

# **ADVANCED LEARNING MANAGEMENT SYSTEM**

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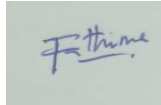
Sri Lanka

Date:11/2023

## **Declaration of the candidate & Supervisor**

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Date: 3/12/ 2023

The above candidate has carried out work for the Bachelors of Information Technology Degree report under my supervision.

Name of the supervisor: Mr. Asel Siriwardana

Signature of the supervisor: Mr. Asel Siriwardana      Date:3/12/2023

## **Acknowledgements**

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## **Abstract**

The prevailing education system in Sri Lanka limits students' opportunities to develop their talents fully. An Alternative Learning Management System (ALMS) is proposed to enhance extracurricular activities, fostering qualities like creativity and independence. This initiative aims to create job opportunities, addressing the economic crisis. Inspired by successful youth in developed countries, the ALMS seeks to provide a well-rounded education, combining textbook knowledge with diverse skills. By encouraging positive activities, it aims to mitigate issues like drug abuse, contributing to a healthier and prosperous future for Sri Lankan students.

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Description</b>
IEEE	Institute of Electrical and Electronic Engineers
CODL	Center for Open and Distance Learning
ALMS	Advanced learning management system

## LIST OF APPENDICES

5.1 Timeline - Gantt chart

5.2. SRS

5.3. Use Case Diagrams

5.4. Activity Diagrams

5.5. ERD

# 1.Introduction

## 1.1 Background

Most of the achievers in the world are grownups. When we think of successful people in life we tend to think only about grownups, mostly people who are middle aged or older than that. But youth are very talented too. Even in the past throughout the history youth has proved their talents and potential time and time again. For example, Hellenistic conqueror Alexander the great conquered countries when he was only 18 years old, the first emperor of Rome Augustus Caesar (Octavian) became a roman senator when he was just 19 years old, Blaise Pascal, a French mathematician developed a calculator when he was 19, The 18<sup>th</sup> century Mozart who changed the world of music forever wrote his first symphony when he was a mere 8 year-old, Willaim Pitt became the youngest prime minister ever in England when he was 24 years old and in the last century in 1915, an Australian born physicist Lawrence Bragg who was just 20 years old, won the Nobel prize for examining the crystal structures with x-rays and his research on it [1]. Not Only males, young females in the history too achieved quite remarkable things. Examples for them are in 1429, in medieval France, a young teenage girl who's only 17 won a war against English forces and was celebrated as a hero, The classic novel "Frankenstein" was written by Mary Shelly when she was 18 and it was published when she was 20 years old and Nellie Bly the famous American investigative journalist exposed a dysfunctional mental asylum by entering the asylum acting as a patient with dementia and delusions at the age of 23 amidst a lot of hurdles [1]. Even in recent history if we see the successful people like Steve Jobs who's the co-founder of Apple company and Mark Zuckerberg who was creator of Facebook were very young when they started Apple company and Facebook. Steve Jobs was only 21 when he created Apple I which is the beginning of creating revolutionary Apple products nowadays. Mark Zuckerberg was only 19 when he created Facebook which is also a revolutionary app nowadays. This shows throughout the history and in current times too, regardless of gender, youngsters has always been very talented, in different fields and



sometimes in more than one field. They have potential. But schools and universities in Sri Lanka give importance mainly for textbook knowledge which pave way to traditional career choices. Moreover, only a small percentage of the students get jobs in leading careers and most are left to find other jobs. This ALMS give these students the opportunity to explore and identify their talents by engaging in extracurricular activities, so if they're not good in grades and exams they don't have to worry about their future. This system facilitates students to perform well in academics by an LMS, while also helping identify their other talents and improve them, so in future they have more chances to find a job. Even students who are talented in academics can use this system to find their hobbies and passions or even to make more money through their other talents, as these days more people are interested in having more than one income source.

One of the extracurricular activities is taking part in business activities [2]. This system also have a online selling platform that enables students to sell the creative end product of their extracurricular activities whether it's a product like a sculpture, or a service like teaching a how to code for junior students. This gives students the motivation to learn and improve their talents because they can make money out of it and also it improves another talent, that is how to take part in a business. Sri Lanka is facing a severe economic crisis these days, as according to Asian development Bank Sri Lanka's GDP in 2022 was -7.8%, is expected to contract by -3.0% in 2023 and inflation rates are forecasted to be 18.7% in 2023[3]. ALMS can provide students an opportunity to make money for petty expenses or other monetary needs in this hard time. Moreover, because of the economic crisis there are very less job opportunities in Sri Lanka these days. So, improving other talents will benefit the students to explore and create their own jobs. Along with facilitating students with educators this system also provide vast amount of knowledge about different fields so they can get a wide knowledge about it and have knack of it.

## **1.2 Problem statement**

Youngsters are very talented but the prevailing education curriculum in Sri Lanka doesn't provide students the opportunity to improve all of their talents. Improving extracurricular activities have lot of benefits and also helps to find unconventional career options in future. Also, considering the economic crisis this country facing now it's important to create more job opportunities and ALMS paves way for that. In developed countries youngsters are achieving successes in life at a much younger age because they have access to more information, have facilities and support to realize their dreams and they have a lot of fields to choose their career from. This system aims to give the opportunity for students to improve their extracurricular activities along with their textbook knowledge so it can provide a healthy and beneficial environment for students to have a prosperous future.

## **1.3 Motivation and significance of project**

The purpose of education is not just providing textbook knowledge but also creating well-rounded personalities and good citizens. One way of achieving this goal is academic institutions focusing on incorporating more extracurricular activities along with sports, which is already encouraged by Sri Lankan schools and universities. Improving extracurricular activities have lot of benefits from helping gain qualities like creativity, purposefulness, performance, responsibility, efficiency, independence, communicability and competency to find unconventional career options in future. In the current economic crisis of our country, this ALMS can provide students a means to earn money while facilitating them to create or find more job opportunities for themselves in future. Sri Lanka is also facing drug smuggling and drug abuse problem along with the economic crisis. If the vibrant energy and focus of the youth is diverted into positive and creative things, it'll help prevent the youngsters paying attention to unhealthy behaviors like drug abuse. So, development of this system provides solutions for some of the crisis prevailing among youngsters and improves a lot of aspects of them and paves way for students to have a healthy and prosperous life.

## **1.4 Aims and objectives**

### **1.4.1 Aim**

- The system aims to build a project to facilitate students to learn extracurricular activities along with their school/university curriculum. The website has a section to sell the end products and services of students, to students and public. It also has a ‘resource hub’ where students can choose external educators and learn new skills. In the same section educators can post about their job and skills. This section also facilitates students to search the location of the educator and accommodation facilities using the map of Sri Lanka.

### **1.4.2 Objectives**

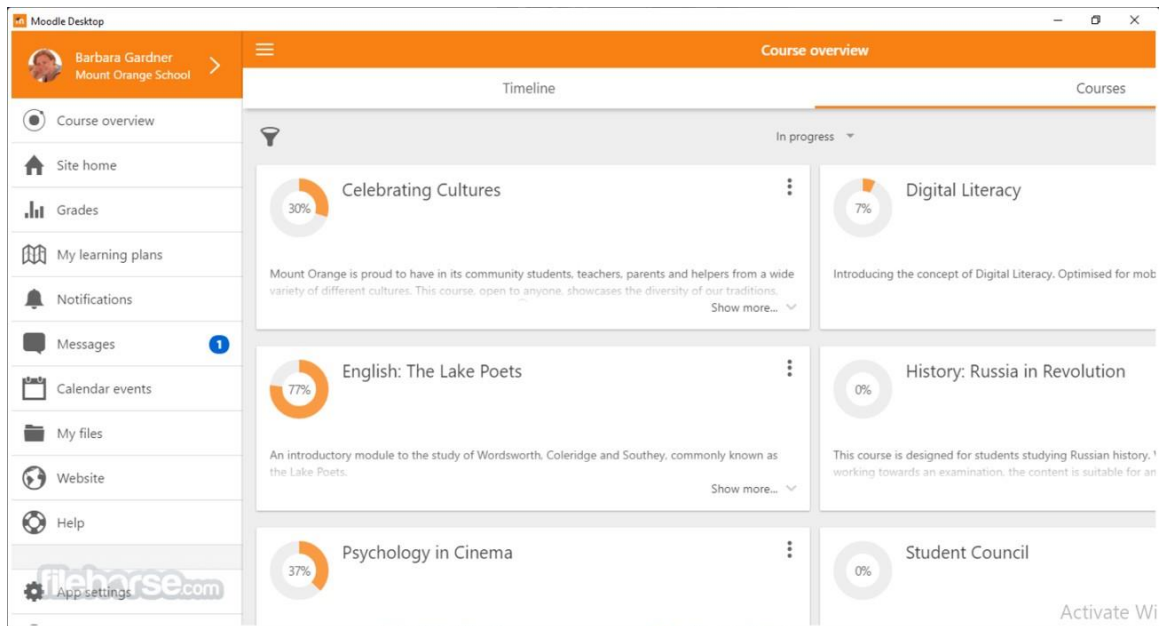
- To study existing learning management systems
- To study existing e-commerce websites
- To study academic institutions that sell their own students’ products through website
- To study random group of students by questionnaires and interviews to know about their requirements and capabilities
- To study about the technologies needed to build this web application
- To design and develop a system that solves the problems mentioned in problem statement
- To conduct a formal evaluation of the system

## **2.Literature review**

### **2.1 Moodle**

Moodle is an open-source online learning management platform written using PHP. It has many features which are very suitable and has the standard for this days’ teaching, like creating courses, gradebooks, calendars, forums, using plugins and even Moodle mobile

app. This app is customizable. This application facilitates educators, administrators and students in virtual learning environment.



**Figure 1: Moodle website**

#### Pros

- Fully customizable because it's open-source
- Teachers can easily create courses and it has facilities like grading, calendar and can use plugins
- Moodle has a community so it's easy to get help
- User friendly
- Can access through mobile phones

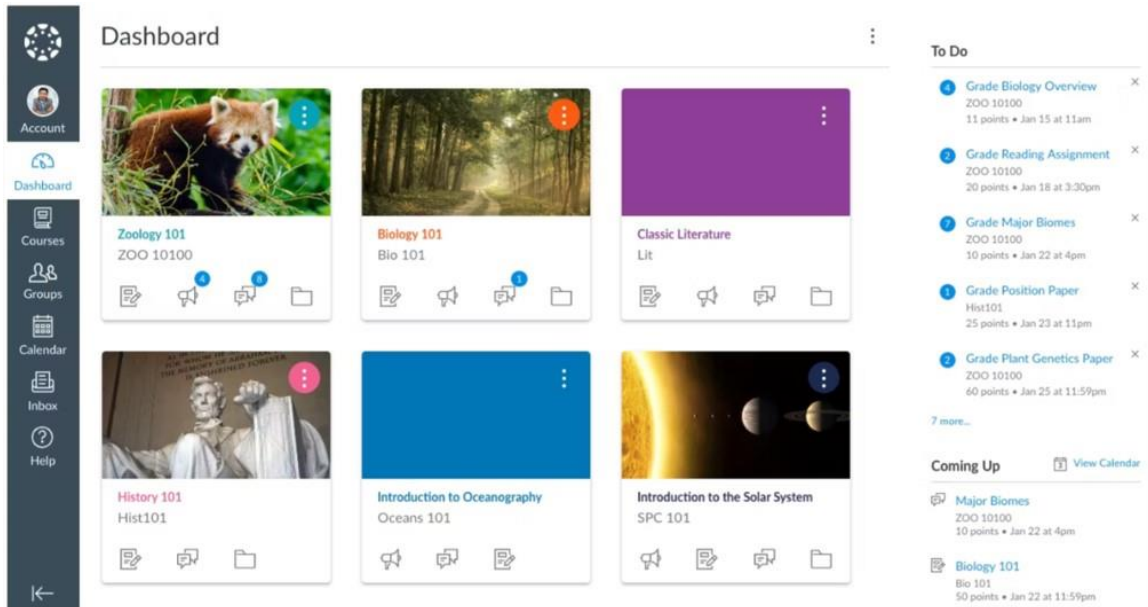
#### Cons

- If more users are added system can slow down
- The Moodle community asks a lot of questions before helping which is demotivating
- Doesn't provide students the facility to sell their creative products

## 2.2 Canvas

Canvas is a learning management system. It's a cloud-based platform. This system has facilities like course creation, grading, interactive assessment, discussion forums and

blogs. Recorded audio and video can be incorporated in course materials. Students and teachers can communicate through email.



**Figure 2:Canvas website**

### Pros

- Can access through mobile phones also
- Good pre and post-sales support
- User-friendly
- Good content management system and it has facilities like grading, calendar and interactive assessment

### Cons

- Some features need payment so comparatively expensive than it's competitors
- If the due date is not set in the midnight the assignment will be automatically erased
- Doesn't provide students the facility to sell their creative products

## 2.3 Etsy

Etsy is an ecommerce website in America which sells around 100 million items. It sells handmade and vintage items including jewelries, handbags, clothing, furniture, art and

home décor. Etsy provides a platform for creative entrepreneurs and people to earn from their hobbies and extracurricular creative talents and make it into small businesses.

