



## **SMART SHELF**

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**Computer Science**

**Sir Syed University of Engineering & Technology**

SMART SHELF

### **Certification**

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This is to certify that **Syed Ali Hussain Jaffery, Syed Hussain Abbas Jafri, Syed Samar Hussain Naqvi, and Sameed Tahir** have successfully completed the final project **SMART SHELF**, at the **Sir Syed University of Engineering & Technology**, to fulfill the partial requirement of the degree **BSCS**.

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[Name of Examiner]

[Designation]



**Project Supervisor**

Mr. Shakir Karim

Assistant Professor

**Chairman**



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## SMART SHELF

### Sustainable Development Goals

(Please tick the relevant SDG(s) linked with FYDP)

SDG No	Description of SDG	SDG No	Description of SDG
SDG 1	No Poverty	SDG 9	Industry, Innovation, and Infrastructure
		✓	
SDG 2	Zero Hunger	SDG 10	Reduced Inequalities
SDG 3	Good Health and Well Being	SDG 11	Sustainable Cities and Communities
SDG 4	Quality Education	SDG 12	Responsible Consumption and Production
✓			
SDG 5	Gender Equality	SDG 13	Climate Change
SDG 6	Clean Water and Sanitation	SDG 14	Life Below Water
SDG 7	Affordable and Clean Energy	SDG 15	Life on Land
SDG 8	Decent Work and Economic Growth	SDG 16	Peace, Justice and Strong Institutions
		SDG 17	Partnerships for the Goals



<b>Range of Complex Problem Solving</b>			
	<b>Attribute</b>	<b>Complex Problem</b>	
1	Range of conflicting requirements	Involve wide-ranging or conflicting technical, engineering and other issues.	
2	Depth of analysis required	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models.	
3	Depth of knowledge required	Requires research-based knowledge much of which is at, or informed by, the forefront of the professional discipline and which allows a fundamentals-based, first principles analytical approach.	
4	✓ Familiarity of issues	Involve infrequently encountered issues	
5	✓ Extent of applicable codes	Are outside problems encompassed by standards and codes of practice for professional engineering.	
6	Extent of stakeholder involvement and level of conflicting requirements	Involve diverse groups of stakeholders with widely varying needs.	
7	Consequences	Have significant consequences in a range of contexts.	
8	Interdependence	Are high level problems including many component parts or sub-problems	
<b>Range of Complex Problem Activities</b>			
	<b>Attribute</b>	<b>Complex Activities</b>	
1	Range of resources	Involve the use of diverse resources (and for this purpose, resources include people, money, equipment, materials, information and technologies).	
2	Level of interaction	Require resolution of significant problems arising from interactions between wide ranging and conflicting technical, engineering or other issues.	
3	✓ Innovation	Involve creative use of engineering principles and research-based knowledge in novel ways.	
4	Consequences to society and the environment	Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation.	

5 ✓	Familiarity	Can extend beyond previous experiences by applying principles-based approaches.
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## Abstract

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We have select the project named “**SMART SHELF**” for Computer Science department. We have selected this idea in order to facilitate university faculty members as they have to physically maintain the course files in the shelf.

In today's rapidly evolving educational landscape, efficient administration and seamless management of course materials are crucial for educational institutions. To address this need, we present **smart shelf**, a cutting-edge android application designed to empower administrators with a user-friendly interface and captivating page flip animation.

Smart shelf is a comprehensive solution that revolutionizes the traditional approach to managing course files. With its intuitive design and innovative features, administrators can effortlessly organize, update, and maintain course materials, ensuring a smooth workflow for faculty members. This application will provide ease to administration department as they can monitor the course files status of faculty members through virtual reality (Shelf displayed through animation). On the other hand, faculty members can easily upload their semester course files easily on this animated smart shelf android application.

SMART SHELF

## Undertaking

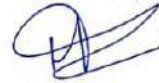
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I certify that the project **SMART SHELF** is our own work. The work has not, in whole or in part, been presented elsewhere for assessment. Where material has been used from other sources it has been properly acknowledged/ referred.



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We are also thankful to our friends and families whose silent support led us to complete our project.

# Table of Contents

<b>Certification</b>	<b>i</b>
<b>Abstract</b>	<b>iv</b>
<b>Undertaking</b>	<b>v</b>
<b>Acknowledgement</b>	<b>vi</b>
<b>Table of Contents</b>	<b>vii</b>
<b>List of Tables</b>	<b>viii</b>
<b>List of Figures</b>	<b>ix</b>
<b>List of Acronyms</b>	<b>x</b>
<b>List of Equations</b>	<b>xi</b>
Chapter 1	1
1.1	1
1.2	2
1.3	2
1.4	3
1.5	3
1.6	3
1.7	3
Chapter 2	2
2.1	9
2.1.1	<b>Error! Bookmark not defined.</b>
2.1.2	<b>Error! Bookmark not defined.</b>
Chapter 3	3
3.1	16
3.1.1	<b>Error! Bookmark not defined.</b>
3.1.2	<b>Error! Bookmark not defined.</b>
Chapter 4	4
4.1	23
Chapter 5	5
6.1	23
Chapter 6	6
7.1	25
<b>References</b>	<b>7</b>

## List of Figures

---

<b>Figure 1:</b> Computer System	2
<b>Figure 2:</b> Computer System	3



# Chapter 1

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## 1.1 Introduction

To deploy Smart Shelf we have selected android operating system for it's best support and user-friendliness. We are using flutter language to develop our product as flutter is one of the best language for android application development. We'll use the animation package for page flipping in flutter language so that faulty or admin can easily flip the pages within the application.

In today's rapidly evolving educational landscape, efficient administration and seamless management of course materials are crucial for educational institutions. To address this need, we present **smart shelf**, a cutting-edge android application designed to empower administrators with a user-friendly interface and captivating page flip animation.

Smart shelf is a comprehensive solution that revolutionizes the traditional approach to managing course files. With its intuitive design and innovative features, administrators can effortlessly organize, update, and maintain course materials, ensuring a smooth workflow for faculty members. This application will provide ease to administration department as they can monitor the course files status of faculty members through virtual reality (Shelf displayed through animation). On the other hand, faculty members can easily upload their semester course files easily on this animated smart shelf android application.

Smart shelf represents a paradigm shift in course file administration for educational institutions. By combining an engaging page flip animation, streamlined file management, easy navigation, collaboration features, the application empowers administrators to easily monitor the status of faculty members.

With Smart shelf, our institution can optimize their administrative processes, save valuable time, and provide a virtual reality experience in displaying the smart shelf. Say goodbye to cumbersome paperwork and embrace the future of physical shelf with our innovative Android application.

## **1.2 Statement of the problem**

- Time-Consuming Manual Process.
- Limited Collaboration and Sharing.
- Security and Confidentiality.
- Inefficient File Organization: Administration has to face difficulty in assuring if the file is complete.

## **1.3 Goals/Aims & Objectives**

- A user-friendly interface and captivating page flip animation.
- Automation: To transfer the course file format into soft copy.
- User-Friendly Interface
- File Organization: Easy to maintain and organize.

