

V 1.0

System Requirement Specification



Group No 33

Blitz Bees

V 1.0

Group Information

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Project Title: L-Curve

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1. INTRODUCTION

L-CURVE is a web based Learning Management System. The system mainly focuses on user experience and it supports Content management, Assignments & Assessments Management and maintaining proper interaction between student, teacher as well as parents.

The client of this project is Trinity College. It is a leading boy school in Kandy which has around five thousand students.

The IT sectional head will be the administrator of the L-Curve. Main stake holders of this project are Teachers, Students, and parents. The users must log in to the system in order to obtain services from it. The main functionalities are log in, student registrations, teacher registration, Customize Profile, Manage Subjects, View Study works, View academic Calendar, View Time table, Open forums, Post news/announcements, View performance report and receiving notifications from the teachers to parents. The system improves the quality of education by converting the traditional learning process into an enhanced blended learning approach.

1.1. Problem Statement

Most of the schools are not using learning management systems, the government has introduced Learning Management Systems based on Moodle but teachers and students hesitated using the system due to complex processors and lack of user friendliness. Even though there are commercial versions of LMS, they cannot be afforded by the government schools. And also, most of the systems are not localized especially into Sinhala and Tamil. And active involvement of parents' in student's learning process is low. They are not able to track the status, performance of the children and get regular notifications.

The main problems identified are,

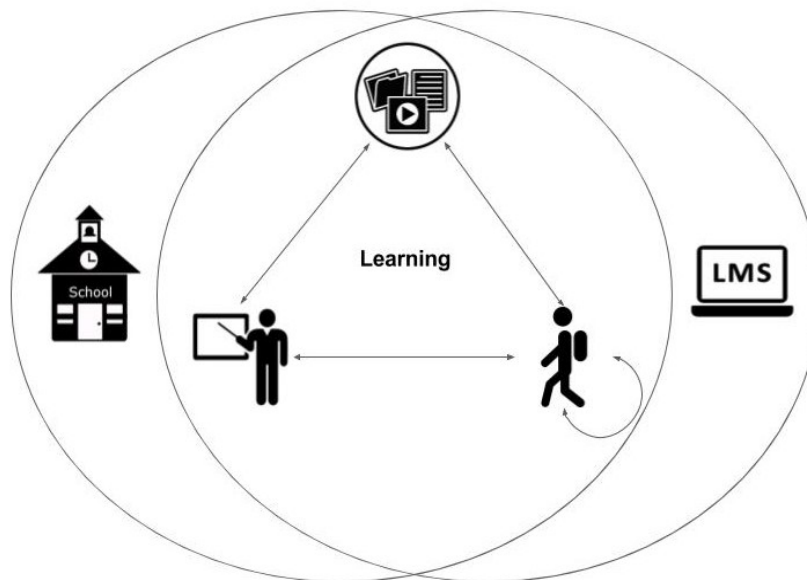
- Lack of user friendliness and complex processors in Free/Open Source Systems
- Unaffordable Commercial Systems
- Lack of language and operational support
- Lack of Parental engagement

1.1.1. Limitations of the proposed System

- SCORM is not supported.
- Distance learning is not supported
- System should be deployed on their own servers or in a third-party server.

1.2. Goals

Our Goal is to provide an enhanced *blended learning* approach with maximizing interaction between Student-Student, Student-Teacher and Teacher-Parent. System will provide learning services provided in the classroom to the users through online while allowing interactions with students-students, students-teachers, students-content and content-teacher.



1.3. Objectives

- Accelerate learning performance
- Increase the reach of learning materials
- Measure the student's performance and report them
- Improve the student attention to learning processes
- Maintain an active relationship among student, teacher & parent

1.4. Scope

1.4.1. In-Scope

The Proposed solution is an interactive dedicated platform for learning. This will also give the enhanced blended learning Facilities with maximum interaction between student-content, parent-content, student-student, student-teacher and also teacher-parent. High level summary of the system's functionality is given below.

- User management
 - Student
 - Teacher
 - parent

- Content management
 - Learning Resources
 - Forums
- Assignment/Homework management
- Administration
 - System configuration
 - Year-end Changes
- Announcement/Events management

1.4.2. Out- Scope

- School Time table management.
- School management.
- Sharable Content Object Reference Model (SCORM).

1.5. Intended Benefits of the System

- Provides unlimited access to e-Learning materials.
- Easily tracks learner progress and performance.
- Reduces Learning and Development costs.
- Reduces Learning and Development time.
- Keeps parents, organizations, society up-to-date with compliance regulations.
- Integrates social learning experiences.

1.6. Constraints

- System administrator and other operators must have adequate knowledge on the system. If they are not competent enough to handle the system. Thus, there may be a need to recruit or train existing employees. Student, teachers and parent must be intuitive about the system.
- The system has to be user-friendly and not confusing as most of the users of the system have a low to mid level of IT literacy while providing the necessary advanced options needed for customization of the system.
- The system should be reliable enough for the staff to depend on it for critical operations like study content handling, assignment submission handling and marking process handling.
- School or individual users should consist proper internet connection and basic knowledge.
- Web application will run on all major browsers such as Google Chrome, Mozilla Firefox, Opera or Internet Explorer
- System can't control the situations such as network issues, issues in login devices,
- Parent have limited system view, they can check only their student's profile, assignment marks, learning progress and receive a notification to their phone about every acknowledgment according to their choice.
- Payment should be made for mobile alerts.

1.7. Assumption and Dependencies

Learning management system has few assumptions in order to have a proper dedicated interaction among the users and contents. The following are the assumptions

- The technical knowledge of teachers, students and parents are adequate to work with the web application
- A Satisfactory amount of Computer and Mobile devices are available in order to process with the system.
- Students have access to LMS at home.

2. OVERALL DESCRIPTION

Project L-curve is an interactive dedicated platform for learning. Following section represent the overall description of our learning management system. The project has been put into perspective through a detailed assessment of the system, user, hardware, software and communication interfaces, memory considerations, operational modes and site adaptation requirements. System constraints and assumptions are discussed and L Curve version 1.1 scope is discussed with the system's end users.

2.1. Product Perspective

L-curve works as a web application and helps to convert the normal school learning, teaching, and interacting process into a dedicated internet based process. School should deploy the system on their own servers or in a third-party server. So, the relevant parties can register and logged into the system. A student can enroll to their subjects, refer them, download content, upload assignment answers. Also, teachers are able to mark all assignments, upload student subject contents and interact with the students, associations or societies. Parents can view their child's marks and get notifications about their children studying progress details according to their necessity. Students can chat with their classmates and work together in group assignments. Admin administrates all user accounts. Also, relies on a number of external interfaces for persistence and unhandled tasks.

2.1.1. System Interfaces

2.1.1.1. User Interfaces

L Curve is a web base system which users will be able to access the system via a browser (eg: chrome, firefox). Interfaces are based on four different roles (Student, Teacher, Parent, Administrator)

Web Application UI

The web application UIs provide an interface for the users to interact with the system's functionalities. These UIs will mainly focus on usability and attractiveness as well as performance. The system aims learning process of the student rather than learning about system processes by supplying best simple user experience

- Student's UI will include functions like view subject content, submit assignment answers, download student subject content, chat with group members and etc.
- Teacher's UI will include upload student subject content, marking assignments, arrange meetings and etc.
- Parent's UI will include the get Notifications, view child marks and etc.
- Administrator UI will include all administrative processes and society, profile updating and etc.

2.1.2. Software Interfaces

L-curve will have an interface with a database management system (DBMS) that stores the information necessary for the whole operation. DBMS must be able to connect for login process by

transferring data speedily and accurately. The DBMS must store all the data such as student subject contents, user details, society details and etc.

2.1.3. Communication Interfaces

It should use a reliable-type IP protocol such as TCP/IP or reliable-UDP/IP for maximum compatibility and stability. The system will use an SMTP client to send emails for student account confirmation, password changes and promotional activities.

2.1.4. Operations

L-Curve handles the school learning process. Student's marks grades, class places, subject materials and everything handle via LMS. So, consistency of the system is highly appreciated. The system should be able to run long periods without failures and data losses. Backup and recovery should be handled by the DBMS and operating system, or external software running on a timed backup system.

2.1.5. Site Adaptation Requirements

Proper internet connection

- Network all devices, install operating systems, server software, and Database Management System
- Secure network, distribute initial passkeys
- Configure server software

Customization of software elements may be required, including:

- Table layout maps
- GUI elements, especially for the web applications

2.2. User Characteristic

The end users of the L-Curve mainly divided into three groups as unskilled, partly skilled and highly skilled users.

Unskilled Users

Students and parents assumed as unskilled users in the project L-Curve. Therefore, be assumed to have no relevant prior skills or education other than basic abilities to operate a web-based system. So, they should be able to handle their part in the web application after minimal training.

Skilled Users

Teachers are assumed as skilled users in the project L-Curve. Therefore, they should be able to use the system and further be able to train others with minimal training themselves. They must be able to explain all elements of the user interfaces except the server. These should not be of notably greater complexity than the standard functions.

Highly Skilled Users

The initial installation and configuration of hardware and system components (especially the server) are guaranteed to require someone with notable computer experience, including extensive experience with network and operating systems to complete it. And later configuration of the features like News forum handling and subject content management features will require a system admin who will have a sufficient knowledge about the software and experience in the computing field. This type of user is expected to have high-school certificate or equivalent, as well as extensive computer experience.

