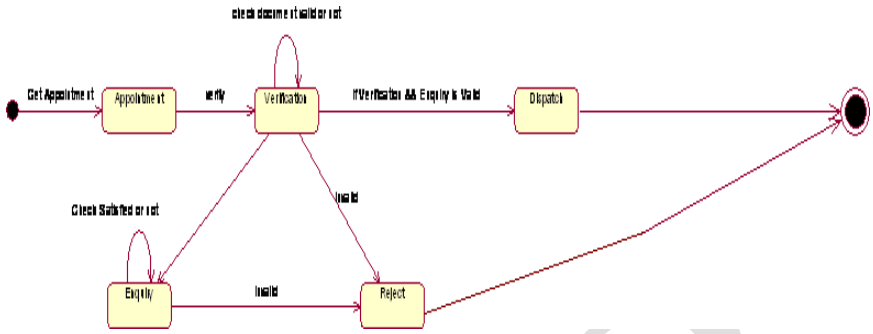


Fig.6.STATE CHART DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

DEPLOYMENT DIAGRAM AND COMPONENT DIAGRAM

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

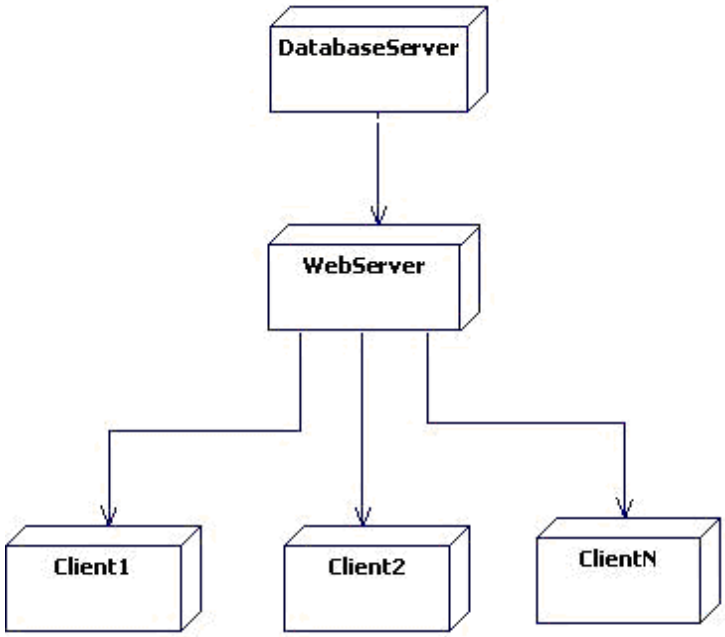


Fig.7.DEPLOYMENT DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

COMPONENT DIAGRAM

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

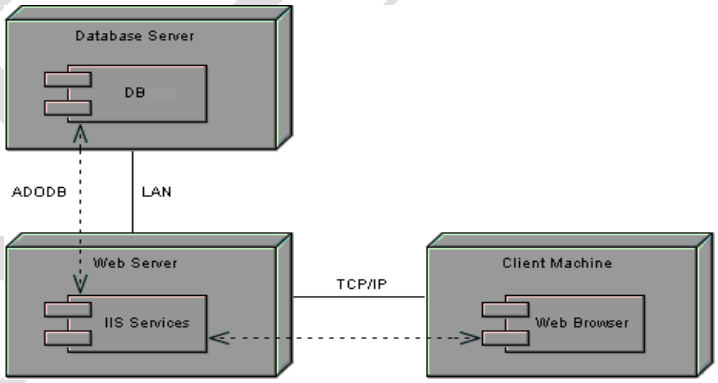


Fig.8.COMPONENT DIAGRAM FOR PASSPORT AUTOMATION SYSTEM

OPEN ENDED EXPERIMENTS

AGILE PROCESS

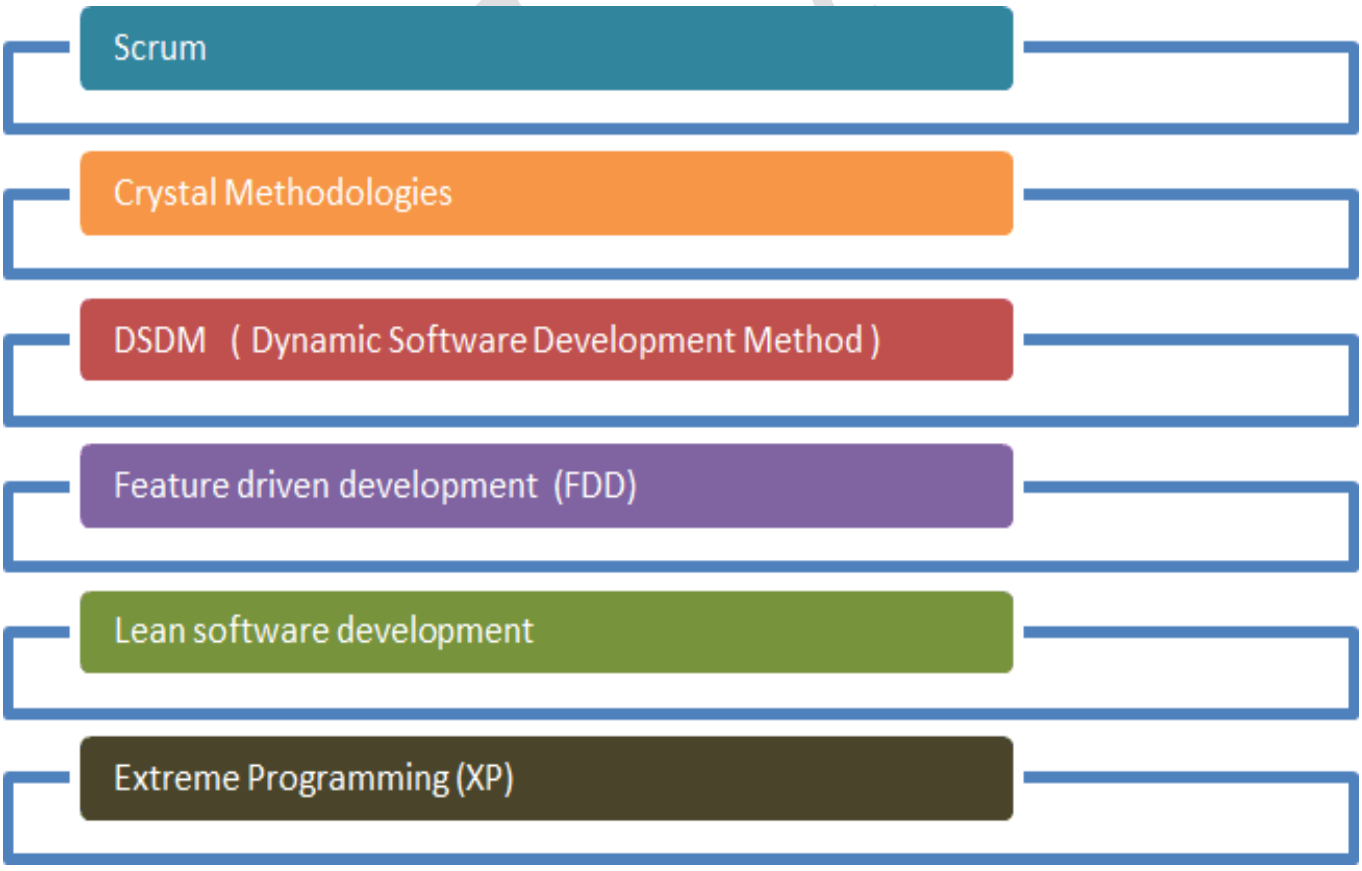
The Agile software development methodology is one of the simplest and effective processes to turn avision