TECHNO MAIN SALT LAKE

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REGISTRATION NO...2013001157.....

DEPT.....CSE.....

SUBJECT NAME & CODE.....

Software Engineering Lab ESC 591

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Lab Execution Top Sheet for CSE, Sec-A

Student Name: **Ashutosh Kumar**
Roll No: **13000120129**
Course Name: **Software Engineering Lab**
Course Code: **ESC 591**
Session: **2021 - 2022**

Exp. No.	List of Experiments	Date	CO- Specific Marks					Total Marks	Remark & Signature
			CO1	CO2	CO3	CO4	CO5	10	
1.	Assignment 1	13.09.2021							
2.	Assignment 2	20.09.2021							
3.	Assignment 3	25.09.2021							
4.	Assignment 4	25.10.2021							
5.	Assignment 5	13.11.2021							
6.	Assignment 6	13.11.2021							
7.	Assignment 7	13.11.2021							
8.	Assignment 8	20.112021							
9.	Assignment 9	27.11.2021							
10.	Assignment 10	04.12.2021							
11.	Assignment 11	04.12.2021							
12.	Assignment 12	16.12.2021							

NAME OF THE PROGRAM: *CSE*	**DEGREE:** *B.Tech*
COURSE NAME: *Software Engineering Lab*	**SEMESTER:** *5th*
COURSE CODE: *CS591*	**COURSE CREDIT:** *2*
COURSE TYPE: *LAB*	**CONTACT HOURS:** *4P*
SESSION: *2021-2022*	

Exp. No.	List of Experiments	Date
1.	Analyze Online Library Management System and prepare a SRS Document.	**1st Week**
2.	Analyze Online Social Networking System and prepare a SRS Document.	**2nd Week**
3.	1. Analyse the functional requirements for an Online Library Management System and prepare a SPMP (Software Project Management Plan) Document. 2. Estimate size of the LMS using Function Point metric. 3. Design Level 0 DFD for the LMS.	**3rd Week**
4.	1. Considering your immense expertise in software development, The Absolute Beginners Inc. has recently allotted you a mega project. The goal of the project is to create a database of all Hindi films released since 2000. The software would allow one to generate a list of top ten hit films, top ten flop films, best comedy films, and so on. Using your prior experience you have decided the approximate sizes of each module of the software as follows: • Data entry (0.9 KDSI) • Data update (0.7 KDSI) • Query (0.9 KDSI) • Report generation and display (2 KDSI) Also take into consideration the following cost drivers with their ratings: • Storage constraints (Low) • Experience in developing similar software (High) • Programming capabilities of the developers (High) • Application of software engineering methods (High) • Use of software tools (High) (All other cost drivers have nominal rating). 1. Now answer the following: • Applying intermediate COCOMO estimate the effort required to develop this system. • Applying intermediate COCOMO estimate the time required to develop this system. • Calculate the phase wise effort percentage for the above application. • Applying intermediate COCOMO estimate the minimum size of the team you would require to develop this system. • Assuming that your client would pay Rs. 50,000 per month of development, how much would be the likely billing? 2. Prepare a Level 0 DFD of Movies database Management System. 3. Decompose into Level-1, Level-2 and Level-3 DFDs applicable wrt your SRS.	**4th Week**

5.	Draw a use case diagram of library Management system using the staruml.	**5th Week**
6.	Draw the following: 1. Use Case and Class Diagram for: • Emotion based Music Player	**6th Week**
7.	1. Draw an Use Case and Class Diagram for: • Hospital Management System	**7th Week**

Exp. No.	List of Experiments	Date
8.	Draw a sequence diagram on Online Shopping System	**8th Week**
9.	a) Draw a Gantt chart for a "Library Management System" using MS Project. b) Prepare a SPMP to plan the project. c) Estimate the size, time, cost, effort and staff requirements using Function point metric and COCOMO Model. d) Draft a test plan illustrating all test cases.	**9th Week**
10.	Multimedia information like text, audio, video, and any combination of those are most pervasive in almost every application field namely Computer, Network, Smartphone, and elsewhere. We also require a high degree of privacy of our own document. There is a problem with how such a document can be protected from unauthorized access. Of course, there are many methods such as using passwords, smartcards, biometrics, etc. are known. Nevertheless, the existing methods have their own limitations as robustness and cost issues. This project would aim to devise a (new) method and develop a user-friendly and cost-effective solution to the problem. **Input:** • A detailed profile of the user, who wishes to protect the document. The profile template will be finalized after a careful discussion with the team member (i.e., a software engineer here). • If any other input that might require. • Document itself to be protected. **Functions:** • Encryption of document • Decryption of document • Opening a document under the protection • Deleting a document under the protection • Copying a document under the protection **Output:** • Document after encryption • Document after decryption • Result on opening a document: success or failure; locking for three unsuccessful attempts • Results on deleting a document under protection: success or failure; locking for three unsuccessful attempts • Results on copying a document under protection: success or failure; locking for three unsuccessful attempts	**10th Week**
11.	a) Draw a Gantt chart for a "Hospital Management System" using MS Project. b) Prepare a SPMP to plan the project. c) Estimate the size, time, cost, effort and staff requirements using Function point metric and COCOMO Model. d) Draft a test plan illustrating all test cases.	**11th Week**
12.	**A case study for live projects** https://evaluation-aep.herokuapp.com/ https://attendance-aep.herokuapp.com/ Design Functional Requirements and Test Case for these.	**12th Week**

1. Rubrics:

Score / Criteria	Excellent (8-10)	Good (5-7)	Average (3-4)	Poor (1-2)	Absent (0)
1. Lab Participation	Students are able to identify the problem/ analyze the problem/Design the solutions and solve the problem applying various algorithms with appropriate test cases; students are able to include boundary conditions in the test cases; students are able to modify the program or design as per requirement of the outcomes from boundary conditions (if any).	Students are able to identify the problem/ analyze the problem/Design the solutions and solve the problem applying various algorithms with appropriate test cases; students are able to include boundary conditions in the test cases.	Students are able to identify the problem/ analyze the problem/Design the solutions and solve the problem applying various algorithms with appropriate test cases.	Student is not able to understand/analyze/design the problem or interpret the problem into specified language	
2. Effective utilization of the modern tools and their properties, compilers	Students are able to exploit the full potential of the tool/property/topic under consideration for the specified language	Students are able to exploit the important features of the tool/property/topic under consideration for the specified language	Students are able to use specified tool/property/topic as per the problem requirement only under consideration for the specified language	Students are not able to use tool/property/topic under consideration for the specified language	
3. Individual or team work	Students are able to work effectively, sincerely and ethically as an individual or in a member of a team	Students are able to work ethically as an individual or in a member of a team	Students are able to work as an individual or in a member of a team	Students are not able to work effectively, sincerely and ethically as an individual or in a member of a team	
4. Documentation	Students will prepare effective documentation of lab classes mentioning problem	Students will prepare effective documentation of lab classes mentioning problem	Students will prepare effective documentation of lab classes mentioning problem	Students will not prepare effective documentation of lab classes mentioning objective, input-output, test cases, boundary conditions	

Score / Criteria	Excellent (8-10)	Good (5-7)	Average (3-4)	Poor (1-2)	Absent (0)
	statement, input-output, appropriate test cases with boundary conditions	statement, input-output, test cases	statement, input-output		

ASSIGNMENT 1

Analyze Online Library Management System and prepare a SRS Document.

Software Requirements Specification

for

Library Management System

Version 3.0 approved

Prepared by Ashutosh Kumar

Techno Main Salt Lake

13-09-2021

Table of Contents

1. Introduction

1.1. Purpose

The software whose software requirement is mentioned in the system is the Online Library Management System. This is the 1.0 version of the software and is approved by the related authorities. The SRS covers the complete description of the Online Library Management System and this aims at simplifying the effort of the librarian and book lenders, thus increasing the productivity by using tools that simplify the book lending process.

1.2. Document Conventions

- Entire document must be justified
- Convention for main title
  - Font face: Times New Roman
  - Font Style: Bold
  - Font Size: 16
- Convention for Sub Title
  - Font face: Times New Roman
  - Font Style: Bold
  - Font Size: 14
- Convention for Body
  - Font face: Times New Roman
  - Font Size: 12
- Definitions
  - Database – Collection of data that are either entered by user or administrator.
  - User – The people who will be using the application.
  - JRE — Java Runtime Environment.
  - OS — Operating System.
  - MS SQL — Microsoft Structured Query Language.
  - REST — Representational State Transfer.
  - HTTPS — Hypertext Transfer Protocol Secure.

1.3. Product Scope

This Online Library Management system will be an automated one. The users would be able to search up the book, check its availability and get to know the time limit for borrowing the particular book. The admin department will be able to track the status of each user, including their details and books they have issued. So, this would increase the user's and admin's productivity by providing a better and simpler interface to manage the system. With the advent of technology, this system can be easily implemented by libraries especially in libraries of educational institutes.

1.4. References

- https://www.knimbus.com/user#/home
- https://www.sciencedirect.com/topics/computer-science/library-management-system
- https://www.grin.com/document/205391

2. History/Background Study (Sources of Domain Knowledge)

2.1. Technical Literature

Online Library Management System is an Automated Library System that handles the various functions of the library. It is an important part of every school and college and it helps the librarian to keep records of available books as well as issued books.

2.2. Existing Applications

- Kooba Library
- Knimbus Library System

2.3. Current/Future requirements

Currently the software is used to keep a record of books borrowed, books available, user details, fine payments.
Future modifications will be made based on user feedback.

3. Overall Description

3.1.Product Functions

The Online Library System provides online real-time information about the books available in the Library and user information. The main purpose of this project is to reduce manual work. This software is capable of managing book issues, Returns, Managing Fines etc. Here Librarian will be the administrator to control members and manage books. The members can also log in as users and they can issue books and they can see the dates of returning the book they have issued. They will also get a notification alert if they don't return their book by the due date and he/she will be fined accordingly.

3.1.1. Hardware Requirements

- 4GB RAM
- 16GB Hard Disk space in terminal machine
- 2TB Hard Disk space in server machine
- Core i5 or higher processor

3.1.2. Software Requirements

- Windows 7 or above OS
- JRE 1.8
- SQL Server
- Chrome or Firefox browser

3.2. Functional Requirements

R: Online Library Management System

R1: Signing in or Signing up.
Description (Scope) – The person has to sign in to his account, if he/she has already created an account. The new users will have to sign up.

R1.1: Signing In.
Input: User Id and Password.
Output: The requested page as per prior selections. Error message if wrong details are entered.
R1.1.1: Forgot password.
Input: Click forgot password.
Output: The reset mail is sent to the user's email id.

R1.2: Signing up. (For users)
Input: Full Name, Student ID (for students)/Teacher ID(for teachers), Mail ID, New Password.
Output: Creation of a new account, UserID and verification mail sent to the user. If any input is incorrect, display ERROR message.

R1.3: Signing up. (For Admin)
Input: Full Name, Admin ID, Mail ID, New Password.
Output: Creation of a new account, UserID and verification mail sent to the user. If any input is incorrect, display ERROR message.

R2: User Profile.
Description (Scope) – This section displays the details of the user. It has 3 sections – Profile, Books and Settings. Another option is provided exclusively to the admin to keep a track of each user and their details. Profile option provides the user details like name, id, email address and photo. Books option shows the number of books the user has issued and details of the duration and for how long are they pending and also the list of books the user has saved for future reference. Settings option contains user's preferences.

R2.1: Profile Option.
Input: Edit profile option to edit the details of the user — change password, edit name, edit profile photo, change email address.
Output: The page showing the changed details of the user. New verification email sent to user if mail has been changed.

R2.2: Books Option.

Input: Check books prompt.

Output: Displays the name, author and code of each book borrowed along with the time duration of being borrowed.

R2.2.1: Saved Books

Input: Click on Saved Books option.

Output: Display list of books saved by user.

R2.3: Settings Option.

Input: User preferences — Site theme and site layout.

Output: Displays the page according to the settings selected.

R2.4: User Details. (Exclusively for Admin)

Input: UserID of specific user.

Output: Displays the page containing the user's details — Name, Date of registration, Books borrowed and time duration of books being borrowed.

R3: Issuing of Books

Description (Scope) – The user searches for a particular book using the books ISBN Code or book name and author or by subject. The book is then searched in the database and the details of the book are displayed, including the availability and duration for borrowing. The user can then issue the book accordingly.

R3.1: Search by ISBN Code.

Input: The ISBN Code.

Output: Displays the book, author, publisher and availability status. Displays not found message if book is not present.

R3.2: Search by name and author.

Input: Name and/or author of the book.

Output: Displays the book, author, publisher and availability status. Displays not found message if book is not present.

R3.3: Search by subject.

Input: Select the required subject from the list of subjects provided.

Output: Displays the list of books under that subject along with their author, publisher and availability status. Displays not found message if book is not present.

R3.4: Save book option.

Input: Select the save book option beside the desired book.

Output: Displays book saved message.

R3.5: Issuing the book.
Description — User chooses option : Either to read E-book(if available) or borrow it physically from library.

R3.5.1: Read E-book (if available).
Input: Select the book and select the e-book option.
Output: A new window pops up containing the book to read online.

R3.5.2: Borrow book offline (if available).
Input: Select the book and enter duration of borrowing.
Output: The book is issued to the user, displaying a receipt with the respective details — Book code, UserID, due date for returning. If user has any book overdue, the user is not granted permission to issue new books and is redirected to book returning page.

R4: Returning of Books
Description (Scope) – The user selects which books to return and if any are overdue, the user pays the fine accordingly.

R4.1: Selecting the book.
Input: Choice of book(s) to return from their book list.
Output: Return prompt window.

R4.2: Returning the book.
Input: Selecting the return key.
Output: Respective page showing the details including book name, code, date of issue and overdue fine (if any).
Shows penalty prompt with amount if users have any book overdue.

R5: Payment of Penalty fee
Description (Scope) – The user is displayed the amount of fine they need to pay and options are given for method of payment — Physically pay at the library, Pay online through UPI, Pay online through net banking.

R5.1: Pay physically.
Input: Enter option to pay offline.
Output: Generates a receipt to show at the library and also prompts the admin about offline payment.

R5.2: Pay through UPI.
Input: UPI ID.
Output: Redirects to payment site after verification of UPI ID.

R5.3: Pay through net banking.
Input: Click on net banking option and select bank.
Output: Redirects to corresponding site.

R6: Management System (Exclusive to Admin)
Description (Scope) – The admin department uses this feature for checking availability of particular books and borrowing history for each book. It also displays which user has what amount of fine due. The admin department can also add new books and the respective details to the database.

R6.1: Check availability status.
Input: Book code.
Output: Count of books available till date.

R6.2: Borrowing History for a particular book.

Input: Book code.

Output: The book borrowing history, displaying which particular copy has been borrowed by which user.

R6.3: Database of users with books overdue.

Input: Click on Database Button

Output: The list of users who have overdue books along with their respective fine amount and date of issue.

R6.4: Add new books to the database.

Input: Book details, including name, author, code, ISBN number and publisher, as well as the number of copies of each book.

Output: The page displaying the new list of books available.

R7: User Support

Description (Scope) – The users can send their feedbacks, problems and questions to the given email id. Users can also know more about the institution by using the About us section.

R7.1: Choose option: Feedback/ Raise a question/ Problems

Input: Select correct option.

Output: Redirect to respective page.

R7.2: Feedback

Input: Enter feedback.

Output: Send the feedback to the designated authorities. When replied, mail is sent to the user.

R7.3: Raise a query

R7.3.1: Choose already answered FAQs from given list.

Input: Select question from given list.

Output: Display corresponding answer.

R7.3.2: Ask a new question.

Input: Enter new question.

Output: Send question to the designated authorities. Send mail notification to user who raised the query.

R7.4: Technical Problems.

R7.4.1: Choose already answered technical FAQs from given list.

Input: Select question from given list.

Output: Display corresponding answer.

R7.4.2: Ask a new question.
Input: Enter new question and add a screenshot if required.
Output: Send question to the designated authorities. Send mail notification to user who raised the query.

R7.5: About Us Section
Input: Select About Us option.
Output: Redirect to respective page, showing the details of the institution.

3.3. Non-Functional Requirements

3.3.1. Correctness Requirement
This software performs accurately as intended and in no other way.

3.3.2. Usability Requirement
The software has a simple but efficient user interface, which can be used by all types of users, both technically sound as well as people not having so much knowledge about technology. So, any user can use its functionalities without any sort of complications.

3.3.3. Portability Requirement
This software provides a web based interface to the user. Any device with latest stable browser will be able to run this software if they have JavaScript enabled and Cookies enabled. Only the offline library has a fixed location at the institute.

3.3.4. Availability Requirement
The software will be available 24/7 and the offline library in the institute will be open according to the institute's schedule. Moreover, the software would be available on internet; only the institutes will have to buy license to use it for their system.

3.3.5. Efficiency Requirement
The software is highly efficient and various tasks in its various modules and sub-modules can be performed simultaneously. It is an efficient solution to the complete web publishing process. Offline efficiency depends on the staff management in the institute.

3.3.6. Performance Requirement
The database can accommodate high number of articles and users without any fault. As the latest technologies have been used, so the system would be very responsive and the response would be extremely fast. The offline responses depend on the management system present at the institute.

3.3.7. Reliability Requirement
The system is extremely reliable as there are proper measures to protect the data of the users, reviewers and the authors. Proper firewall and other security measures have been used to prevent any kind of breaching.

3.4. User Characteristics

The system will provide different types of services based on the user. The Admin department will be working like the controller and can administer the database of various users. While the users have got limited functionalities.

The features available to Admin -

- Can see list of books available.
- Can update existing list of books.
- Can view and edit user details.

The features available to users are -

- Can view the books available.
- Can search for particular book.
- Can edit their profile.
- Can save books for future reference.
- Read available e-books online.

3.5. Design and Implementation Constraints

• The information of all users and resources must be stored in a database that is easily accessible by the website.
• Users can access from any computer that has a stable internet connection and proper browsing capabilities.
• MS SQL Server is used as SQL engine and database.
• RazorPay is used for online payment support.

3.6. Assumption and Dependencies

Assumptions :

- Coding is error free.
- System has specified hardware and software requirements.
- Fast access to database.
- User does not provide any incorrect information.

Dependencies :

- Depends on third party app MS SQL for database and RazorPay for payment.
- Hardware and software specifications of the running environment.
- Correct data entered by all users.

4. Interface Requirements

4.1. User Interfaces

4.1.1. Register/Sign In Interface :
If user is not yet registered, sign up is required by providing necessary details, else the user logs in by entering required details. Error prompt is displayed if there is any wrong input provided.

4.1.2. Search Interface :
The user can search for books.

4.1.3. Admin Control Interface :
Allows the admin to update and view details of other users. Allows admin to edit details of books.