3. FEASIBILITY STUDY

3.1. Purpose of Feasibility Study

A feasibility study focuses on the viability of the project idea and identifies potential problems. Also, it helps to choose whether the idea works and should proceed with it or not. Components of this feasibility study are;

- Description of the Business
- Market Feasibility
- Technical Feasibility
- Financial Feasibility: How much startup capital is needed, sources of capital, return on investment
- Organizational Feasibility

3.2. Solution

The proposed solution is the web application. this will focus on every customer of the system such as the teacher, student, parent. Due to the majority of customers are children android application will not be provided. but web application will focus on users with mobile phones throughout their processes.

3.3. Feasibility

Common approaches of feasibility study are Operational, Technical , Schedule, Economic Legal and Ethical feasibility.

3.3.1. Operational Feasibility

Operational feasibility measures the ability to solve problems using the new proposed system. The main problem arose with the current system is the existing learning systems are not used by users. These problems arise due to the current system lack in user friendliness, users have language problems, users have less knowledge in handling the system, fewer user guidelines have given. Mainly the system is built using more colorful interfaces meaningfully focusing on attracting students who are main users of the system. Attracting students towards the system is a main requirement of the system.

The system is built using simple interfaces which can understand by the user just looking at it disregarding the level of knowledge and experience of related technologies. Due to users of the system have different kinds of education levels and different level of technical knowledge, the system gives user tips in each step to guide them through the process. Also, system help teachers to reduce their effect they have to spend for their works.

As examples;

- Assignments can be easily given to the students without spending much time

- Notification can be given to all users easily and their attention can gain easily for important notifications
- Events calendar helps remind upcoming events for all users

Interactive education is needed by the users. So, the L-Curve helps to combine and interact users easily through the system. Forum and chat as a help for solve that problem. Localized learning management system is given to reduce engagement with the system by the users' due to issues with language which reduce theirs.

And widely available Learning management systems with more user-friendliness are not affordable by Sri Lankan schools. Due to that, L-Curve will be developed in a very user-friendly manner and implement as an open source project which allows any school in Sri Lanka can download the system.

3.3.2. Cultural Feasibility

Cultural feasibility is a measure of how people feel about a solution and how well it will be accepted in the given organizational climate. As learning management system which can be operated by users (mostly students) is a long-awaited system by the client. As they wanted interactive education using the latest technology and attract them to collaborative education.

From this system, localized version of a learning management system based on main three languages in Sri Lanka is given to users. So, without considering any language barriers to use the system. And guide system will help any user with any technological levels.

3.3.3. Technical Feasibility

Free and open source software will be used to develop the system such as;

For front end: HTML5
CSS3
jQuery
Bootstrap

For backend: Apache Tomcat
JSP
Java
PostgreSQL

So, availability of the software is higher. And members of the group are well capable of handling these technologies.

Hardware required is fulfilled using our own computers which lead no hardware cost for the development process. Machine learning activities or overly complex algorithms will not be used for the whole process. So, available knowledge is sufficient for development. Obtaining advice for concerning problems occur and improvements is easy through the internet and they are widely available. Learning resources, help, and support, troubleshooting guides are easy to find for these technologies.

3.3.4. Schedule Feasibility

The timeframe is not a client requirement but it is required by the objectives of the course. So, an achievable timeline for the project within one year is designed. The extreme prototype will be used for the development process. firstly, a static prototype will be build using dummy data and then dynamic prototype and backend development will be developed parallely.

Number of members in the group -> 6

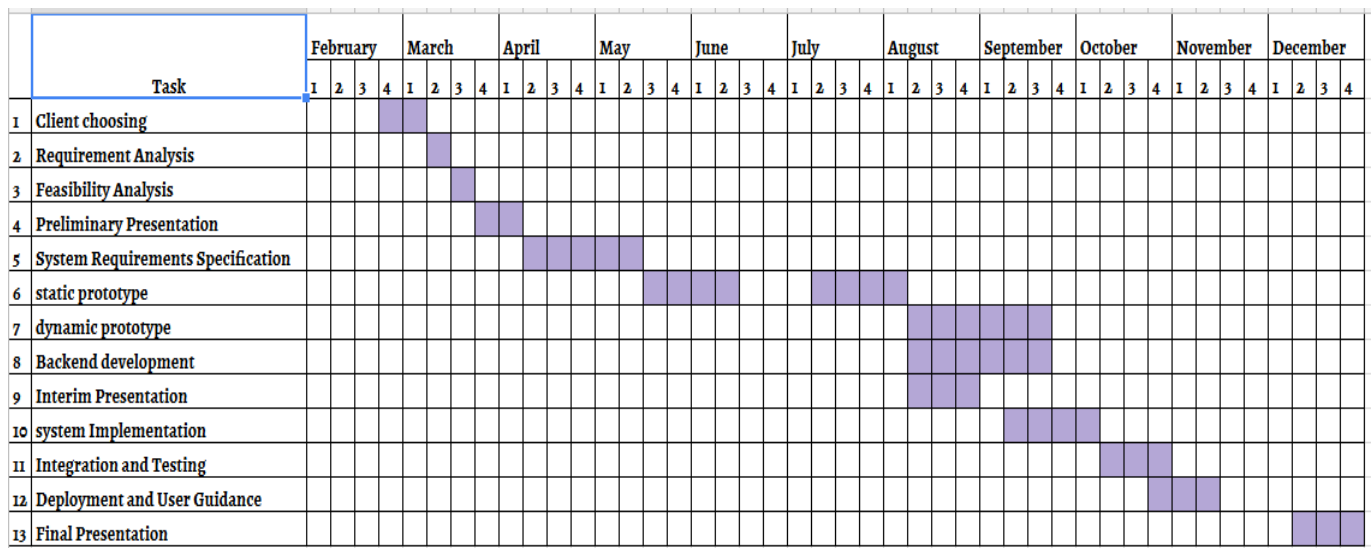
Number of work hours -> 6 hours per week for a member

Man-hours per week -> $6 \times 6 = 36$

Estimated weeks -> 41

Total man-hours -> $36 \times 41 = 1476$

So, using the available man hours given major activities can be done within the deadlines easily. Gantt chart for the L-curve is Illustrated below.



3.3.5. Legal and Ethical Feasibility

The system will be compatible with the data protection laws and acts in Sri Lanka. And it will ensure to keep each Customer's privacy such as personal details, passwords, activities and visiting history. But some details such as email addresses and contact numbers will be shown to only allowed users due the main purpose of implementing this L-Curve is to maintain a collaborative education among students.

Proposed software for development are free and open source and there will not be any legal issues arisen such as copyright issues, violation of license agreements.

3.3.6. Resource Feasibility

L-curve will be workable in any browser which supports html5 regardless whether it is a mobile phone or a computer. So, just a workable smartphone or a computer is needed.

3.3.7. Economic Feasibility

Economic feasibility is the analysis of costs and revenues of the project to determine whether or not it is possible to complete. Expenses arise for the whole development such as meet the client, host site, domain etc. will be provided by a sponsor. Also, there will not be a significant expense for development because only free and open source software will be used and our own computers will be used for the development process.

3.3.8. Cost Benefit Analysis of the Best Solution

Cost and benefits of the system are analyzed. Main costs for the system for the system will be for the development, deployment and operational cost. And those are assumed as a total of 92,780 LKR.

3.3.8.1. Development Cost

| item | description | cost |
|---------------------|--|-----------------------------|
| Electricity bill | Considerable amount of electricity will be used for the development process such as for implementation process, related technological activities | $1000 \times 8 = 8000$ LKR |
| Software | Used software for the development is freeware. So, there will not be cost for software. | free |
| Printing cost | For system requirement specification documents and user manuals printing | $15 \times 100 = 1500$ LKR |
| Internet connection | system needs static IP internet connection to the host website. | $2000 \times 8 = 16000$ LKR |
| Hardware | For the development process only our own computers will be used. So, no hardware cost for development | free |
| Consulting fees | Consulting for the project is done by allocated university supervisor and mentor | free |
| Personal costs | System will be built by group members focusing the course. So, there will not be any cost for personal fees. | free |

3.3.8.2. deployment Cost

| Item | Description | Cost |
|---------------------|--|--------------------|
| Web server | To accepts and supervises the HTTP requests | 18000 LKR |
| Database server | To provide database services to the system | 760 x 8 = 6080 LKR |
| Domain | To get an identification string (Name) that defines a realm the control within the Internet. | 450 x 8 = 3600 LKR |
| Web hosting service | To get website accessible via the World Wide Web. | 450 x 8 = 3600 LKR |

3.3.8.3. Operational Cost

| Item | Description | Cost |
|-----------------------------|---|---------------------|
| System maintenance expenses | After the installation, the operational expenses incur will be borne by the school. | 2000 x 3 = 6000 LKR |
| System upgrades | Due to the source code is going to make open source, upgrading cost is none. | free |

3.3.8.4. Benefits

As tangible benefits of the system;

- processing errors will be fewer while operating.
- System will decreases response time for the processes.
- And increase the involvement of users with the online learning.

As intangible benefits of the system;

- User interaction with the system will be increased
- Better decision making

3.3.9. Risk analysis

Users (students, teachers etc.) may refuse to adapt to new technological measures at once. Should ensure the security of the user data. There is a risk of the security of private data gathered to the customer profiles.

| Risk | Likelihood | Impact |
|---|------------|----------|
| Failure to accomplish end user requirements | Low | High |
| lack of demanded knowledge in technologies among group members | Low | Moderate |
| Low commitment of the top administration and client engagement to the project | Low | High |
| Changing scope of the project | Low | Low |
| Incompetent to obtain user commitments | Moderate | High |
| New technologies introduction for developing stage | Moderate | Moderate |

This given analysis shows how this project is feasible to implement. And the project is ready to be introduced as an open source project to the community and it is available for further development processes in future.