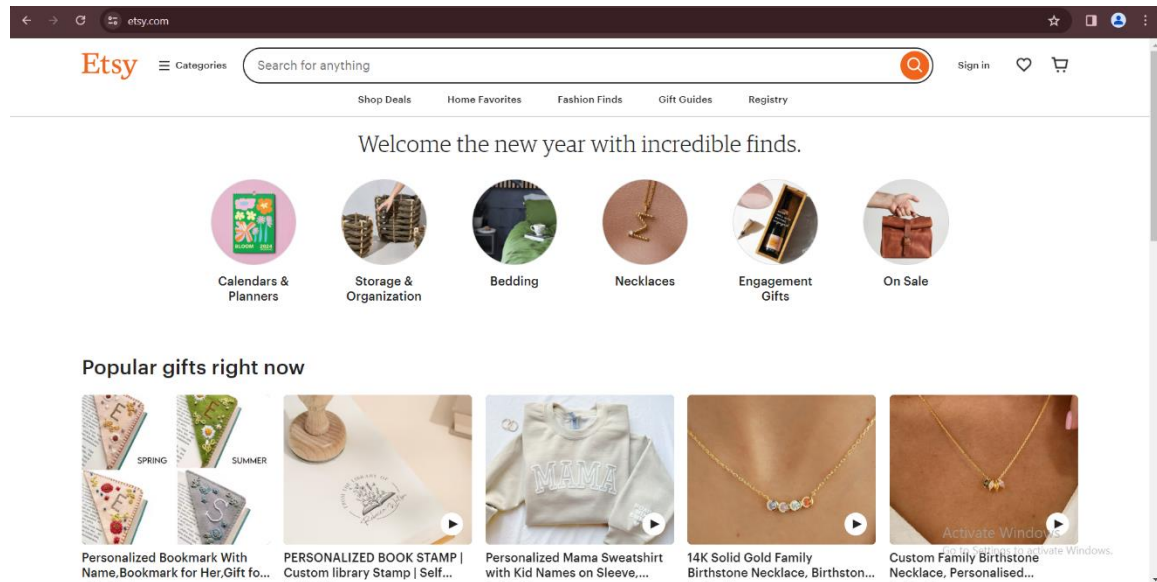


Figure 3 etsy website

### Pros

- It has a wide range of handmade products
- It has a big customer base
- Provide good quality service to customers

### Cons

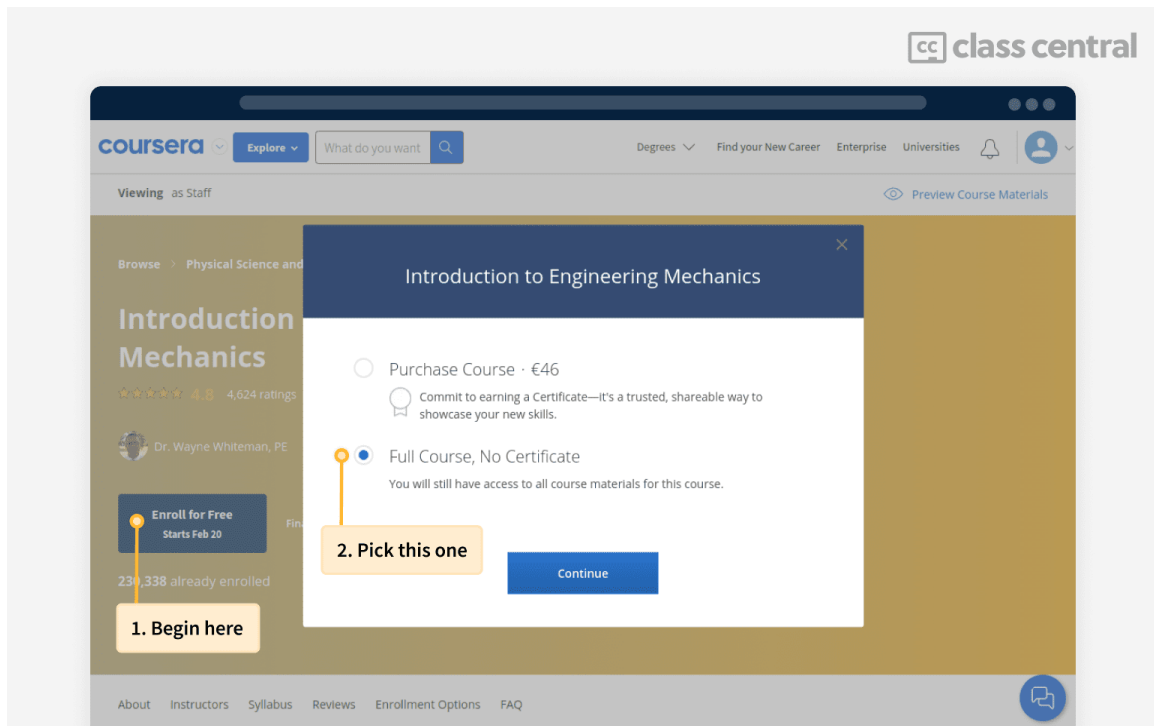
- It doesn't sell online courses
- It is not connected with any schools learning management system so Srilankan students have no much awareness about it.

## 2.4 Coursera

Coursera is an online learning platform that works with institutions and organizations all around the world to offer a vast array of courses, specializations, and degree programs. Coursera provides education in a range of areas, such as business, technology, humanities, and health. The platform makes education more accessible to a worldwide audience by

enabling flexible, self-paced learning. Coursera provides specialties, which are collections of connected courses intended to advance knowledge in a particular field, in addition to individual courses. Additionally, Coursera allows students to seek professional credentials and even entire degrees from recognized universities.

Coursera has grown in popularity as a result of its dedication to provide top-notch online education and its initiatives to provide learning opportunities to everyone everywhere, thereby fostering the expansion of online education.



**Figure 4 Coursera website**

### Pros

- It offers a vast array of courses, specializations, and degree programs.
- It enables flexible, self-paced learning
- Coursera allows students to seek professional credentials and even entire degrees from recognized universities.

### Cons

- It doesn't have a section to sell the products of students
- It's not connected with any LMS in Sri Lanka so Sri Lankan students have no much exposure to it.

## 2.5 RISD/ Rhode Island School of Design

RISD is a private arts school in Rhode Island. It provides bachelor's and masters' degrees in 19 majors [4]. It has a website to sell the product of its students and it also has a museum which has schools' art collections. Moreover it provides students information about a lot of websites such as where they can get resources like raw materials, and in what other websites they can sell their products.

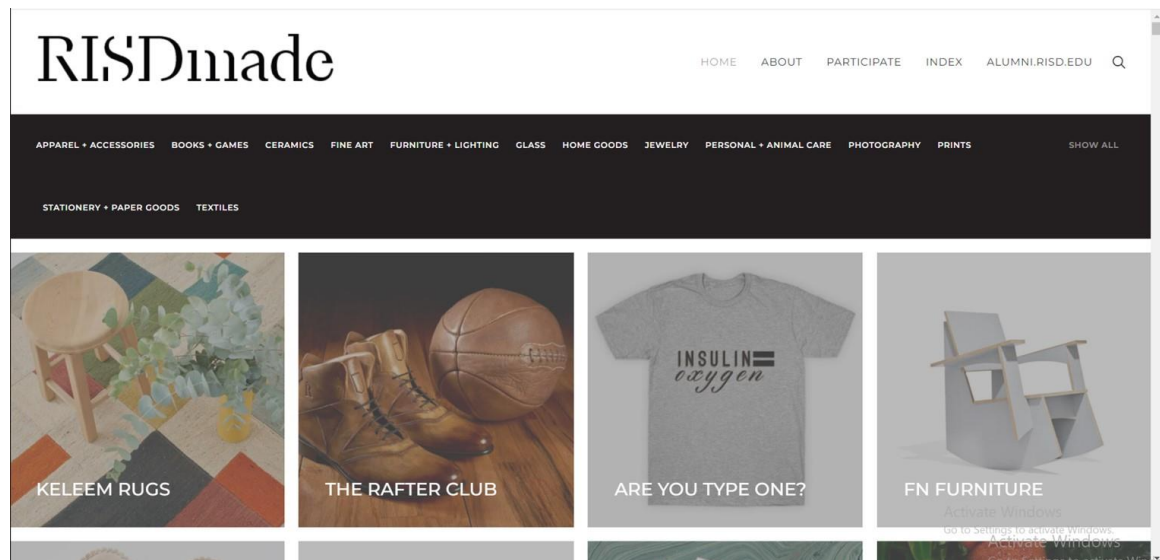


Figure 5:RISD website

### Pros

- It provides its students the facility to sell their products
- It supports students in doing business guiding them and providing information like from where to buy resources, how to get expert knowledge, information about similar communities, exhibitions and internships



#### Cons

- It's a private art school so it teaches only arts related subjects whereas ADMS teaches variety of extracurricular activities without any limits or restrictions.

Functionality	Moodle	Canvas	Etsy	Coursera	RISD	ALMS
Option to create course content and management	yes	Yes	No	Yes	Yes	Yes
Option to teach extracurricular activities	No	No	No	Yes	No	Yes
Provides educators to post a job	No	No	No	Yes	No	Yes
Provides accommodation details island-wide	No	No	No	No	No	Yes
Option to sell students products and services	No	No	No	No	Yes	Yes
Provide students with vast knowledge about their passions	No	No	No	Yes	Yes	Yes
Options to place an order by students and public	No	No	Yes	Yes	Yes	Yes

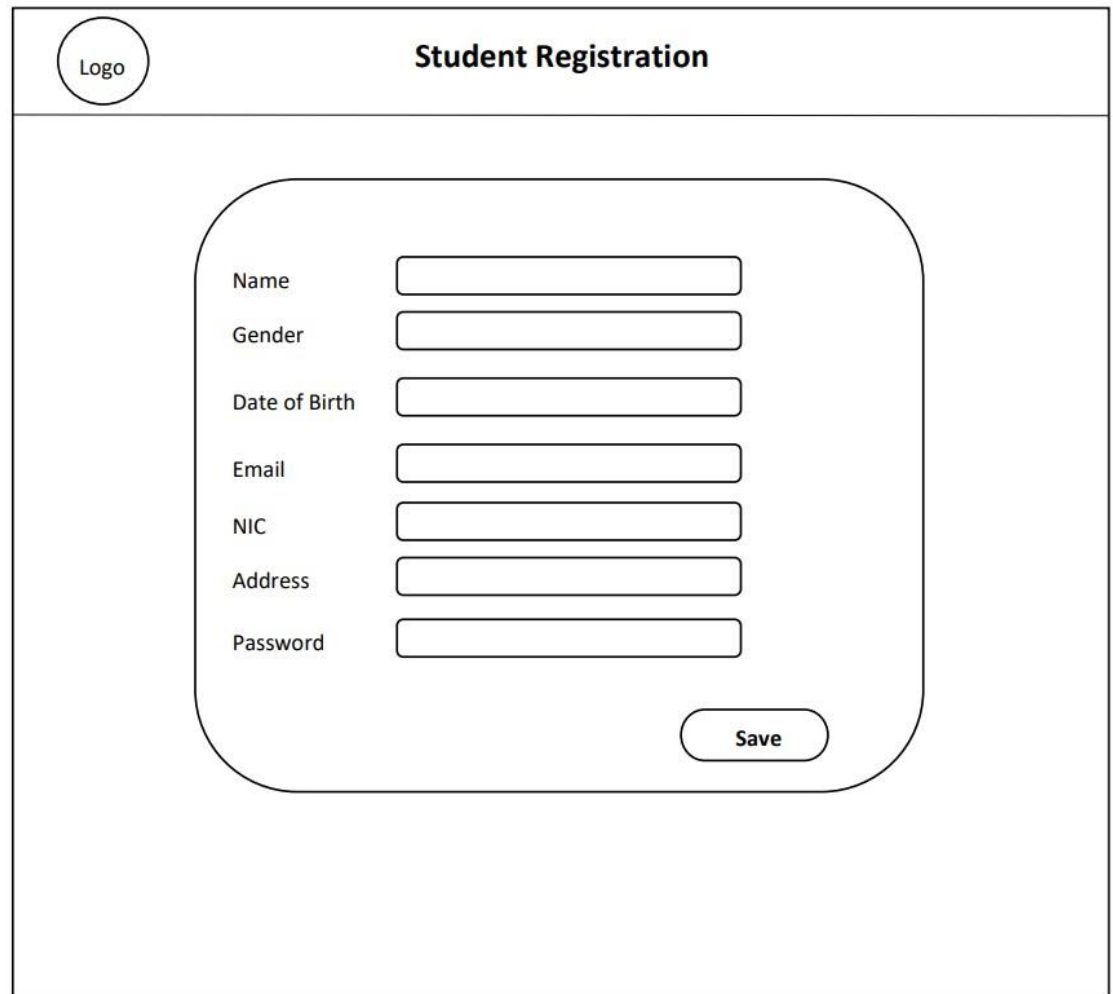
Comparison between similar systems

**Table 1 comparision table**

### 3. Project plan and initial design

#### 3.1 Components of the system

##### 3.1.1 Software component and tasks



The wireframe illustrates a 'Student Registration' form. It features a header bar with a circular 'Logo' placeholder on the left and the title 'Student Registration' on the right. The main content area contains a rounded rectangular container with the following fields: 'Name', 'Gender', 'Date of Birth', 'Email', 'NIC', 'Address', and 'Password', each paired with a text input field. A 'Save' button is positioned at the bottom right of this container.