## **1.4 Motivation**

The credit behind the motivation of this product, all goes to our supervisor. Our supervisor motivates us in each and every stage of the development. He reviews our progress, tells about our mistakes and provides recommendations.

## **1.5 Assumption and Dependencies**

We assumed that this type of application is a need for our university. Therefore, we negotiated with our supervisor in order to implement an innovative approach that provide ease to our department's faculty members. Our supervisor informed us to present this product in a unique way. Therefore, we are developing this product with a page-flip animation.

## **1.6 Methods**

The methods applied in this product are multiple interfaces. As there will be two users (faculty and admin) involved in the application therefore, we are developing the product in two interfaces. Thus, each user will have their respective interfaces and rights.

## **1.7 Report Overview**

This report is structured to provide a comprehensive understanding of the project. Following this introduction, the subsequent sections delve into the background of course files management, the automation of course files into soft copy, the technical details of the prototype, and the results obtained. The report also includes a critical analysis of the system, implications for real-world applications, and avenues for future development. Each section contributes to a holistic overview of the project, offering insights into its motivations, and methodologies.

## Chapter 2

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### Literature Review

#### 2.1 Existing Systems

Discuss at least 3 to 4 most relevant projects with title, brief description and system features with references show as follows.

##### 2.1.1 Title: An Online Course File Management System (OCFMS) [1]

###### **Description:**

“One of the most important task for academic staff is managing course file for his/her teaching courses, this task includes: preparing and reviewing course syllabus, looking for suitable text book, preparing and assessment course learning outcomes, exams, and many other issues. Sometimes instructor teaches more than one (two, three) course, for each course (section) course file must be prepared. At the end of semester all documents related to the course must be collected and submitted to the department (university) management, this means scanning a lot of papers, grouping teaching materials, preparing samples of students works, and many other documents. For this reason most of universities are using management system to organize course files, such Blackboard [1], eCourse File Management Systems [2], Editors [3], or any other system; each one of these systems has suitable functions to achieve this goal, we are trying in this work to provide an Online Course File Management System (OCFMS) to participate in achievement this goal also, but by adding some key values in preparation course file. Accreditation Board for Engineering and Technology emphasizes [4] on the importance of assessment and defines it as one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes and program educational objectives.”



**System Features:**

OCFMS contains the following features in their system:-

- (1) Maintaining academic staff.
- (2) Maintaining CIS.
- (3) Maintaining exams report.
- (4) Maintaining presentations.

**2.1.2 Title: Course Files Management [2]**

**Description:**

“Design and implement the proposed CFM and user-interface is to reduce paperwork and retain and facilitate the review of the course file contents based on the standards of quality of national and international educational institutions.. The King Khalid University is among Saudi Arabia's largest universities. It situated in the south of the Kingdom and in terms of geographical area; it is one of the largest universities in the Arab Gulf region. The university has many branches within the Kingdom's southern region as well as many universities, each university has many academic departments and administrative units, and each department has a number of departments of faculty members and staff, and each faculty member can study more than one course and therefore each can have a scheduled course file to prepare. The proposed system provides faculty members with the possibility of entering the course file through the Internet in the numbers of the rapporteur's electronic file, and then entering the system with the powers granted and then the possibility of filling out the required form for the course file, which includes many fields, some of which related to a faculty member and some of them relate to the attachment of files related to the course.”

**System Features:**

This system includes following system features:-

- (1) Maintaining academic staff.
- (2) Maintaining CIS.
- (3) Maintaining exams report.
- (4) Maintaining presentations.
- (5) This system includes monitoring of above materials by administration and higher faculty members.

**2.1.3 Title: An e-Course file management system: A green campus initiative [3] Description:**

“A portfolio can be defined as a purposeful collection of student work that tells the story of a student’s effort, progress and/or achievement in one or more subject areas (Arter, J. A. et al. 1992). Accreditation Board for Engineering and Technology emphasizes (ABET 2011) on the importance of assessment and defines it as one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes and program educational objectives. This requirement could be facilitated by keeping a record of complete information along with the relevant documents used for teaching and assessing all courses taught in a given institution. A course file is a documented evidence of teaching and learning which helps us to review and improve both teaching and learning process taken place in the class. It also exhibits the strength and accomplishment of each faculty member as it includes the documents and materials that narrate the quality of his/her teaching abilities and performance. A course file is not only a collection of syllabus, assignments, and evidence of students’ achievements, but it should also include analysis and reflection on the failure or success of each individual course. The course file may also put forward an agenda for changing the course content, pedagogy, assessment methods and techniques in order to improve future course offerings. A careful survey shows that course files are typically maintained manually. This compilation method has many disadvantages such as limited sharing, information retrieval, physical storage, paper and printing costs, number of required man-hours, disposal of old files, wastage of natural resources, and environmental impact. In recent years, a number of universities (Sharp, L. 2002) have launched a variety of

environmental sustainability programs and have achieved reasonable successes. Campus sustainability has become an issue of global concern for university policy makers and planners as result of the realization of the impacts the activities and operations of universities have on the environment (Alshuwaikhat, et al. 2008). As a part of campus sustainability programs, one can focus on improving energy efficiency, conserving resources and enhancing environmental quality by using information technology (IT) tools and resources. These efforts can certainly make a significant contribution towards healthy and sustainable environment learning environment. A number of IT solutions (such as Oracle Content Management 2009 and MS Sharepoint 2010) could facilitate organizations to devise mechanisms for creating, routing, approving, and publishing of documents which ultimately could replace paper-based documentation. The proposed green campus initiative is clearly a step in the same direction as it aims to replace or convert paper-based course files and related processes to the electronic versions. To address the above issues, we propose a database system to replace the manual record keeping of the course files. This system will facilitate instructors in organizing their course files through guided Graphical User Interfaces (GUIs). The eCourse file contents created by this new system will not only be a click away for all stakeholder interested in reviewing the course material but will also save the resources and cost in terms of money and man hours. Section 2 deals with the system architecture and related details of the graphical user interfaces. A detailed discussion is provided in section 3 whereas the conclusion of the paper is given in section 4.”

### **System Features:**

This system includes following system features:-

- (1) Maintaining academic staff.
- (2) Maintaining CIS.
- (3) Maintaining exams report.
- (4) Maintaining presentations.

**2.2 Comparative Analysis:**

<b>PROJECTS</b>	<b>Online Course File Management System [1]</b>	<b>Course Files Management [2]</b>	<b>e-Course File Management System [3]</b>	<b>Smart Shelf (our product) [4]</b>
<b>Academic Staff</b>	✓	✓	✓	✓
<b>CIS</b>	✓	✓	✓	✓
<b>Presentation (Lectures, assignments, quizzes)</b>	✓	✓	✓	✓
<b>Exams Report</b>	✓	✓	✓	✓
<b>Admin Monitoring</b>	×	✓	×	✓
<b>Page Flip Animation</b>	×	×	×	✓

## Chapter 3

---

# Requirement Analysis

### 3.1 External Interface Requirements

#### 3.1.1 User Interfaces

##### User Registration and Authentication:

**Interface:** This interface allows users to register and create an account for the software product. It also handles user authentication, ensuring that only authorized users can access and manage course files.