4. REQUIREMENTS

The following section presents the complete set of functional and nonfunctional requirements identified for the L-Curve. Functional requirements are listed first, according to their relationship to the overall system, Students, Teachers, Parents, Class teachers and Administrators. The non-functional requirements that pertain to user friendliness, performance, Modularity, Scalability, Portability and Security are subsequently presented. The functional requirements have been specified using a natural language description and as such, the reader is directed to Chapter 6 (UML Analysis Models) for further detail.

4.1. Stakeholders

The stakeholders of the L-Curve are the people or groups with an interest in the success or failure of the LMS. They can affect or be affected by the actions, objectives and policies of the LMS. Not all the stakeholders are equal. Some are more important to the application while the others are less.

Stakeholder Analysis

| Key | Name | Power(1-5) | Interest(1-5) |
|-----|-------------|------------|---------------|
| 1 | Owner | 5 | 5 |
| 2 | Students | 3 | 5 |
| 3 | Teachers | 4 | 5 |
| 4 | Parents | 3 | 4 |
| 5 | Government | 4 | 1 |
| 6 | Competitors | 1 | 5 |

Primary Stakeholders

The stakeholders who are vital to the success or the failure of the LMS can't exist without their continuing participation. The followings are the primary stakeholders of this system.

| Name of the stakeholder | Description | Interest |
|-------------------------|--|--|
| Administrator | The employee who have control the LMS. | To create a better environment leading to the success of the LMS in which performance quality. |

| | | |
|------------|--|--|
| Students | The recipient of good service of the LMS. | To do Study works easily and accuracy. |
| Teachers | A person who have more activities to be done via LMS. | To manage students' studies easily and to direct communication with parents through LMS. |
| Parents | A person who is considering the activities done through the LMS. | To know about child's performance and activities and to contact with teachers directly. |
| Government | The local government of the country. | The organization who will decide the education policies and other rules and regulation which will affect the LMS |

Secondary Stakeholders

The stakeholders who involved in the success or the failure of the business whether the management agrees or not. Secondary stakeholders are as follows.

| Name of the stakeholder | Description | Interest |
|-------------------------|--|---|
| Competitors | Other learning management systems which serve the same kind of services. | The quality and simple-ness of LMS, services, cost and functionalities. |

4.2. Functional Requirements

This subsection presents the identified functional requirements for the LMS. Initially, general requirements that pertain to the whole system are given. Where possible, subsequent requirements have been demarcated based on their relevance to the users of the system, that is, Administrator, Student, Teacher and the Parent.

4.2.1. General

This presents the identified functional general requirements that directly relate to the entire LMS

| | Requirement Description |
|----|--|
| 01 | A server shall host the L-Curve and provide system data processing and storage capability. |
| 02 | A display shall provide a student with all student system functionality. |
| 03 | A display shall provide a teacher with all teacher system functionality. |
| 04 | A display shall provide a parent with all parent system functionality. |

4.2.2. Student

This presents the identified functional student requirements that directly relate to the students (including student leaders) of the LMS.

| | Requirement | |
|----|-------------------|--|
| | Functions | Description |
| 01 | Login | The student should be able to log in to his account in the system in order to do activities. To do this they have to validate their account. |
| 02 | Customize Profile | Student should be able to customize his account. He can view the account and if he wants he has the authority to change the password of his account. |
| 03 | View Subjects | Student should be able to view subjects, download study materials and view each subject mark. |
| 04 | View task | Student should be able download and submit homework and assignments. They should be able to do online assignments |

| | | |
|----|-------------------------|---|
| | | such as online quizzes and they should be able to view assignment marks. |
| 05 | View academic Calendar | Student should be able to view academic calendar and that calendar should be included assignment deadlines and academic events. |
| 06 | View Timetable | Student should be able to view Time table. |
| 07 | Read News | Student should be able to read news posted in LMS. He should be able to download related files attached to the news. |
| 08 | View Performance Report | Student should be able to view his performance report |
| 09 | Chat in forums | Student should be able to chat with their friends of same grade about the studies. |
| 10 | Post news | Student leaders such as prefects, sports leaders should be able to post news to the LMS. |

4.2.3. Teacher

This presents the identified functional teacher requirements that directly relate to the teachers (including sectional head) of the LMS.

| | Requirement | |
|----|-------------------|--|
| | Functions | Description |
| 01 | Login | The teacher should be able to to log in to his account in the system in order to do his activities.To do this they have to validate their account. |
| | Customize Profile | Teacher should be able to customize his account. They can edit or update his personal data. He can view the account and if he wants he has the authority to change the password of his account. |
| 03 | Manage Subjects | Teacher should be able to view his teaching subjects, upload study materials and upload each subject marks. |
| 04 | Evaluate task | Teacher should be able upload, view study works, assignments, homework and assignment marks. They should be able to do online assignments such as online quizzes and they should be able to view assignment marks. And he should |

| | | |
|----|-------------------|--|
| | | be able to send reminders to the parents about the assignments according to the time period selected by the teacher. |
| 05 | Chat with parents | Teachers should be able to have a chat with parent. |
| 06 | Make announcement | Teacher should be able to post news to the LMS |

4.2.4. Parent

This presents the identified functional parent requirements that directly relate to the parents of the LMS.

| | Requirement | |
|----|-------------------------|--|
| | Functions | Description |
| 01 | Login | The parent should be able to log in to his account in the system in order to do his activities. To do this they have to validate their account. |
| 02 | Customize Profile | Parent should be able to customize his account. They can edit or update their personal data. He can view the account and if he wants he has authority to change the password of his account. |
| 03 | View child results | He should be able to view his own child's results. |
| 04 | View Notification | He should be able to view reminders which are about assignments. |
| 05 | Chat with teachers | Parent should be able to have a chat with teachers via L-Curve. |
| 0 | View performance report | Parent should be able to view his own child's performance report made by the class teacher. |

4.2.5. System Administrator

This presents the identified functional parent requirements that directly relate to the parents of the LMS.

| | Requirement | |
|----|----------------------|---|
| | Functions | Description |
| 01 | Login | Administrator should be able to log in to his account in the system in order to do his activities. To do this he has to validate their account. |
| 02 | Customize Profile | Administrator should be able to customize his account. He can edit or update his personal data. He can view the account and if he wants he has authority to change the password of his account. |
| 03 | Manage records | Administrator should be able to add or delete a student, teacher, parent, administrator or a subject. He should be able to update details of other users. |
| 04 | Configure the system | He should be able to control powers to the users in the LMS. |

4.2.6. Class Teacher

This presents the identified functional teacher requirements that directly relate to the teachers (including sectional head) of the LMS.

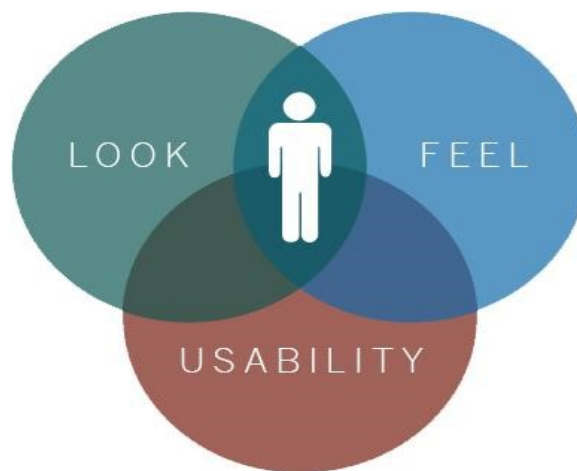
| | Requirement | |
|----|-----------------------------------|---|
| | Functions | Description |
| 01 | Upload student performance report | Teacher should be able to upload student performance report to the LMS. |

4.3. Non-Functional Requirements

This subsection presents the identified non-functional requirements for the L-Curve. The subcategories of non-functional requirements given are user-friendliness, performance, modularity, scalability, portability and security.

4.3.1. User-friendliness

- Web application should be very interactive.
- Web application should not contain elements that are too complex to be understood by the average unskilled user like parents. It should be simple.
- To improve user experience, web application should give maximize look, feel and usability.



4.3.2. Performance

- The system shall be capable to handle large amount of data.
- It should be able to modify the system and should allow changes to functionalities.
- The server shall be capable of supporting an arbitrary number of computers, tablets and Displays.
- Backups for database should be available within the system.
- The System and server should be fast enough to support live updates of quiz assignments and other notifications.

4.3.3. Modularity

- Developers may want to implement other modules and functionalities.

4.3.4. Scalability

- They may want to integrate the system with the other systems.
- web application would be scalable if it could be moved from a smaller to a larger operating system and take full advantage of the larger operating system in terms of performance (user response time) and the larger number of users that could be handled.

4.3.5. Portability

- Web application should be able to run in any web browser or any operating system.

4.3.6. Security

- Only authorized users can access the LMS.
- Embed links should be used for content sharing in the web application.
- There should be a secured way to communicate within web application in the system.
- Password policies should be used in the application.

5. Proposed System's Architecture

The system will be deployed on a server machine which has all the required applications to run a Java web application. System is using Multi-tier Architecture which has different layers (Presentation Layer, Business Logic Layer, Data Access Layer). Below is shown a UML deployment diagram for further understanding.