for a business need into software solutions. Agile is a term used to describe software development approaches that employ continual planning, learning, improvement, team collaboration, evolutionary development, and early delivery. It encourages flexible responses to change.

The agile software development emphasizes on four core values.

1. Individual and team interactions over processes and tools
2. Working software over comprehensive documentation
3. Customer collaboration over contract negotiation
4. Responding to change over following a plan

Agile Process

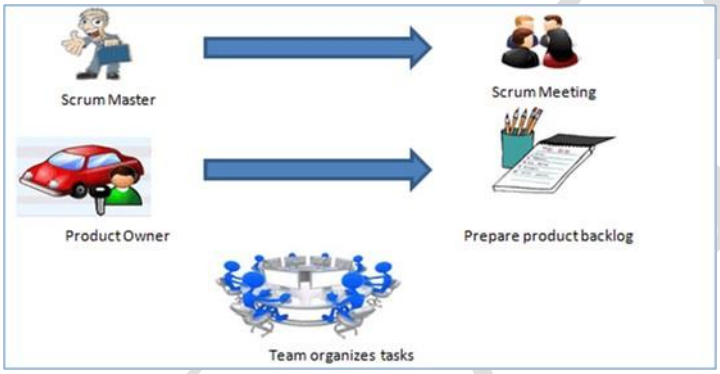
Check the below Agile methodology process to deliver successful systems quickly.