4.1.4. Payment Interface :
Shows payment history and due bill (if any) and option to select payment gateway.

4.1.5. User details Interface :
Displays details of user such as UserID, name, email id, books taken and date of joining.

4.1.6. Help number and email id will be provided on every page.

4.2. Hardware Interfaces

The supported devices are the bar code scanner to scan the information of the book. So, there would be an extra interface for making the work of that hardware component easier. Then the data read through the bar code is stored in the temporarily in a location and then used accordingly.

4.3. Software Interfaces

Specified browser and operating system version. No additional requirements.

4.4. Communication Interfaces

The communication architecture must follow the client-server model. Communication between the client and server should utilize a REST-compliant web service and must be served over HTTP Secure (HTTPS).
As the verification will be done through the emails, this has to be included in the communication interface. The various web browsers like Chromo and Mozilla Firefox, on which this system has been already tested are also a part of the communication interface. The communication that is being done during the process must be encrypted and has to be monitored by an antivirus.

5. Conclusion

With the evolution of technology and it being so blended in our daily lives, it is imperative that we discard time-consuming laborious methods to implement something which would be so clean and compact to use through computers. This system provides efficient service to the various users. Implemented with the best technology available, this software is convenient to use and virtually fault-free, providing the users with a smooth and unique experience. This version of the software will be available on the internet (license and payments included).

ASSIGNMENT 2

Analyze Online Social Networking System and prepare a SRS Document.

Software Requirements Specification

for

Online Social Networking System

Version 2.0 approved

Prepared by Ashutosh Kumar

Techno Main Salt Lake

20-09-2021

Table of Contents

1. Introduction

1.1. Purpose

The software whose software requirement is mentioned in the system is the Online Social Networking System. This is the 2.0 version of the software and is approved by the related authorities. The SRS covers the complete description of the Online Social Networking System and this aims at connecting people virtually and engaging people in communicating through an online platform and create connections throughout the world.

1.2. Document Conventions

- Entire document must be justified
- Convention for main title
  - Font face: Times New Roman
  - Font Style: Bold
  - Font Size: 16
- Convention for Sub Title
  - Font face: Times New Roman
  - Font Style: Bold
  - Font Size: 14
- Convention for Body
  - Font face: Times New Roman
  - Font Size: 12
- Definitions
  - Database – Collection of data that are either entered by user or administrator.
  - User – The people who will be using the application.

- JRE — Java Runtime Environment.
- OS — Operating System.
- MS SQL — Microsoft Structured Query Language.
- REST — Representational State Transfer.
- HTTPS — Hypertext Transfer Protocol Secure.

1.3. Product Scope

This Online Social Networking System will help users around the world to communicate with each other and share interests and hobbies and post their updates of life. The users will be able to make their account on the system and after proper verification, they would be able to access the content available. The users will be able to share a post, delete a post, share a recent activity or story, chat with other users, and do video and audio calls and many other things. The user will be able edit the profile information and select the different measures of privacy. User can also add new friends and customize their newsfeed based on their interest.

1.4. References

- IEEE. IEEE Recommended Practice for Software Requirements Specifications. Link - https://ieeexplore.ieee.org/document/6984101
- https://mlsdev.com/blog/how-to-create-social-media-app

2. History/Background Study (Sources of Domain Knowledge)

2.1. Technical Literature

Online social networks are decentralized and distributed computer networks where users communicate with each other through internet services. Networking social network services used primarily for non-social interpersonal communication (e.g., LinkedIn, a career- and employment-oriented site)

2.2. Existing Applications

- Facebook
- Instagram
- Tumblr
- LinkedIn

2.3. Current/Future requirements

The bright future prospect of social networking is also proven with the fact that the technology is integrated in the mobile phones as well. Look at the devices designed with powers of interpersonal communication on a globalized outlook. These devices are now being created to with the perspective of global interaction and messaging across geographical boundaries. The concept is one, wherever on the earth; reach the common platform of the people for everybody's benefit.

3. Overall Description

3.1. Product Functions

- User can register to social networking site and then login whenever he/she wishes to visit the site.
- Users can edit their profile and change various
- User can share post containing videos, pictures, paragraphs.
- User can share story or recent activity which are visible for 24 hours.
- User can react and comment on certain posts as well as remove those.
- User can block and report certain user.
- User can remove their account with deleting all their data.

3.1.1. Hardware Requirements

- A device (Computer/laptop) with at least 2 GB RAM
- Core i3 Processor or standard mobile processor
- Stable internet connection

3.1.2. Software Requirements

- Windows 7 or above OS for Desktop
- Chrome or Firefox browser

3.2. Functional Requirements

R: Online Social Networking System

R1: Sign up/ Sign in

Description— New users who wish to create a new account have to sign up. Existing users have to just login.

R1.1: Create new account.

Input: Enter name, surname, mobile number, email address, password, date of birth, gender. Agree to terms and conditions.

Output: Account created prompt is displayed and verification link is sent to mail and contact number. Error message is displayed if any filled detail is wrong.

R1.1.1: Terms and Conditions

Input: Click on terms, Data Policy or Cookie policy.

Output: Redirect to the respective page, showing the details of each policy.

R1.2: Log in

Input: Email or phone number and password. Click on log in.

Output: Open home page of user. Send email to user if log in is done from a new device.

R1.2.1: Forgot password

Input: Click forgot password.

Output: The reset mail is sent to the user's email id.

R2: Account

Description— Profile, settings, display, saved, help & support and log out option.

R2.1: Profile

Description— User can see their profile page, make edits, add posts.

R2.1.1: Add or update profile photo.

Input: Select photo. Crop to fit. Save.
Output: Profile picture successfully updated prompt.

R2.1.2: Add or update cover photo.

Input: Select photo. Crop to fit. Save.
Output: Profile picture successfully updated prompt.

R2.1.3: Add or edit bio.

Input: User writes a short description about them.
Output: Updated bio successfully.

R2.1.4: Link account

Input: User provides URL of his account on another social media site.
Output: Account linked successfully prompt.

R2.1.5: See followers

Input: Click on followers tab.
Output: See list of people who follow user.

R2.1.5.1: Remove follower

Input: User selects remove follower option beside each profile in the list.
Output: Follower removed and follower count decreased.

R2.1.5.2: Follow follower

Input: User selects follower they want to follow back from the list.
Output: Following message displayed with following count increased.

R2.1.5.3: See profile

Input: User selects profile.
Output: Redirected to the profile page of that user.

R2.1.6: See following

Input: Click on following tab.
Output: See list of people who user follows.

R2.1.6.1: Unfollow
Input: User selects profile from the list and unfollows.
Output: Following profile removed and following count decreased.

R2.1.6.2: See profile
Input: User selects profile.
Output: Redirected to the profile page of that user.

R2.1.7: Posts
Input: Navigate through list of posts made by user. Click on desired post.
Output: Display post, along with likes, comments, date of posting.

R2.1.7.1: React to a post
Input: Click on the desired reaction — Like, LOL, Sad, Angry, Amazed.
Output: Show the selected reaction under the picture and increase reaction count.

R2.1.7.2: Comment on post
Input: Write comment in comment box and click post.
Output: Comment is displayed in the comments section and comment count is increased.

R2.1.7.3: Share a post
Input: Click share option and select where to share – profile, direct message to someone or external.
Output: Share to the desired selection.

R2.1.7.4: See who reacted to the post
Input: Click on the reacts section under the post.
Output: Display list of profiles along with their respective reactions.

R2.1.7.5: See who commented on the post
Input: Click on the comments section under the post.
Output: Display list of profiles along with their respective comments.

R2.1.8: Tagged posts
Input: Select tagged post option.
Output: Display posts where user has been tagged, along with who posted it and post details.

R2.2: Settings
Description— User can edit their privacy settings, change password or email, check login activity.

R2.2.1: Privacy
Input: Choose privacy settings like make profile public or display active status.

Output: Apply the respective settings to the user profile.

R2.2.2: Change email or password
Input: Enter old email/password and new email/password.
Output: Apply the respective changes and send confirmation mail to user.

R2.2.3: Check log in activity
Input: Navigate through the list of devices which have the user logged in presently or previously, along with date, time and location provided. User can choose to remove any particular device.
Output: Display list of devices and make updates (if any).

R2.3: Display
Description— User can edit their display preferences like theme.
Input: Select theme.
Output: Theme applied.

R2.4: Help and Support
Description— User can report a problem, mail feedback or search up a query.

R2.4.1: Report a problem.
Input: Enter problem description and add a screenshot if required.
Output: Send question to the designated authorities. Send mail notification to user who raised the query.

R2.4.2: Send feedback
Input: Enter feedback to be sent.
Output: Send feedback to the designated authorities. Send mail notification to user.

R2.4.3: Search a query.
Input: Select question from given list of FAQs.
Output: Display corresponding answer.

R2.5: Log out
Description— User can edit their privacy settings, change password or email, check login activity.
Input: Select log out option.
Output: Successfully logged out message.

R2.6: Delete/Deactivate account
Input: Select delete/deactivate account option. For deactivation, user inputs the time.
Output: Performs the respective operation after confirmation through mail.

R3: Feed

Description— Shows recent posts from following users.

R3.1: React to a post

Input: Click on the desired reaction — Like, LOL, Sad, Angry, and Amazed.
Output: Show the selected reaction under the picture and increase reaction count.

R3.2: Comment on post

Input: Write comment in comment box and click post.
Output: Comment is displayed in the comments section and comment count is increased.

R3.2.1: React to a comment

Input: Select reaction for a comment
Output: Display react icon and react count beside the comment.

R3.2.2: Reply to a comment

Input: Select comment, click reply and type out a reply.
Output: Display replied comment.

R3.3: Share a post

Input: Click share option and select where to share – profile, direct message to someone or external.
Output: Share to the desired selection.

R3.4: See who reacted to the post

Input: Click on the reacts section under the post.
Output: Display list of profiles along with their respective reactions.

R3.5: See who commented on the post

Input: Click on the comments section under the post.
Output: Display list of profiles along with their respective comments.

R3.6: See profile of user who posted

Input: User clicks on profile.
Output: Redirected to the profile page of that user.

R3.7: Report someone

Input: Select user, post or specific comment and click on report option. Select reason for reporting from a given.
Output: Remove respective post/comment from user's view and send notice to the respective authority.

R4: Messaging

Description— Allows users to chat among themselves and send media to each other. Also supports group calls and video chats up to 15 people. Messages are end-to-end encrypted.

R3.1: Send message

Input: Click on profile to chat with. Enter message. Add media like photo, video, audio. Click send.
Output: Message sent to other user.

R3.2: Call/Video call

Input: Select profile. Click on call icon or video call icon.
Output: Respective operation is carried out.

R3.3: Group chat

Input: Select profiles to add into chat and name the group.
Output: Group created.

R3.3: Group call/ Group video call.

Input: Select profile(s) to call/video call. After calling, user is able to add more contacts if required (at most 15).
Output: Respective operation is carried out.

R5: Create post

Description— Users can upload their own posts — photos or videos.

R5.1: Select post to add.

Input: Select picture or video from gallery.
Output: Shows the next step.

R5.2: Make edits to the post.

Input: Crop photo, add filter or edit time of video.
Output: Shows the next step.

R5.3: Final details.

Input: Tag people, add location, add caption, select who can view the picture.
Output: Post is created on their page.

R6: Profile of other users

Description— Display profile of other users. Only those posts are visible which the user has set according to their privacy setting.

R6.1: View profile photo.
Input: Click on profile picture.
Output: Display the photo to the user.

R6.2: View cover photo.
Input: Click on cover photo.
Output: Display the photo to the user.

R6.3: Navigate through posts
Input: Click on post made by the user to see.
Output: Display respective post along with its details like reacts, comments and date of posting.

R6.4: See followers (if user has allowed)
Input: Click on followers tab.
Output: See list of people who follow user.

R6.4.1: Follow follower
Input: User selects follower they want to follow from the list.
Output: Following message displayed.

R6.4.2: See profile
Input: User selects profile.
Output: Redirected to the profile page of that user.

R6.5: See following (if user has allowed)
Input: Click on following tab.
Output: See list of people who user follows.

R6.5.1: Follow profile.
Input: User selects profile they want to follow from the list.
Output: Following message displayed.

R6.5.2: See profile
Input: User selects profile.
Output: Redirected to the profile page of that user.

R6.6: Follow user
Input: Click on follow button.
Output: User has been followed.

R6.7: Unfollow user
Input: Click on unfollow button.
Output: User has been unfollowed.

R6.8: Block user
Input: Click on block button and confirm block.
Output: User blocked and their profile is now hidden.

R7: Search
Description— User can search a particular profile by entering their name.

Input: Enter profile name.
Output: Display list of results.

R8: Explore page
Description— User can explore posts from other users who have similar interests, and view similar posts which the user has already interacted with.

Input: Select explore page icon.
Output: Display posts which the user may like and interact with.

R9: Live Stream
Description— User can go live on their profile. The viewers can like, comment and also pay rewards to the user.

R9.1: Go live option
Input: Select go live option.
Output: User starts streaming and viewers count and actions are shown.

R9.2: Pay rewards (for viewers only)
Input: Select amount to send and any message along with it.
Output: Redirects user to payment gateway and sends money to user who is live.

R9.2.1: Payment Gateway
Input: Select payment method: UPI, Debit card, Netbanking.
Output: Redirects to payment website and sends money to user. Donators name popped up on screen with their message.

R9.3: React and comment
Input: Select react and/or type comments.
Output: React and/or comment is displayed on screen.

3.3. Non-Functional Requirements

3.3.1. Correctness Requirement

This software performs accurately as intended and in no other way.

3.3.2. Usability Requirement

The software has a simple but efficient user interface, which can be used by all types of users, both technically sound as well as people not having so much knowledge about technology. So, any user can use its functionalities without any sort of complications. This website supports over 50 languages globally.

3.3.3. Portability Requirement

This software provides a web based interface to the user. Any device with latest stable browser will be able to run this software if they have JavaScript enabled and Cookies enabled.

3.3.4. Availability Requirement

The software will be available 24/7. Moreover, the software would be available on internet.

3.3.5. Efficiency Requirement

The software is highly efficient and various tasks in its various modules and sub-modules can be performed simultaneously. It is an efficient solution to the complete web publishing process.

3.3.6. Performance Requirement

The database can accommodate high number of users and data without any fault. As the latest technologies have been used, so the system would be very responsive and the response would be extremely fast.

3.3.7. Reliability Requirement

The system is extremely reliable as there are proper measures to protect the data of the users. Proper firewall and other security measures have been used to prevent any kind of breaching. The software stores no personal data from the user. It provides safe money transactions.

3.4. User Characteristics

- Searching and Following People
- Sharing posts in the form of pictures or videos.
- Going LIVE for any event.
- Chatting with connections and in groups.

- Voice and video calls.
- Adding reactions and comments to any posts.
- Adding information to user's profile.
- Blocking and reporting malicious users.
- Deleting/deactivating account.

3.5. Design and Implementation Constraints

- Any update will have to be recorded and the correct information must be updated and all the changes must be done as soon as possible. There is no provision for saving incomplete data.
- Users can access from any computer that has a stable internet connection and proper browsing capabilities.
- RazorPay is used for online payment support.

3.6. Assumption and Dependencies

Assumptions :

- Coding is error free.
- User must use their username and correct passwords.
- User must have valid email address before making an account.

Dependencies :

- Depends on third party app RazorPay for payment.
- Hardware and software specifications of the running environment.
- Correct data entered by all users.

4. Interface Requirements

4.1. User Interfaces

4.1.1. Register/Sign-In Interface:

If user is not yet registered, sign up is required by providing necessary details, else the user logs in by entering required details. Error prompt is displayed if there is any wrong input provided.

4.1.2. Search Interface:

The user can search for the person they know or the groups of common interest by typing in the search box.

4.1.3. User details Interface:

User can update their profile with various information about themselves and their pictures to help others know them better.

4.1.4. Post Interface:

User can share pictures, videos, documents, write ups as posts. Users can react, comment and share those posts.

4.1.5. Report Interface:

User can report other users who are not abiding by the laws of the community. They get option to block them to avoid connection with them.

4.1.6. Support Interface:

User can ask their queries and share their problems. User's problem will be responded to as soon as possible.

4.2. Hardware Interfaces

No extra hardware required other than ones mentioned.

4.3. Software Interfaces

We use the software in the web browsers like Mozilla Firefox, Chrome, etc… That contains the first software interface. Then, the database DBMS along with the tool, consists of the second software interface. The third one is constituted by the mail verification tool, which helps in validating the account. There are many sub – software interface. But these are the major ones.

4.4. Communication Interfaces

The communication architecture must follow the client-server model. Communication
between the client and server should utilize a REST-compliant web service and must be served over HTTP Secure (HTTPS).
As the verification will be done through the emails, this has to be included in the communication interface. The various web browsers like Chromo and Mozilla Firefox, on which this system has been already tested are also a part of the communication interface. The communication that is being done during the process must be encrypted and has to be monitored by an antivirus.

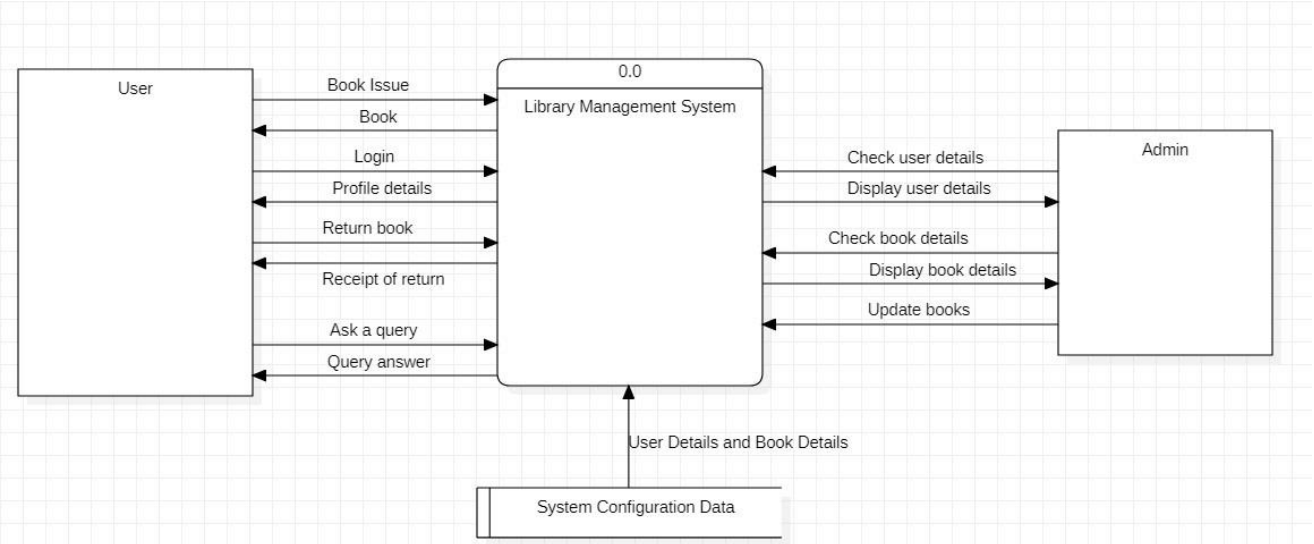
4. Conclusion

Social networking sites make people more social and help them communicate with others. Social networking sites are places where people can maintain and nurse their existing (offline) friendships and create new (online) friendships. People learn the crucial importance of being able to network which they can benefit from in their future professional life.