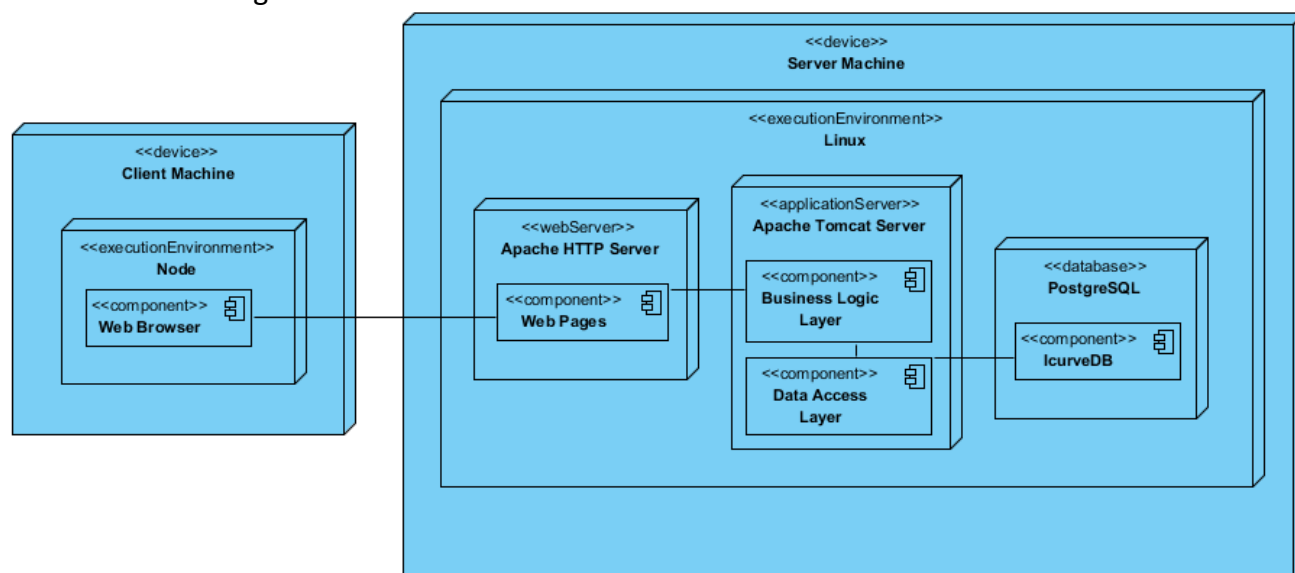


Figure 1

5.1. Component Responsibilities

Authoring Tool is a third party component used to let users create content. Using a already developed tool will reduce the development time.

Content component use authoring tool to make its content. Content can be used in any form such as (task, announcement, forum, assignment, resource material)

Group Component is used to logically group users according to their enrollments. This component will help to reduce code redundancy since all other components within can share the same code.

Calendar component is used to get events object and display them accordingly. Calendar get event objects at the time of making announcements.

5.2. Component Interactions

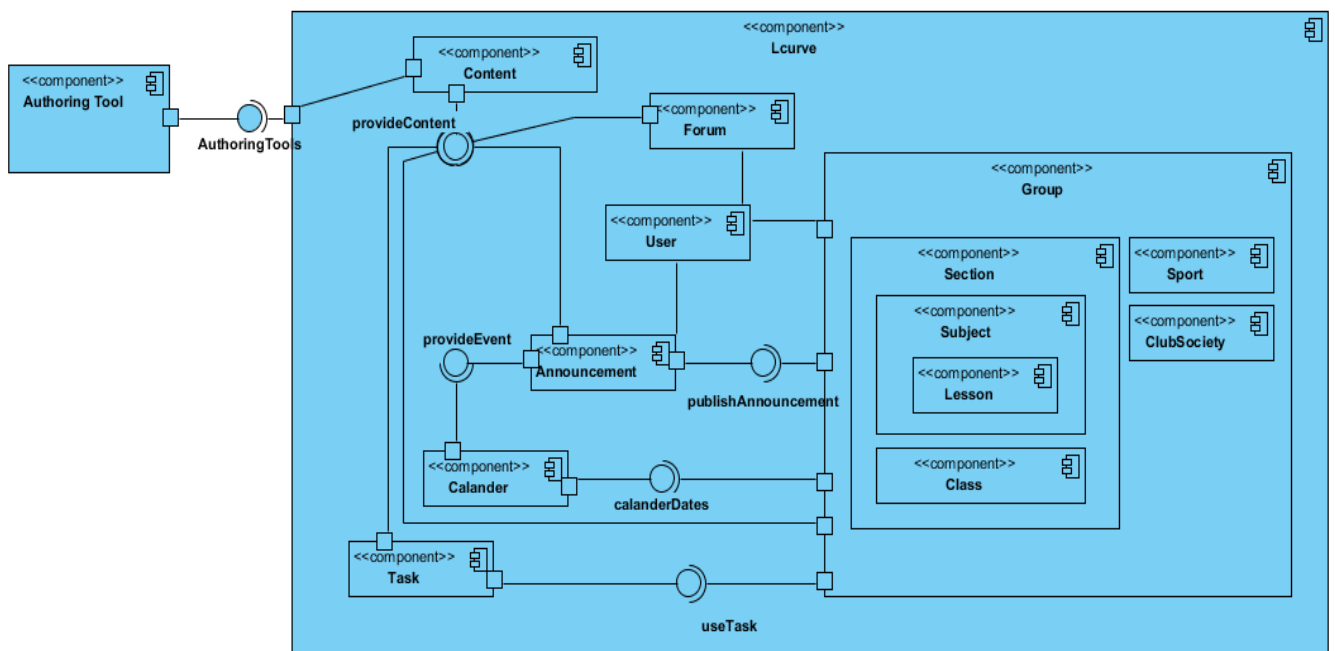


Figure 2

Above, is a UML Component diagram which shows interactions between components.

6. System Design - UML

6.1. Use cases

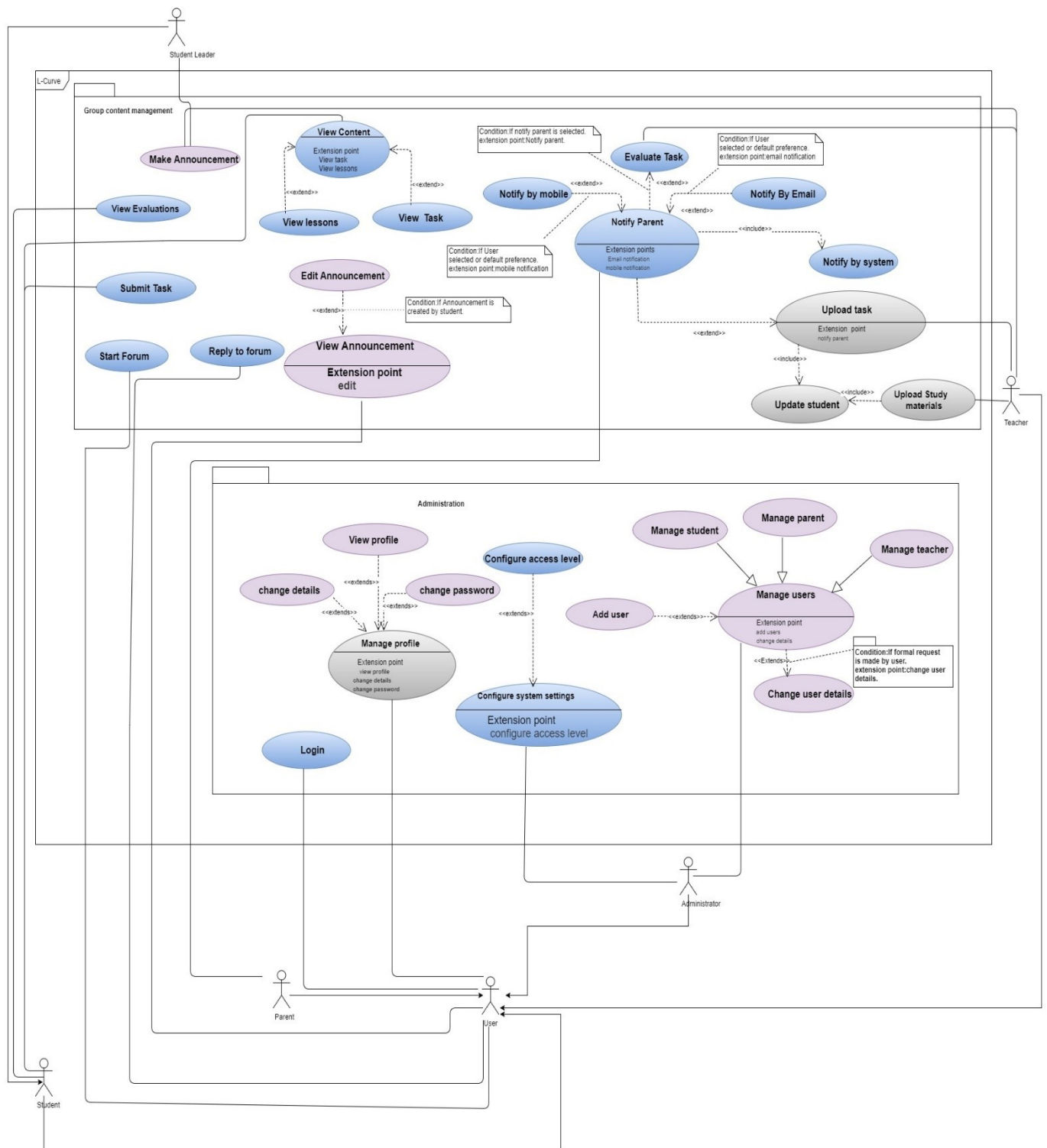


Figure 3

6.1.1. Actors

- ❖ Teacher
- ❖ Student
- ❖ Parent
- ❖ Administration
- ❖ Class Teacher

6.1.2. Use case Narratives

| | |
|-----------------|---|
| Use Case | Login to the System |
| Actor | Teacher, Parent, Student, Administrator |
| Goal in context | Allow users to use this Learning management System |
| Precondition | User should have an account |
| Trigger | User decided to log in to the system in order to use services and privileges of the web application. |
| Description | The user has to select the login button from the menu bar and type the user name (email address) and password. Then the dashboard is enable to the user according to the user type. |
| Exception | If the user enters an invalid username or password. |
| Post Conditions | Change password, view profile, change Details |