Figure 6: student registration wireframe

Logo

Welcome here to Login

Email

Password

Login

Forgot Password?

Figure 7: login page wireframe

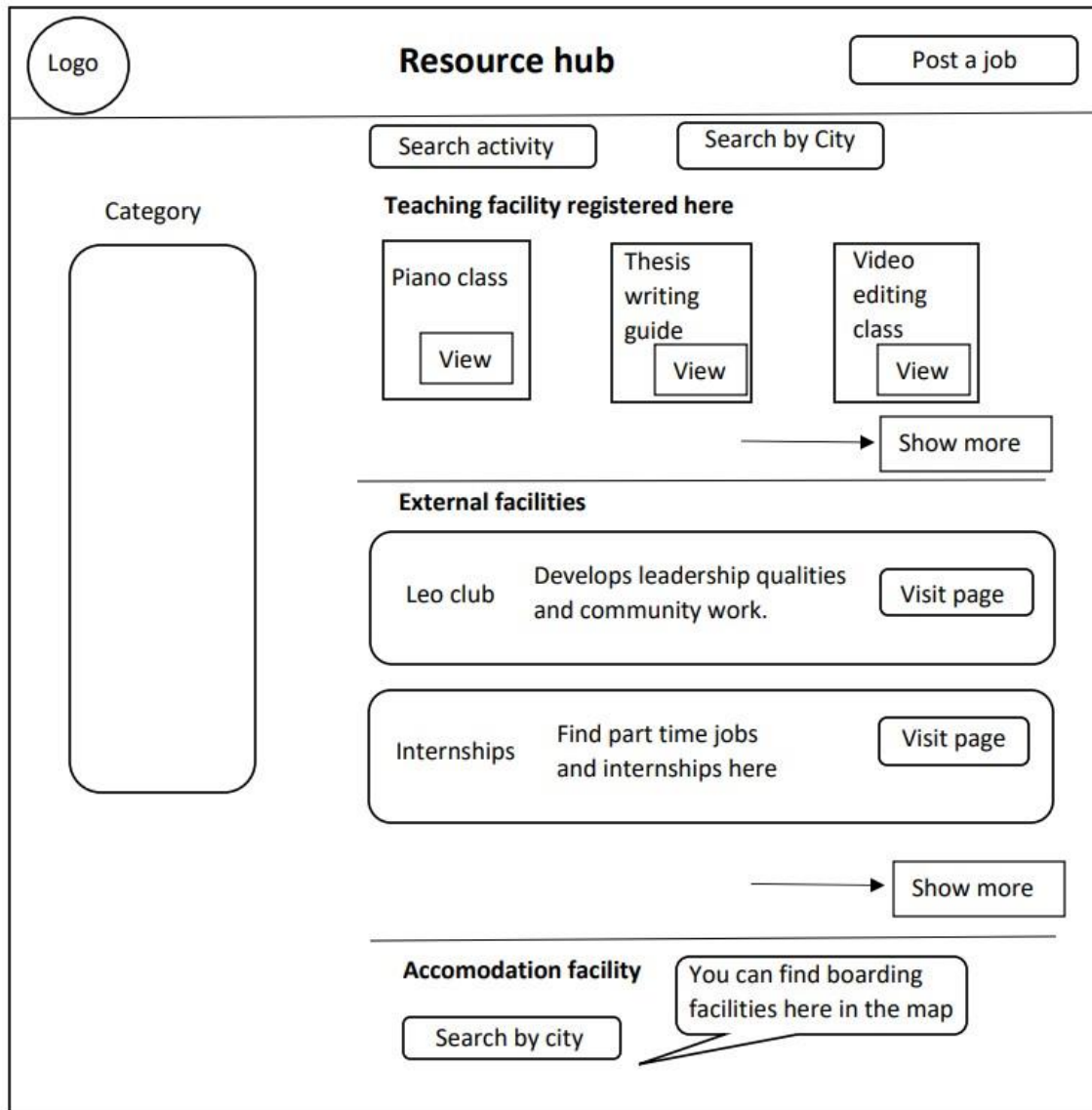


Figure 8: resource hub page wireframe

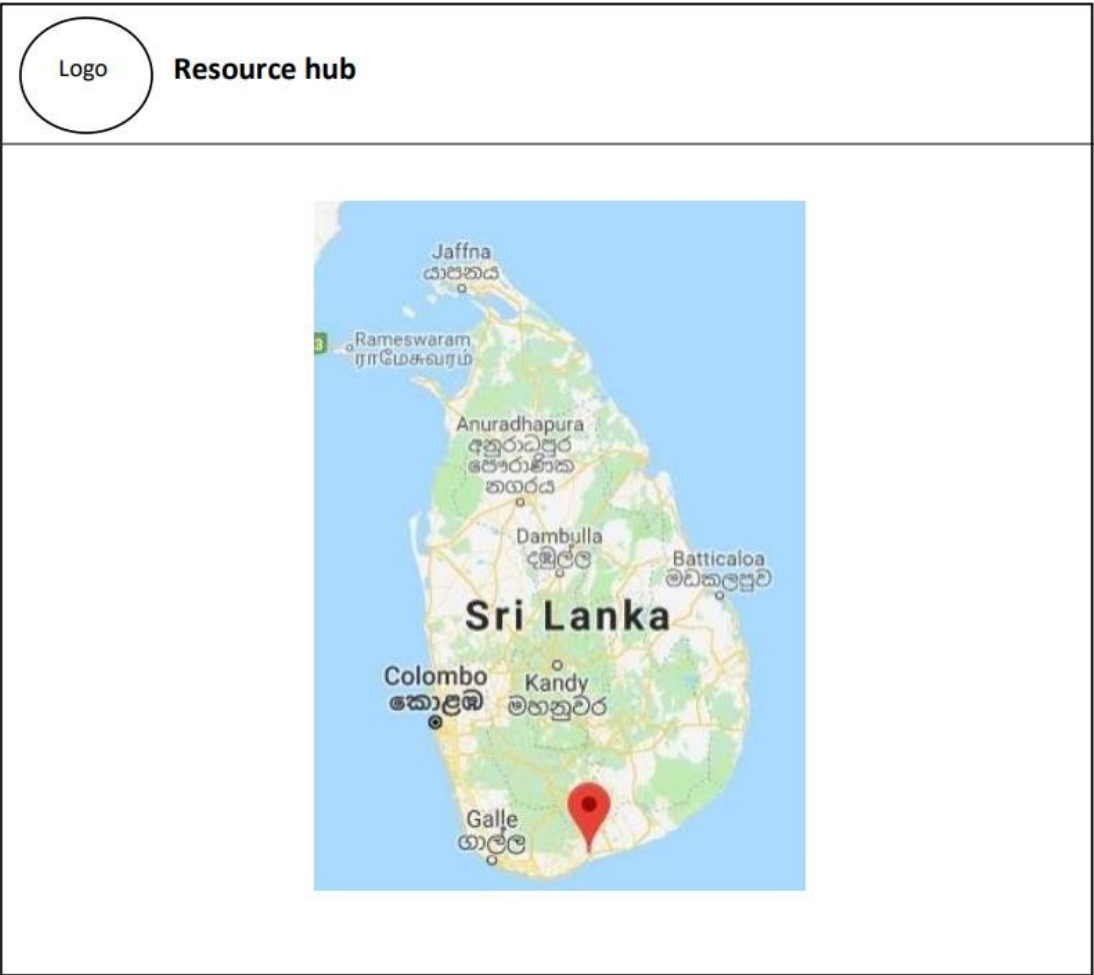


Figure 9:Sri Lankan map wireframe

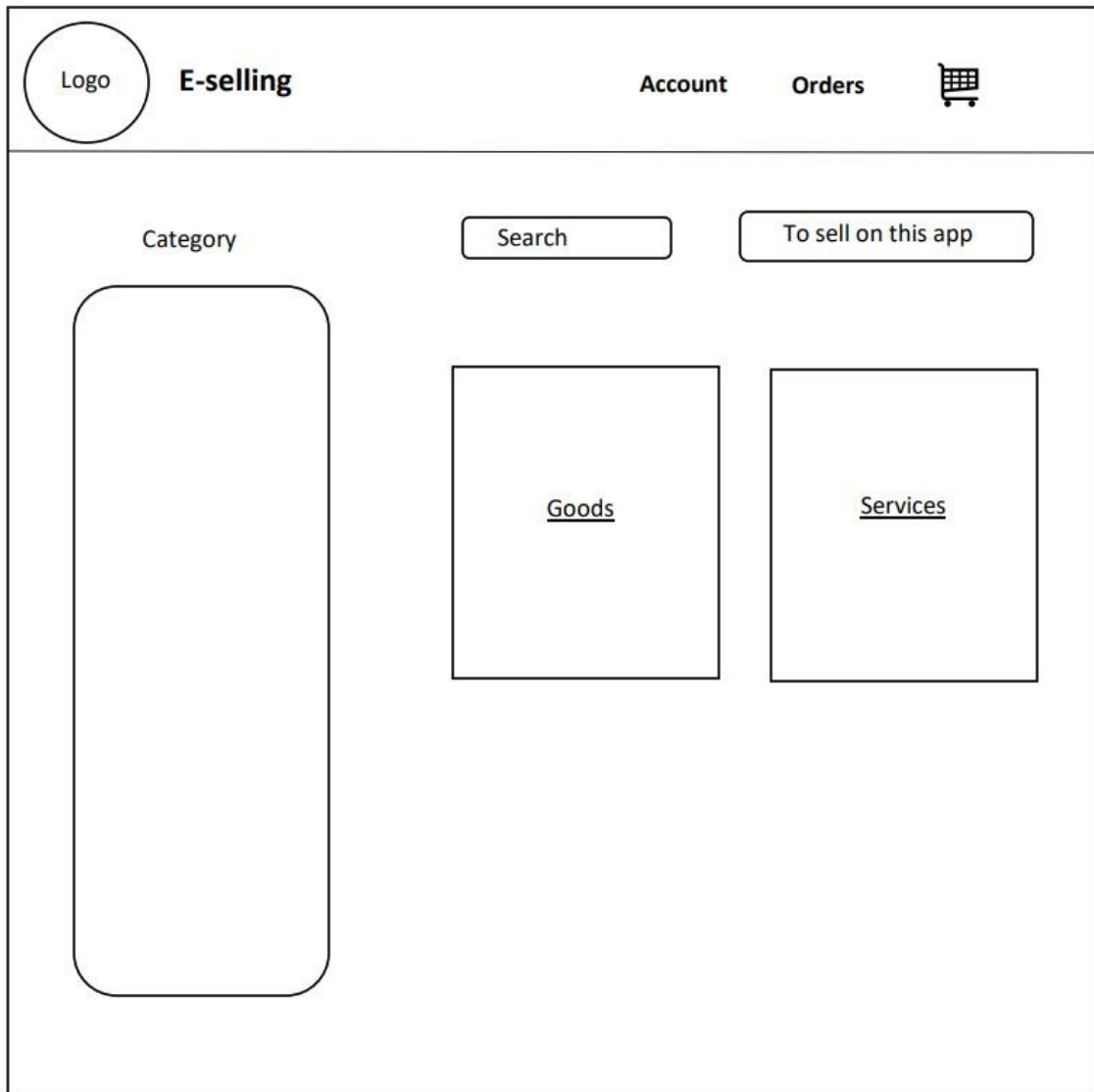


Figure 10: e-commerce first page wireframe

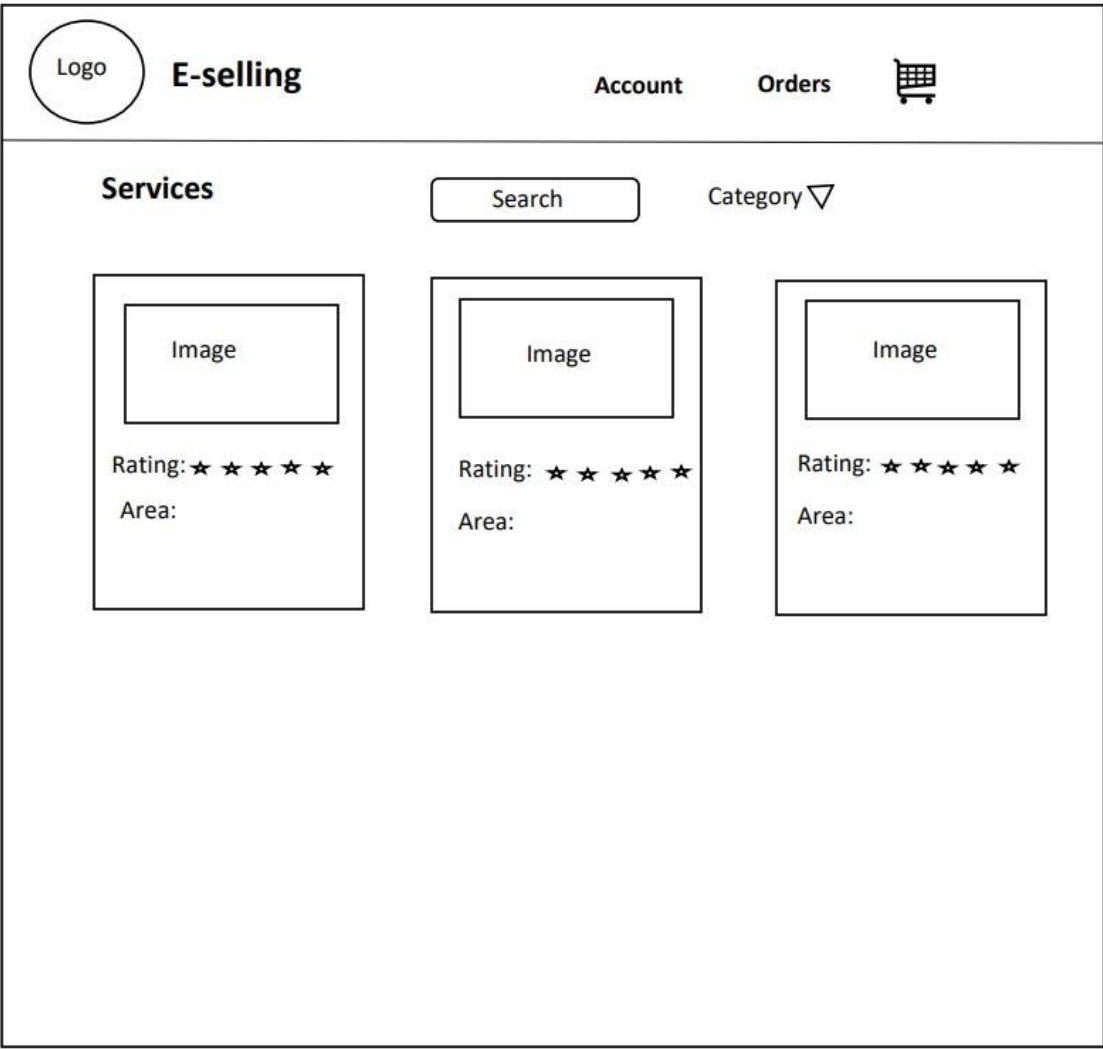


Figure 11: e-commerce catalog wireframe

### **3.1.2 Database component**

ER diagrams will be used to develop the database using MySQL database management system. Entities are drawn using rectangles, characteristics are drawn using oval and relationships are drawn using diamonds. ER diagram is shown in appendix 5.5 of this report.

## **3.2 Proposed methodology**

The methodology used in this project is waterfall model. In this model development activities are broken down to linear sequential phases. Each phases depend on the previous phases' deliverable.

## **3.3 Technologies adopted**

### **Front end:**

The front end of this advanced learning management system will be implemented using HTML,CSS, Bootstrap and React.js. React.js is used for all the validation in the front end.

- HTML:HTML stands for Hyper Text Mark-up Language. It describes web page structure. The web browser gets the HTML documents and render the web page on the browser
- CSS: “CSS (Cascading Style Sheets) is used to style and layout web pages — for example, to alter the font, color, size, and spacing of your content, split it into multiple columns, or add animations and other decorative features” [5].
- Bootstrap:” Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development” [6]. “It also includes HTML and CSS-based design templates for forms, typography, buttons, navigation, tables, modals, image carousels, and many other components along with other optional JavaScript plugins” [7].



- React.js: “React Js is a front-end JavaScript library used in web development to build interactive elements on website User Interfaces (UI) based on UI components”[8].

### **Back end**

Back end of this LMS will be implemented using PHP with MySQL database technologies.

- MySQL: MySQL is a free and open-sourced relational database management system. It’s used in this system for storing and accessing data.
- XAMPP: XAMPP is free and opensource that bundles Apache, PHP and Perl in it. It is used to test web application in a local host webserver.
- Php: “PHP is an open-source, server-side programming language that can be used to create websites, applications, customer relationship management systems and more” [9]. This creates dynamic web pages and interacts with databases. It’s object oriented language. It is supported by several frameworks like Laravel, CodeIgniter and symphony.

### **3.4 Test and deployment plan:**

- Unit testing: in unit testing individual component of the system are tested separately to make sure they are working as expected. Units are the smallest testable part of a system. Unit testing is done parallelly with coding and it will be done until system is fully developed.
- Integration testing: after unit testing components are integrated with one another into a group and tested to see how the system functions when integrated. This is done before system testing and after unit testing
- Systems testing: this is done after integration testing. After the whole system is done this testing is performed to see if the system is working as expected and meet the user requirements.

- Acceptance testing: in this users will be included in the testing and their feedbacks will be taken to make sure that the requirements are met and to check if anything is missed in unit testing and integration testing.

## 4. References

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[9] R. Toal, ‘What is PHP? Uses & Introduction’, Code Institute Global. Accessed: Dec. 07, 2023. [Online]. Available: <https://codeinstitute.net/global/blog/what-is-php-programming/>

## 5. Appendix

### 5.1 Appendix A: Timeline Gantt chart

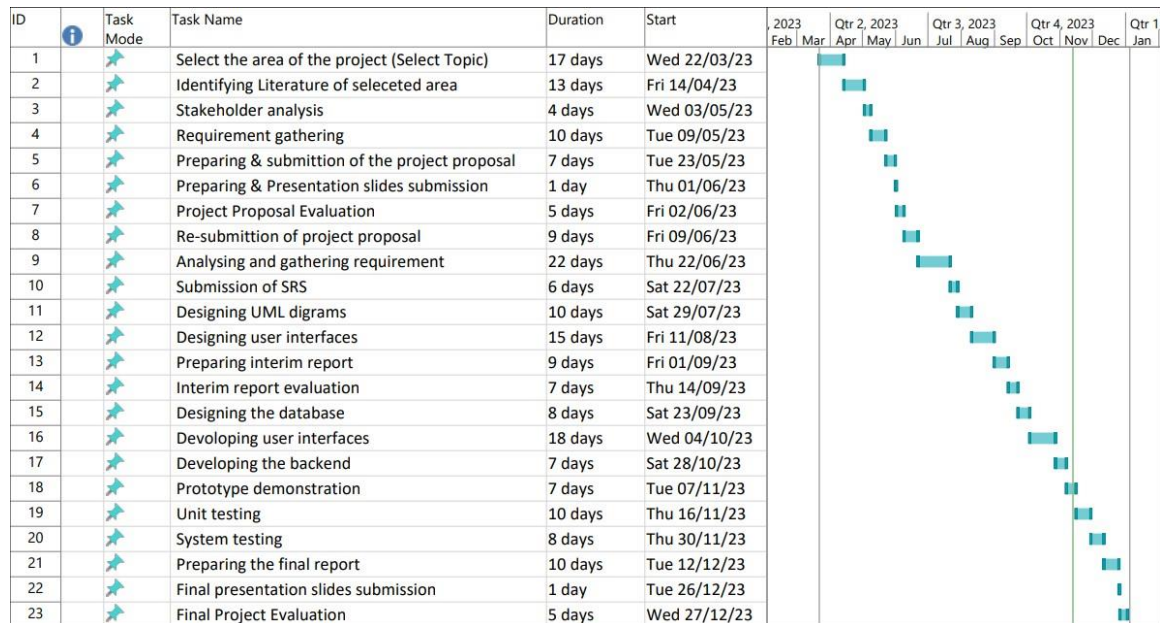


Figure 12: gantt chart



Figure 13: gantt chart

### 5.2 Appendix B: SRS

# **Software Requirements Specification**

**for**

## **Advanced Learning Management System**

**Version 1.0 approved**

**Prepared by Fathima Farzana J -e1946016**

**University of Moratuwa- BIT**

**7<sup>th</sup> November 2023**

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## Revision History

Name	Date	Reason For Changes	Version
Advanced Learning Management System			1

## **1. Introduction**

### **1.1 Purpose**

The goal of ALMS is to provide a platform for students to increase their knowledge and talents. This consist of normal curriculum of schools and universities, other mentoring for academic activities like extracurricular activities and a e-selling site for students who likes to sell the end product of the extracurricular activities. The current version is v.1.1 and the scope covered by the SRS is overall description, system features, external interface requirements, non-functional requirements and other requirements.

### **1.2 Document Conventions**

This document organizes the content according to IEEE format. Microsoft word is used as application software.

	Font	Size	Style
Major headings	Times New Roman	Bold	18
Sub headings	Times New Roman	Bold	14
Other headings	Times New Roman	Regular	12
Body	Times New Roman	Regular	12

### **1.3 Intended Audience and Reading Suggestions**

Intended audience of this SRS are software engineers, testers and project managers.