**Characteristics:** The interface should provide a user-friendly registration process, with input fields for necessary information such as name, email address, and password. It should include appropriate validation mechanisms and security measures to protect user accounts.

##### User Profile:

**Interface:** This interface allows users to view and manage their profile information within the software product.

**Characteristics:** Users should be able to update their personal details, such as name, contact information, and profile picture.

##### Dashboard:

**Interface:** The dashboard interface serves as the main screen of the software product, providing users with an overview of the smart shelf and relevant information.

**Characteristics:** The dashboard should present a visually appealing and intuitive display of the smart shelf, including options to organize and categorize them. It should allow users to quickly navigate and access different sections or functionalities of the software product related to smart shelf.

##### File Management in the smart shelf:

**Interface:** This interface allows users to manage and organize course files in the smart shelf, including uploading, downloading & deleting them.

**Characteristics:** The interface should provide users with the ability to upload course files in various formats such as documents and presentations. Users should also be able to download, delete, and update files as needed.

### 3.1.2 Hardware Interfaces

Android smartphone is the requirement for our product to run. Smart shelf will run easily on smartphones without any problem.

### 3.1.3 Software Interfaces

To deploy Smart Shelf we have selected android operating system for it's best support and user-friendliness. We are using flutter language to develop our product as flutter is one of the best language for android application development. The animation design of shelf and book will be constructed on Adobe Photoshop. This animation will be exported to flutter and integrated with the coding process. We'll use the animation package for page flipping in flutter language so that user or admin can easily flip the pages of animated book.

### 3.1.4 Communications Interfaces

There will be two users in the dashboard (administration and faculty members). When the user (faculty members) desires to upload any course material, He simply has to click on "upload files" button in order to add that material in the course file section which is contained in animated shelf which will be displayed on user's profile. Then the desired material will be added and displayed in the smart shelf under course file section. On the other hand, the second user (admin) will monitor the status of first user (faculty members).

## 3.2 Functional Requirements

Specify Function requirements. Each requirement should be uniquely identified with a sequence number or a meaningful tag of some kind.

ID	Requirement
----	-------------

<b>REQ-1</b>	The app will display the course files of faculty members (user) in animated shelf
<b>REQ-2</b>	The administrators (user) can easily monitor the status of any faculty member (user)
<b>REQ-3</b>	The app will have some rights restricted for admin and some rights restricted for faculty members

### 3.3 Other Nonfunctional Requirements

#### 3.3.1 Performance Requirements

This application should display the course material uploaded by user in a virtual reality page flip animation which will be contained in animated shelf (smart shelf).

#### 3.3.2 Safety Requirements

This application should restrict access to personal information of users to everyone including the developers.

#### 3.3.3 Security Requirements

- \* This application should not use user's data for any purpose.
- \* This application shall ensure that the data of registered users is confidential.

#### 3.3.4 Software Quality Attributes

- \* This application is reliable to its users.
- \* This application will save the time of user as course files will be automated.

### 3.4 Cost Estimation

S.No	Project Expenditure	Cost in Rupees
1	<b>Hosting</b>	
	Hosting (Android App)	7000 pkr
	<b>Sub Total</b>	<b>7000 pkr</b>
3	<b>Printing</b>	

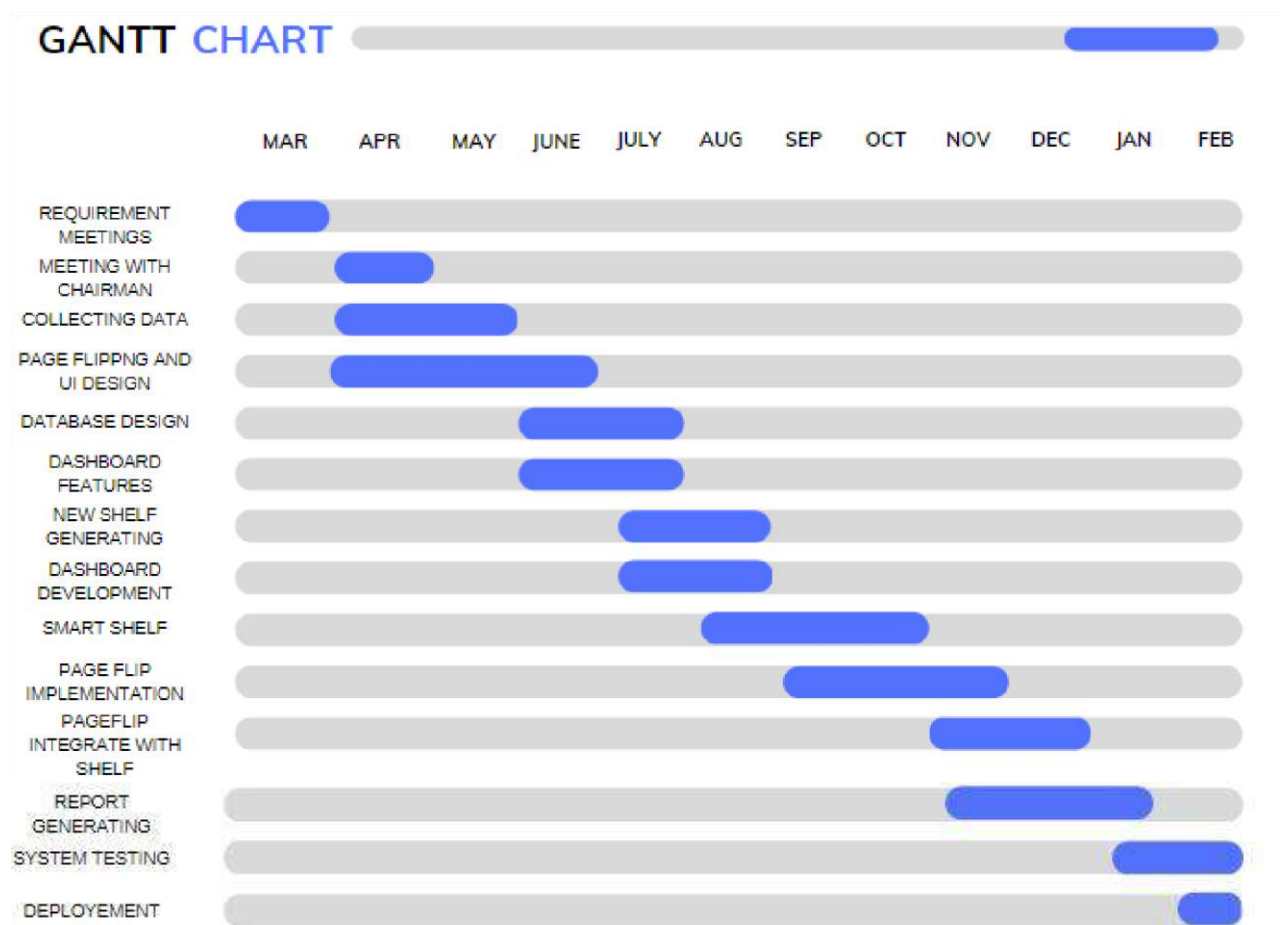
Title of the Project/Thesis

	FYP Wall Poster	3000 pkr
	FYP Standee	1500 pkr
	FYP Brochure	500 pkr
	FYP Report 3 Copies	3000 pkr
	2 DVDs	800 pkr
	<b>Sub Total</b>	<b>8800 pkr</b>
	<b>Grand Total</b>	<b>15,800 pkr</b>