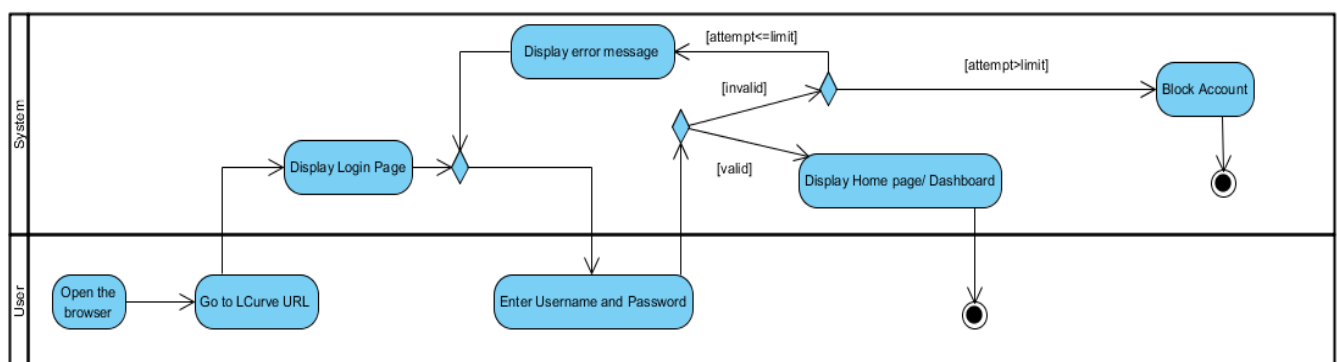


Figure 4

Activity diagram for User login to system.

| | |
|-----------------|--|
| Use Case | View Profile |
| Actor | Student, teacher, parent |
| Goal in context | View user profile |
| Precondition | User should login to the system |
| Trigger | None |
| Description | User select the view Profile button from the user account. |
| Exception | None |
| Post Conditions | None |

| | |
|-----------------|--|
| Use Case | Change Password |
| Actor | Student, teacher, parent |
| Goal in context | Change user's password |
| Precondition | User should login to the system and must enter the previous password |
| Trigger | None |
| Description | User select the Change password from the user account. |
| Exception | If user enter previous password incorrectly |
| Post Conditions | None |

| | |
|-----------------|--|
| Use Case | Change Details |
| Actor | Teacher, parent, student |
| Goal in context | Change user details |
| Precondition | User should login to the system |
| Trigger | None |
| Description | User select the Change details button from the user account. |
| Exception | None |
| Post Conditions | None |

| | |
|-----------------|---|
| Use Case | Submit task |
| Actor | Student |
| Goal in context | For submit done assignment |
| Precondition | User should login to the system |
| Trigger | When they finished the assignment. |
| Description | Student should go to the subject tab and then they have to select the subject then the content page enables to them. Then they have to go to the assignment and have to open the link and submit it through that. |
| Exception | None |
| Post Conditions | None |

| | |
|-----------------|--|
| Use Case | View Evaluations |
| Actor | Student |
| Goal in context | For get report |
| Precondition | User should login to the system and class teacher should upload performance report for each students. |
| Trigger | When student decided to view report. |
| Description | There is a tab for marks in their home page when they click it performance report will be loaded in there. |
| Exception | None |
| Post Conditions | None |

| | |
|-----------------|--|
| Use Case | Chat in forum |
| Actor | Student |
| Goal in context | For ask questions and get answers. |
| Precondition | None |
| Trigger | When a student have got a question which they do not have answers for. |
| Description | At top of the their subject page there is forum tab so they can click it on and asked questions. |
| Exception | None |
| Post Conditions | None |

| | |
|-----------------|--|
| Use Case | Upload study material. |
| Actor | Teacher |
| Goal in context | For upload lessons. |
| Precondition | Teacher should login to the system. |
| Trigger | None |
| Description | In there my classes pane they will be able to upload these things. |
| Exception | None |
| Post Conditions | Download study materials. |

| | |
|-----------------|--|
| Use Case | Evaluate task. |
| Actor | Teacher |
| Goal in context | For upload marks for subjects in the exam and assignment. |
| Precondition | Teacher should login to the system. |
| Trigger | None |
| Description | In there my classes pane they will be able to upload these things. |
| Exception | None |
| Post Conditions | View marks. |

| | |
|-----------------|--|
| Use Case | Upload task. |
| Actor | Teacher |
| Goal in context | For upload Assignment for subjects . |
| Precondition | Teacher should login to the system. |
| Trigger | None |
| Description | In there my classes pane they will be able to upload these things. |
| Exception | None |
| Post Conditions | Submit task |

| | |
|-----------------|---|
| Use Case | Notify parent. |
| Actor | Teacher |
| Goal in context | For remind parents about assignment deadline through mobile or internet . |
| Precondition | Teacher should login to the system. |
| Trigger | None |
| Description | In their Assignment management link they will be able to send Notifications to parents. |
| Exception | None |
| Post Conditions | None. |

| | |
|-----------------|--|
| Use Case | Manage Users |
| Actor | Admin |
| Goal in context | User registration |
| Precondition | Admin should login to the system. |
| Trigger | None |
| Description | In here he will be able to register a parent, student, teacher. When they log in to the system. There will be paths to change these details. |
| Exception | None |
| Post Conditions | None. |

| | |
|-----------------|--|
| Use Case | Configure the system. |
| Actor | Admin |
| Goal in context | Control the system. |
| Precondition | Admin Should login to the system. |
| Trigger | None |
| Description | In here the place where gives user access level. |
| Exception | None |
| Post Conditions | None. |

Text



6.3. Sequence Diagram

User viewing profile scenario.

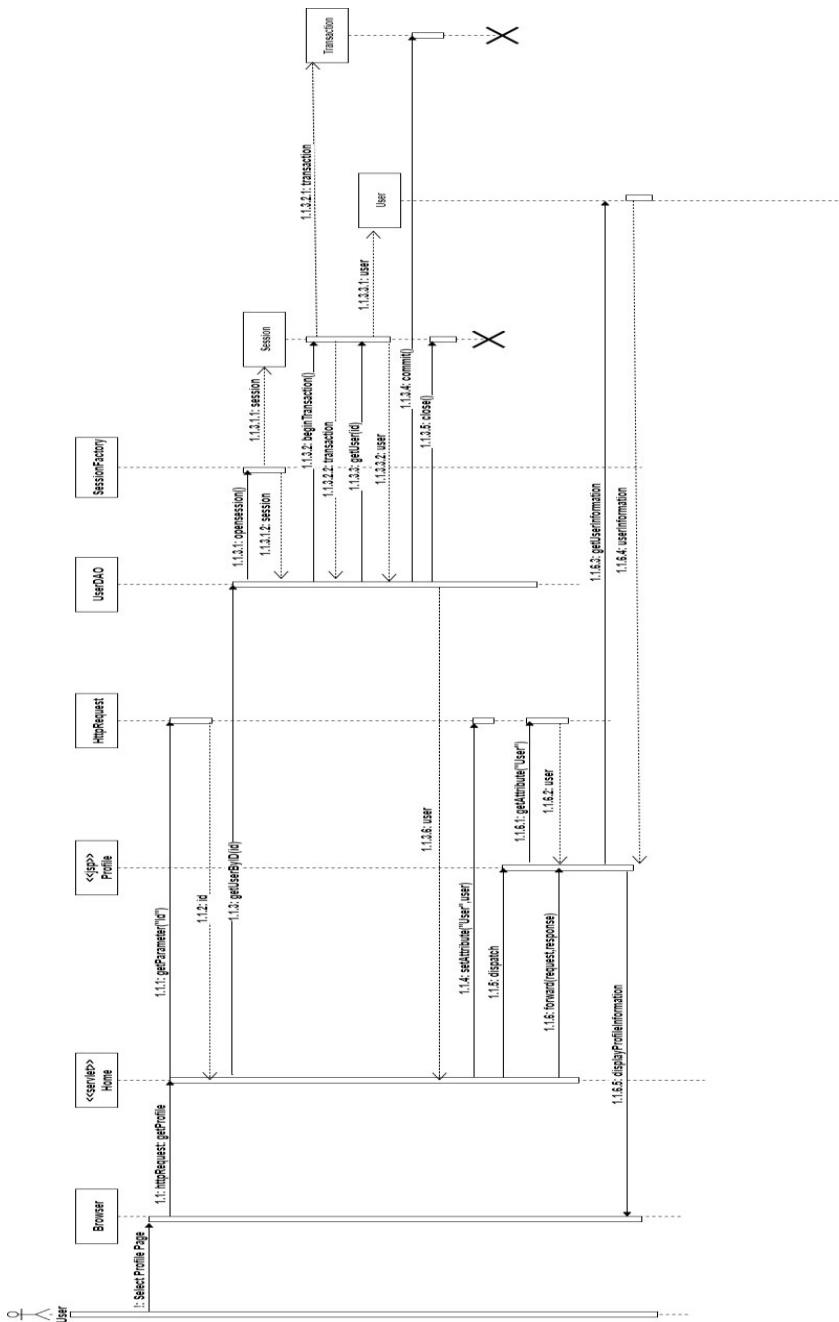
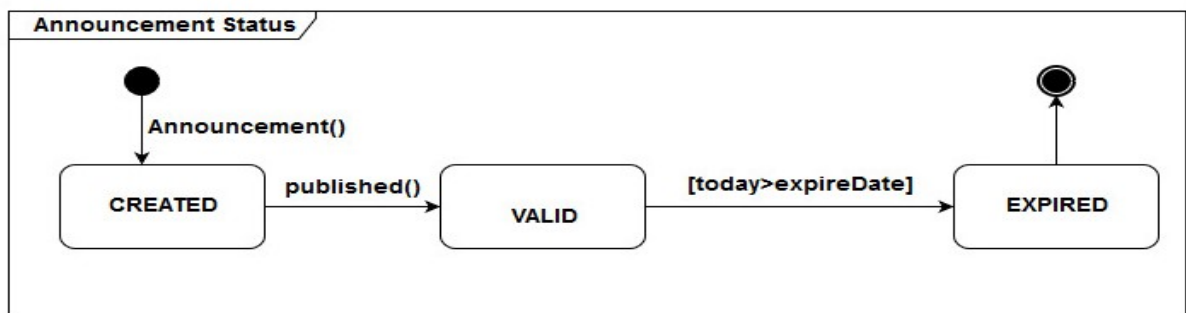