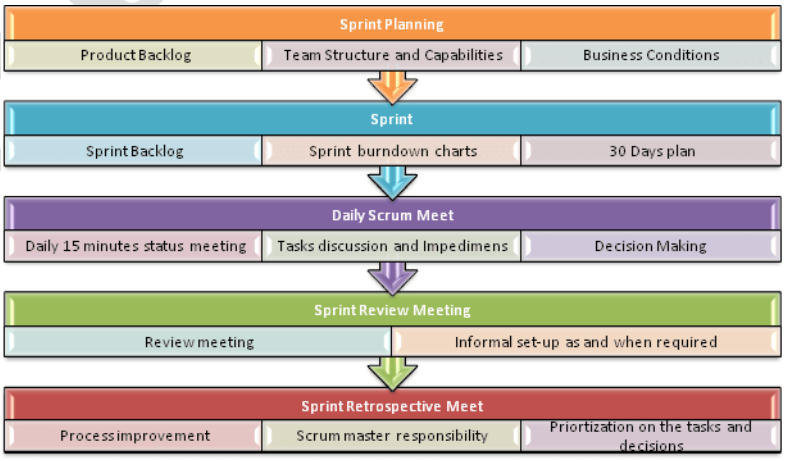
There are various **Agile methods** present in agile testing, and those are listed below:

SCRUM

SCRUM is an agile development method which concentrates specifically on how to manage tasks within a team-based development environment. Basically, Scrum is derived from activity that occursduring a rugby match. Scrum believes in empowering the development team and advocates working in small teams (say- 7 to 9 members). Agile and Scrum consist of three roles, and their responsibilities are explained as follows:



- Scrum Master
  - Master is responsible for setting up the team, sprint meeting and removes obstacles to progress
- Product owner
  - The Product Owner creates product backlog, prioritizes the backlog and is responsible for thedelivery of the functionality at each iteration
- Scrum Team
  - Team manages its own work and organizes the work to complete the sprint or cycle



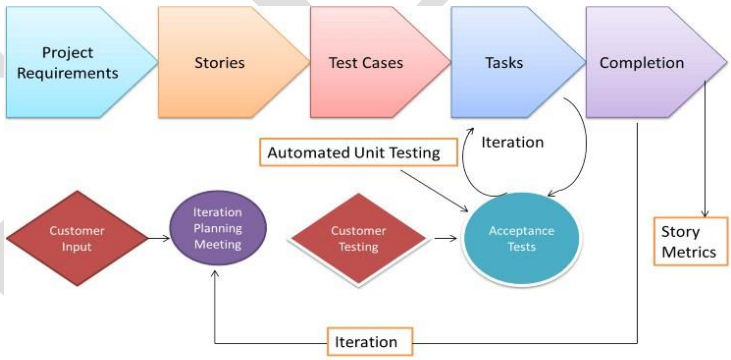
Process flow of Scrum Methodologies:

Process flow of scrum testing is as follows:

- Each iteration of a scrum is known as Sprint
- Product backlog is a list where all details are entered to get the end-product
- During each Sprint, top user stories of Product backlog are selected and turned into Sprint backlog
- Team works on the defined sprint backlog
- Team checks for the daily work
- At the end of the sprint, team delivers product functionality

Extreme Programming (XP)

Extreme Programming technique is very helpful when there is constantly changing demands or requirements from the customers or when they are not sure about the functionality of the system. It advocates frequent "releases" of the product in short development cycles, which inherently improves theproductivity of the system and also introduces a checkpoint where any customer requirements can be easily implemented. The XP develops software keeping customer in the target.