**Phase 1: Planning and Requirements Gathering**



### 3.5 Project Plan with Gantt Chart



#### DESCRIPTION:

- Define project scope, objectives, and deliverables
- Meeting with the administration and gather their requirements
- Conduct research and analysis
- Define user stories and acceptance criteria

#### Phase 2: Design

- Create high-level and detailed design documentation
- Identify system architecture and components
- Develop UI wireframes and mockups
- Create database schema and data models

#### Phase 3: Development

- Develop the frontend mobile application using flutter.
- Develop API for page flip animation package in flutter.
- Develop dashboard features (Animated Shelf).
- Animation design in adobe Photoshop and export in flutter. - Perform unit testing and code review.

#### Phase 4: Testing (08 weeks)

- Develop and execute test cases and test scenarios
- It is crucial to perform functional, integration, and performance testing to validate that its meets the required specification and perform as expected.
- Debug and fix any issues found during testing

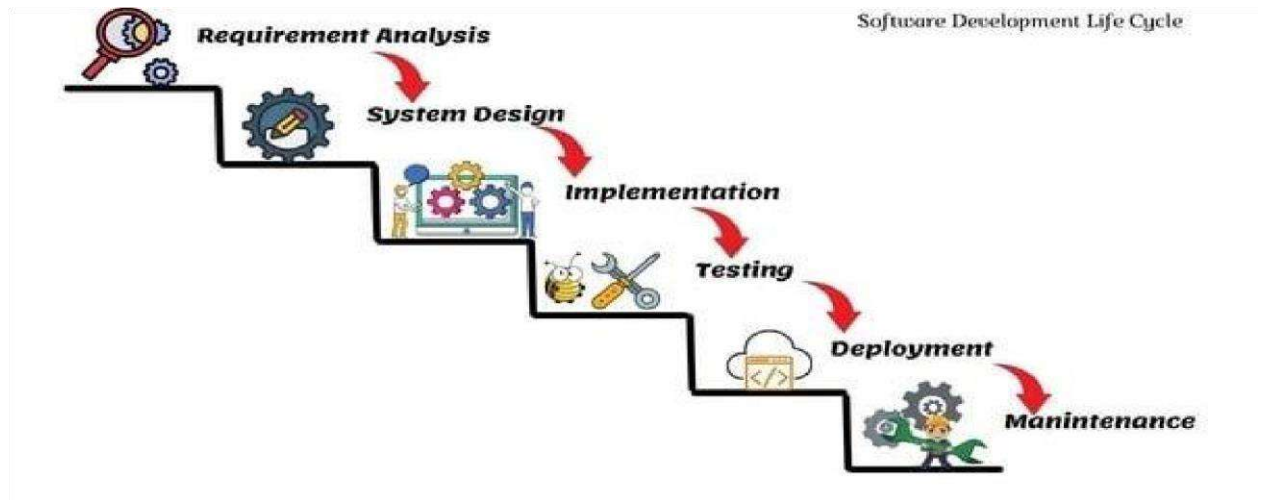
#### **Phase 5: Deployment (04 weeks)**

- Create deployment package
- Deploy the system to the production environment
- Perform user acceptance testing

### **3.6 Software Development Life Cycle Model**

We will implement our project using the waterfall model. Phases to implement the method are discussed as under:

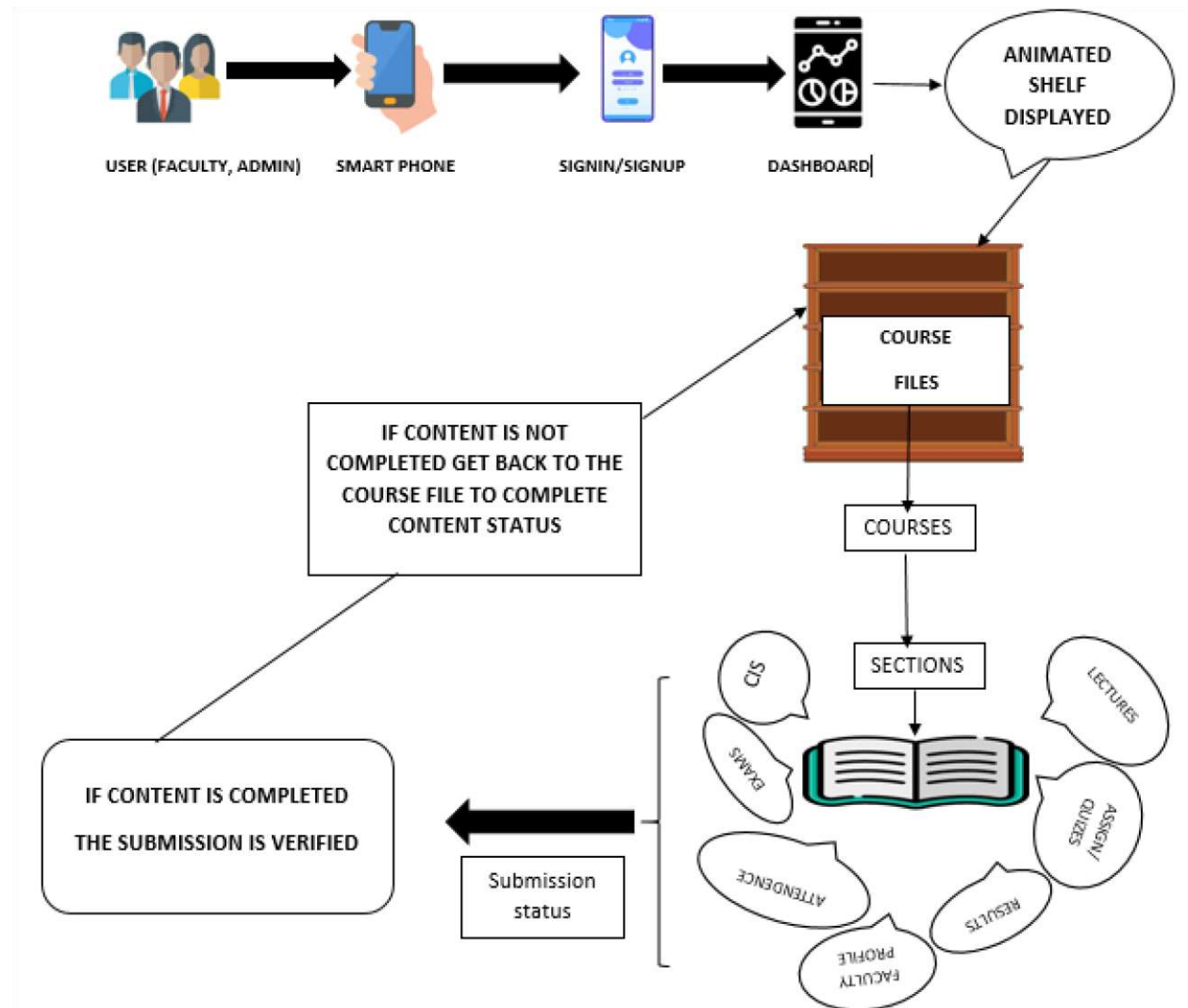
1. **Requirement Gathering and Analysis:** All possible requirements of the system to be developed are gathered in this phase and a requirement specification document is prepared.
2. **System Design:** The Design Phase is an essential phase of the Software Development Life Cycle. The list of requirements that you develop in the requirement phase is used to make design choices. In the design phase, one or more designs are created to achieve the project result.
3. **Coding / Implementation:** The tasks are divided into modules or units and assigned to various developers. The developers will then start building the entire system by writing code using the programming languages they chose.
4. **Integration and Testing:** the testing is done to ensure that the entire application works according to the customer requirements. After testing, the QA and testing team might find some bugs or defects and communicate the same with the developers.
5. **Deployment of system:** the final phase of the software development life cycle (SDLC) and puts the product into production. After the project team tests the product and the product passes each testing phase, the product is ready to go live.