### **1.4 Project Scope**

Academic institutions make not just professionals but efficient good-hearted citizens with well-rounded personality. Introducing and facilitating to do extracurricular activities help achieve this goal. Being talented in more than one field gives youngsters confidence. Also, learning more than one skill build their brain muscles and improve different parts of the brain which helps students to think in innovative and broad manner and think out of the box. Students usually select extracurricular activities based on their career goals, so it helps them achieve their goals. Moreover, extracurricular activities help students identify their different talents other than getting grades and passing exams. Not all students are good in exams and there are students who don't like to take the traditional path and try some unconventional new path. Extracurricular activities give those students a chance to identify their hidden talents and a help find new career choices. In addition to that they improve hard and soft skills which is benefits them in their careers. Nowadays most youngsters get drawn towards bad habits like drugs, thuggery etc. But when they direct their energy in positive and creative things, their vibrant youth energy is used in a positive manner. Moreover, when students involve in social service through volunteerism and activism by joining clubs it trains them to think in a way that gives importance to the benefit and welfare of the society. So not only extracurricular activities reduce the chances of students getting diverted to unhealthy behaviors, it also guide and mold them towards growing up to an efficient and good citizens which is an asset to the country. Furthermore, all the above-mentioned results of extracurricular activities improve the mental health and physical health of youngsters. These days due to stress youngsters face mental health issues and other health issues like obesity due to the trend of consuming

fast food often. Activities like sports and martial arts are good solution for health problems like obesity. So although extracurricular activities are not given importance by many academic institutions they provide a lot of benefits for the younger generation who are the future leaders of the country. The main objective of this project is to create a web application for schools and universities that facilitate students carry on their academic activities through an LMS, create a platform which helps students select and learn or engage in one or more extracurricular activities according to their talents and create a platform to sell the creative outcomes of the extracurricular activities whether they are products or services.

## 1.5 References

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## 2. Overall Description

### 2.1 Product Perspective

Extracurricular activities are extra academic activity which falls outside the normal curriculum of school, college or university. Students are not expected to take part in them in order to show any grades by the academic institution but student can choose it because of their passion and love for that a particular activity. This project aims to create a web application which facilitate students to study the syllabus according to the normal curriculum of that academic institution, choose extracurricular activities and learn them while also selling the end products of the extracurricular activities. This web application has 3 parts: an LMS, a resource hub and an e-selling platform. LMS provide the academic institution to teach textbook lessons, resource hub provides students facilities to select a teacher who can teach him the extracurricular activity he wants. Those teachers can register in the system and post about their job and qualifications and students can contact them. It also provides information about accommodation facilities available for students. The e-selling platform allows students to sell their creative products or services to other students or public.

### 2.2 Product Features

Learning Management system



- User registration and login
- User profiles management
- Uploading lessons
- Students uploading assignments

became a lecture. (upload cv and submit)



- Timeline of activities
- Grading students
- Chat area
- Past paper section
- Exam results and eligibility section
- Forum
- Notice section
- Queries section

#### Resource hub

- User registration and login  admin approval
- User profile management
- Posting teaching jobs 
- Search extracurricular activities by students
- Search accommodation facilities
- Admin rejecting or removing a job post

#### E-selling platform

- User registration and login
- User profile management
- Product management
- Shopping cart
- Checkout process
- Payment gateway integration
- Communication of customers and students through emails or phone
- Delivery management
- Admin rejecting or removing a product or service

## 2.3 User Classes and Characteristics

- Admin-
  - ✓ Admin can see the general information of all the users of the system.
  - ✓ Admin can accept an extracurricular activity teaching job and post it.
  - ✓ Admin can remove any teaching post.
  - ✓ Similarly in the e-selling platform admin can remove a product or service.
- Teachers of the academic institution-
  - ✓ Teachers can upload lessons, assignments and quizzes.
  - ✓ Teachers can assess and grade them. They'll be able to contacted through email by students.
- Students-
  - ✓ Students can access the lesson, do assignments and upload it, do quizzes.
  - ✓ They can view their grade and exam results.