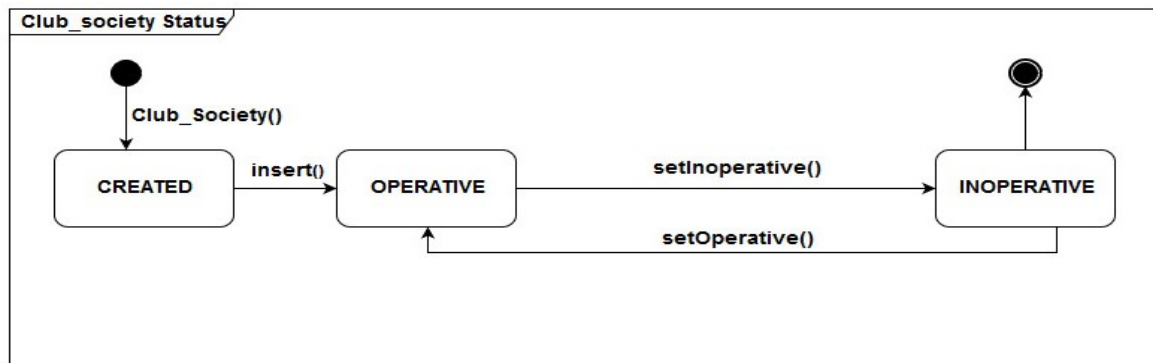
Figure 6

When user select profile button, http request is sent and server get user information from database using hibernate framework, then dispatch the Profile.jsp file and show the html content to the user.