## Chapter 4

### Proposed Solution/ Result & Discussion:

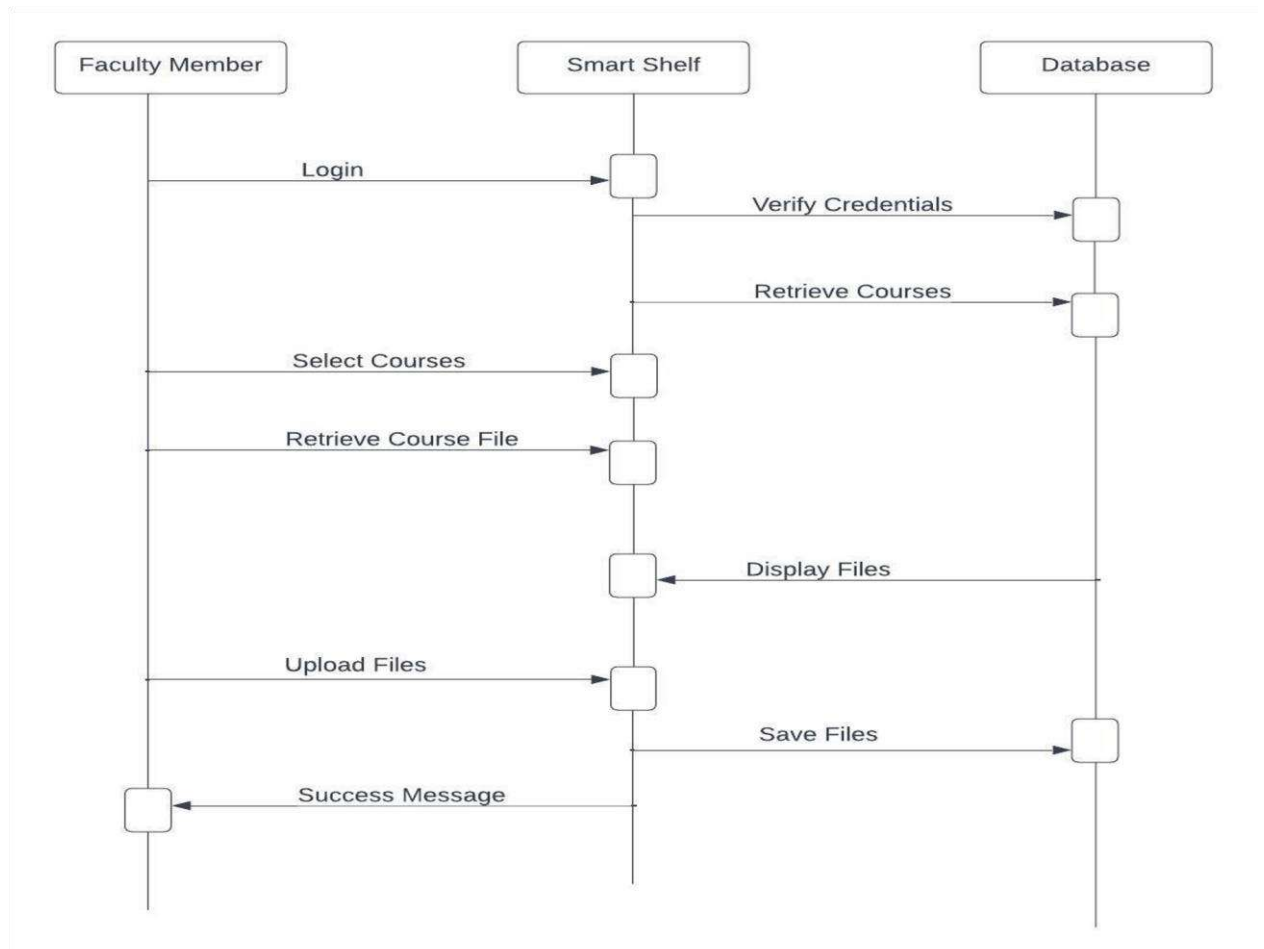
#### 4.1 System Architecture Diagram



Firstly, Faculty members login to the app and select a course they want to manage. They can upload various course materials such as CIS, lecture notes, Assignments/Quizzes, Exams. The app saves the uploaded files and updates the database accordingly. The workflow of this application will displayed through page flip animation. Administrators can monitor the status of the uploaded materials and manage them as needed. Faculty members can easily access and view the course materials they uploaded, ensuring efficient organization and retrieval.