ASSIGNMENT 3

1. Analyse the functional requirements for an Online Library Management System and prepare a SPMP (Software Project Management Plan) Document.
2. Estimate size of the LMS using Function Point metric.
3. Design Level 0 DFD for the LMS.

LEVEL 0 DFD



LEVEL 0 DFD for Library Management System

Software Project Management Plan for "Library Management System"

1. Introduction

In the project, a system has to be designed to support library management system. The software application to be made consists of at least three main functions, which must interact using the internet. The application may involve the basic e-commerce activities, such as members' login, browsing, issuing and reserving books. The entire system has to be developed (in JAVA) in a way that it is easy to maintain and extend.

I. Project Overview

This project is to create a prototype of library management system. It is an online application like a virtual library on the Internet where customers can borrow books and as well as read books with interest. The customer can create their own user id for accessing this system frequently. The customer will be asked to fill payment information of fine for late returning the books such as credit card number. A notification is sent to the customer's email as soon as the transaction will be done and every time notification will be sent to the users after a successful reserving of a book.

II. Project Deliverables

1. Preliminary Project Plan	07.09.2021
2. Requirements Specification	15.09.2021
3. Analysis [Object model, Dynamic model, and User interface]	26.09.2021
4. Architecture Specification	06.10.2021
5. Component/Object Specification	26.10.2021
6. Source Code	04.11.2016 - 16.11.2021
7. Test Plan	17.12.2021 - 23.12.2021
8. Final Product Demo	24.12.2021 - 28.12.2021

III. Evolution of this document

This document will be updated as the project progresses. Updates should be expected in the following sections:

i. ***References*** - updated as necessary.
ii. ***Definitions, acronyms, and abbreviations*** - updated as necessary.
iii. ***Organizational Structure*** will be updated as the team leaders are assigned for each phase.
iv. ***Technical Process*** - this section will be revised appropriately as the requirements and design decisions become clearer.
v. ***Schedule*** – as the project progresses, the schedule will be updated accordingly.

Revision History

Revision	Date	Updated By	Update Comments
0.1	28.09.2021	Ashutosh Kumar	First Draft
0.2	02.10.2021	Ashutosh Kumar	Second Draft

IV. References

- https://www.softwaresuggest.com/library-management-software#:~:text=Some%20commonly%20used%20LMS%20Software,%2C%20LIBRARIAN%2C%20Readerware%2C%20etc.
- https://www.educative.io/courses/grokking-the-object-oriented-design-interview/RMlM3NgjAyR

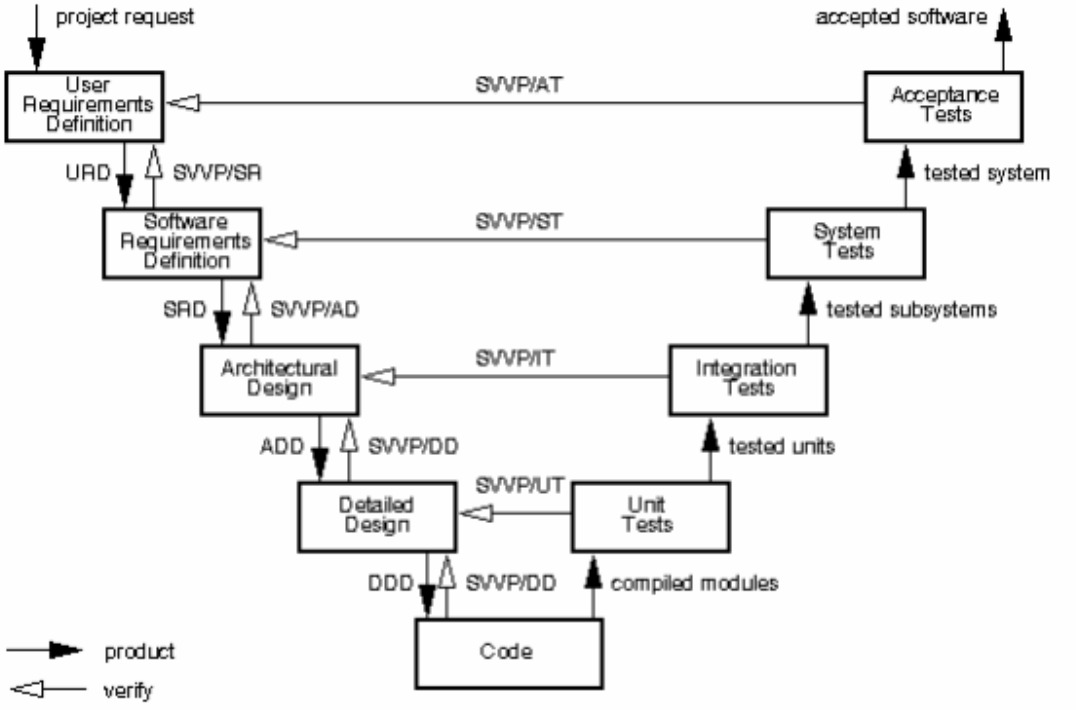
V. Definitions, Acronyms, and Abbreviations

i. UML - Unified Modeling Language
ii. AD - Architectural Design
iii. DD - Detailed Design
iv. DDD - Detailed Design Document
v. ITP - Integration Test Plan Monitor Application that either monitors dispatchers
vi. PM - Project Manager
vii. QAM - Quality Assurance Manager
viii. SCMP - Software Configuration Management Plan
ix. SM - Senior Management SPMP Software Project Management Plan (this document)
x. SQA - Software Quality Assurance
xi. SQAP - Software Quality Assurance Plan
xii. SR - Software Requirements
xiii. SRD - Software Requirements Document
xiv. STD - Software Transfer Document
xv. STP - Software Test Plan Submitter Application that submits jobs to dispatchers
xvi. SUM - Software User Manual
xvii. TBD – To Be Decided
xviii. TR - Transfer Phase
xix. LMS – Library Management System
xx. URD - User Requirements Document
xxi. UTP - Unit Test Plan
xxii. VPM - Vice Project Manager

2. Project Organization

I. Process Model

The process used for this project will be a V-model such that each stage of the model allows us to do testing after completing a phase. Referring to the diagram below, each phase is tested after completion.



II. Organizational Structure

Team Members –

i. Alankriti Mallick

Name	Organization/ Position	Contact Information
Ashish Kashyap	ITech Project Manager	kashyapsja@gmail.com 9001360763

Days	Deliverable	Team Leader	Deliverable Description
9	1	Ashu	Project Plan
7	2		Requirements Specification
9	3		Analysis
13	4		Architecture Specification
9	5		Component/Object Specification
14	6		Source Code
7	7		Test Plan
5	8		Final Deliverable

III. *Organizational Boundaries and Interfaces*

Team leaders throughout each development of the phases will be responsible for coordinating team meetings, updates, communications, and team deliverables.

IV. Project Responsibilities

For the most vital responsibilities per phase of each team members, please refer to segment 2.2. Ultimately the project team is responsible for the successful delivery of the product. The team member tasks per deliverable according to expertise and the phases are as given below:

1. Project Plan – Whole Team
2. Requirements Specification – TBD
3. Analysis – TBD
4. Architecture Specification – TBD
5. Component/Object Specification – TBD
6. Source Code – TBD
7. Test Plan – TBD
8. Final Deliverable – Entire Team

Name	Organization/ Position	Role/Responsibilities
Ashish Kashyap	ITech Project Manager	• Managing and leading the project team. • Developing and maintaining a detailed project plan. • Monitoring project progress and performance. • Managing project evaluation and dissemination activities. • **Develop corrective actions when necessary.**
Ashish Kashyap	ITech Business Analyst	• Prepare reports on project plans, status, progress, risks, deadlines and resource requirements. • Develop and perform work flow analysis to find out the difficulties in reaching goals. • Provide project cost estimates.
Ashish Kashyap	ITech Designer	• Propose effective design solutions to meet project goals. • Prepare design layouts and sketches according to company design standards. • Keeping of records and files.
Ashish KAshyap	ITech Staff	• Documentation of daily activities. • Making kick-off meeting reports. • In-charge of materials needed for team building activities.

3. Managerial Process

I. Management Objectives and Priorities

The management objective is to deliver the product in time and of high quality. The PM and QAM work together to achieve this by respectively checking that progress is made as planned and monitoring the quality of the product at various stages.

II. Assumptions, Dependencies, and Constraints

In this project plan, a number of factors are taken into account. The following list shows the way milestones on various project phases have been scheduled:

• The team budget of 5 persons x 365 hours = 1825 hours
• The project deadline of December 28th.
• The final presentation is on December 28th.
• The peer evaluation deadline is on December 12th.
• Other days the weekends holiday is closed (October 2nd, October 6th, October 12th, 13th, 14th, 15th, October 19th, November 4th, November 10th, 19th November).

NOTE: Due to the deadline of December 28th, running out of time will have its reflection on the product, and not on the duration of the project. By assigning a priority to every user requirement, a selection can be made of user requirements that may be dropped out if time runs out.

III. Risk Management

This section mentions any potential risks for the project. Also, schedules or methods are defined to prevent or to reduce the risks as below:

i. Technology risk
ii. People risk
iii. Financial risk
iv. Market risk
v. Structure/process risk

The following are the possible risks to be encountered during the development of the project and how they can be prevented.

1. Miscommunication
   Prevention: Team members should not hesitate to ask and re-ask questions if things are unclear. Team members should have a written copy of the tasks assigned to them every meeting.
   Correction: When it becomes clear that miscommunication is causing problems, the team members should gather in a meeting to clear things up.

2. Time shortage
   Prevention: Care is taken to plan enough spare time. *Correction*: When tasks fail to be finished in time or when they are finished earlier than planned the project planning is adjusted
3. Illness or absence of team members
   Prevention: Team members should warn their team leader or the PM timely before a planned period of absence.
   Correction: Work can be taken over quickly by someone else or be distributed among the team members if a person gets ill.

Monitoring and Controlling Mechanisms:

The monitoring of progress is done by the PM using the following means:

Project Kick-off Meetings

The project group meetings take place within the class room or through chat. These meetings are meant to inform each other of the progress made on various tasks and to assign new tasks.

Progress Report

Progress report is done every Friday. This is meant to inform and show the progress in the development of the project and how things are going.

IV. Monitoring and Controlling Mechanisms

The monitoring of progress is done by the PM using the following means:

i. Weekly project status meetings
ii. Shared document repository
iii. Project tracking by MS project plan
iv. Tracking utilizing baselines in MS project

4. Technical Process

I. Methods, Tools, and Techniques

The project will be implemented utilizing V-model methodology, and tools such as Dreamweaver, Microsoft Project, Star UML, Java, MySQL, QTP, and Load Runner will be utilized. The risks for each category are listed to complete the project successfully. For each risk, a description, a probability of occurrence, the associated action and the impact of the risk are given.

II. Software Documentation

Documentation such as Project Charter, Business Requirement Document, Functional Specification document, Cost Benefit Analysis, Technical Specification document, Detail Design Document, Test Plan, Implementation Plan, Detailed Project Report, and Benefit Realization document.

III. Project Support Functions

All project support documents will be completed in applicable phases.

5. Work Elements, Schedule, and Budget

I. The project is accounted for project resources, technologies and tools required to whole analysis, implementation, and test of the application.
II. The project lead will be rotated for each phase within 5 team members.
III. The document for all phases will be revised in subsequent phases if applicable.

Budget and Resource Allocation

Salary	80,000.00
Office Operations/Supplies/Equipment/Consumables	40,000.00
Miscellaneous	20,000.00
Total	**Rs. 140,000.00**

Schedule

Identify the company	4 days	Tue 24.08.2021	Fri 27.08.2021
Conceptualize the project	1 day	Tue 31.08.2021	Tue 31.08.2021
Establish the vision, mission and objectives	3 days	Wed 01.09.2021	Fri 03.09.2021
Identify scope of the project	1 day	Mon 06.09.2021	Mon 06.09.2021
Develop preliminary schedules and cost estimates	1 day	Tue 07.09.2021	Wed 08.09.2021
Create Project charter	1 day	Wed 08.09.2021	Thu 09.09.2021
Develop business case for the project	1 day	Thu 09.09.2021	Fri 10.09.2021
Select development tools	2 days	Mon 13.09.2021	Wed 15.09.2021
Identify Customer Needs	3 days	Wed 15.09.2021	Fri 17.09.2021
Establish Target Specifications	2 days	Mon 20.09.2021	Wed 22.09.2021
Generate Product Concepts	2 days	Wed 22.09.2021	Thu 23.09.2021
Refine Product Specifications	2 days	Fri 24.09.2021	Mon 27.09.2021
Plan the Remaining Development Project	1 days	Tue 28.09.2021	Wed 29.09.2021
Detail Design	4 days	Wed 29.09.2021	Tue 05.10.2021
3D Modelling	4 days	Tue 05.10.2021	Mon 11.10.2021

FP METRIC

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Function Point Worksheet**											
2												
3							**Weighting Factor**					
4	**Measurement parameter**			Count		simple	average	complex	Choice			
5												
6	# of user inputs			4	X	3	4	6	3	=	12	
7	# of user outputs			6	X	4	5	7	4	=	24	
8	# of user inquiries			3	X	3	4	6	3	=	9	
9	# of files			1	X	7	10	15	7	=	7	
10	# of external interfaces			2	X	5	7	10	5	=	10	
11												
12								**Count-total (UFP)=**			62	
13												
14	Rate each factor on a scale of 0 to 5:				0 - No Influence		1 - Incidental		2 - Moderate			
15					3 - Average		4 - Significant		5 - Essential			
16												
17	1. Does the system require reliable backup and recovery?										4	
18	2. Are data communications required?										2	
19	3. Are there distributed processing functions?										0	
20	4. Is performance critical?										3	
21	5. Will the system run in an existing, heavily utilized operational environment?										2	
22	6. Does the system require on-line data entry?										4	
23	7. Does the on-line data entry require the input transaction to be built over multiple screens or operatio										3	
24	8. Are the master files updated on-line?										3	
25	9. Are the inputs, outputs, files, or inquiries complex?										2	
26	10. Is the internal processing complex?										2	
27	11. Is the code designed to be reusable?										3	
28	12. Are conversion and installation included in the design?										1	
29	13. Is the system designed for multiple installations in different organizations?										3	
30	14. Is the application designed to facilitate change and ease of use by the user?										3	
31												
32								**Total Complexity Adjustment Value =**			35	
33												
34												
35	**Product Complexity Adjustment (PC) =**				[.65+.01*CAV]							
36				=	1.000							
37												
38	**Total Adjusted Function Point (FP) =**				UFP * PC							
39				=	62							
40												
41	**Language Factor (LF) =**				60							
42												
43	**Source Lines of Code (SLOC) =**				FP * LF							
44				=	3720							
45												

ASSIGNMENT 4

1. Considering your immense expertise in software development, The Absolute Beginners Inc. has recently allotted you a mega project. The goal of the project is to create a database of all Hindi films released since 2000. The software would allow one to generate a list of top ten hit films, top ten flop films, best comedy films, and so on. Using your prior experience, you have decided the approximate sizes of each module of the software as follows:

- Data entry (0.9 KDSI)
- Data update (0.7 KDSI)
- Query (0.9 KDSI)
- Report generation and display (2 KDSI)

Also take into consideration the following cost drivers with their ratings:

- Storage constraints (Low)
- Experience in developing similar software (High)
- Programming capabilities of the developers (High)
- Application of software engineering methods (High)
- Use of software tools (High)

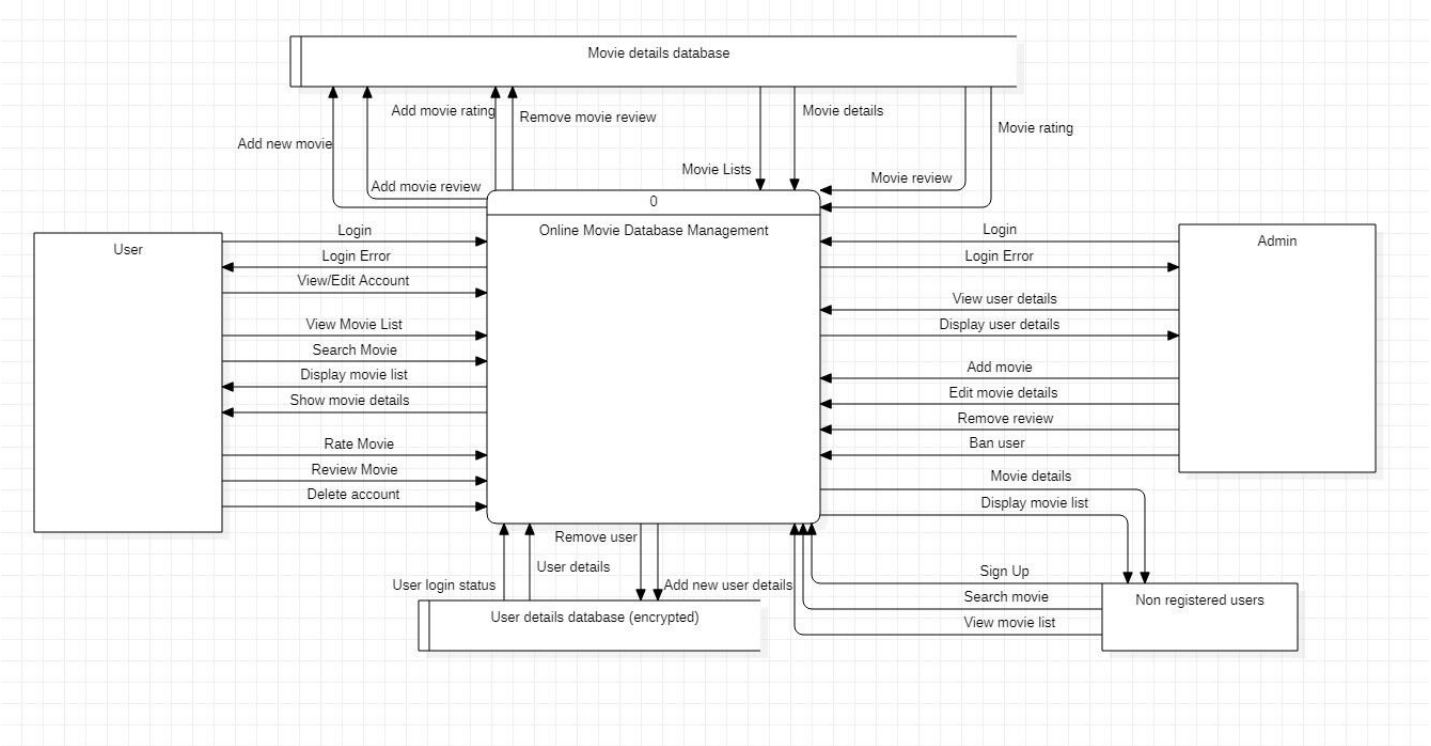
(All other cost drivers have nominal rating).