Extreme Programming (XP)

Phases of eXtreme programming:

There are 6 phases available in Agile XP method, and those are explained as follows:

Planning

- Identification of stakeholders and sponsors
- Infrastructure Requirements
- Security related information and gathering

- Service Level Agreements and its conditions

Analysis

- Capturing of Stories in Parking lot
- Prioritize stories in Parking lot
- Scrubbing of stories for estimation
- Define Iteration SPAN(Time)
- Resource planning for both Development and QA teams

Design

- Break down of tasks

- Test Scenario preparation for each task
- Regression Automation Framework

Execution

- Coding
- Unit Testing
- Execution of Manual test scenarios
- Defect Report generation
- Conversion of Manual to Automation regression test cases
- Mid Iteration review
- End of Iteration review

Wrapping

- Small Releases
- Regression Testing
- Demos and reviews
- Develop new stories based on the need
- Process Improvements based on end of iteration review comments

Closure

- Pilot Launch
- Training
- Production Launch
- SLA Guarantee assurance

- Review SOA strategy
- Production Support

Crystal Methodologies

Crystal Methodology is based on three concepts

1. Chartering: Various activities involved in this phase are creating a development team, performing apreliminary feasibility analysis, developing an initial plan and fine-tuning the development methodology
2. Cyclic delivery: The main development phase consists of two or more delivery cycles, during whichthe
    1. Team updates and refines the release plan
    2. Implements a subset of the requirements through one or more program test integrate iterations
    3. Integrated product is delivered to real users
    4. Review of the project plan and adopted development methodology
3. Wrap Up: The activities performed in this phase are deployment into the user environment, post-deployment reviews and reflections are performed.

Dynamic Software Development Method (DSDM)

DSDM is a Rapid Application Development (RAD) approach to software development and provides an agileproject delivery framework. The important aspect of DSDM is that the users are required to be involved actively, and the teams are given the power to make decisions. Frequent delivery of product becomes the active focus with DSDM. The techniques used in DSDM are

1. Time Boxing
2. MoSCoW Rules
3. Prototyping

The DSDM project consists of 7 phases

1. Pre-project
2. Feasibility Study
3. Business Study
4. Functional Model Iteration
5. Design and build Iteration

6. Implementation
7. Post-project

Metrics that can be collected for effective usage of Agile is:

- Drag Factor
  - Effort in hours which do not contribute to sprint goal
  - Drag factor can be improved by reducing number of shared resources, reducing the amount ofnon-contributing work
  - New estimates can be increased by percentage of drag factor -New estimate = (Oldestimate+drag factor)
- Velocity
  - Amount of backlog(user stories) converted to shippable functionality of sprint
- No of Unit Tests added
- Time interval taken to complete daily build
- Bugs detected in an iteration or in previous iterations
- Production defect leakage

VIVA QUESTIONS

Define Framework.

A framework is the Code Skeleton that can be fleshed out with particular classes or functionality and designed to address the specific problem at hand.

What are the characteristics of the software?

Characteristics of the software are:

- Software is engineered, not manufactured.
- Software does not wear out.
- Most software is custom-built rather than being assembled from components.

What are the various categories of software?

The various categories of software are:

- System software Application.
- Software Engineering / Scientific.
- Software Embedded software.
- Web Applications.
- Artificial Intelligence software.

What are the challenges in software?

The challenges in the software are:

- Copying with legacy systems.
- Heterogeneity challenge.

Define Software process.

A software process is defined as the structured set of activities that are required to develop the software system.

What are the internal milestones?

They are the significant and quantifiable attributes of progress. They are the standard methods in the project which provide that we are on the right track. They are under the authority of the project manager.

What is the limitation of RAD Model?

Limitation of RAD Model are:

- It requires a sufficient number of Human Resources to create enough number of teams.
- Developers and Users are not committed,the system fails.
- It is not Properly Modularized building component may be Problematic.
- It is not applicable when there is more possibility for Technical Risk.

What are the disadvantages of classic life cycle model?

Disadvantages of the classic life cycle model are:

- Real projects rarely follow the sequential flow. Iteration always occurs and creates a problem.
- Challenging for the customer to state all requirements.
- The working version of the program is not available. So the customer must have patience.

What are the merits of the incremental model?

The merits of the incremental model are:

- The incremental model can be accepted when there is less number of people include in the project.
- Technical risks can be handle with each increment.
- For a minimal period, at least the core product can be delivered to the user.

What is the disadvantage of the spiral model?

The disadvantage of the spiral model are:

1. It is based on user communication. If the interface is not proper, then the software product which gets created will not be the up to the mark.
2. It demands a vast risk assessment. If the risk assessment is completed correctly, then only the successful product can be obtained.

Name the Evolutionary process Models.

Evolutionary powers models are:

- Incremental model
- Spiral model
- WIN-WIN spiral model

- Concurrent Development

Define Software Prototyping.

Software prototyping is represented as rapid software development for validating the requirements.

What are the benefits of prototyping?

The benefits of prototyping are:

- Prototype services as a basis for developing system specification.
- Design quality can be revised.

****