- ✓ They can learn extracurricular activities by the teaching of a mentor using resource hub.
- ✓ They can buy products or services from fellow students and sell product or service for fellow students and public.
- Extracurricular activity teachers-
- ✓ These teachers can register themselves in the system and post a job. Admin will check their qualifications and allow them to post about their job publicly.
- Public-
- ✓ Public can create a profile for them and buy products or services the students sell.
- Further idea of user roles can be taken from ER diagram

## **2.4 Operating Environment**

The proposed system will operate in any operating environment and it'll need a web browser and internet connection.

The hardware configurations are:

- Hard Disk: 20GB hard disk
- Processor: Intel core i5
- Processor Speed: 2.6GHz
- RAM: 8GB RAM

## **2.5 Design and Implementation Constraints**

- Since there is a deadline for this project time is a constraint
- Since the language used in the system is English users are required to know English language

## **2.6 User Documentation**

Users can get online help. Along with that admins contact details also will be provided for the users of the system.

## **2.7 Assumptions and Dependencies**

This is a remote application. So, users need good internet connection and a device with web browsing facility. Moreover, users should have some familiarity with using apps and enough amount of English knowledge.

## **3. System Features**

### **3.1 User friendly Homepage**

#### **3.1.1 Description and Priority**

For anyone dealing with the system, the Main Activities and Home Page serve as their initial point of contact. Thus, it ought to be created in an incredibly appealing and intuitive way. The application's main page should have a visually appealing and appealing design that fits the site's brand and goal. Thus, this could involve typefaces, colors, and visuals.

### **3.1.2 Stimulus/Response Sequences**

Users who load this application should proceed to the first relevant action. The application's newly additional panels, icons, and data ought to all be visible on the home activity. Users can click on the desired feature or the available icons to complete their prerequisites.

### **3.1.3 Functional Requirements**

REQ-1: Home page should be loaded without any delay

REQ-2: Themes and images should be suitable for system and attractive

REQ-3: The home page should clear and important buttons including search, help and account settings

## **3.2 User registration**

### **3.2.1 Description and priority**

The category of people who'll use this function are admin, teachers of that particular academic institution, students, extracurricular activity teacher and public who'll use the e-selling platform. Extracurricular activities teacher and public can view the pages of resource hub and e-selling platform without registering but if the extracurricular activities teacher wants to post his job he has to register in the system and the if the public wants to buy any product or service they should register in order to purchase. Registration should have details about password requirements. Emails should be verified.

### **3.2.2 Stimulus/Response Sequences**

- I. User clicks on 'Sign up' button and the registration form appears.
- II. User is required to fill the form providing important details about him/her.
- III. The information will be verified
- IV. User can click submit button and submit it.
- V. User will get a message as he/she is registered successfully.
- VI. User will get the button to log in

### **3.2.3 Functional Requirements**

REQ-1: The registration form will require important information about the user

REQ-2: The registration details will be validated before allowing the user to get registered

REQ-3: After the registration user will get a message as ‘successfully registered’ and be allowed to click log in button

After completing the registration process the system will allow users to login. Login will require only two details: username and password. This function has high priority.

### **3.3 Login**

#### **3.3.1 Description and priority**

After completing the registration process the system will allow users to login. Login will require only two details: username and password. This function has high priority.

#### **3.3.2 Stimulus/Response Sequences**

- I. User can click login button and provide the username and password
- II. If the username and passwords are correct user will be led to the dashboard of relevant sites.
- III. If the username and password are wrong user will get a message as ‘wrong username and password’

#### **3.3.3 Functional Requirements**

REQ-1: The user will be required to provide username and password in relevant fields

REQ-2: after clicking login button the system will connect with the database to validate the credentials.

REQ-3: After validating the credentials user will be led to the dashboard

## 4. External Interface Requirements

### 4.1 User Interfaces

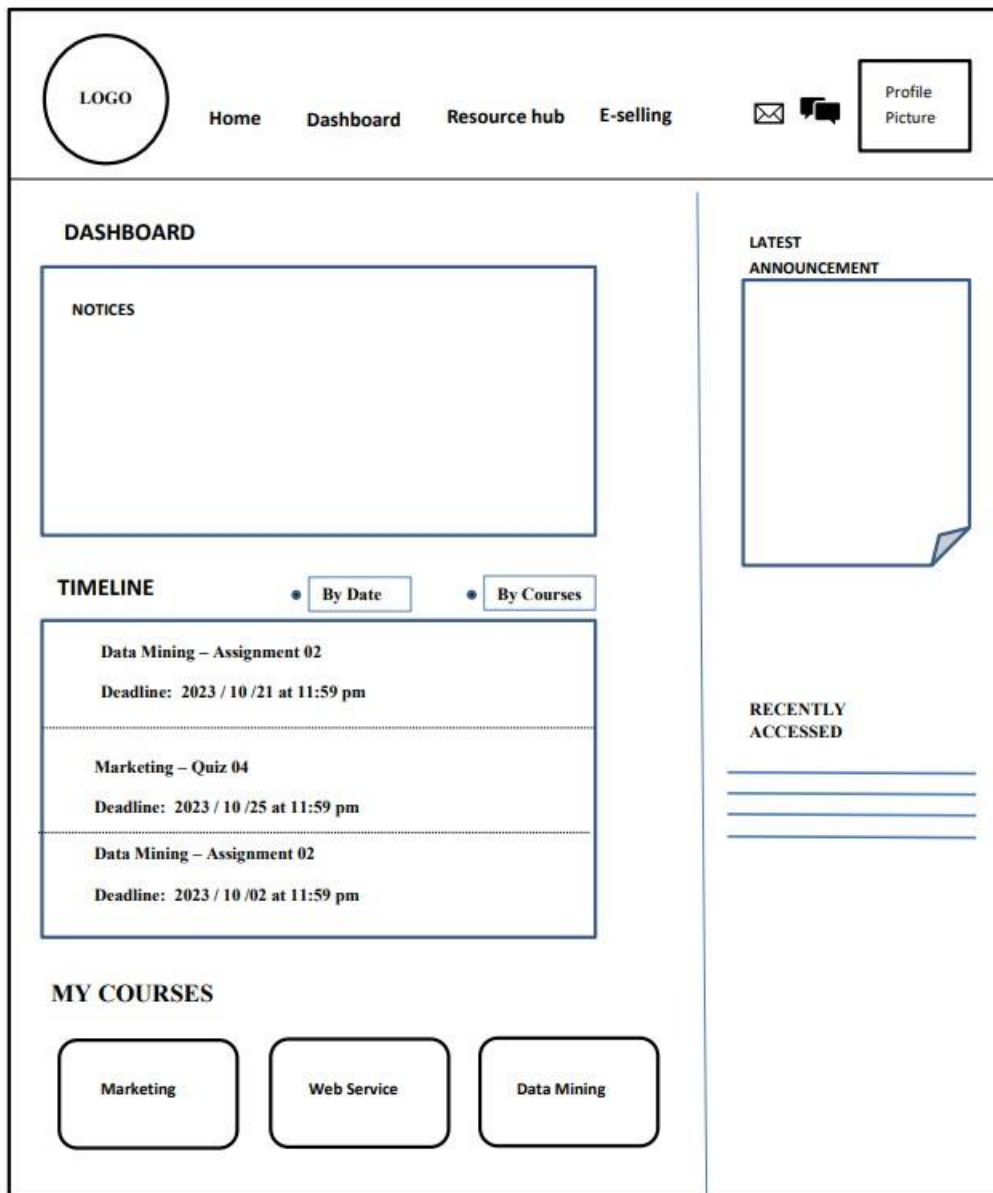


Figure 1: sample image for dashboard interface

Logo

Welcome here to Login

Email

Password

Login

Forgot Password?

Figure 2: Sample image for log-in interface

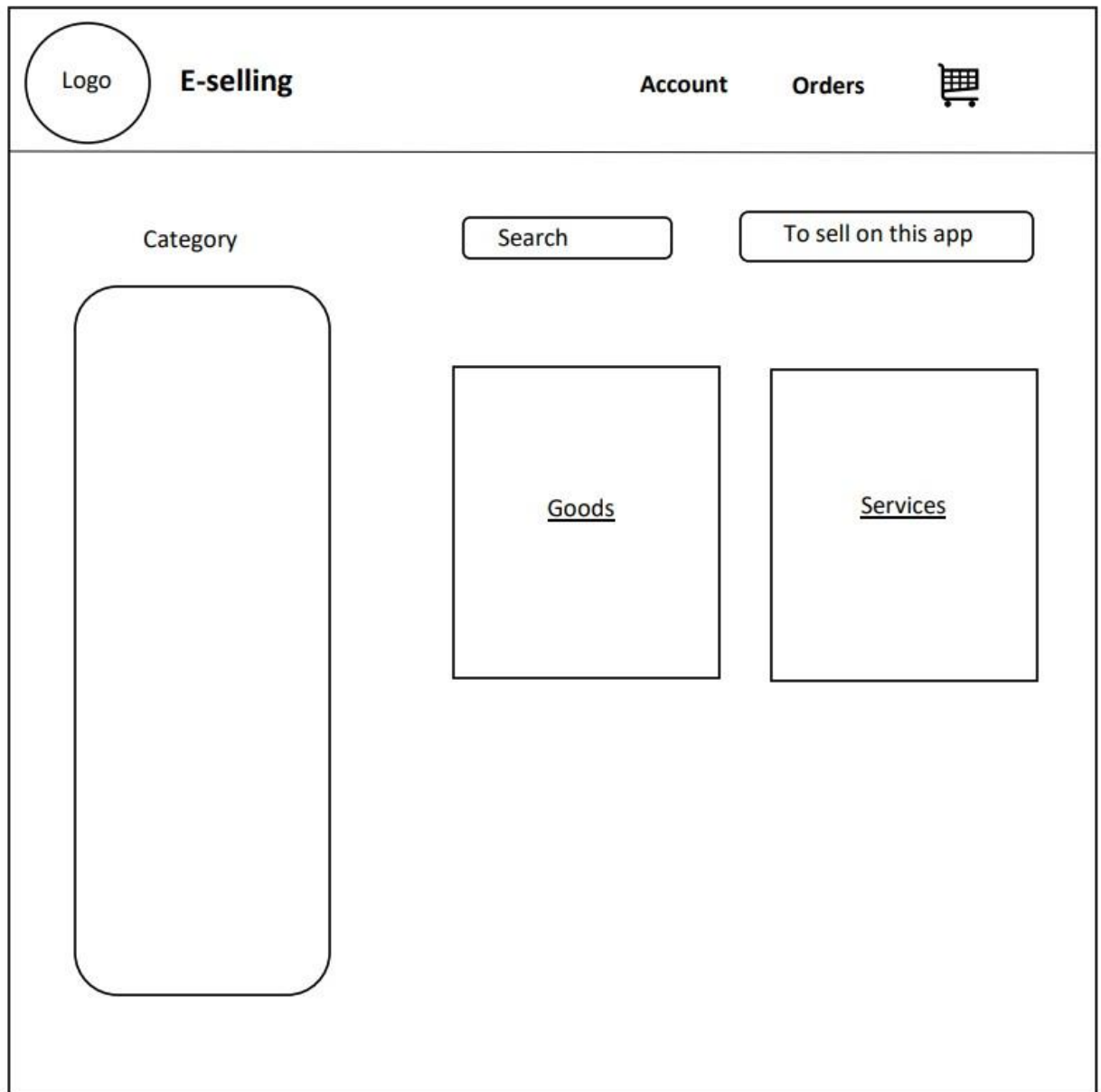


Figure 3: sample image of e-selling platform interface

## **4.2 Hardware Interfaces**

- Processor – Intel Core i3
- Processor speed: 2.6GHz
- RAM: 1 GB
- Disk Space: 1 GB
- Wifi /modem

## **4.3 Software Interfaces**

- Operating system - Windows 7 or higher
- Technologies used – React.js, bootstrap, Node.js
- Platform – XAMPP
- Database - MySQL

## **4.4 Communications Interfaces**

TCP/IP protocol will be used for internet communication. Communication between students-teachers and users-admin will be done through email. IPv4 will be the format of the logical address of the site.

## **5. Other Nonfunctional Requirements**

### **5.1 Performance Requirements**

- When using this system it should run fast without loading
- Even when workload is high and when there's more traffic system should function well.
- Emails and chat messages should be sent without any delay

### **5.2 Safety Requirements**

- There should be back-up for database incase it's affected by a disaster or virus.
- The registered users data should be protected

### **5.3 Security Requirements**

- Database should be protected
- System should be hosted in a safe place

### **5.4 Software Quality Attributes**



Using quality assurance testing ALMS will achieve reliability, availability, maintainability, flexibility and dependability.