1. Now answer the following:

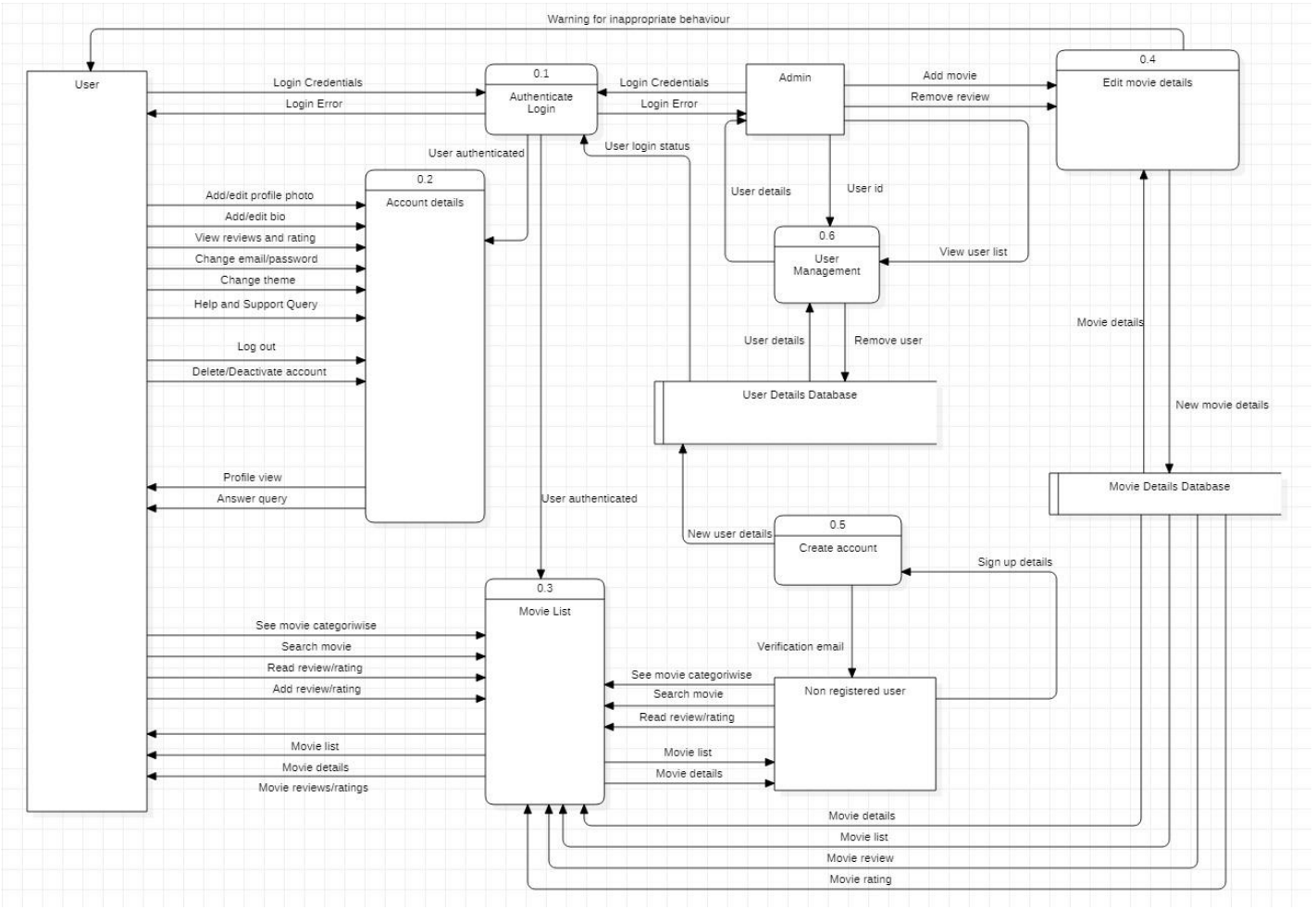
- Applying intermediate COCOMO estimate the effort required to develop this system.
- Applying intermediate COCOMO estimate the time required to develop this system.
- Calculate the phase wise effort percentage for the above application.
- Applying intermediate COCOMO estimate the minimum size of the team you would require to develop this system.
- Assuming that your client would pay Rs. 50,000 per month of development, how much would be the likely billing?

2. Prepare a Level 0 DFD of Movies database Management System.
3. Decompose into Level-1, Level-2 and Level-3 DFDs applicable wrt your SRS.

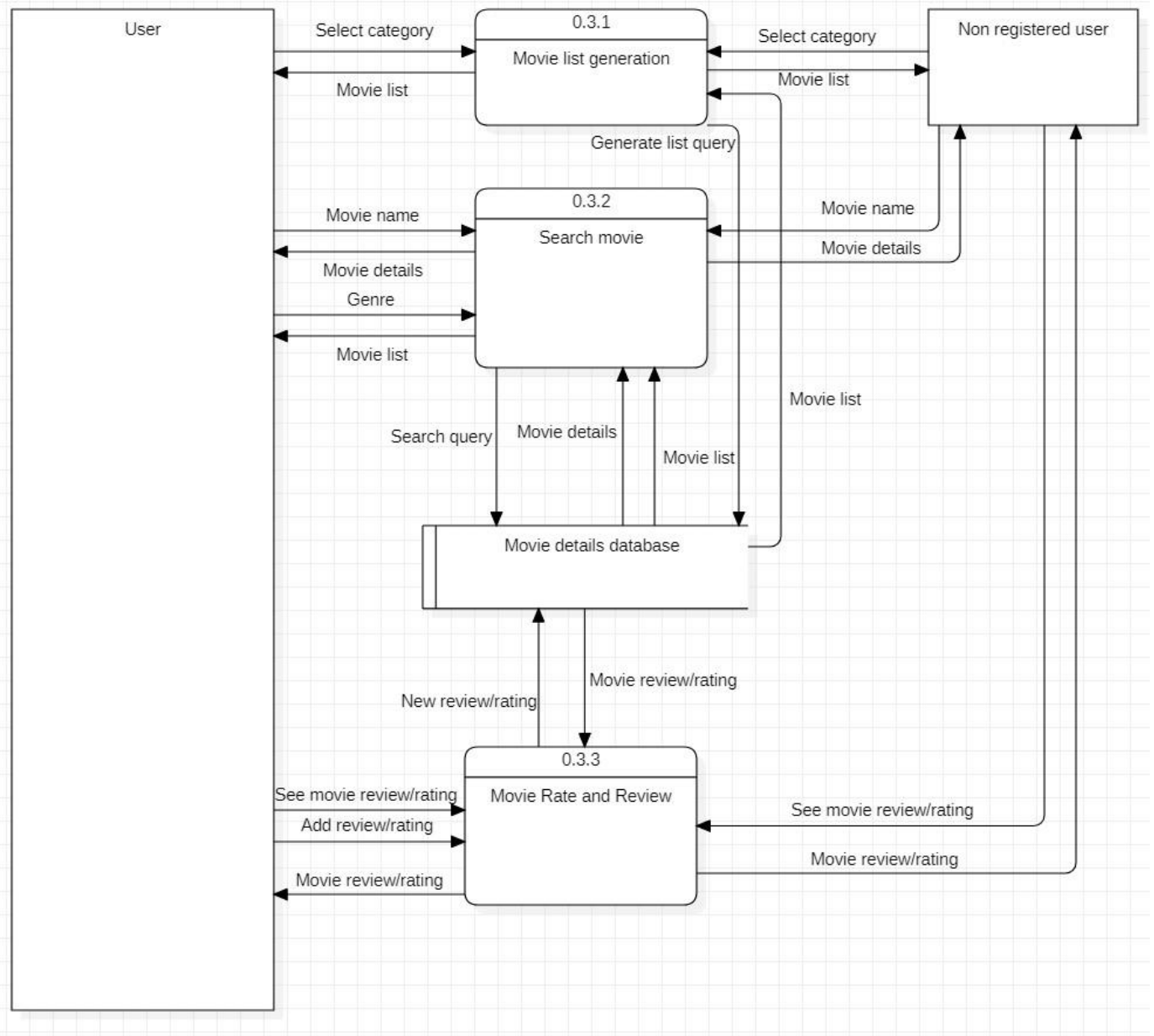
DFD LEVEL 0


Movie details database
Add movie rating
Remove movie review
Movie details
Movie rating
Add new movie
Movie Lists
Add movie review
Movie review
0
Online Movie Database Management
User
Login
Login Error
View/Edit Account
View Movie List
Search Movie
Display movie list
Show movie details
Rate Movie
Review Movie
Delete account
Admin
Login
Login Error
View user details
Display user details
Add movie
Edit movie details
Remove review
Ban user
Movie details
Display movie list
Remove user
User details
User login status
Add new user details
User details database (encrypted)
Sign Up
Search movie
View movie list
Non registered users

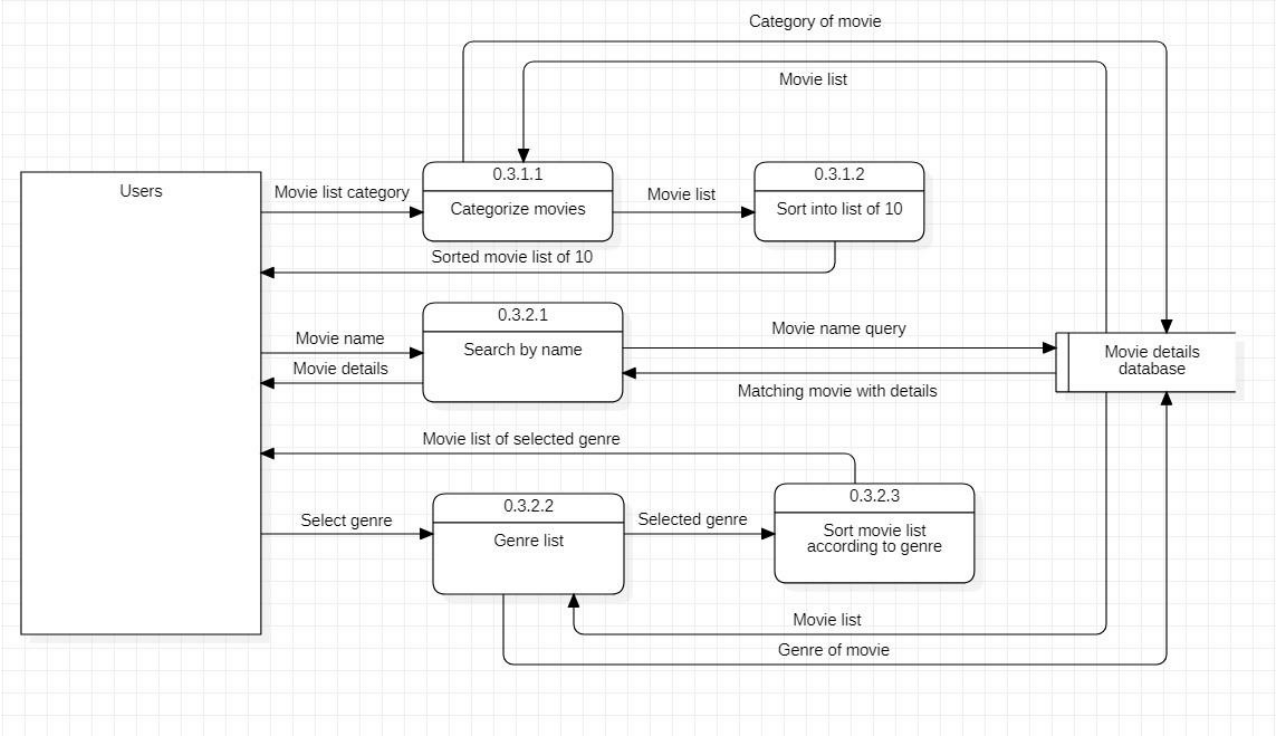
DFD LEVEL 1


Warning for inappropriate behaviour
User
Login Credentials
Login Error
0.1
Authenticate Login
Login Credentials
Login Error
Admin
Add movie
Remove review
0.4
Edit movie details
User authenticated
User login status
0.2
Account details
Add/edit profile photo
Add/edit bio
View reviews and rating
Change email/password
Change theme
Help and Support Query
Log out
Delete/Deactivate account
User details
User id
0.6
User Management
View user list
Movie details
User details
Remove user
User Details Database
New movie details
Profile view
Answer query
User authenticated
Movie Details Database
New user details
0.5
Create account
Sign up details
0.3
Movie List
See movie categoriwise
Search movie
Read review/rating
Add review/rating
Verification email
See movie categoriwise
Search movie
Read review/rating
Non registered user
Movie list
Movie details
Movie reviews/ratings
Movie list
Movie details
Movie details
Movie list
Movie review
Movie rating

DFD LEVEL 2


User
Select category
Movie list
0.3.1
Movie list generation
Select category
Movie list
Non registered user
Generate list query
Movie name
Movie details
Genre
Movie list
0.3.2
Search movie
Movie name
Movie details
Movie list
Search query
Movie details
Movie list
Movie details database
New review/rating
Movie review/rating
0.3.3
Movie Rate and Review
See movie review/rating
Add review/rating
Movie review/rating
See movie review/rating
Movie review/rating

DFD LEVEL 3


Category of movie
Movie list
Users
Movie list category
0.3.1.1
Categorize movies
Movie list
0.3.1.2
Sort into list of 10
Sorted movie list of 10
Movie name
Movie details
0.3.2.1
Search by name
Movie name query
Matching movie with details
Movie details database
Movie list of selected genre
Select genre
0.3.2.2
Genre list
Selected genre
0.3.2.3
Sort movie list according to genre
Movie list
Genre of movie

ASSIGNMENT 4

Analyze Online Movie Database Management System and prepare a SRS Document.

Software Requirements Specification

for

Online Movie Database Management System

Version 1.0 approved

Prepared by Ashutosh Kumar

Techno Main Salt Lake

25-10-2021

Table of Contents

5. Introduction

5.1. Purpose

The software whose software requirement is mentioned in the system is the Online Movie Database Management System. This is the 1.0 version of the software and is approved by the related authorities. The SRS covers the complete description of the Online Movie Database Management System and this aims at creating a combined database to search up latest movies at an ease.

5.2. Document Conventions

- Entire document must be justified
- Convention for main title
  - Font face: Times New Roman
  - Font Style: Bold
  - Font Size: 16
- Convention for Sub Title
  - Font face: Times New Roman
  - Font Style: Bold
  - Font Size: 14
- Convention for Body
  - Font face: Times New Roman
  - Font Size: 12
- Definitions
  - Database – Collection of data that are either entered by user or administrator.
  - DBMS — Database Management System.
  - FAQ — Frequently Asked Questions.
  - HTTPS — Hypertext Transfer Protocol Secure.
  - OS — Operating System.
  - REST — Representational State Transfer.
  - User – The people who will be using the application.

5.3. Product Scope

This Online Movie Database Management System will be able to present lists to users based on their search preferences. One can see lists of the top ten hit movies or top ten flop movies. The lists will be categorized accordingly and the top ten of each genre will be presented.

5.4. References

- IEEE. IEEE Recommended Practice for Software Requirements Specifications. Link - https://ieeexplore.ieee.org/document/6984101
- https://www.imdb.com/

6. History/Background Study (Sources of Domain Knowledge)

6.1. Technical Literature

Online Movie Database Management System is a software which allows users to generate lists of movies according to genres selected.

6.2. Existing Applications

- IMDB
- Rotten Tomatoes
- Movies.com

6.3. Current/Future requirements

Currently the software is used to keep a database of recent movies and sort them according to their genres.
Future modifications will be made based on user feedback.

7. Overall Description

7.1. Product Functions

- User can review movies and rate them.
- User can categorize movies according to their genres and ratings.
- Admin can add movies to the list.

7.1.1. Hardware Requirements

- A device (Computer/laptop) with at least 2 GB RAM
- Core i3 Processor or standard mobile processor
- Stable internet connection

7.1.2. Software Requirements

- Windows 7 or above OS for Desktop
- Chrome or Firefox browser

7.2. Functional Requirements

R: Online Social Networking System

R1: Sign up/ Sign in
Description— New users who wish to create a new account have to sign up. Existing users have to just login.

R1.1: Create new account (for user)
Input: Enter name, surname, mobile number, email address, password, date of birth, gender. Agree to terms and conditions.
Output: Account created prompt is displayed and verification link is sent to mail and contact number. Error message is displayed if any filled detail is wrong.

R1.2: Create new account (for admin)
Input: Enter name, surname, mobile number, email address, password, date of birth, gender. Agree to terms and conditions. Enter a specific code sent by company to admin.
Output: Account created prompt is displayed and verification link is sent to mail and contact number. Error message is displayed if any filled detail is wrong.

R1.3: Terms and Conditions
Input: Click on terms, Data Policy or Cookie policy.
Output: Redirect to the respective page, showing the details of each policy.

R1.3: Log in
Input: Email or phone number and password. Click on log in.
Output: Open home page of user. Send email to user if log in is done from a new device.

R1.3.1: Forgot password
Input: Click forgot password.
Output: The reset mail is sent to the user's email id.

R2: Account

Description— Profile, settings, display, saved, help & support and log out option.

R2.1: Profile

Description— User can see their profile page, make edits, add posts.

R2.1.1: Add or update profile photo.

Input: Select photo. Crop to fit. Save.
Output: Profile picture successfully updated prompt.

R2.1.2: Add or edit bio.

Input: User writes a short description about them.
Output: Updated bio successfully.

R2.1.3: Reviews and Ratings

Input: Navigate through list of reviews and ratings given by user.
Output: Display rating/review along with the movie name and date and time of posting.

R2.2: Settings

Description— User can change password or email.

R2.2.1: Change email or password

Input: Enter old email/password and new email/password.
Output: Apply the respective changes and send confirmation mail to user.

R2.3: Display

Description— User can edit their display preferences like theme.
Input: Select theme.
Output: Theme applied.

R2.4: Help and Support

Description— User can report a problem, mail feedback or search up a query.

R2.4.1: Report a problem.

Input: Enter problem description and add a screenshot if required.
Output: Send question to the designated authorities. Send mail notification to user who raised the query.

R2.4.2: Send feedback

Input: Enter feedback to be sent.
Output: Send feedback to the designated authorities. Send mail notification to user.

R2.4.3: Search a query.
Input: Select question from given list of FAQs.
Output: Display corresponding answer.