#### 4.2 System Operations

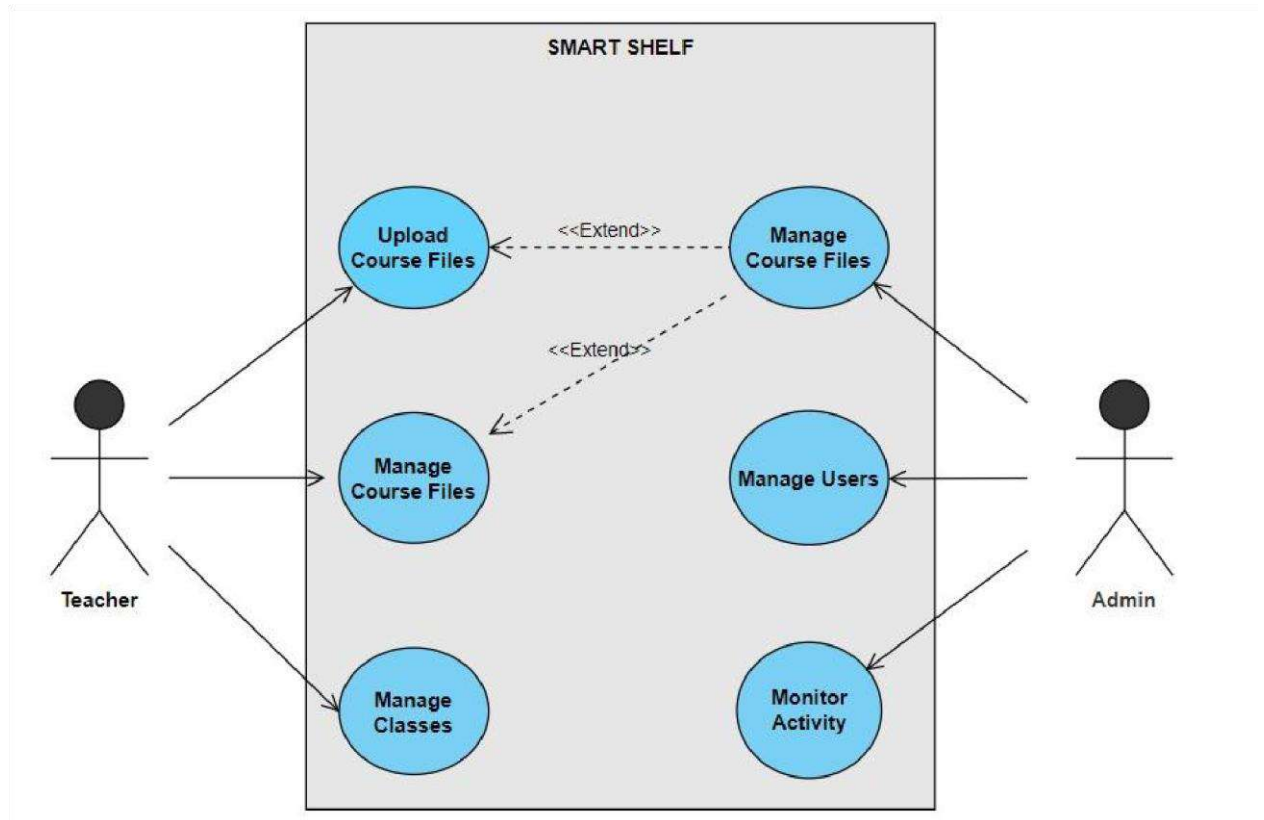
## UML Sequence Diagram



In this sequence diagram, the interaction flow starts with the faculty member logging into the app. The app verifies the faculty member's credentials with the database. Once authenticated, the app retrieves the list of courses associated with the faculty member. The faculty member then selects a specific course, and the app retrieves the corresponding course files from the database. The app displays the files to the faculty member, allowing them to upload a new file. The app saves the uploaded file to the database and sends a success message back to the faculty member.

### 4.3 System Model

#### UML USE CASE DIAGRAM DESCRIPTION



Here are some UML use cases for the Smart Shelf app:

**\*Use Case: Uploading Course Materials\***

Actor: Faculty Member

Description: This use case involves a faculty member uploading course materials to the app.

Steps:

1. Faculty member logs into the app with their username and password.
2. Faculty member navigates to the course they want to upload materials for.
3. Faculty member selects the type of material they want to upload (e.g. syllabus, lecture notes, assignments).
4. Faculty member selects the file they want to upload from their device.
5. App saves the file to the appropriate table in the database.

**\*Use Case: Viewing Course Materials\***

Actor: Faculty Member

Description: This use case involves a faculty member viewing course materials that have been uploaded to the app.

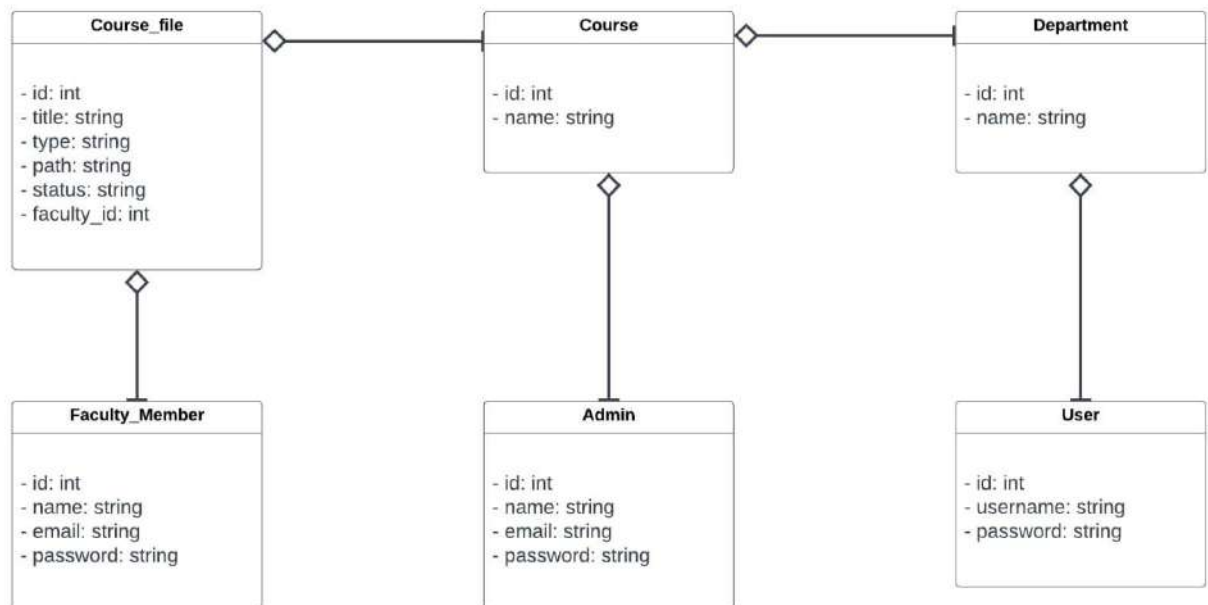
Steps:

1. Faculty member logs into the app with their username and password.
2. Faculty member navigates to the course they want to view materials for.
3. Faculty member selects the type of material.

#### 4.4 Object Model

Here is the UML class diagram for the Smart Shelf app:

**UML CLASS DIAGRAM**



**Description:**

In this diagram, there are four classes:

`CourseFile`, `Course`, `FacultyMember`, and `Administrator`.

`CourseFile` represents a file that is associated with a particular course. It has attributes for the file's ID, title, type (e.g. syllabus, lecture notes), file path, status (e.g. uploaded, reviewed, approved), and the ID of the faculty member who uploaded it.

`Course` represents a course that is offered by the university. It has attributes for the course's ID and name.