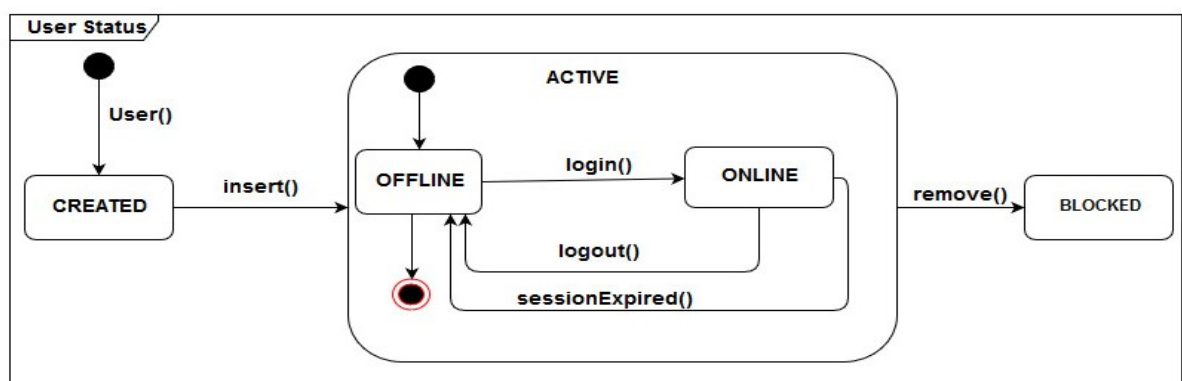
6.4. State Machine Diagram



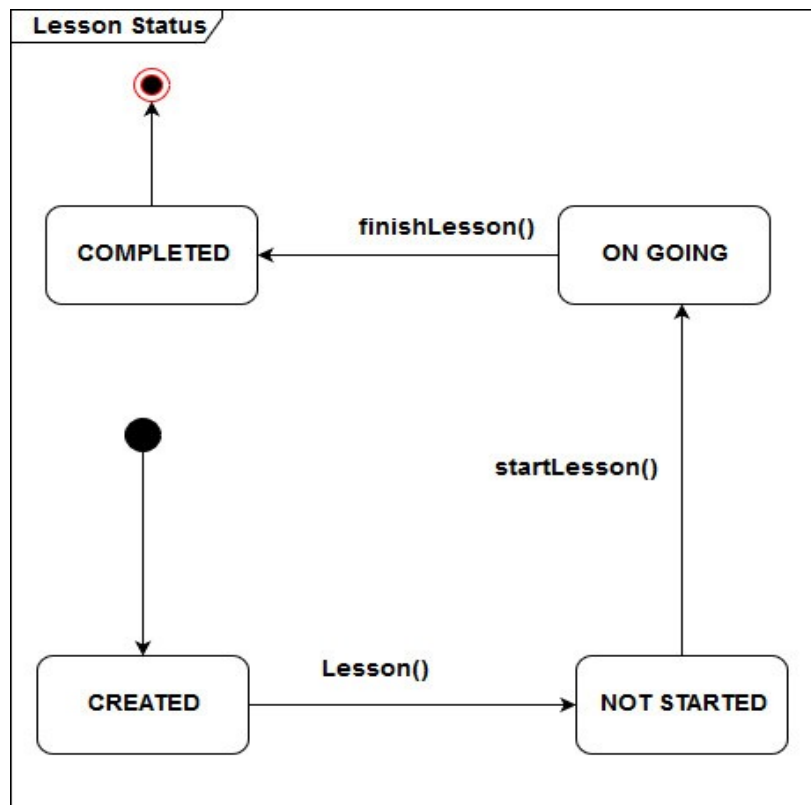
6.4.1 Announcement status



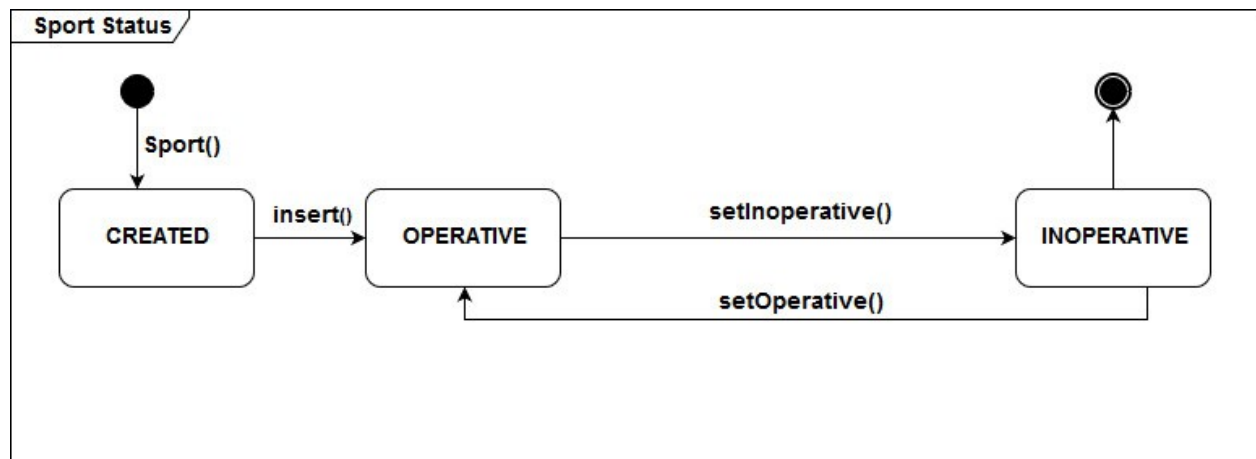
6.4.2 Club Society status



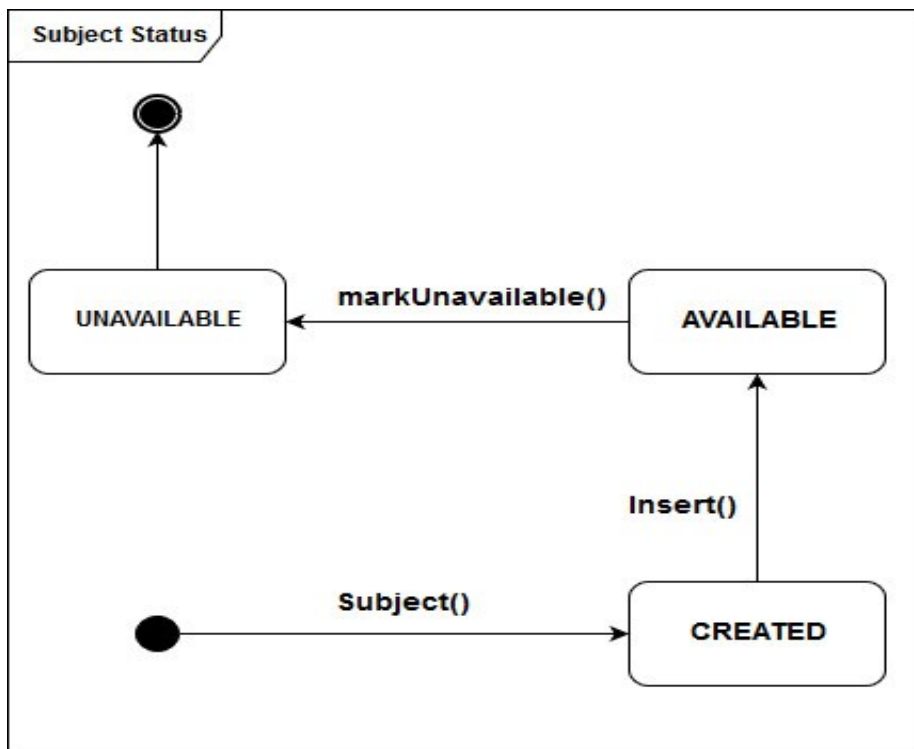
6.4.3 User status



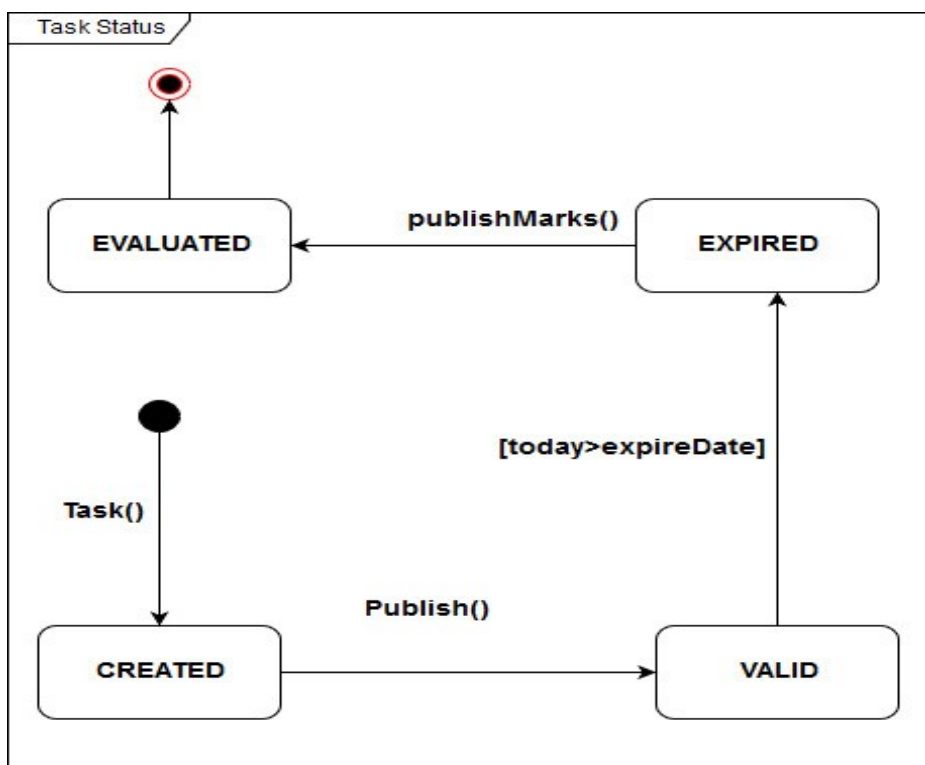
6.4.4 Lesson status



6.4.5 Sport status

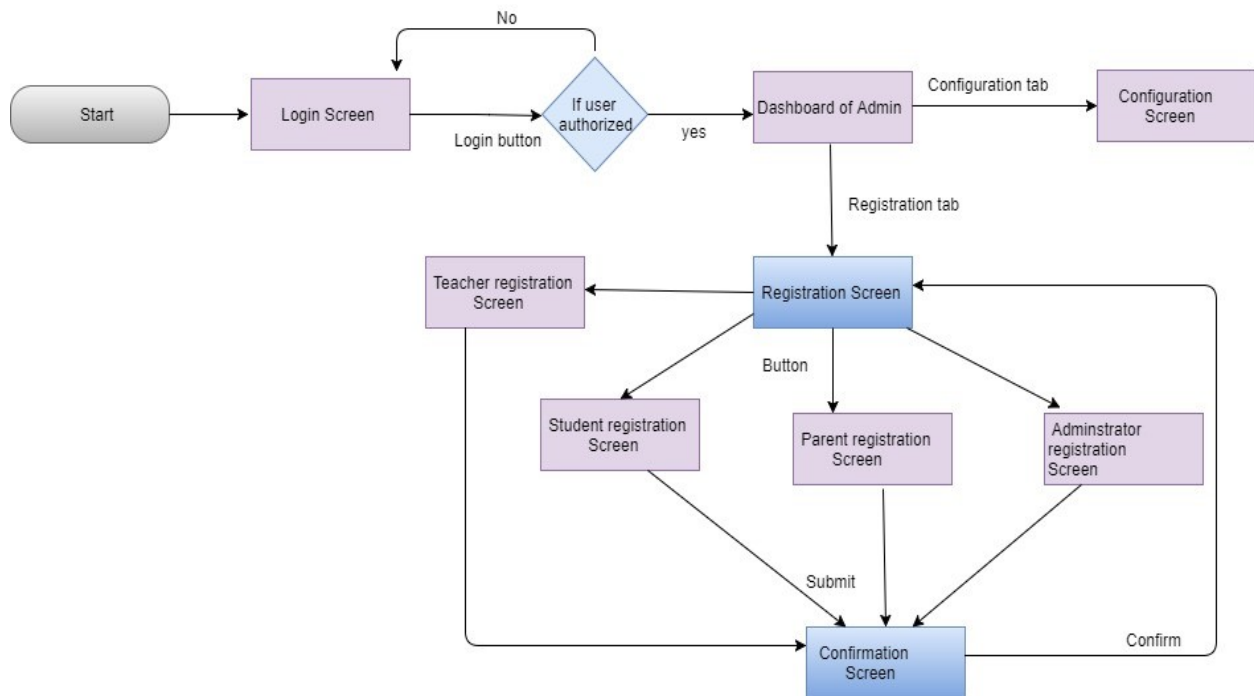


6.4.6 Subject status

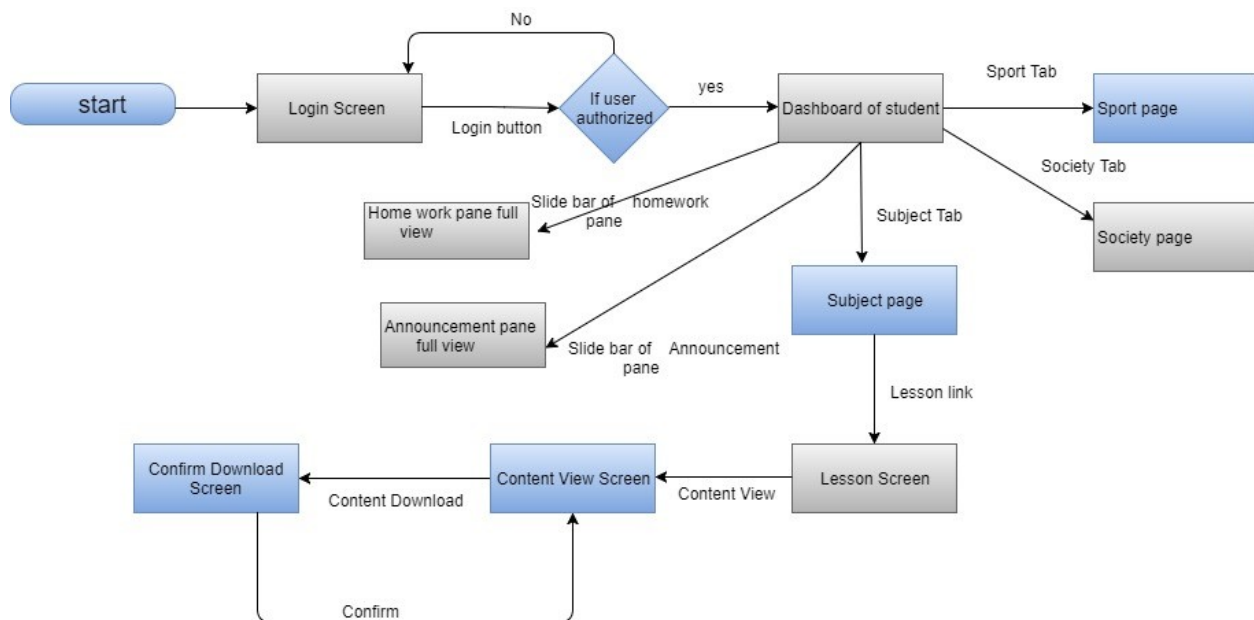


6.4.7 Task status

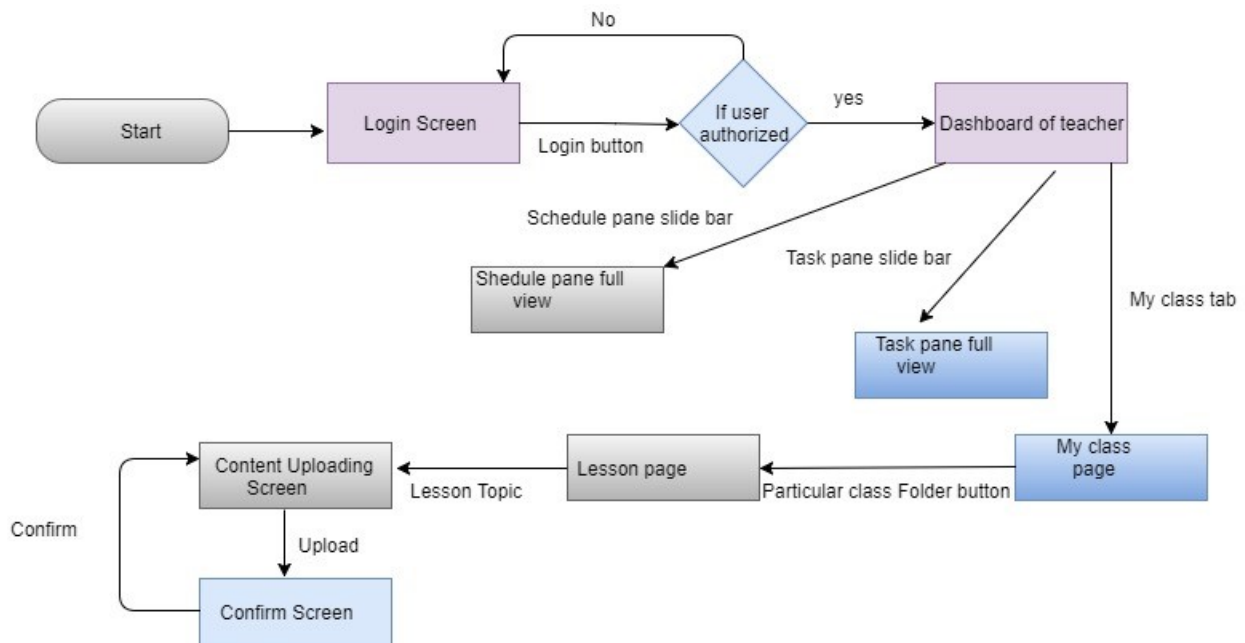
6.5. Interface Flow Diagram



6.5.1 Admin interface flow diagram

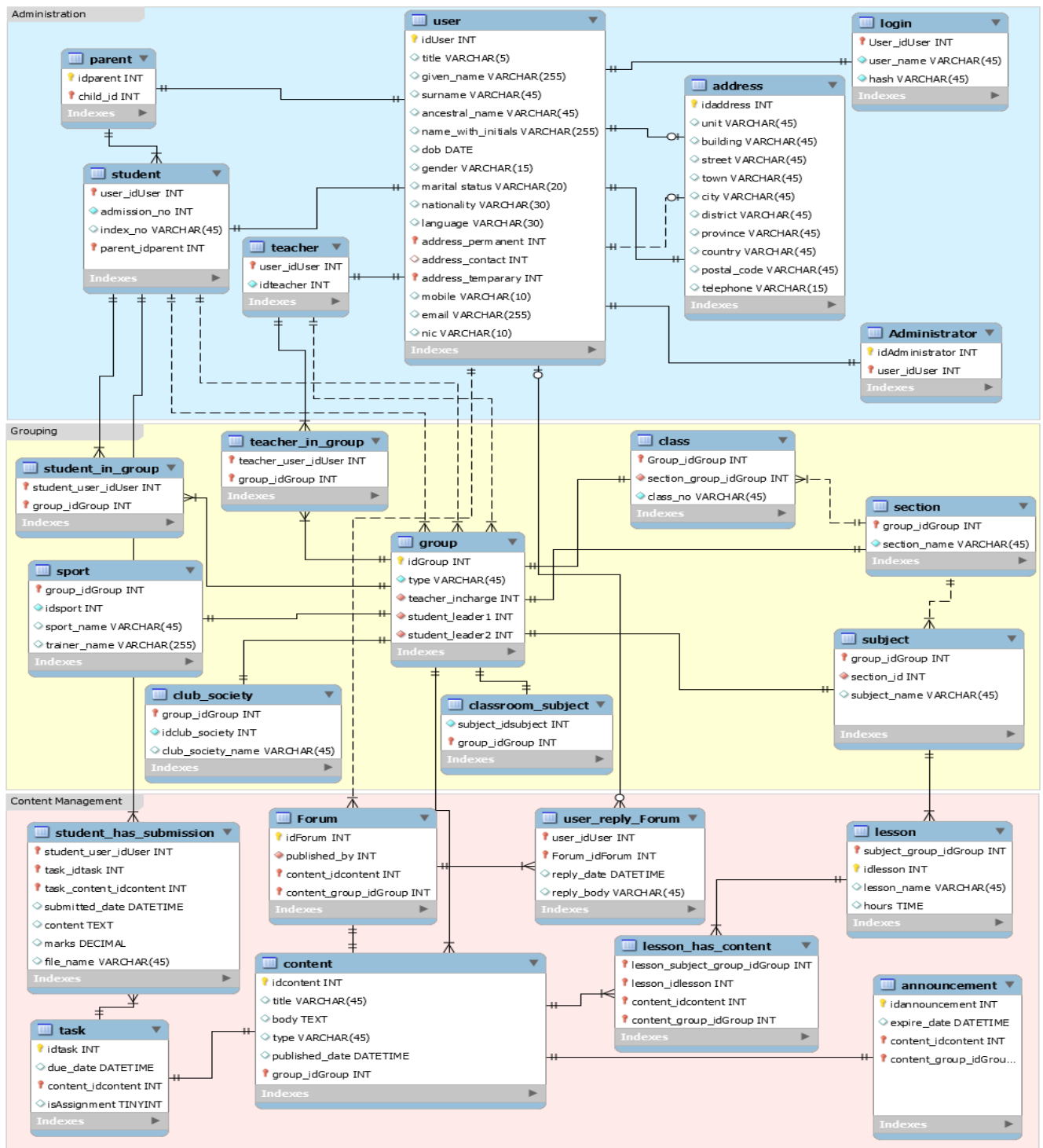


6.5.2 Student interface flow diagram



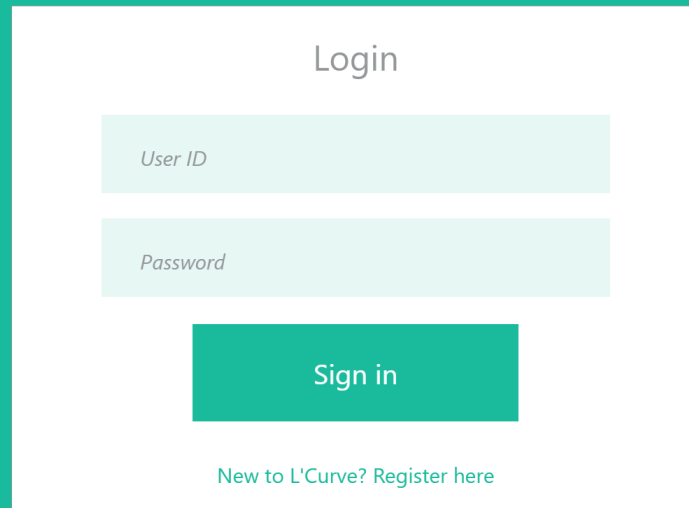
6.5.3 Teacher interface flow diagram

6.6. Entity Relationship Diagram



Physical implementation of the database

7. Appendix - User Interfaces



A login form UI mockup. It features a white rectangular container centered on a teal background. At the top of the container is the title "Login". Below the title are two light teal input fields. The first field is labeled "User ID" and the second is labeled "Password". Below these fields is a teal button with the text "Sign in". At the bottom of the container is a link that reads "New to L'Curve? Register here".

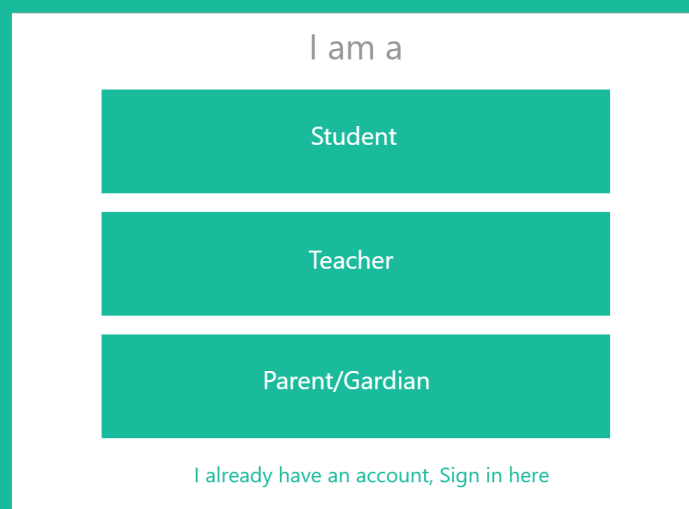
Login

User ID

Password

Sign in

[New to L'Curve? Register here](#)



A user selection form UI mockup. It features a white rectangular container centered on a teal background. At the top of the container is the title "I am a". Below the title are three teal buttons stacked vertically. The buttons are labeled "Student", "Teacher", and "Parent/Gardian". Below these buttons is a link that reads "I already have an account, Sign in here".

I am a

Student

Teacher

Parent/Gardian

[I already have an account, Sign in here](#)

Student's Registration

✕

General Information

First Name

Last Name

Full Name (as in birth certificate)

Password

Confirm Password

Gender

Grade

Admission Number

Admission Date

Gardian/Parent Infomation

Gardian's Name

Gardian's Email Address

Telephone Number

Mobile Number

By Signing up I here by agree for the [terms and conditions](#) and [privacy policy](#)

Sign Up

Parent's Registration

✕

General Information

First Name

Last Name

Address

NIC Number

Email

Password

Confirm Password

Child's Infomation

Child's Name

Child's Admission Number

Gender

Grade

By Signing up I here by agree for the [terms and conditions](#) and [privacy policy](#)

Sign Up

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CLASS ROOM

SOCIETIES

SPORTS

🔔

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