## **6. Other Requirements**

Public can view the e-selling platform and the products and services. But if they want to purchase they should register.

## **Appendix A: Glossary**

ALMS- advanced learning management system

BIT- bachelor of information technology

RAM- Random access memory

## Appendix B: Analysis Models

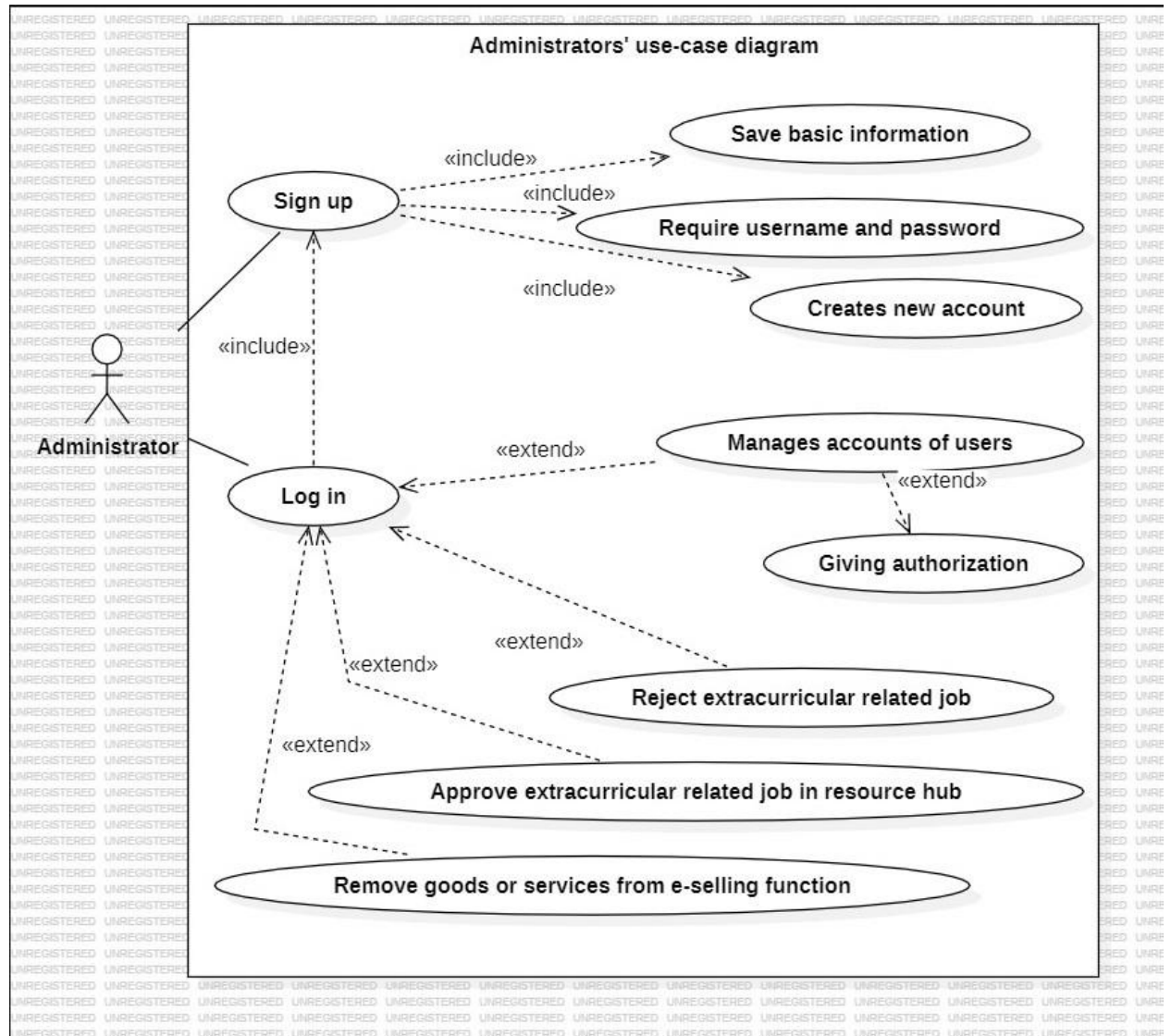


Figure 4: Use case diagram for admin