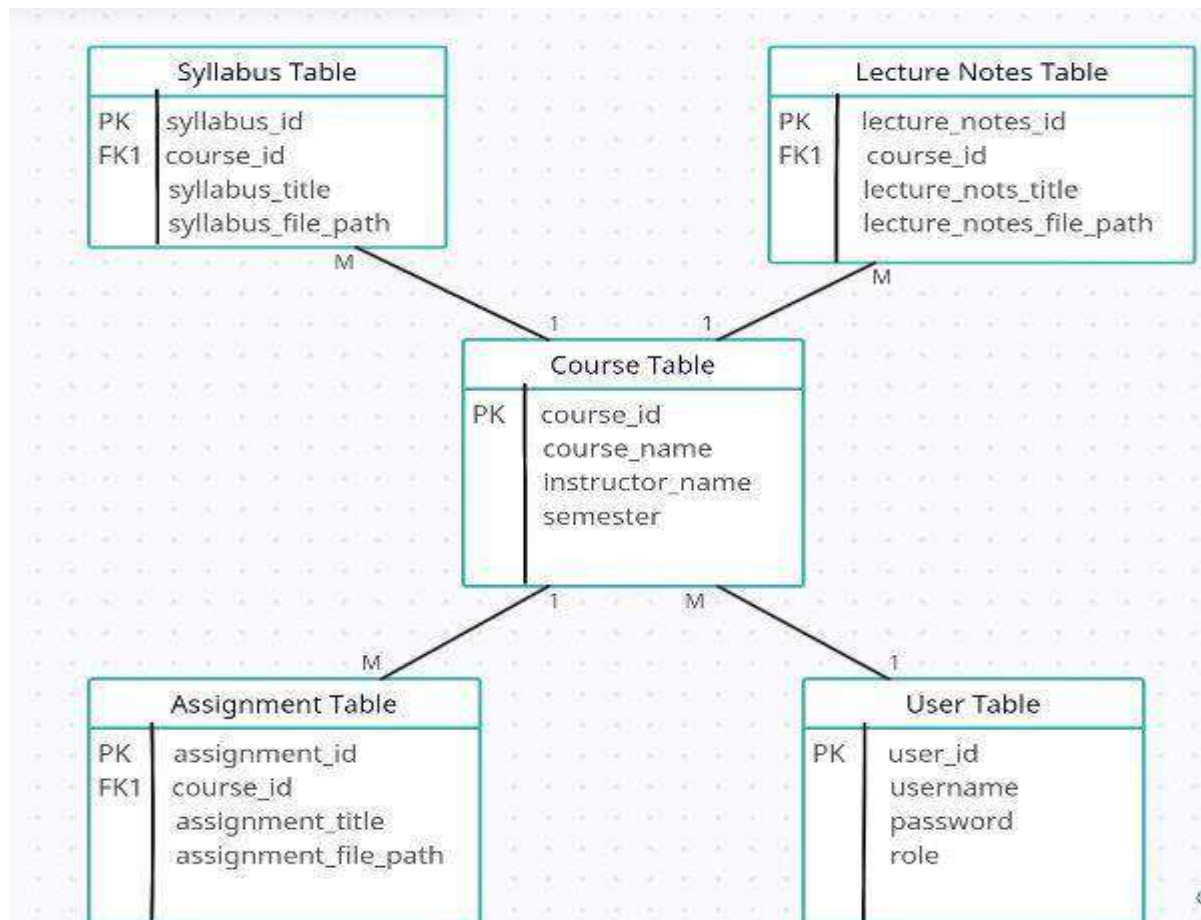
`FacultyMember` represents a member of the faculty who has access to the app. It has attributes for the faculty member's ID, name, email address, and password.

`Administrator` represents an administrator who has access to the app. It has attributes for the administrator's ID, name, email address, and password.

Finally, there is a `User` class, which represents a generic user of the app. It has attributes for the user's ID, username, and password. Both `FacultyMember` and `Administration`.

#### 4.5 Data Model

##### UML PHYSICAL DATABASE DIAGRAM





**Description:**

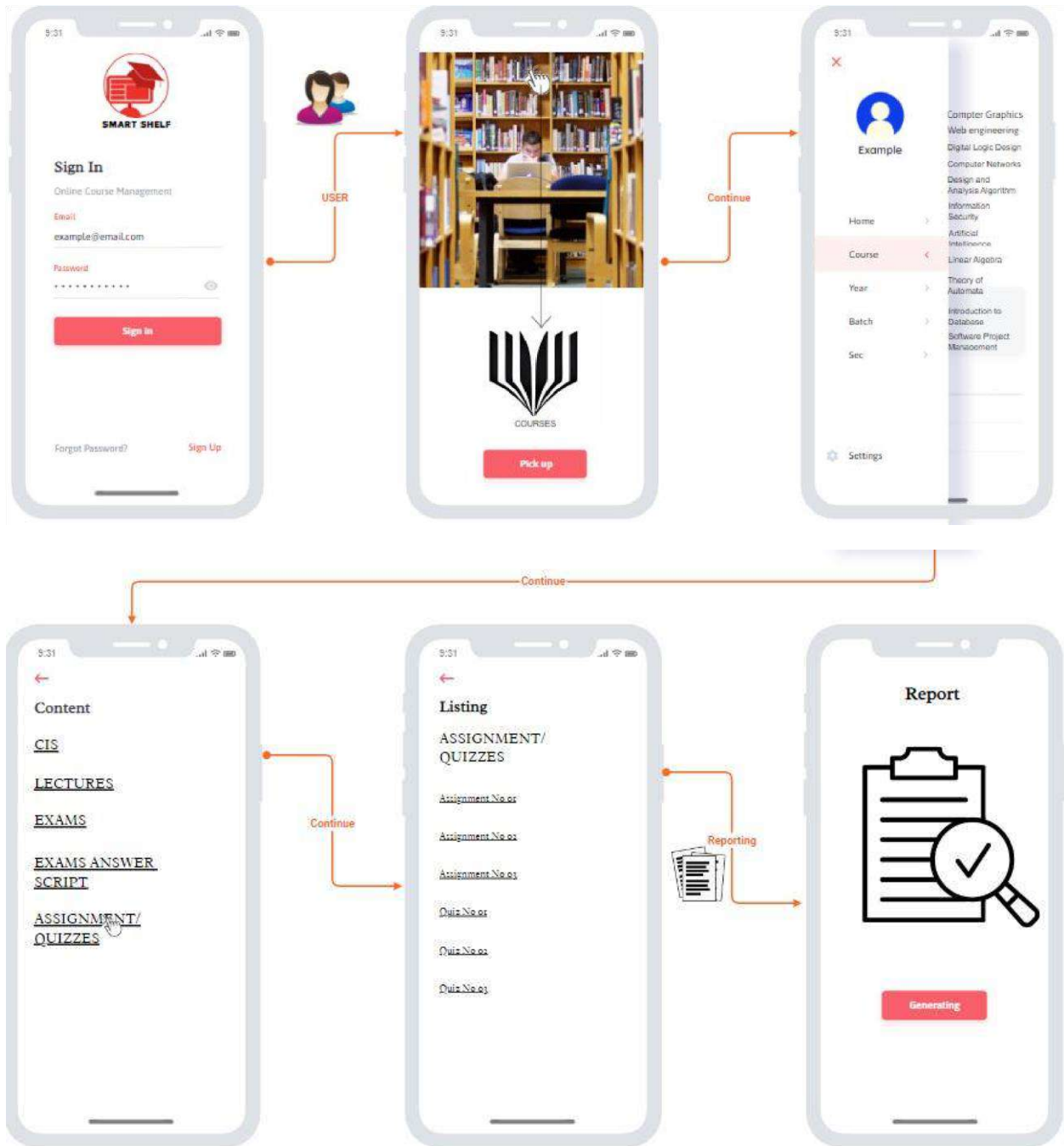
A UML physical database diagram would represent the physical structure of the database used by the Smart Shelf app. It would show the tables, columns, and relationships between them, as well as any keys or indexes used to optimize queries. The diagram would likely include tables for storing course materials, such as syllabi, lecture notes, and assignments. Each table would have columns for relevant information, such as the course name, instructor name, semester, and file path. There might be additional tables for storing user data, such as login credentials and access permissions. These tables would likely have columns for username, password, role, and other relevant information.