R2.5: Log out
Description— User can edit their privacy settings, change password or email, check login activity.
Input: Select log out option.
Output: Successfully logged out message.

R2.6: Delete/Deactivate account
Input: Select delete/deactivate account option. For deactivation, user inputs the time.
Output: Performs the respective operation after confirmation through mail.

R3: Movie List
Description— User can see movie lists according to their selected preference.

R3.1: Select category of top ten movies
Input: User can select the category for the given list of choices.
Output: Show the list of the top ten movies of that category.

R3.2: Search by category

R3.2.1: Search by name
Input: Enter the movie name.
Output: Display movies with related names.

R3.2.2: Search by genre
Input: Select genre of movies from the list.
Output: Display list of movies in that genre.

R3.3: Select movie
Input: User clicks on movie name.
Output: Redirected to the page of the movie providing it with details of movie – name, release date, rating, review, cast, production and brief plot of storyline.

R3.4: Read reviews
Input: User clicks on reviews under movie name.
Output: Movie reviews are displayed along with name and picture of user who posted the review.

R3.4.1: Sort reviews
Input: User can sort review according to their ratings from high to low, low to high or newest to oldest, oldest to newest.
Output: Display sorted list accordingly.

R4: Rate/Review a movie
Description— Allows users to rate and/or review a movie.

R4.1: Write reviews
Input: Write the review under the movie.
Output: Display review in the reviews list.

R4.2: Give ratings
Input: Rate the movie out of 5 stars.
Output: Display the new rating of the movie.

R5: Admin functions
Description— Admin can add movies, remove inappropriate reviews and ban users if they violate the community policy.

R5.1: Add movies to database
Input: Add movie name and details like genre, release date, rating, review, cast, production and brief plot of storyline
Output: Shows the newly added movie in its respective list.

R5.2: Remove reviews
Input: Remove inappropriate reviews.

Output: Review removed prompt. Respective user is sent a warning through mail.

R5.3: Ban users
Input: Users who have violated the community guidelines more than 5 times, are banned.
Output: Respective user is sent an email and they are not allowed to create any further account.

R5.4: Users details
Input: Select user database list.
Output: Displays list of users along with their details like name, number and email id.

3.3. Non-Functional Requirements

3.3.1. Correctness Requirement

This software performs accurately as intended and in no other way.

3.3.2. Usability Requirement

The software has a simple but efficient user interface, which can be used by all types of users, both technically sound as well as people not having so much knowledge about technology. So, any user can use its functionalities without any sort of complications.

3.3.3. Portability Requirement

This software provides a web based interface to the user. Any device with latest stable browser will be able to run this software if they have JavaScript enabled and Cookies enabled.

3.3.4. Availability Requirement

The software will be available 24/7. Moreover, the software would be available on internet.

3.3.5. Efficiency Requirement

The software is highly efficient and various tasks in its various modules and sub-modules can be performed simultaneously.

3.3.6. Performance Requirement

The database can accommodate high number of users and data without any fault. As the latest technologies have been used, so the system would be very responsive and the response would be extremely fast.

3.3.7. Reliability Requirement

The system is extremely reliable as there are proper measures to protect the data of the users. Proper firewall and other security measures have been used to prevent any kind of breaching. The software stores no personal data from the user.

3.4. User Characteristics

For user:

- Search movies.
- Categorize movies into list view.
- Read reviews.
- Rate movies.
- Write reviews.

For admin:

- Add movies to the list.
- Maintains community guidelines.

3.5. Design and Implementation Constraints

- Any update will have to be recorded and the correct information must be updated and all the changes must be done as soon as possible. There is no provision for saving incomplete data.
- Users can access from any computer that has a stable internet connection and proper browsing capabilities.

3.6. Assumption and Dependencies

Assumptions:

- Coding is error free.
- User must use their username and correct passwords.
- User must have valid email address before making an account.

Dependencies:

- Hardware and software specifications of the running environment.
- Correct data entered by all users.

4. Interface Requirements

4.1. User Interfaces

4.1.1. Register/Sign-In Interface:

If user is not yet registered, sign up is required by providing necessary details, else the user logs in by entering required details. Error prompt is displayed if there is any wrong input provided.

4.1.2. Movie List Interface:

The user can search for movies by entering movie name in search box. User can categorize movie list by genres or by top 10 list.

4.1.3. User details Interface:

User can update their profile picture, add bio or change email or password.

4.1.4. Movie Review Interface:

User can sort movies in a particular genre according to its rating. User can read reviews. User can write reviews and rate movies.

4.1.5. Movie Details Interface:

Movies details are provided such as poster, director, producer, cast, details of production team, plot outline, reviews and ratings.

4.1.6. Support Interface:

User can ask their queries and share their problems. User's problem will be responded to as soon as possible.

4.1.7. Admin Interface:

Admin can see user details and remove reviews. Admin can ban users.

4.2. Hardware Interfaces

No extra hardware required other than ones mentioned.

4.3. Software Interfaces

We use the software in the web browsers like Mozilla Firefox, Chrome, etc… That contains the first software interface. Then, the database DBMS along with the tool, consists of the second software interface. The third one is constituted by the mail verification tool, which helps in validating the account. There are many sub–software interface. But these are the major ones.

4.4. Communication Interfaces

The communication architecture must follow the client-server model. Communication
between the client and server should utilize a REST-compliant web service and must be served over HTTP Secure (HTTPS).
As the verification will be done through the emails, this has to be included in the communication interface. The various web browsers like Chromo and Mozilla Firefox, on which this system has been already tested are also a part of the communication interface. The communication that is being done during the process must be encrypted and has to be monitored by an antivirus.

8. Conclusion

Online Movie Database Management System is a software which will provide a simple interface to the user for selecting movies. In the world of evolving technology, it will be an essential tool for all hindi movie lovers where they can easily look up any movie and decide on what to watch.

FP METRIC

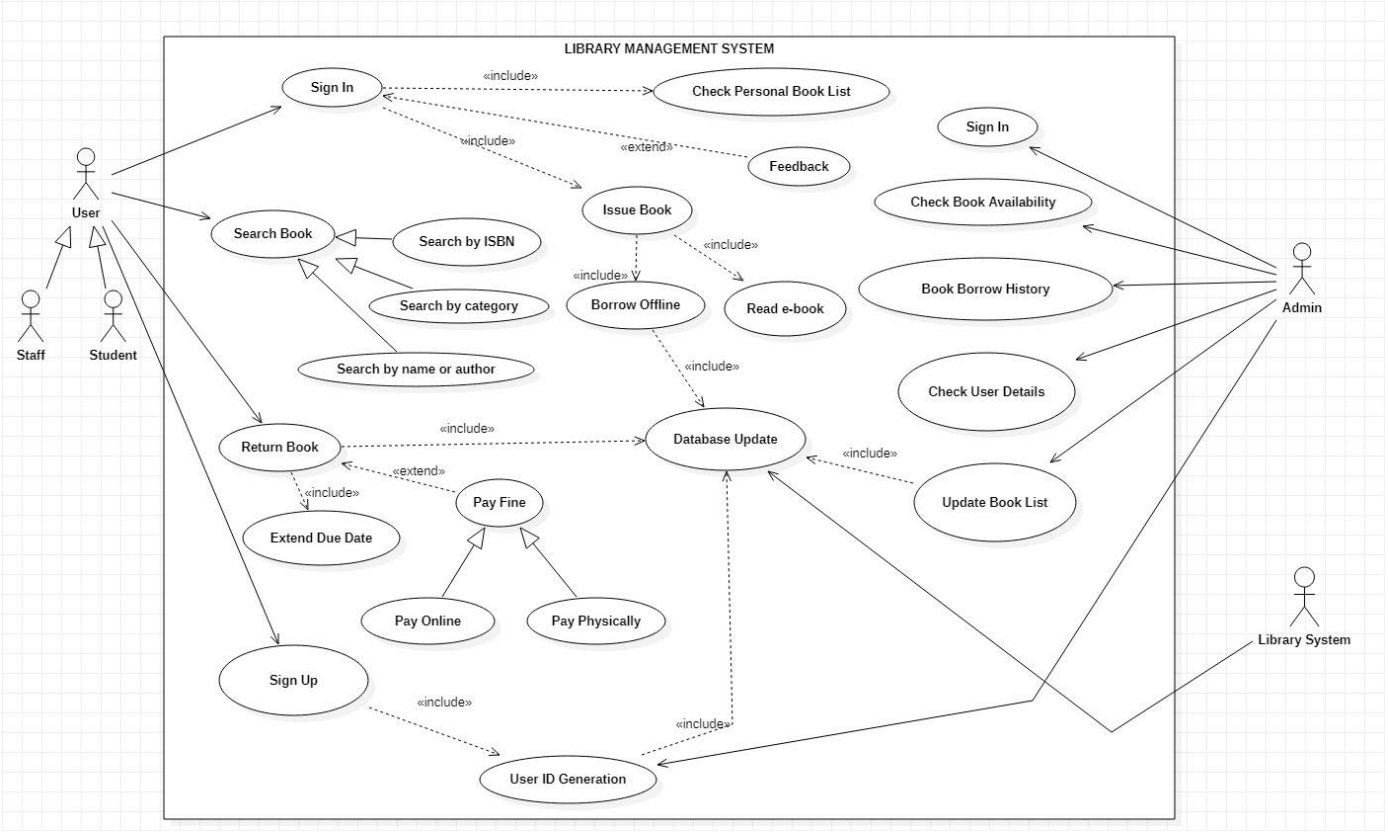
	A	B	C	D	E	F	G	H	I	J	K
1	**Function Point Worksheet**										
2											
3							**Weighting Factor**				
4	**Measurement parameter**			Count		simple	average	complex	Choice		
5											
6	# of user inputs			11	X	3	4	6	3	=	33
7	# of user outputs			7	X	4	5	7	4	=	28
8	# of user inquiries			5	X	3	4	6	3	=	15
9	# of files			2	X	7	10	15	7	=	14
10	# of external interfaces			3	X	5	7	10	5	=	15
11											
12								**Count-total (UFP)=**			105
13											
14	Rate each factor on a scale of 0 to 5:				0 - No Influence		1 - Incidental		2 - Moderate		
15					3 - Average		4 - Significant		5 - Essential		
16											
17	1. Does the system require reliable backup and recovery?										3
18	2. Are data communications required?										3
19	3. Are there distributed processing functions?										3
20	4. Is performance critical?										2
21	5. Will the system run in an existing, heavily utilized operational environment?										2
22	6. Does the system require on-line data entry?										4
23	7. Does the on-line data entry require the input transaction to be built over multiple screens or operatio										4
24	8. Are the master files updated on-line?										3
25	9. Are the inputs, outputs, files, or inquiries complex?										1
26	10. Is the internal processing complex?										2
27	11. Is the code designed to be reusable?										3
28	12. Are conversion and installation included in the design?										2
29	13. Is the system designed for multiple installations in different organizations?										1
30	14. Is the application designed to facilitate change and ease of use by the user?										4
31											
32									**Total Complexity Adjustment Value =**		37
33											
34											
35	**Product Complexity Adjustment (PC) =**				[.65+.01*CAV]						
36					=	1.020					
37											
38	**Total Adjusted Function Point (FP) =**				UFP * PC						
39					=	107.1					
40											
41	**Language Factor (LF) =**				60						
42											
43	**Source Lines of Code (SLOC) =**				FP * LF						
44					=	6426					

COCOMO

	A	B	C	D	E	F	G	H
1	**Intermediate COCOMO**							
2								
3	**MODULE**						**KDSI**	
4	Data entry						0.9	
5	Data update						0.7	
6	Query						0.9	
7	Report generation and display						2	
8	**TOTAL**						**4.5**	
9								
10	**COST DRIVERS**						**RATINGS**	
11	Storage Constraints (Low)						1	
12	Experience in developing similar software (High)						0.91	
13	Programming capabilities of the developers (High)						0.95	
14	Application of software engineering methods (High)						0.91	
15	Use of software tools (High)						0.91	
16	**EAF**						**0.715892**	
17								
18	Since KLOC<50, Project will be **Organic**							
19								
20	**a**						3.2	
21	**b**						1.05	
22	**c**						0.38	
23								
24	**EFFORT**						**11**	**PM**
25	$\mathbf{T_{dev}}$						**6**	**Months**
26	**TEAM SIZE**						**2**	**Persons**
27	**BILLING**					₹	**600000**	
28								

ASSIGNMENT 5

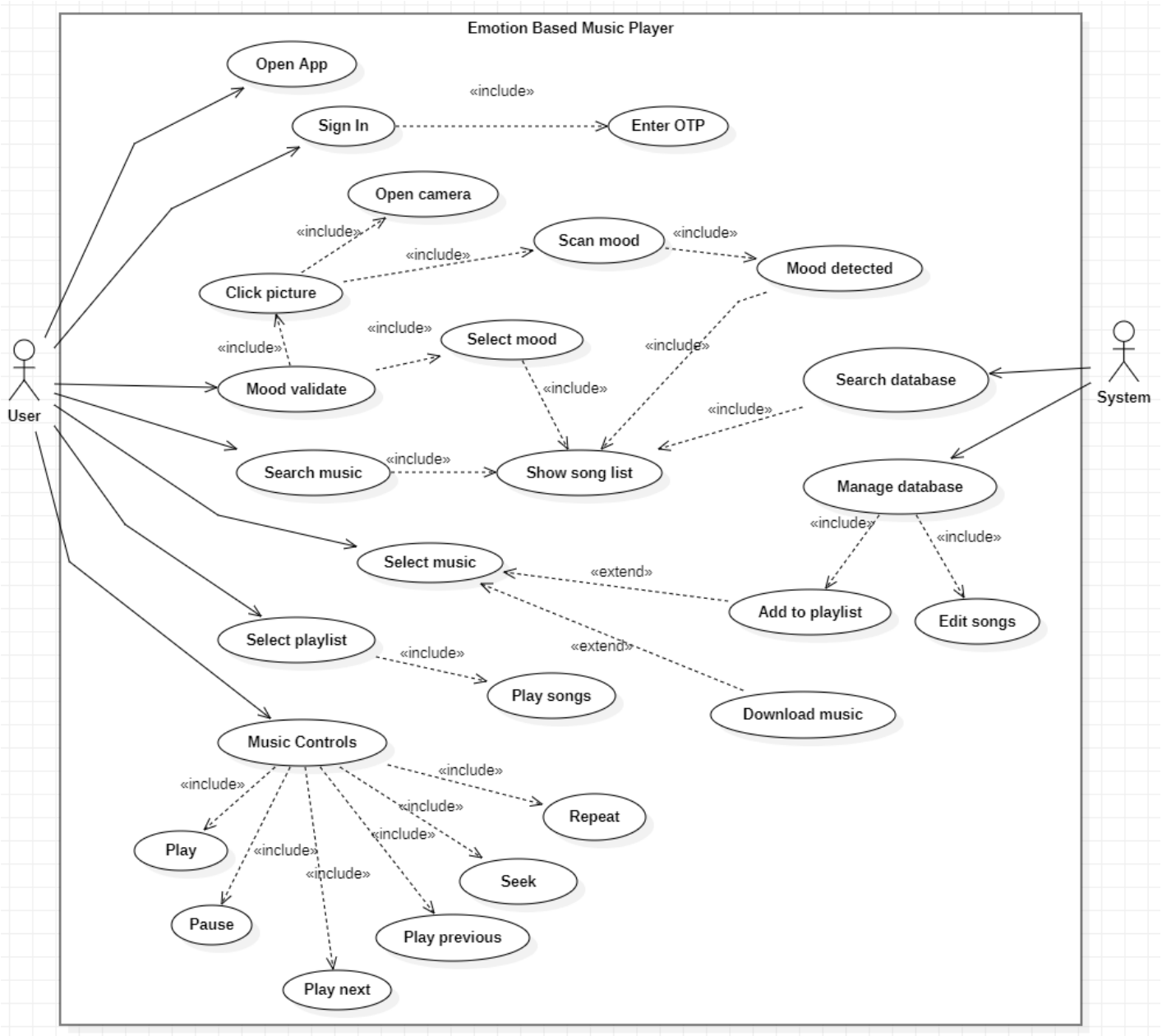
Draw a use case diagram of library Management system using the staruml.