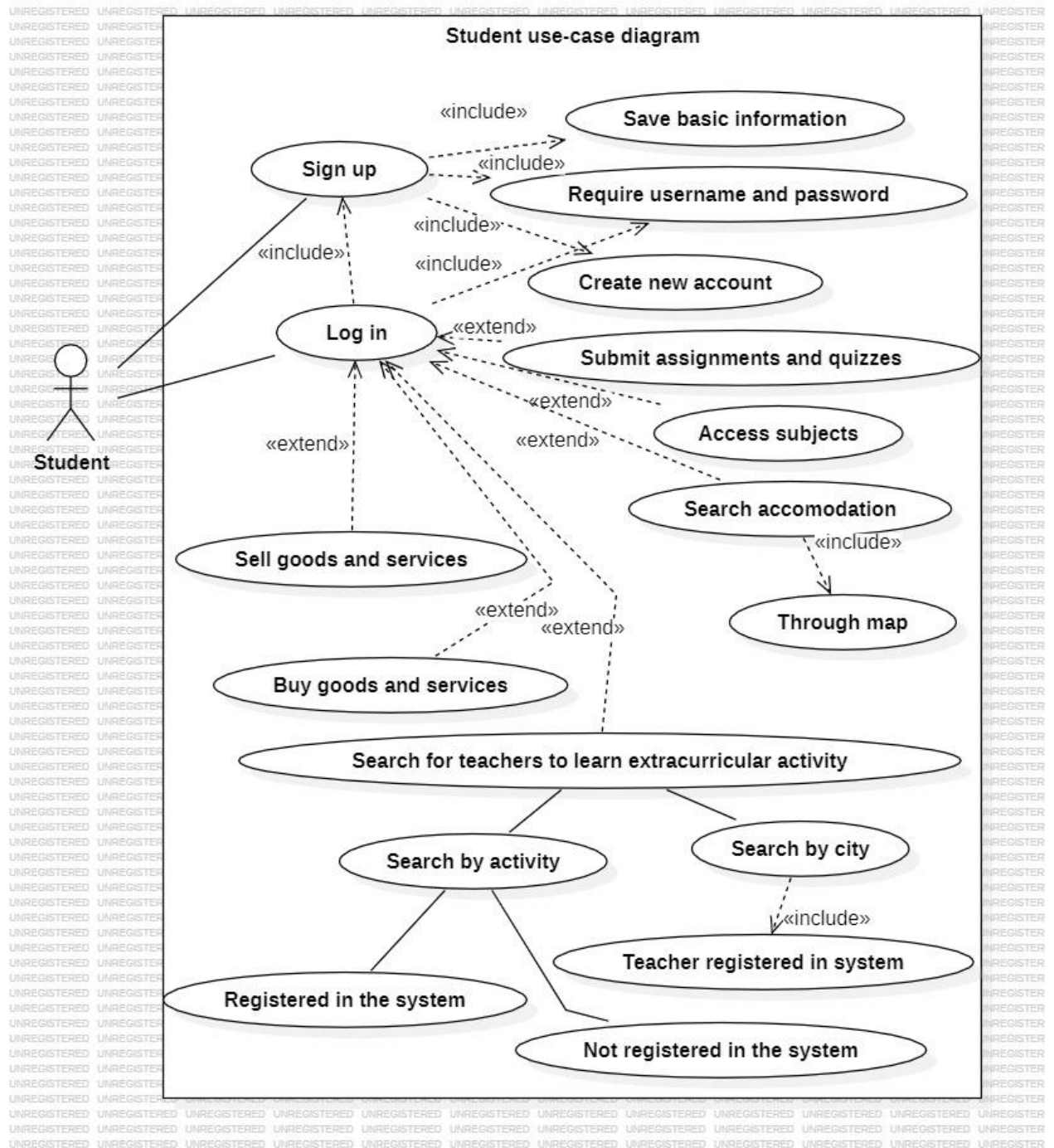


Figure5: Use case diagram for students

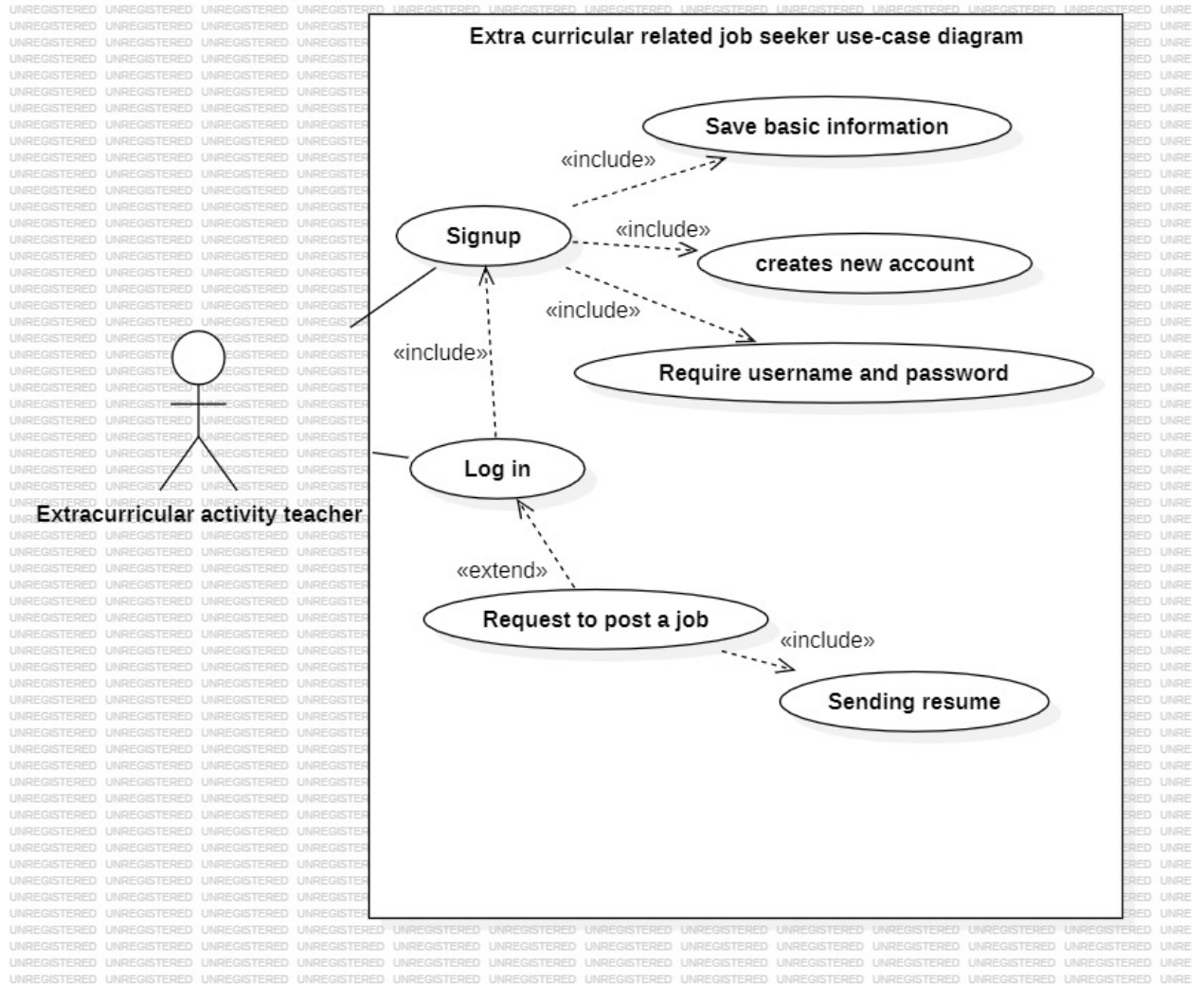


Figure6: Use case diagram for extracurricular activity teacher

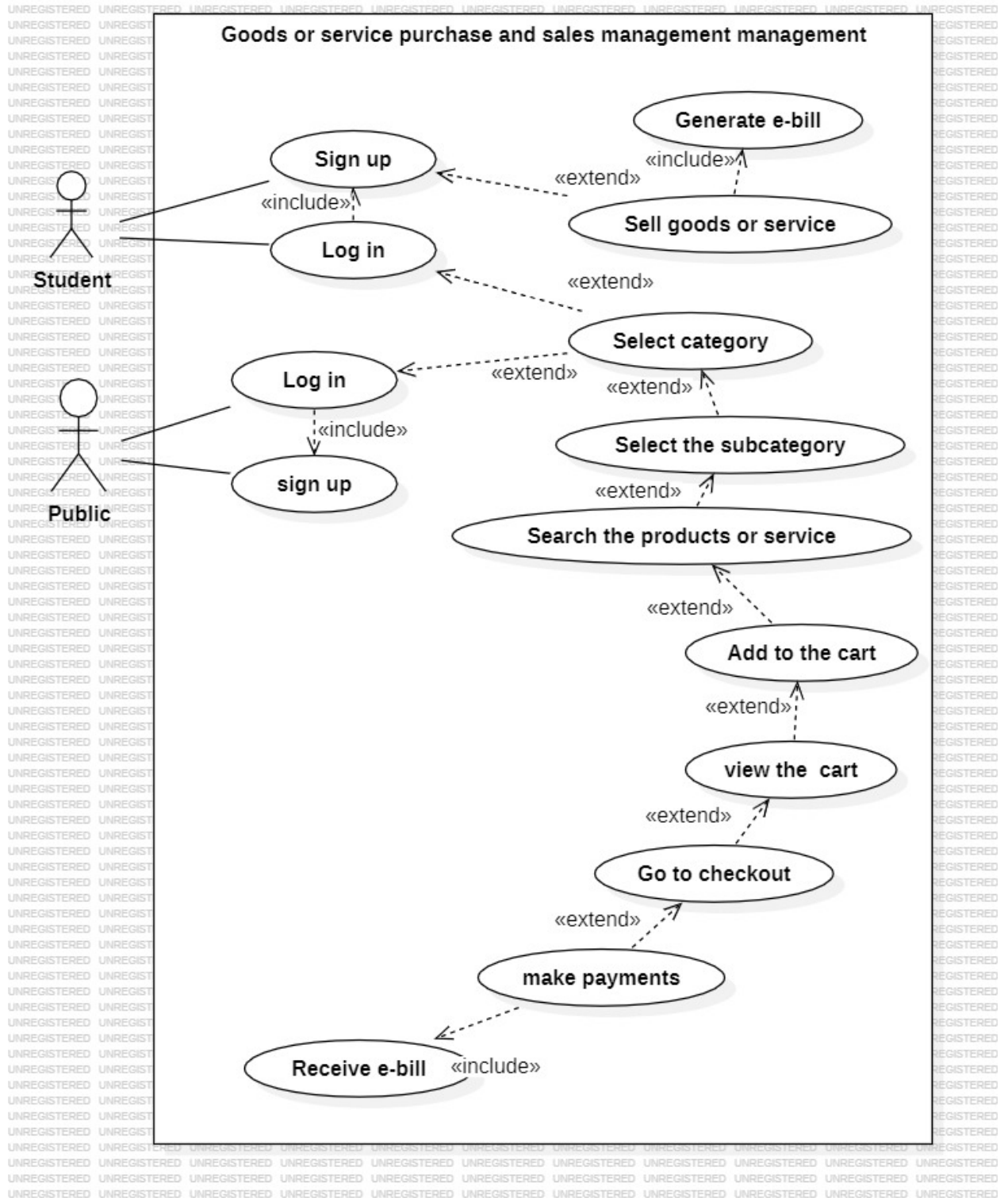


Figure7: Use case diagram for e-selling

### 5.3 Use case diagram

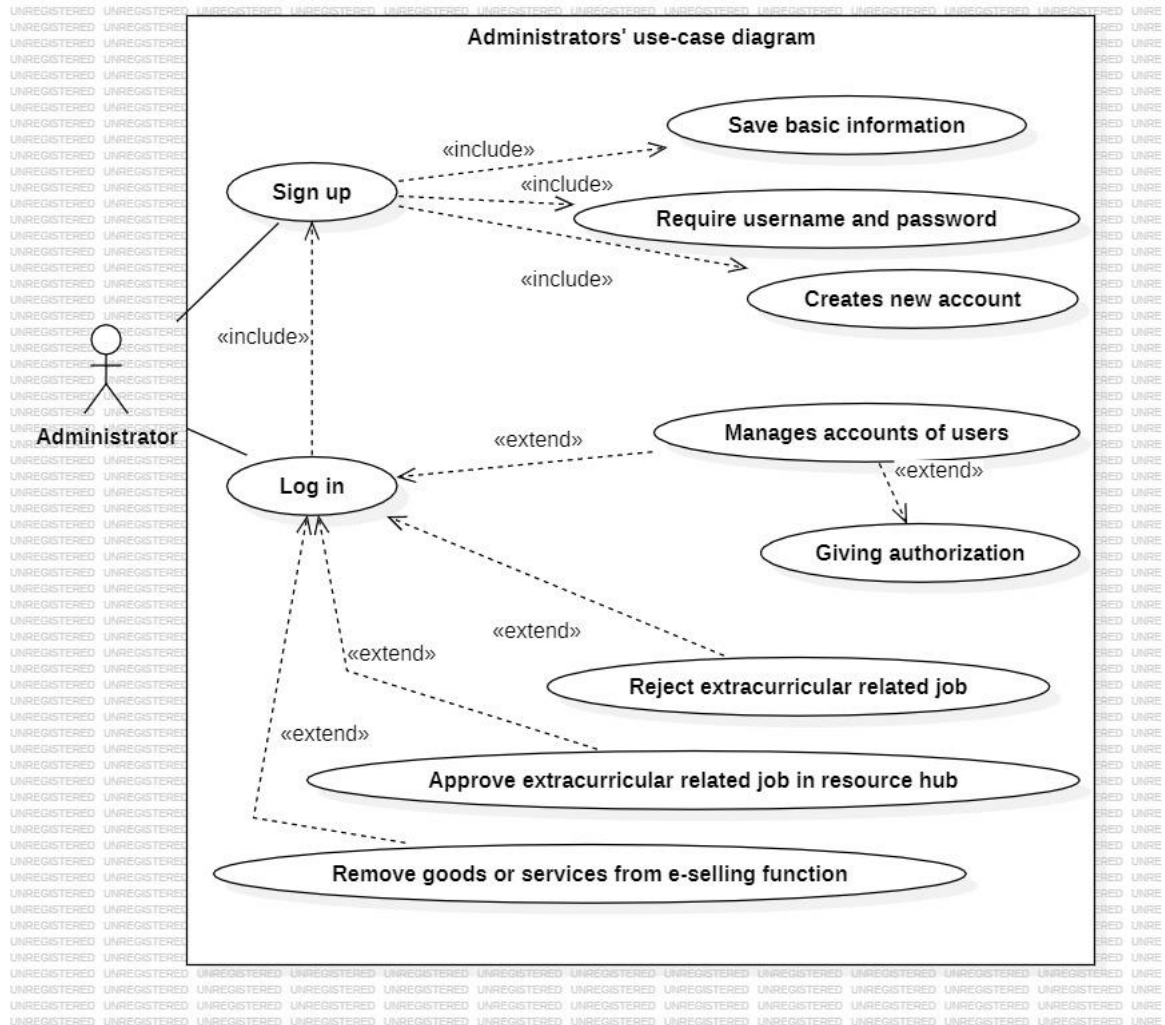


Figure 14: use case diagram for admin

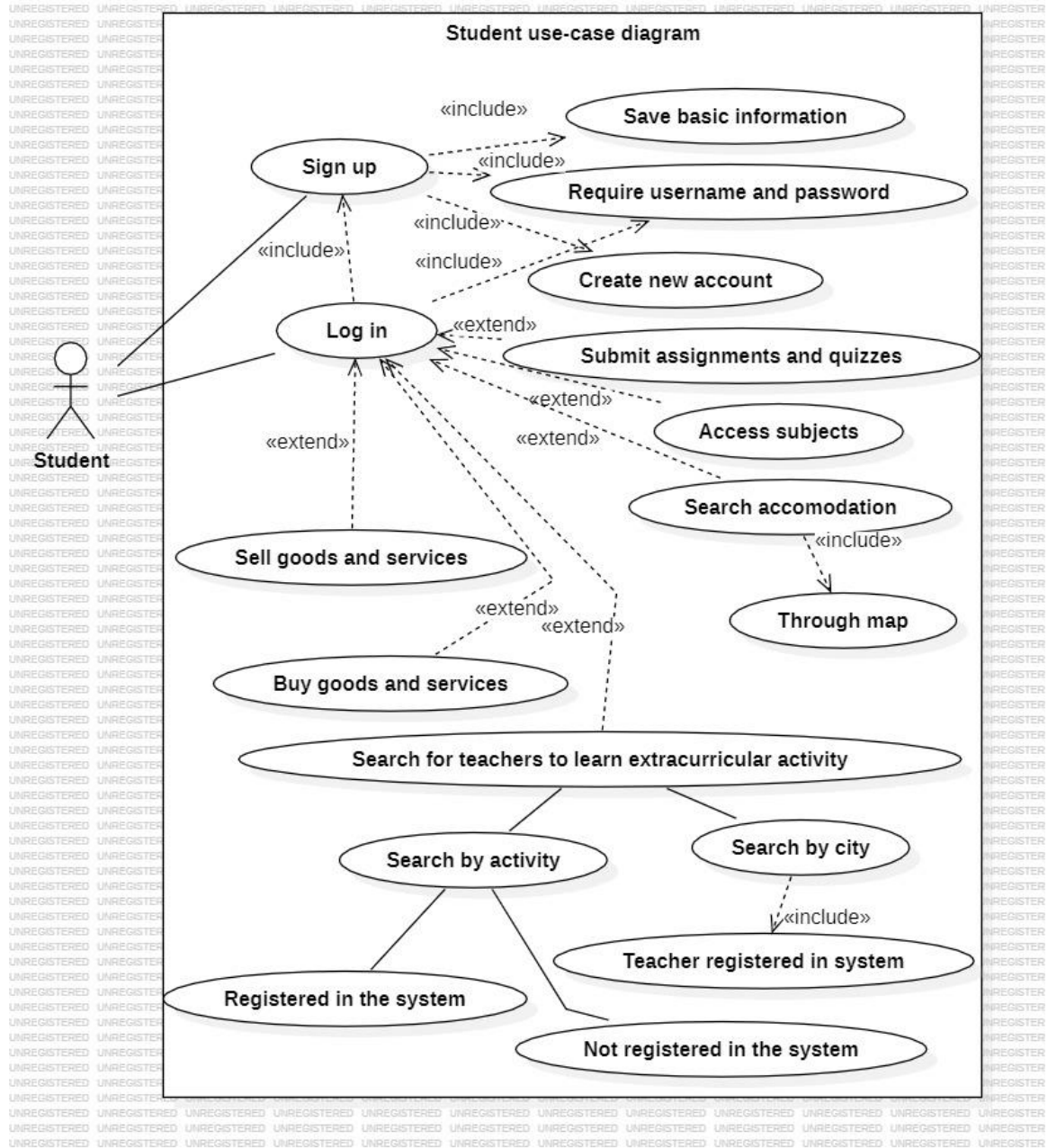