The relationships between the tables would be represented using lines with arrows indicating the direction of the relationship. For example, there might be a one-to-many relationship between the course table and the syllabus table, indicating that each course can have multiple syllabus.

**4.6 User Interface Design**

Our Application will consist of following screens:

- Login Screen: This screen allows users to enter their credentials (username and password) to access the application.
- User Dashboard: This screen serves as the main hub for the members. It displays in the form of shelf which contains books and navigate the desired course.
- Course: This screen enables users to faculty member selects the type of material they want to upload (e.g. syllabus, lecture notes, assignments).
- List of contents: Faculty member selects the file they want to upload from their device.
- Report: This screen shows the report of the user for example does the faculty member upload the desired/needed course file content or not.



## Chapter 5

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### 1. 6.1 Summary and Future work

#### **Summary:-**

The thesis centers on the development of the "SMART SHELF" android application within the Computer Science department, aiming to address the challenges faced by university faculty members in physically managing course files. In response to the imperative for efficient administration and seamless course material management in today's educational landscape, the project introduces Smart Shelf as a revolutionary solution. This cutting-edge application boasts a user-friendly interface, captivating page flip animations, and the integration of virtual reality to enable administrators to effortlessly organize, update, and monitor course materials, ultimately enhancing the overall workflow for faculty members.

The research methodology involves the design and implementation of the Smart Shelf android application, incorporating features to improve user experience and real-time monitoring capabilities. The expected results and conclusions emphasize the transformative impact of the application, streamlining administrative processes and significantly improving the management of course materials. The implicit recommendation is for educational institutions to adopt and implement Smart Shelf, recognizing its potential to enhance efficiency and effectiveness in the academic environment, ultimately providing a more streamlined and technologically advanced approach to course material management.

#### **Future work:-**

In the future work section, our focus will revolve around refining and expanding the "SMART SHELF" project to ensure its optimal functionality and widespread adoption. First and foremost, we will conduct thorough user testing involving both administrators and faculty members to gather invaluable feedback, enabling iterative design changes that enhance the overall user experience. Additionally, we plan to explore the integration of advanced features, such as collaborative editing and real-time notifications, to further streamline course material management. Security and data privacy concerns will be addressed through the implementation of robust encryption protocols to safeguard sensitive course materials. Moreover, the virtual reality component will undergo enhancements for a more immersive experience in monitoring course file status, and we will investigate the potential of augmented reality to seamlessly integrate the Smart Shelf within the educational environment. Cross-platform compatibility will be a priority, ensuring accessibility on various devices, and efforts will be directed towards assessing scalability for accommodating a growing number of users. A strategy for promoting widespread adoption within the university will be developed, considering potential resistance to change. Long-term maintenance and support plans will be established, including regular updates and bug fixes. Lastly, we will explore collaboration opportunities with educational researchers to assess the impact of the Smart Shelf on teaching efficiency and academic outcomes, contributing to its ongoing success and evolution in the rapidly evolving educational landscape.

## Chapter 6

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### 7.1 Conclusion & Recommendation

In conclusion, our research aimed to address the challenges faced by university faculty members in managing course files through the development of the "SMART SHELF" android application. Recognizing the need for efficient administration in today's dynamic educational environment, our project set out to revolutionize the traditional approach to course material management. By creating an intuitive and user-friendly interface with captivating page flip animations, we sought to empower administrators in organizing, updating, and maintaining course materials seamlessly. Additionally, the incorporation of virtual reality technology allows the administration department to monitor the status of faculty members' course files in real-time. Faculty members, in turn, benefit from the ease of uploading semester course files on this innovative platform.

The significant accomplishments of our project lie in providing a comprehensive solution that streamlines the workflow for faculty members and enhances the overall efficiency of course material management. The captivating page flip animation not only adds a visually appealing element but also contributes to the application's user-friendly experience. The integration of virtual reality further elevates the monitoring capabilities of the administration department, fostering a more connected and responsive educational ecosystem. Our results signify a step forward in leveraging technology to address practical challenges within academic institutions.

In the broader context, the "SMART SHELF" android application extends beyond academia, offering a potential blueprint for optimizing administrative processes in various industries. The efficient and visually engaging features of our application can inspire advancements in digital management systems, benefiting organizations beyond the educational sector. As we embrace the digital age, the need for intuitive and innovative solutions becomes increasingly relevant, and our project exemplifies how technology can be harnessed to enhance traditional practices. This work not only contributes to the academic discourse but also prompts broader considerations on the transformative potential of technology in addressing real-world challenges.

## References

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- [1] Ayman Hussein Odeh, "An Online Course File Management System (OCFMS)", May.2019.
- [2] O. M. A. F. Ebrahim, "Design and Implementation Web-Based System for Course Files Management by using WEBML Methodology", March.2020.
- [3] A. M. N. ahmed, "An e-Course file management system: A green campus initiative", 2013.

## General Guidelines for Writing Project's Thesis

### For convenient upload on PEC's e-Library

#### **Page Setup**

Page Size:	A4
Top margin:	1.00 inch or 2.54 cm
Bottom margin:	1.00 inch or 2.54 cm
Left margin:	1.00 inch or 2.54 cm
Right margin:	1.00 inch or 2.54 cm

#### **Fonts and Styles:**

Use a standard font such as Times New Roman, Arial, or Calibri

Font size should be 12 points for the main text.

Use consistent font sizes and styles (bold, italics) for headings, subheadings, and content.

#### **Footer:**

Each page shall have a footnote "Page number, right align".

#### **Header:**

Each page shall have a header "Project/Thesis Title".

#### **Chapter Startup:**

Each chapter shall be numbered as Chapter 1, Chapter 2, etc.

#### **Paragraph Formatting:**

Single-spaced, Line entered paragraph, left align or justified.

**Line Spacing:**

1.5 spacing is required for the text. Only footnotes, long quotations, bibliography entries (double space between entries), table captions, and similar special material may be single spaced.

Maintain consistent spacing between paragraphs

**Images, Figures, Hyperlink:**

Ensure that images, figures, and hyperlink are of high quality and are properly labeled.

**Tables and Equations:**

Format tables with clear column and row headings.

Provide captions for each Table.

Label equations and provide clear explanations.

**Citations and References:**

Follow a standardized citation style (e.g., APA, MLA, PEC etc.) for references.

Include a separate references section at the end of the document.

**File Naming Convention:**

Submitted files are named with a clear and concise title that reflects the content of the paper or thesis.