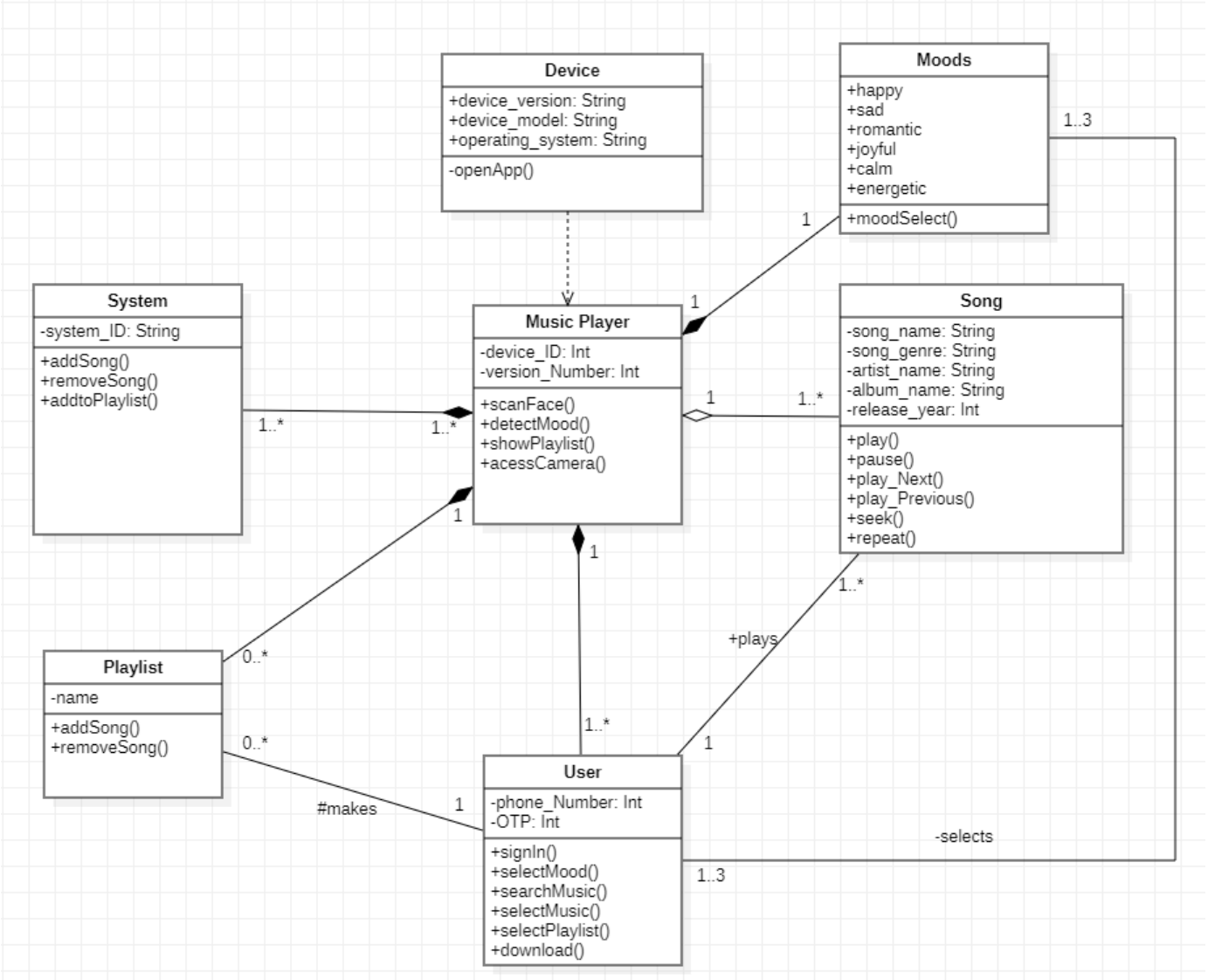
ASSIGNMENT 6

Draw the following:
1. Use Case and Class Diagram for:
- Emotion based Music Player

USE CASE



CLASS DIAGRAM

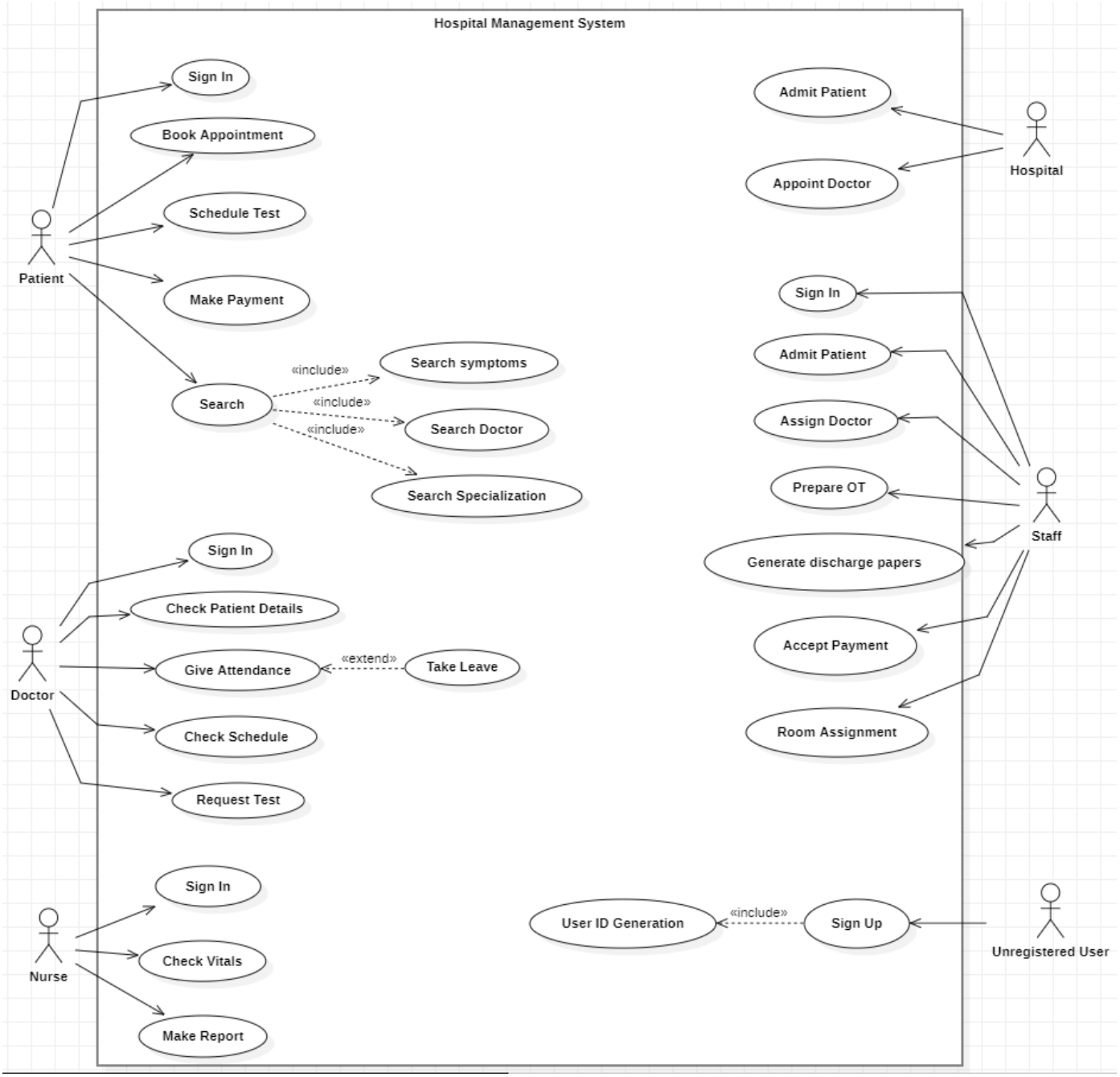


ASSIGNMENT 7

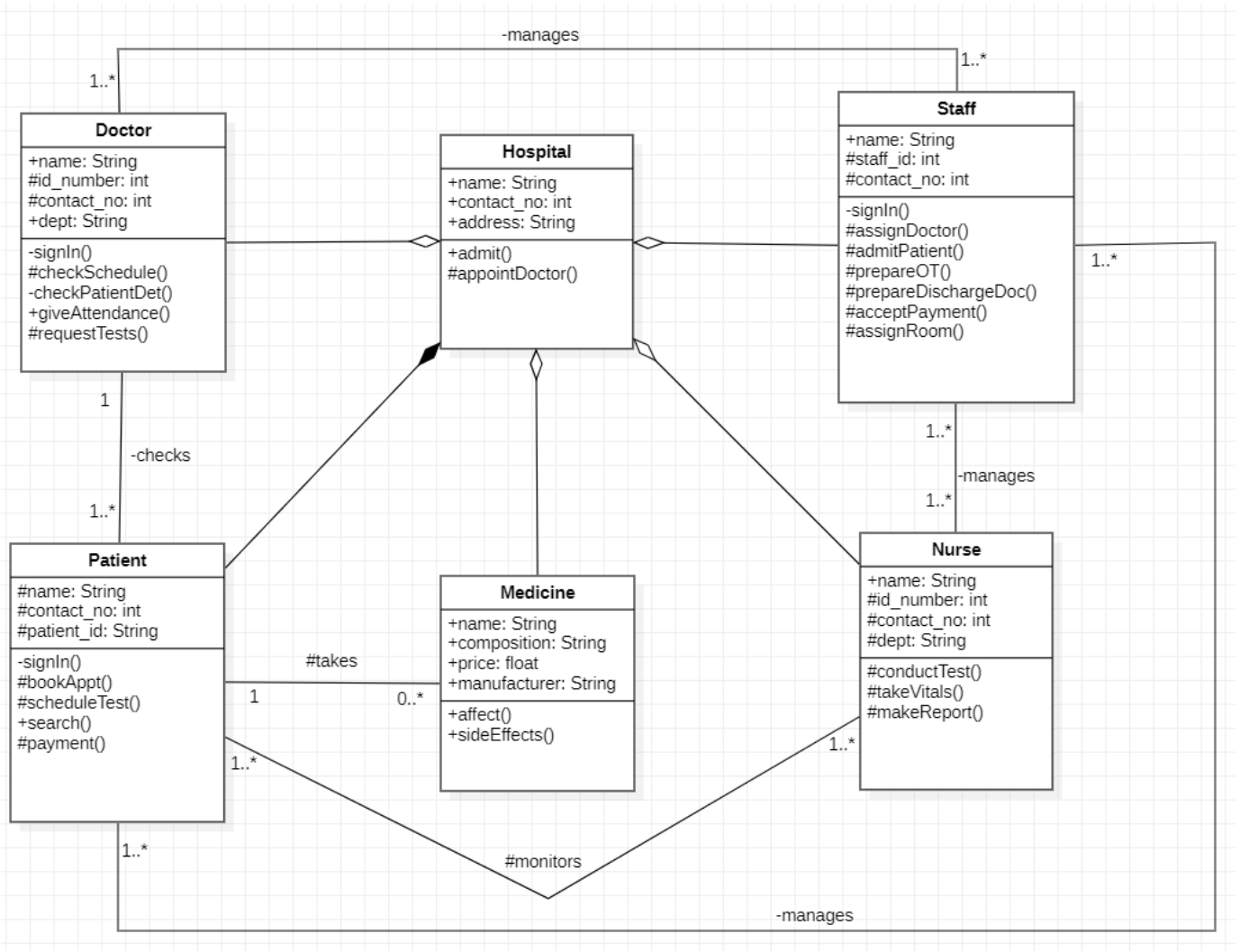
Draw a Use Case and Class Diagram for:

- Hospital Management System

USE CASE

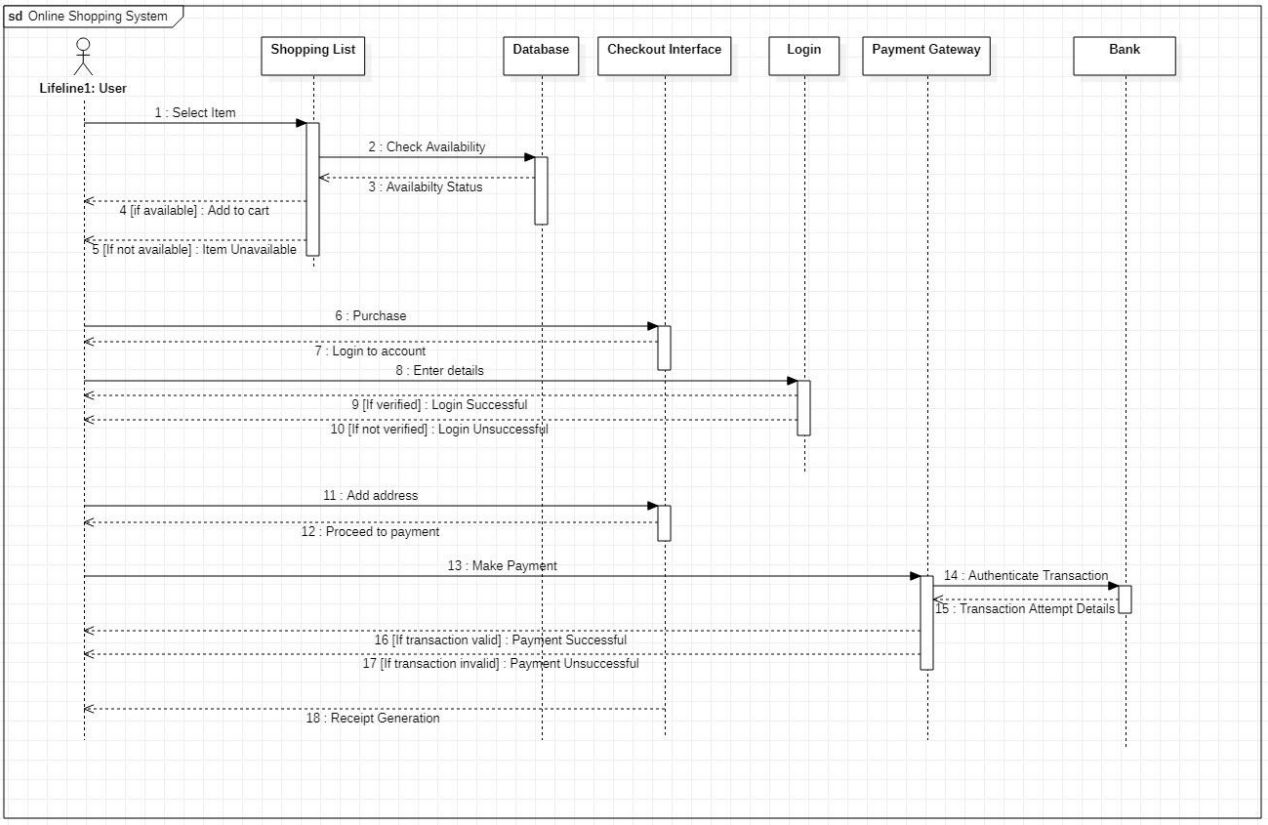


CLASS DIAGRAM



ASSIGNMENT 8

Draw a sequence diagram on Online Shopping System.

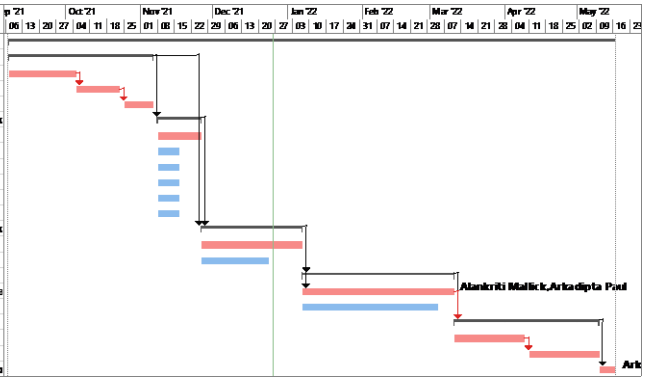


ASSIGNMENT 9

a) Draw a Gantt chart for a "Library Management System" using MS Project.
b) Prepare a SPMP to plan the project.
c) Estimate the size, time, cost, effort and staff requirements using Function point metric and COCOMO Model.
d) Draft a test plan illustrating all test cases.

a) Gantt Chart

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1		Library Management	180 days	Tue 07-09-21	Mon 16-05-22		
2		Planning	44 days	Tue 07-09-21	Fri 05-11-21		Alankriti
3		Feasibility Study	20 days	Tue 07-09-21	Mon 04-10-21		
4		Requirements	14 days	Tue 05-10-21	Fri 22-10-21	3	
5		Requirements	10 days	Mon 25-10-21	Fri 05-11-21	4	
6		Visual Modelling	14 days	Mon 08-11-21	Thu 25-11-21	2	Alankriti Mallick,Ark
7		Design DFD	14 days	Mon 08-11-21	Thu 25-11-21		
8		Design Class Diagram	7 days	Mon 08-11-21	Tue 16-11-21		
9		Design Use case	7 days	Mon 08-11-21	Tue 16-11-21		
10		Design Activity	7 days	Mon 08-11-21	Tue 16-11-21		
11		Design Statechart	7 days	Mon 08-11-21	Tue 16-11-21		
12		Design Sequence	7 days	Mon 08-11-21	Tue 16-11-21		
13		Design	30 days	Fri 26-11-21	Thu 06-01-22	2,6	Alankriti Mallick,Ark
14		Design Database	30 days	Fri 26-11-21	Thu 06-01-22		
15		Design GUI	20 days	Fri 26-11-21	Thu 23-12-21		
16		Coding	45 days	Fri 07-01-22	Thu 10-03-22	13	
17		Database Coding	45 days	Fri 07-01-22	Thu 10-03-22	13	Alankriti Mallick,Arka
18		GUI Coding	40 days	Fri 07-01-22	Thu 03-03-22		
19		Testing	42 days	Fri 11-03-22	Mon 09-05-22	17,16	
20		Unit Testing	21 days	Fri 11-03-22	Fri 08-04-22		
21		Integrated Testing	21 days	Mon 11-04-22	Mon 09-05-22	20	
22		Deployment	5 days	Tue 10-05-22	Mon 16-05-22	19	Arkadipta Paul,Alank



b) SPMP

Software Project Management Plan for "Library Management System"

6. Introduction

In the project, a system has to be designed to support library management system. The software application to be made consists of at least three main functions, which must interact using the internet. The application may involve the basic e-commerce activities, such as members' login, browsing, issuing and reserving books. The entire system has to be developed (in JAVA) in a way that it is easy to maintain and extend.

I. Project Overview

This project is to create a prototype of library management system. It is an online application like a virtual library on the Internet where customers can borrow books and as well as read books with interest. The customer can create their own user id for accessing this system frequently. The customer will be asked to fill payment information of fine for late returning the books such as credit card number. A notification is sent to the customer's email as soon as the transaction will be done and every time notification will be sent to the users after a successful reserving of a book.

II. Project Deliverables

1. Preliminary Project Plan	04.10.2021
2. Requirements Specification	05.11.2021
3. Architecture Specification	25.11.2021
4. Design	06.01.2022
5. Source Code	07.01.2022 - 10.03.2022
6. Test Plan	11.03.2022 - 09.05.2022
7. Final Product Demo	10.05.2022

III. Evolution of this document

This document will be updated as the project progresses. Updates should be expected in the following sections:

vi. ***References*** - updated as necessary.
vii. ***Definitions, acronyms, and abbreviations*** - updated as necessary.
viii. ***Organizational Structure*** will be updated as the team leaders are assigned for each phase.
ix. ***Technical Process*** - this section will be revised appropriately as the requirements and design decisions become clearer.
x. ***Schedule*** – as the project progresses, the schedule will be updated accordingly.