Figure 15: usecase diagram for student

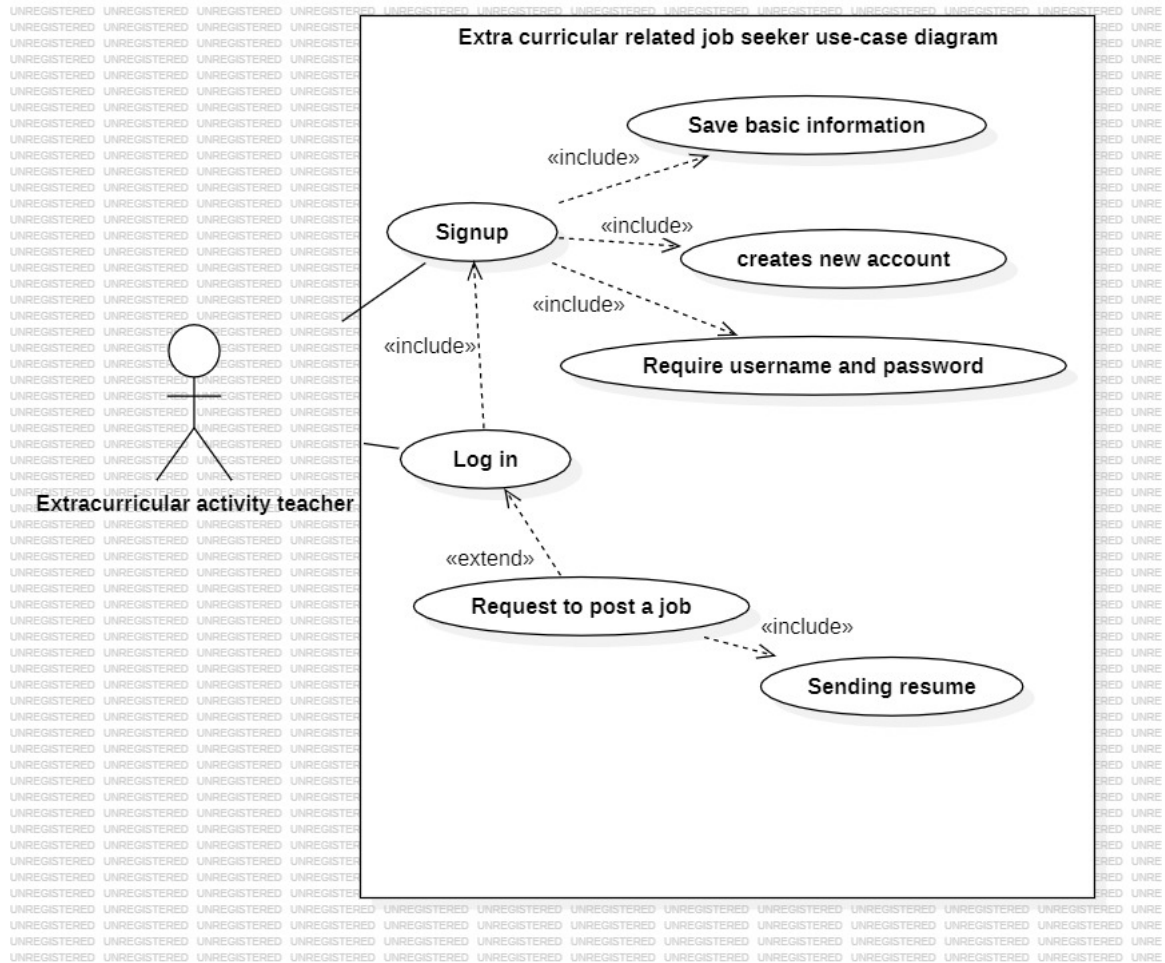


Figure 16: usecase diagram for job seeker



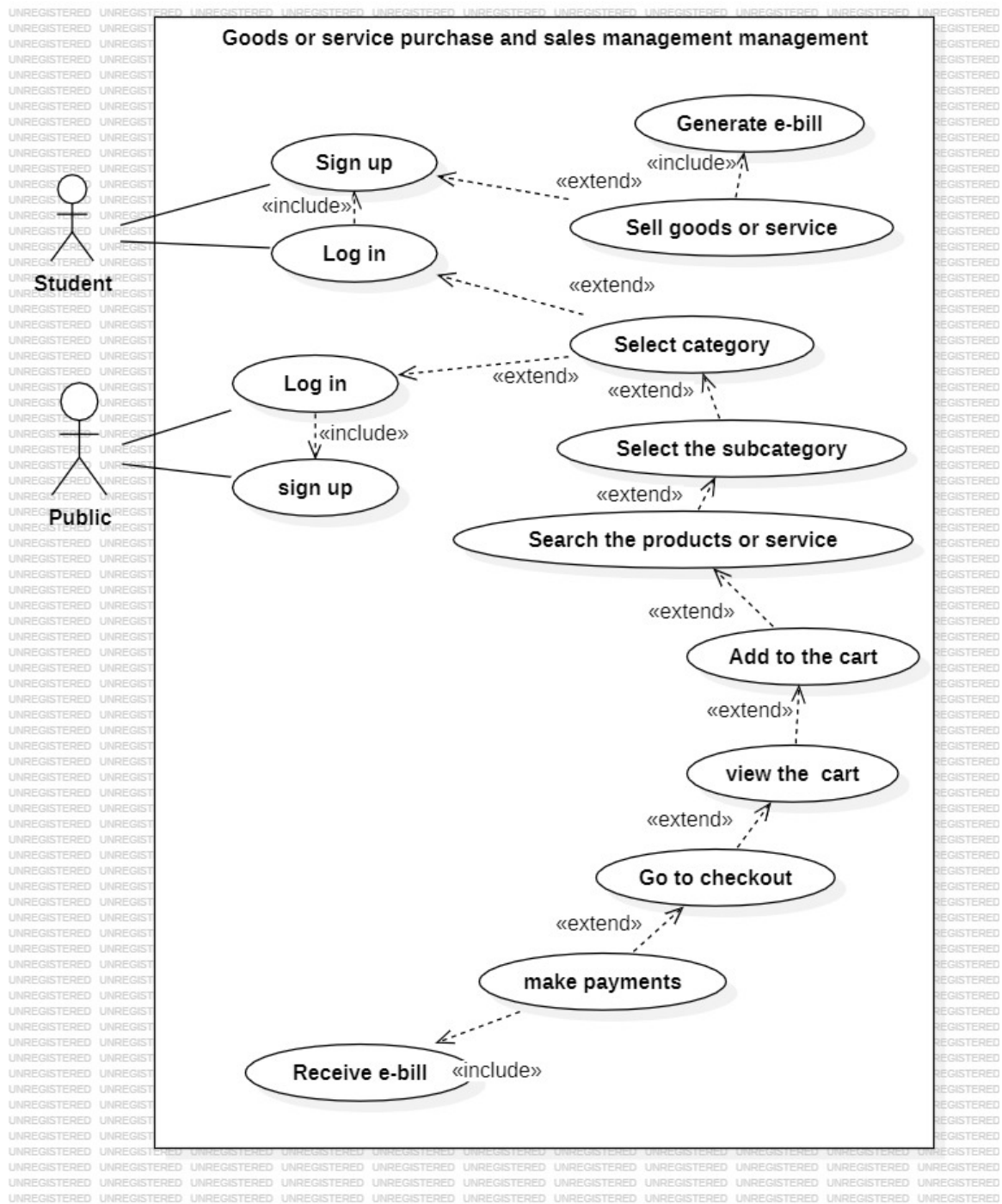


Figure 17: use case diagram for e-selling section

## 5.4 activity diagram

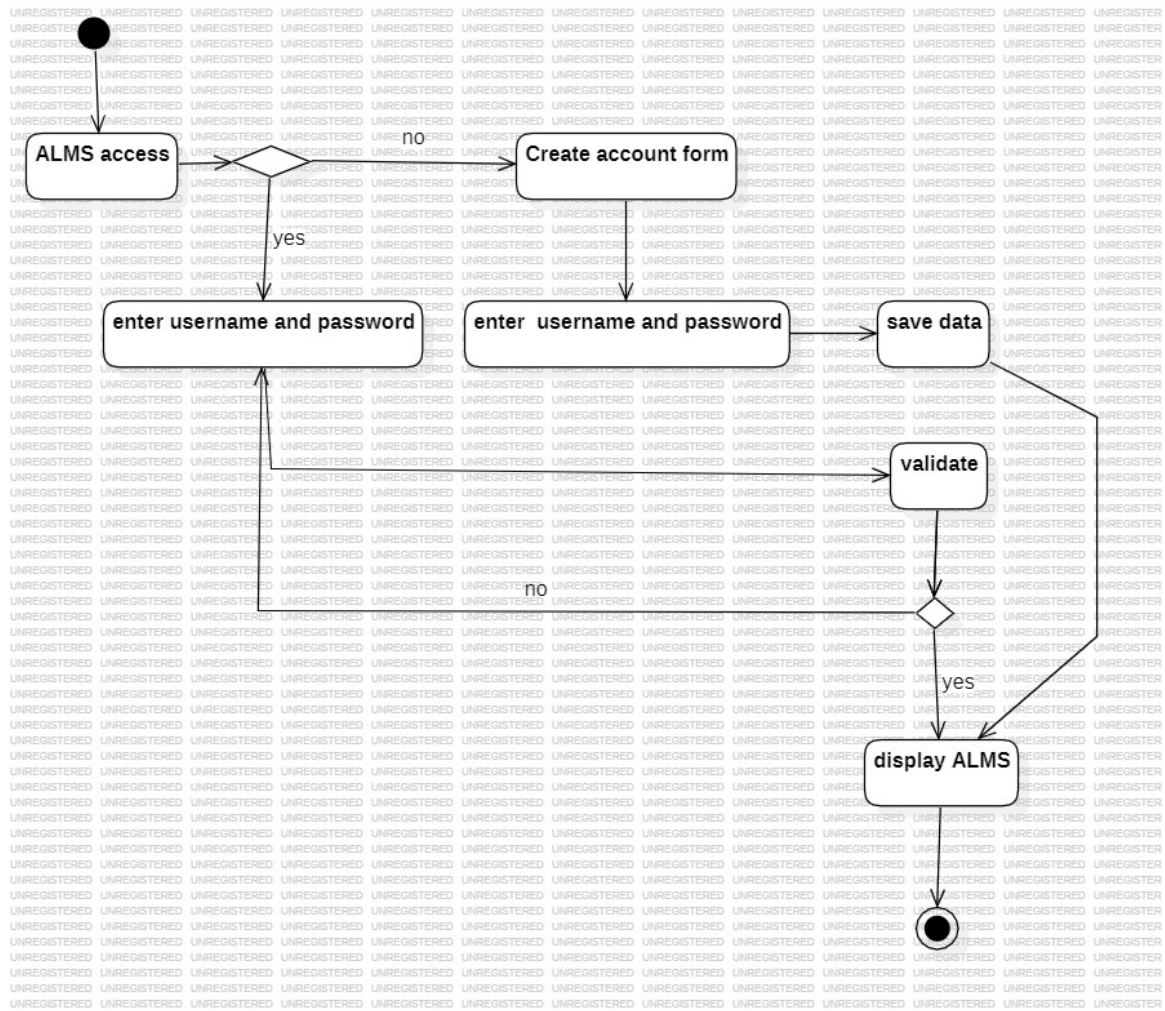


Figure 18: activity diagram for registration and login

## 5.5 ER diagram

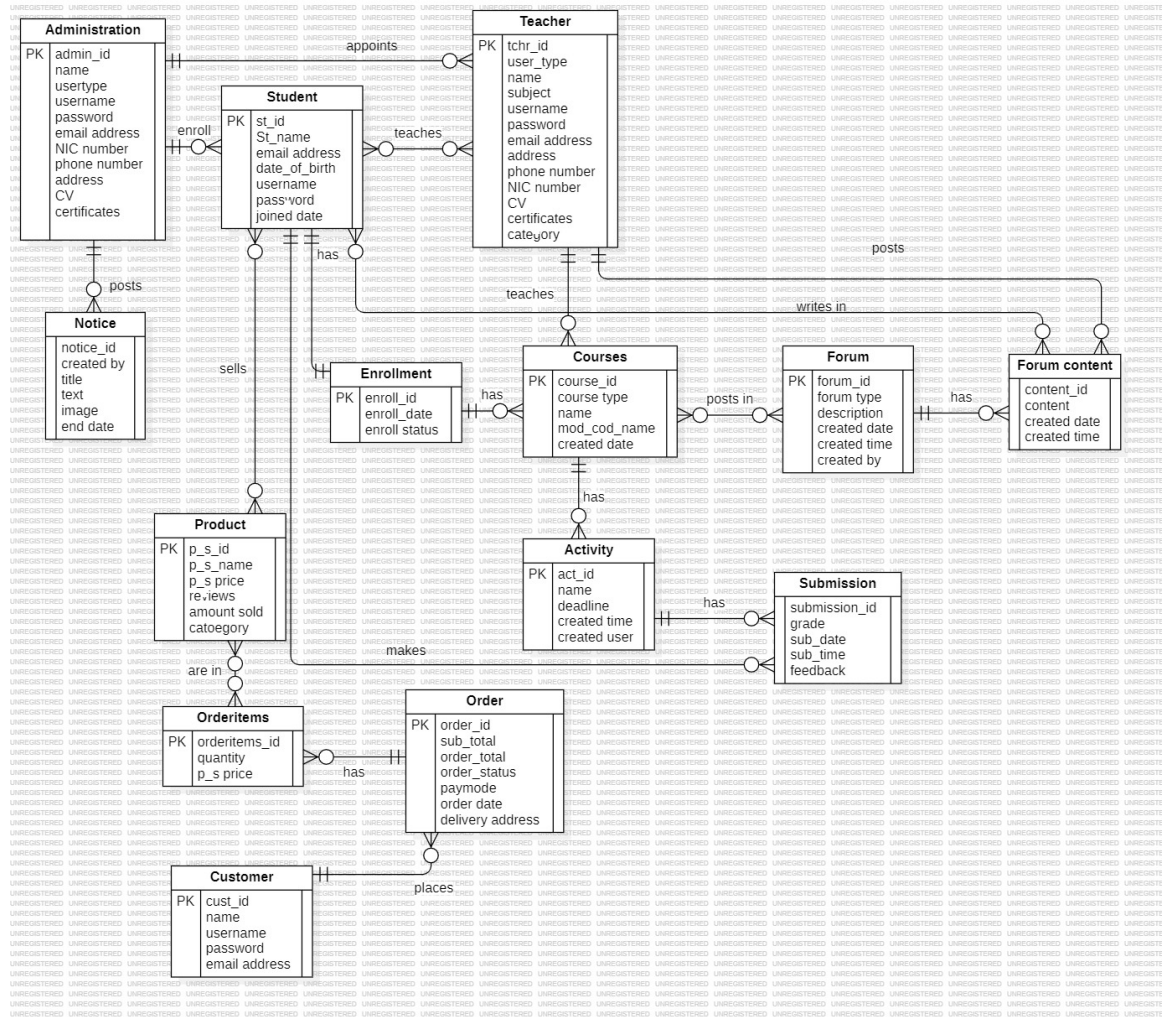


Figure 19: ER diagram