Revision History

Revision	Date	Updated By	Update Comments
0.1	03.09.2021	Ashutosh Kumar	First Draft

IV. References

- https://www.softwaresuggest.com/library-management-software#:~:text=Some%20commonly%20used%20LMS%20Software,%2C%20LIBRARIAN%2C%20Readerware%2C%20etc.
- https://www.educative.io/courses/grokking-the-object-oriented-design-interview/RMlM3NgjAyR

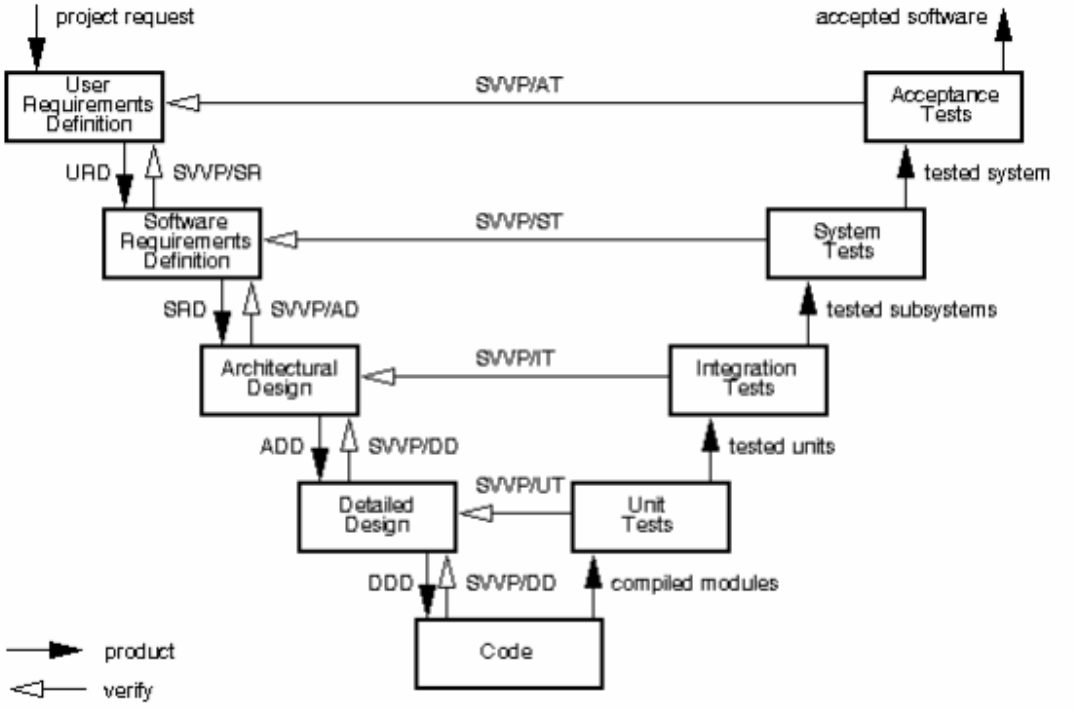
V. Definitions, Acronyms, and Abbreviations

i. UML - Unified Modeling Language
ii. AD - Architectural Design
iii. DD - Detailed Design
iv. DDD - Detailed Design Document
v. ITP - Integration Test Plan Monitor Application that either monitors dispatchers
vi. PM - Project Manager
vii. QAM - Quality Assurance Manager
viii. SCMP - Software Configuration Management Plan
ix. SM - Senior Management SPMP Software Project Management Plan (this document)
x. SQA - Software Quality Assurance
xi. SQAP - Software Quality Assurance Plan
xii. SR - Software Requirements
xiii. SRD - Software Requirements Document
xiv. STD - Software Transfer Document
xv. STP - Software Test Plan Submitter Application that submits jobs to dispatchers
xvi. SUM - Software User Manual
xvii. TBD – To Be Decided
xviii. TR - Transfer Phase
xix. LMS – Library Management System
xx. URD - User Requirements Document
xxi. UTP - Unit Test Plan
xxii. VPM - Vice Project Manager

7. Project Organization

I. Process Model

The process used for this project will be a V-model such that each stage of the model allows us to do testing after completing a phase. Referring to the diagram below, each phase is tested after completion.



II. Organizational Structure

Team Members –

i. Alankriti Mallick
ii. Arkadipta Paul

Name	Organization/ Position	Contact Information
Ashish Kashyap	ITech Project Manager	alankriti1108@gmail.com 8420234363

Days	Deliverable	Team Leader	Deliverable Description
20	1	Ashutosh	Project Plan
10	2	Ashutosh	Requirements Specification
14	3	Ashutosh	Architecture Specification
30	4	Ashutosh	Design
45	5	Ashutosh	Source Code
42	6	Ashutosh	Test Plan
5	7	Ashutosh	Final Deliverable

III. Organizational Boundaries and Interfaces

Team leaders throughout each development of the phases will be responsible for coordinating team meetings, updates, communications, and team deliverables.

IV. Project Responsibilities

For the most vital responsibilities per phase of each team members, please refer to segment 2.2. Ultimately the project team is responsible for the successful delivery of the product. The team member tasks per deliverable according to expertise and the phases are as given below:

9. Project Plan – Whole Team
10. Requirements Specification – TBD
11. Analysis – TBD
12. Architecture Specification – TBD
13. Component/Object Specification – TBD
14. Source Code – TBD
15. Test Plan – TBD
16. Final Deliverable – Entire Team

Name	Organization/ Position	Role/Responsibilities
Ashish Kashyap	ITech Project Manager	• Managing and leading the project team. • Developing and maintaining a detailed project plan. • Monitoring project progress and performance. • Managing project evaluation and dissemination activities. • **Develop corrective actions when necessary.**
Ashish Kashyap	ITech Business Analyst	• Prepare reports on project plans, status, progress, risks, deadlines and resource requirements. • Develop and perform work flow analysis to find out the difficulties in reaching goals. • Provide project cost estimates.
Ashish Kashyap	ITech Designer	• Propose effective design solutions to meet project goals. • Prepare design layouts and sketches according to company design standards.

		• Keeping of records and files.
Ashish Kashyap	ITech Staff	• Documentation of daily activities. • Making kick-off meeting reports. • In-charge of materials needed for team building activities.

8. Managerial Process

I. Management Objectives and Priorities

The management objective is to deliver the product in time and of high quality. The PM and QAM work together to achieve this by respectively checking that progress is made as planned and monitoring the quality of the product at various stages.

II. Assumptions, Dependencies, and Constraints

In this project plan, a number of factors are taken into account. The following list shows the way milestones on various project phases have been scheduled:

• The team budget of 2 persons x 365 hours = 730 hours
• The project deadline of May 16th.
• The final presentation is on May 10th.
• Other than the weekends, holiday is closed.

NOTE: Due to the deadline of May 16th, running out of time will have its reflection on the product, and not on the duration of the project. By assigning a priority to every user requirement, a selection can be made of user requirements that may be dropped out if time runs out.

III. Risk Management

This section mentions any potential risks for the project. Also, schedules or methods are defined to prevent or to reduce the risks as below:

i. Technology risk
ii. People risk
iii. Financial risk
iv. Market risk
v. Structure/process risk

The following are the possible risks to be encountered during the development of the project and how they can be prevented.

4. Miscommunication

Prevention: Team members should not hesitate to ask and re-ask questions if things are unclear. Team members should have a written copy of the tasks assigned to them every meeting.
Correction: When it becomes clear that miscommunication is causing problems, the team members should gather in a meeting to clear things up.

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6. Illness or absence of team members
   Prevention: Team members should warn their team leader or the PM timely before a planned period of absence.
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Monitoring and Controlling Mechanisms:

The monitoring of progress is done by the PM using the following means:

Project Kick-off Meetings

The project group meetings take place within the class room or through chat. These meetings are meant to inform each other of the progress made on various tasks and to assign new tasks.

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Progress report is done every Friday. This is meant to inform and show the progress in the development of the project and how things are going.

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The monitoring of progress is done by the PM using the following means:

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iv. Tracking utilizing baselines in MS project

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The project will be implemented utilizing V-model methodology, and tools such as Dreamweaver, Microsoft Project, Star UML, Java, MySQL, QTP, and Load Runner will be utilized. The risks for each category are listed to complete the project successfully. For each risk, a description, a probability of occurrence, the associated action and the impact of the risk are given.

II. Software Documentation

Documentation such as Project Charter, Business Requirement Document, Functional Specification document, Cost Benefit Analysis, Technical Specification document, Detail Design Document, Test Plan, Implementation Plan, Detailed Project Report, and Benefit Realization document.

III. Project Support Functions

All project support documents will be completed in applicable phases.

10. Work Elements, Schedule, and Budget

I. The project is accounted for project resources, technologies and tools required to whole analysis, implementation, and test of the application.
II. The document for all phases will be revised in subsequent phases if applicable.

Budget and Resource Allocation

Salary		2,40,000.00
Office Operations/Supplies/Equipment/Consumables		50,000.00
Miscellaneous		10,000.00
Total	**Rs.**	**300,000.00**

Schedule

Task Name	Duration	Start	Finish
Library Management System	**180 days**	**Tue 07-09-21**	**Mon 16-05-22**
Planning	**44 days**	**Tue 07-09-21**	**Fri 05-11-21**
Feasibility Study	20 days	Tue 07-09-21	Mon 04-10-21
Requirements Analysis	14 days	Tue 05-10-21	Fri 22-10-21
Requirements Specification	10 days	Mon 25-10-21	Fri 05-11-21
Visual Modelling	**14 days**	**Mon 08-11-21**	**Thu 25-11-21**
Design DFD	14 days	Mon 08-11-21	Thu 25-11-21
Design Class Diagram	7 days	Mon 08-11-21	Tue 16-11-21
Design Use case Diagram	7 days	Mon 08-11-21	Tue 16-11-21
Design Activity Diagram	7 days	Mon 08-11-21	Tue 16-11-21
Design Statechart Diagram	7 days	Mon 08-11-21	Tue 16-11-21
Design Sequence Diagram	7 days	Mon 08-11-21	Tue 16-11-21
Design	**30 days**	**Fri 26-11-21**	**Thu 06-01-22**
Design Database	30 days	Fri 26-11-21	Thu 06-01-22
Design GUI	20 days	Fri 26-11-21	Thu 23-12-21
Coding	**45 days**	**Fri 07-01-22**	**Thu 10-03-22**
Database Coding	45 days	Fri 07-01-22	Thu 10-03-22
GUI Coding	40 days	Fri 07-01-22	Thu 03-03-22
Testing	**42 days**	**Fri 11-03-22**	**Mon 09-05-22**
Unit Testing	21 days	Fri 11-03-22	Fri 08-04-22
Integrated Testing	21 days	Mon 11-04-22	Mon 09-05-22
Deployment	5 days	Tue 10-05-22	Mon 16-05-22

c) FP METRIC AND COCOMO

Function Point Worksheet

Measurement parameter	Count		Weighting Factor: simple	average	complex	Choice		
# of user inputs	4	X	3	4	6	3	=	12
# of user outputs	6	X	4	5	7	4	=	24
# of user inquiries	3	X	3	4	6	3	=	9
# of files	1	X	7	10	15	7	=	7
# of external interfaces	2	X	5	7	10	5	=	10
					Count-total (UFP)=			62

Rate each factor on a scale of 0 to 5:	0 - No Influence	1 - Incidental	2 - Moderate
	3 - Average	4 - Significant	5 - Essential

1. Does the system require reliable backup and recovery?	4
2. Are data communications required?	2
3. Are there distributed processing functions?	0
4. Is performance critical?	3
5. Will the system run in an existing, heavily utilized operational environment?	2
6. Does the system require on-line data entry?	4
7. Does the on-line data entry require the input transaction to be built over multiple screens or operations?	3
8. Are the master files updated on-line?	3
9. Are the inputs, outputs, files, or inquiries complex?	2
10. Is the internal processing complex?	2
11. Is the code designed to be reusable?	3
12. Are conversion and installation included in the design?	1
13. Is the system designed for multiple installations in different organizations?	3
14. Is the application designed to facilitate change and ease of use by the user?	3
Total Complexity Adjustment Value =	35

Product Complexity Adjustment (PC) =	[.65+.01*CAV]
=	1.000
Total Adjusted Function Point (FP) =	UFP * PC
=	62
Language Factor (LF) =	60
Source Lines of Code (SLOC) =	FP * LF
=	3720

Basic COCOMO								
KLOC						**3.72**		
Since KLOC<50, Project will be **Organic**								
a						2.4		
b						1.05		
c						0.38		
EFFORT						**10**	**Person Months**	
T_{dev}						**6**	**Months**	
TEAM SIZE						**2**	**Persons**	
BILLING					₹	**300000**		

d) TEST CASE

Test Case 1

Test Case 2

Test Case 3

Test Case ID	LMS_003	**Test Case Description**	Test the Search Functionality in Online Library Management System		
Created By	Alankriti Mallick	**Reviewed By**	Alankriti Mallick	**Version**	1.1
QA Tester's Log	NA				
Tester's Name	Alankriti Mallick	**Date Tested**	04-Apr-2022	**Test Case (Pass/Fail/Not Executed)**	Pass

S #	Prerequisites:	S #	Test Data
1	Access to Chrome Browser	1	Subject: Software Engineering
2	Access to Internet	2	
3	Already have an account in LMS	3	
4		4	

Test Scenario Verify on searching a book by subject, list of matching results appear

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Navigate to LMS Site	Site should open	As Expected	Pass
2	Enter UserID & Password	Credential can be entered	As Expected	Pass
3	Click Submit	Logged in	As Expected	Pass
4	Click Search	Show list of search options	As Expected	Pass
5	Click search by subject	Prompt to enter subject name	As Expected	Pass
6	Enter Subject	Show list of books of that subject	As Expected	Pass

ASSIGNMENT 10

Multimedia information like text, audio, video, and any combination of those are most pervasive in almost every application field namely Computer, Network, Smartphone, and elsewhere. We also require a high degree of privacy of our own document. There is a problem with how such a document can be protected from unauthorized access. Of course, there are many methods such as using passwords, smartcards, biometrics, etc. are known. Nevertheless, the existing methods have their own limitations as robustness and cost issues. This project would aim to devise a (new) method and develop a user-friendly and cost-effective solution to the problem.

Input:

• A detailed profile of the user, who wishes to protect the document. The profile template will be finalized after a careful discussion with the team member (i.e., a software engineer here).
• If any other input that might require.
• Document itself to be protected.

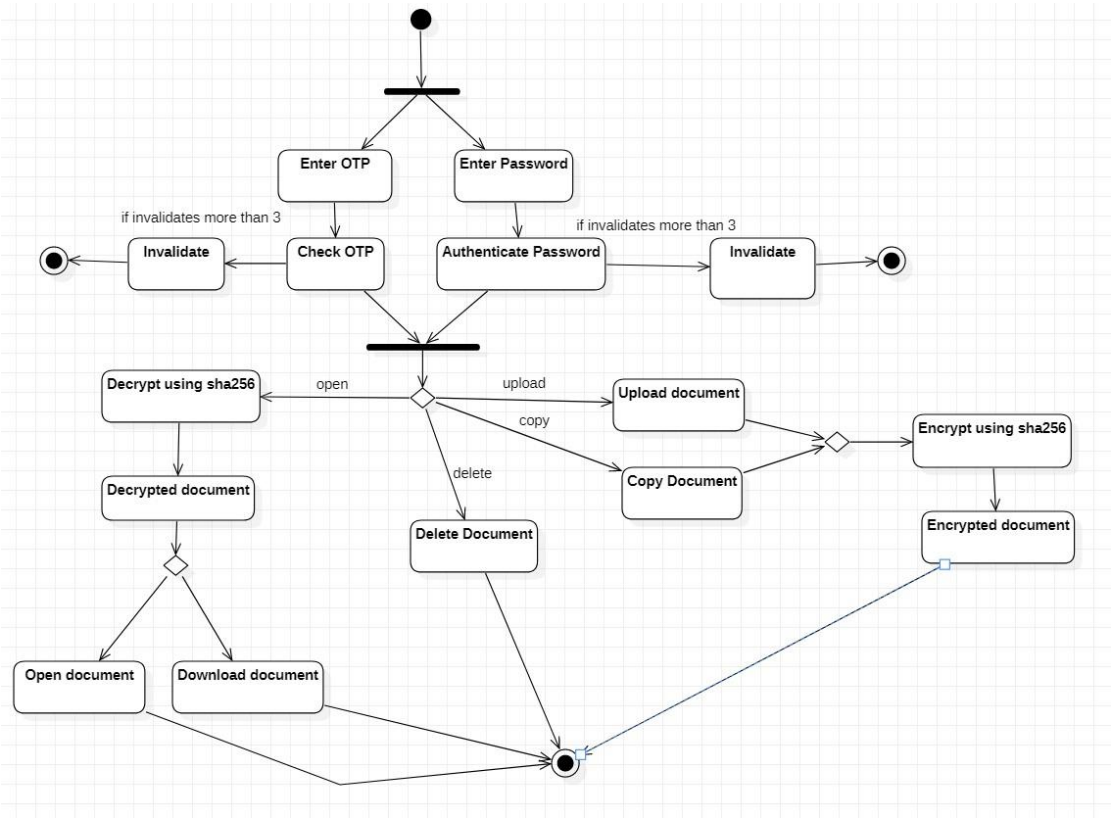
Functions:

• Encryption of document
• Decryption of document
• Opening a document under the protection
• Deleting a document under the protection
• Copying a document under the protection

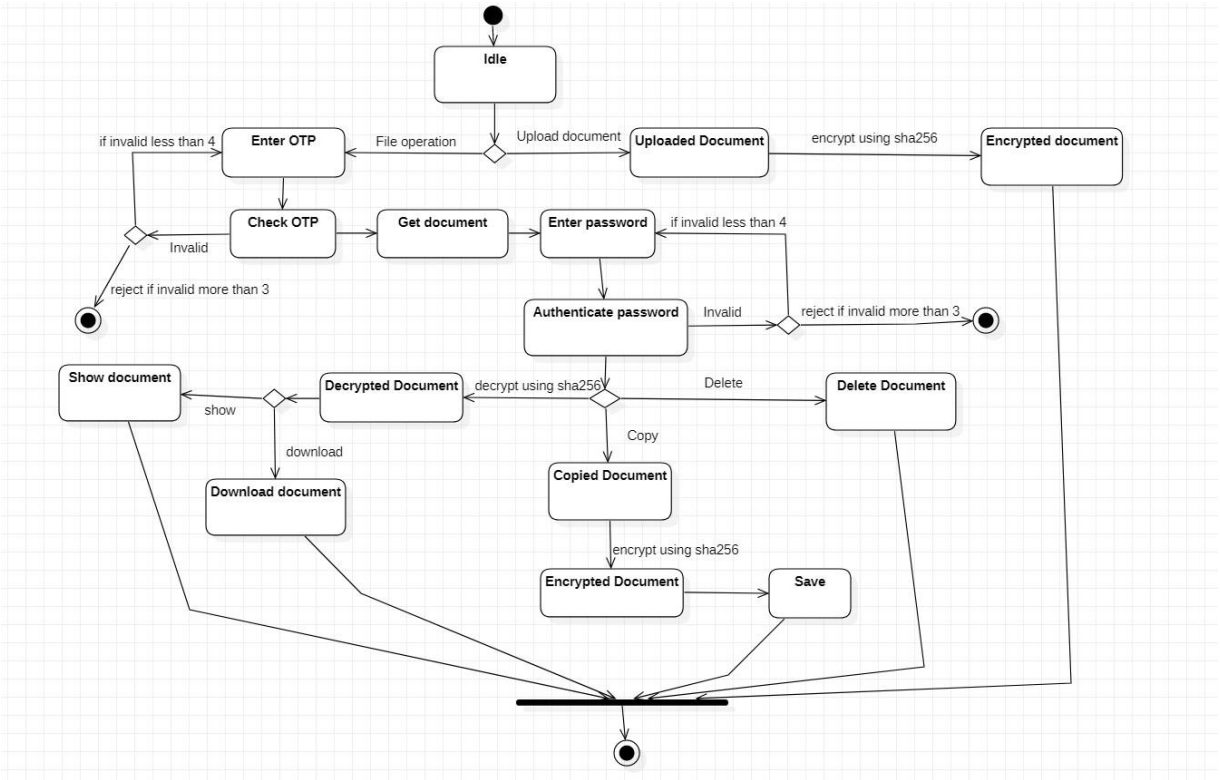
Output:

• Document after encryption
• Document after decryption
• Result on opening a document: success or failure; locking for three unsuccessful attempts
• Results on deleting a document under protection: success or failure; locking for three unsuccessful attempts
• Results on copying a document under protection: success or failure; locking for three unsuccessful attempts

ACTIVITY DIAGRAM



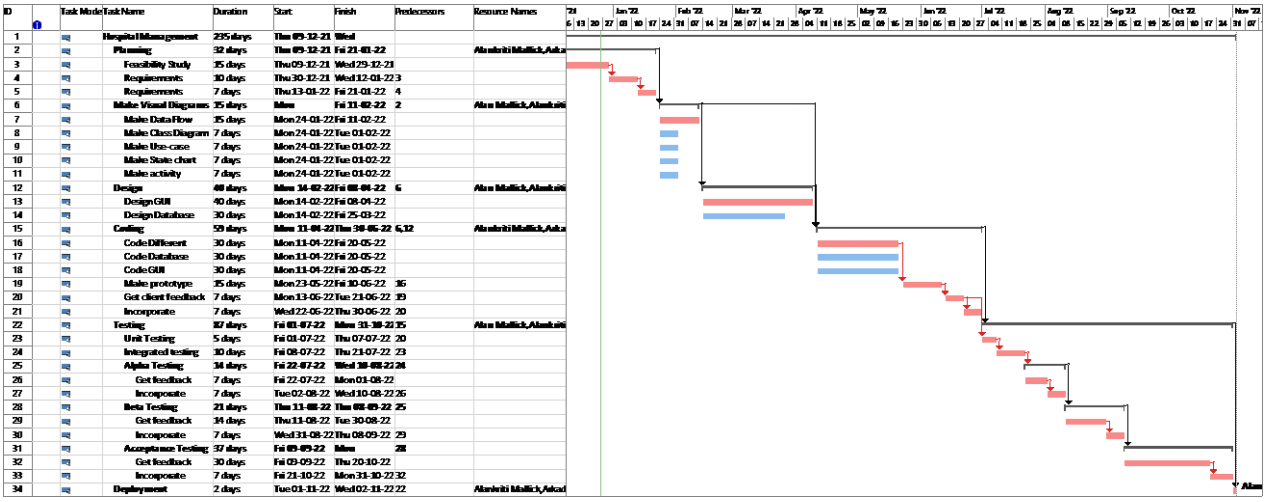
STATECHART DIAGRAM



ASSIGNMENT 11

a) Draw a Gantt chart for a "Hospital Management System" using MS Project.
b) Prepare a SPMP to plan the project.
c) Estimate the size, time, cost, effort and staff requirements using Function point metric and COCOMO Model.
d) Draft a test plan illustrating all test cases.

a) GANTT CHART



ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1		Hospital Management	235 days	Thu 09-12-21	Wed		
2		Planning	32 days	Thu 09-12-21	Fri 21-01-22		Akshriti Mallick,Ash
3		Feasibility Study	15 days	Thu 09-12-21	Wed 29-12-21		
4		Requirements	10 days	Thu 30-12-21	Wed 12-01-22	3	
5		Requirements	7 days	Thu 13-01-22	Fri 21-01-22	4	
6		Make Visual Diagrams	35 days	Mon	Fri 11-02-22	2	Abu Mallick,Akshriti
7		Make Data Flow	35 days	Mon 24-01-22	Fri 11-02-22		
8		Make Class Diagram	7 days	Mon 24-01-22	Tue 01-02-22		
9		Make Use-case	7 days	Mon 24-01-22	Tue 01-02-22		
10		Make State chart	7 days	Mon 24-01-22	Tue 01-02-22		
11		Make activity	7 days	Mon 24-01-22	Tue 01-02-22		
12		Design	48 days	Mon 14-02-22	Fri 08-04-22	6	Abu Mallick,Akshriti
13		Design GUI	40 days	Mon 14-02-22	Fri 08-04-22		
14		Design Database	30 days	Mon 14-02-22	Fri 25-03-22		
15		Coding	59 days	Mon 11-04-22	Thu 30-06-22	6,12	Akshriti Mallick,Ash
16		Code Different	30 days	Mon 11-04-22	Fri 20-05-22		
17		Code Database	30 days	Mon 11-04-22	Fri 20-05-22		
18		Code GUI	30 days	Mon 11-04-22	Fri 20-05-22		
19		Make prototype	35 days	Mon 23-05-22	Fri 10-06-22	16	
20		Get client feedback	7 days	Mon 13-06-22	Tue 21-06-22	19	
21		Incorporate	7 days	Wed 22-06-22	Thu 30-06-22	20	
22		Testing	87 days	Fri 01-07-22	Mon 31-10-22	15	Abu Mallick,Akshriti
23		Unit Testing	5 days	Fri 01-07-22	Thu 07-07-22	20	
24		Integrated testing	10 days	Fri 08-07-22	Thu 21-07-22	23	
25		Alpha Testing	14 days	Fri 22-07-22	Wed 10-08-22	24	
26		Get feedback	7 days	Fri 22-07-22	Mon 01-08-22		
27		Incoporate	7 days	Tue 02-08-22	Wed 10-08-22	26	
28		Beta Testing	21 days	Thu 11-08-22	Thu 08-09-22	25	
29		Get feedback	14 days	Thu 11-08-22	Tue 30-08-22		
30		Incoporate	7 days	Wed 31-08-22	Thu 08-09-22	29	
31		Acceptance Testing	37 days	Fri 09-09-22	Mon	28	
32		Get feedback	30 days	Fri 09-09-22	Thu 20-10-22		
33		Incoporate	7 days	Fri 21-10-22	Mon 31-10-22	32	
34		Deployment	2 days	Tue 01-11-22	Wed 02-11-22	22	Akshriti Mallick,Akad

b) SPMP

Software Project Management Plan for "Hospital Management System"

11. Introduction

In the project, a system has to be designed to support hospital management system. The software application to be made consists of at least three main functions, which must interact using the internet. The application may involve the basic activities, such as users' login, browsing, booking appointments, giving attendance. The entire system has to be developed (in JAVA) in a way that it is easy to maintain and extend.

I. Project Overview

This project is to create a prototype of hospital management system. It system is a computer system that helps manage the information related to health care and aids in the job completion of health care providers effectively. They manage the data related to all departments of healthcare such as, Clinical. Financial. Laboratory. The system automatically generates a highly-efficient process and makes it quick. Thereby, allowing hospitals to provide quality service in addition to professional medical care. In a nutshell, Hospital Management System (HMS) creates a frictionless approach towards managing the entire hospital and solves all complexities in the process.

II. Project Deliverables

1. Preliminary Project Plan	29.12.2021
2. Requirements Specification	21.01.2022
3. Architecture Specification	11.02.2022
4. Design	08.04.2022
5. Source Code	11.04.2022 - 30.06.2022
6. Test Plan	01.07.2022 - 31.10.2022
7. Final Product Demo	01.11.2022

III. Evolution of this document

This document will be updated as the project progresses. Updates should be expected in the following sections:

- **xi.** ***References*** - updated as necessary.
- **xii.** ***Definitions, acronyms, and abbreviations*** - updated as necessary.
- **xiii.** ***Organizational Structure*** will be updated as the team leaders are assigned for each phase.
- ***xiv.*** ***Technical Process*** - this section will be revised appropriately as the requirements and design decisions become clearer.
- **xv.** ***Schedule*** – as the project progresses, the schedule will be updated accordingly.

Revision History

Revision	Date	Updated By	Update Comments
0.1	09.12.2021	Ashish Kashyap	First Draft

IV. References

- https://www.educative.io/courses/grokking-the-object-oriented-design-interview/RMlM3NgjAyR

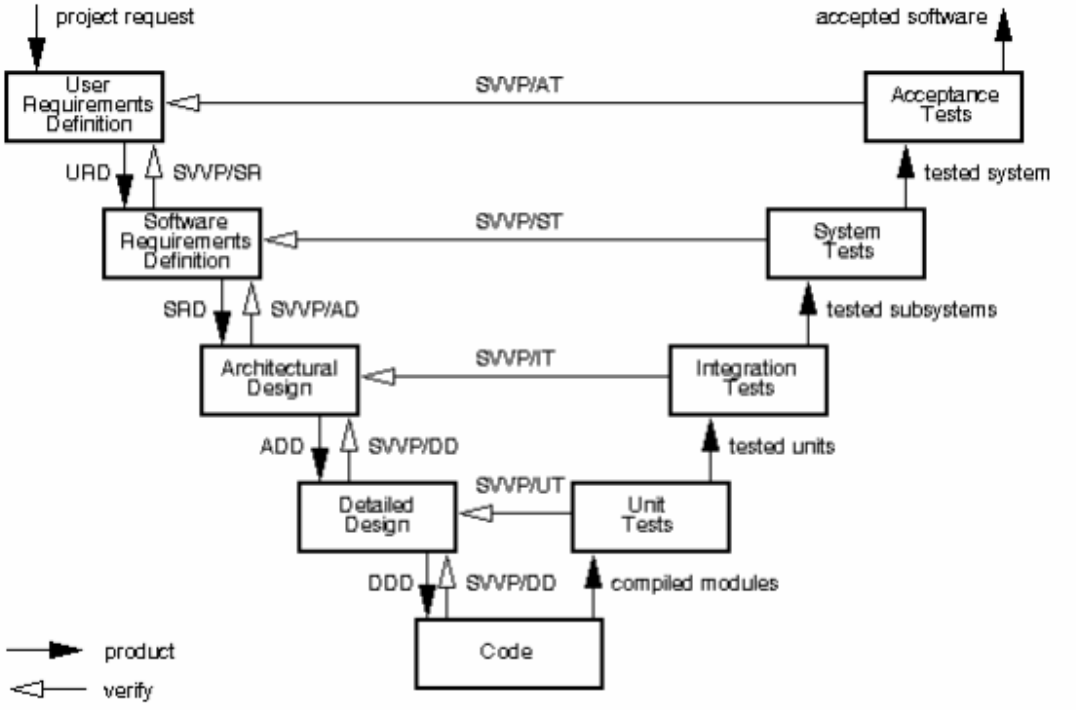
V. Definitions, Acronyms, and Abbreviations

i. UML - Unified Modeling Language
ii. AD - Architectural Design
iii. DD - Detailed Design
iv. DDD - Detailed Design Document
v. HMS – Hospital Management System
vi. ITP - Integration Test Plan Monitor Application that either monitors dispatchers
vii. PM - Project Manager
viii. QAM - Quality Assurance Manager
ix. SCMP - Software Configuration Management Plan
x. SM - Senior Management SPMP Software Project Management Plan (this document)
xi. SQA - Software Quality Assurance
xii. SQAP - Software Quality Assurance Plan
xiii. SR - Software Requirements
xiv. SRD - Software Requirements Document
xv. STD - Software Transfer Document
xvi. STP - Software Test Plan Submitter Application that submits jobs to dispatchers
xvii. SUM - Software User Manual
xviii. TBD – To Be Decided
xix. TR - Transfer Phase
xx. URD - User Requirements Document
xxi. UTP - Unit Test Plan
xxii. VPM - Vice Project Manager

12. Project Organization

I. Process Model

The process used for this project will be a V-model such that each stage of the model allows us to do testing after completing a phase. Referring to the diagram below, each phase is tested after completion.



II. Organizational Structure

Team Members –

i. Ashutosh Kumar
ii. Komal Tater
iii. Gopal Murarka

Name	Organization/ Position	Contact Information
Ashutosh Kumar	ITech Project Manager	alankriti1108@gmail.com 8420234363

Days	Deliverable	Team Leader	Deliverable Description
15	1	Ashu	Project Plan
7	2	Ashu	Requirements Specification
15	3	Ashu	Architecture Specification
40	4	Ashu	Design
59	5	Ashu	Source Code

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2	7	Ashu	Final Deliverable

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II. The document for all phases will be revised in subsequent phases if applicable.

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Miscellaneous	80,000.00
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Requirements Analysis	10 days	Thu 30-12-21	Wed 12-01-22
Requirements Specification	7 days	Thu 13-01-22	Fri 21-01-22
Make Visual Diagrams	**15 days**	**Mon 24-01-22**	**Fri 11-02-22**
Make Data Flow Diagram	15 days	Mon 24-01-22	Fri 11-02-22
Make Class Diagram	7 days	Mon 24-01-22	Tue 01-02-22
Make Use-case diagram	7 days	Mon 24-01-22	Tue 01-02-22
Make State chart diagram	7 days	Mon 24-01-22	Tue 01-02-22
Make activity diagram	7 days	Mon 24-01-22	Tue 01-02-22
Design	**40 days**	**Mon 14-02-22**	**Fri 08-04-22**
Design GUI	40 days	Mon 14-02-22	Fri 08-04-22
Design Database	30 days	Mon 14-02-22	Fri 25-03-22
Coding	**59 days**	**Mon 11-04-22**	**Thu 30-06-22**
Code Different modules	30 days	Mon 11-04-22	Fri 20-05-22
Code Database	30 days	Mon 11-04-22	Fri 20-05-22
Code GUI	30 days	Mon 11-04-22	Fri 20-05-22
Make prototype	15 days	Mon 23-05-22	Fri 10-06-22
Get client feedback	7 days	Mon 13-06-22	Tue 21-06-22
Incorporate feedback	7 days	Wed 22-06-22	Thu 30-06-22
Testing	**87 days**	**Fri 01-07-22**	**Mon 31-10-22**
Unit Testing	5 days	Fri 01-07-22	Thu 07-07-22
Integrated testing	10 days	Fri 08-07-22	Thu 21-07-22
Alpha Testing	**14 days**	**Fri 22-07-22**	**Wed 10-08-22**
Get feedback	7 days	Fri 22-07-22	Mon 01-08-22
Incorporate feedback	7 days	Tue 02-08-22	Wed 10-08-22
Beta Testing	**21 days**	**Thu 11-08-22**	**Thu 08-09-22**
Get feedback	14 days	Thu 11-08-22	Tue 30-08-22
Incorporate feedback	7 days	Wed 31-08-22	Thu 08-09-22
Acceptance Testing	**37 days**	**Fri 09-09-22**	**Mon 31-10-22**
Get feedback	30 days	Fri 09-09-22	Thu 20-10-22
Incorporate feedback	7 days	Fri 21-10-22	Mon 31-10-22
Deployment	2 days	Tue 01-11-22	Wed 02-11-22

ASSIGNMENT 12

A case study for live projects
https://evaluation-aep.herokuapp.com/
https://attendance-aep.herokuapp.com/

Design Functional Requirements and Test Case for these.

ATTENDANCE TRACKER

FUNCTIONAL REQUIREMENTS

R: Online Attendance Tracking System.

R1: Sign up / Sign in

Description – New users can sign up by providing name, email and password. Existing users can log in with registered email and password.

R1.1: Sign Up

Input: Name, email id and password.

Output: Create account and redirect to attendance page. Display error message if email input format is wrong.

R1.2: Sign In

Input: Email and password.

Output: Redirect to attendance page. Display error message if inputs are incorrect.

R2: Attendance

Description – User can upload attendance and download attendance. User can add a new course to their list.

R2.1: Upload Attendance

Description – Attendance can be uploaded here and their parsing logic can be controlled by different features.

Input: Select course name from dropdown menu.

Output: Display selected course name.

R2.1.1: Batch attendance

Description: Allows user to upload multiple files at a time.

Input: Upload file.

Output: File uploaded. Attendance recorded. Status message displayed.

R2.1.2: Single attendance

Description: Allows user to upload a single file at a time.

Input: Select type of app.

Output: Selected app displayed.

R2.1.2.1: For MS Teams

Input: Upload file, select end time, input threshold and flag roll numbers (if any).

Output: File uploaded. Attendance recorded. Status message displayed.

R2.1.2.1: For Google Forms

Input: Upload file and flag roll numbers (if any).

Output: File uploaded. Attendance recorded. Status message displayed.

R2.2: Download Attendance.

Description – Attendance reports uploaded are parsed and collated into one single file.

Input: Select course from dropdown menu. Select type and format of report and download.
Output: Prompt to save the file is displayed.

R3: Courses

Description: A course is uniquely identified by its batch and id. The user can upload a course for which they wish to track the attendance or delete a course whose session is over.

R3.1: Upload Course

Input: Fill in course id, name and batch. Click on create course.
Output: Display status message. Display error if mistake is made while filling the form.

R3.2: Delete Course

Input: Select course from drop down menu. Click delete.
Output: Display course id and batch. Display confirmatory message after deletion.

R4: Help

Description: This section contains details and instructions about each field and form.

Input: Select section.
Output: Display details about that section.

R5: Logout

Description: User can log out of their account when they have finished their work.

Input: Select Logout.
Output: Display Login page.

TEST CASE

TEST CASE 1

TEST CASE 2

EVALUATION TOOL

FUNCTIONAL REQUIREMENTS

R: Online Answer Sheet Evaluation Tool

R1: Upload Answer Script

Description – User can upload the answer script for a student and evaluate it online.

Input: Browse and upload file. Enter student details such as name and roll number. Enter subject code, Exam name and section.

Output: Display uploaded sheet in the section below.

R2: Check Answer Script

Description – User can check the uploaded file.

Input: Select option – Highlight, Underline, Strike-through, squiggly, Free text, rectangle, freehand, add marks and calculate. Perform the selected action as required.

Output: Uploaded file is modified with the selected and performed action.

R3: Annotate

Description – User can annotate the document as per their wish. Undo and redo buttons are available. Colour choices also available with each annotation tool.

R3.1: Highlight

Input: User selects the highlight tool and highlights the required texts.
Output: Text is highlighted.

R3.2: Underline

Input: User selects the underline tool and underlines the required texts.
Output: Text is underlined.

R3.3: Strikethrough

Input: User selects the strikethrough tool and strikes through the required texts.
Output: Text is stroke-through.

R3.4: Squiggly

Input: User selects the squiggly tool and selects the required texts.
Output: Text is squiggly underlined.

R3.5: Free text

Input: User selects the free text tool and draws a box and writes text inside the box.
Output: Text appears on document.

R3.6: Rectangle

Input: User selects the rectangle tool and draws a box.
Output: Box is displayed on document.

R3.7: Freehand

Input: User selects the freehand tool and draws on document.
Output: Drawing appears on document.

R3.8: Eraser

Input: User selects the eraser tool and erases annotations as per their choice.
Output: Annotations erased.

R4: Insert

Description – User can insert signature, rubber stamp or stamp into the document. User has to first upload the necessary picture which would be used for stamping.

R4.1: Signature

Input: User selects signature and draws a box in the document.
Output: Signature made in that box.

R4.2: Rubber stamp

Input: User selects rubber stamp option and draws a box in the document.
Output: Stamp appears on document.

R3.3: Stamp

Input: User selects stamp option and draws a box in the document.
Output: Stamp appears on document.

R5: Calculate marks

Description: User inputs free text box and writes marks into it. Then user calculates marks and displays marks.

Input: Select free text box tool from annotations and write marks at the top of the document. Click on calculate marks.

Output: Confirmation prompt displayed. Marks calculated.