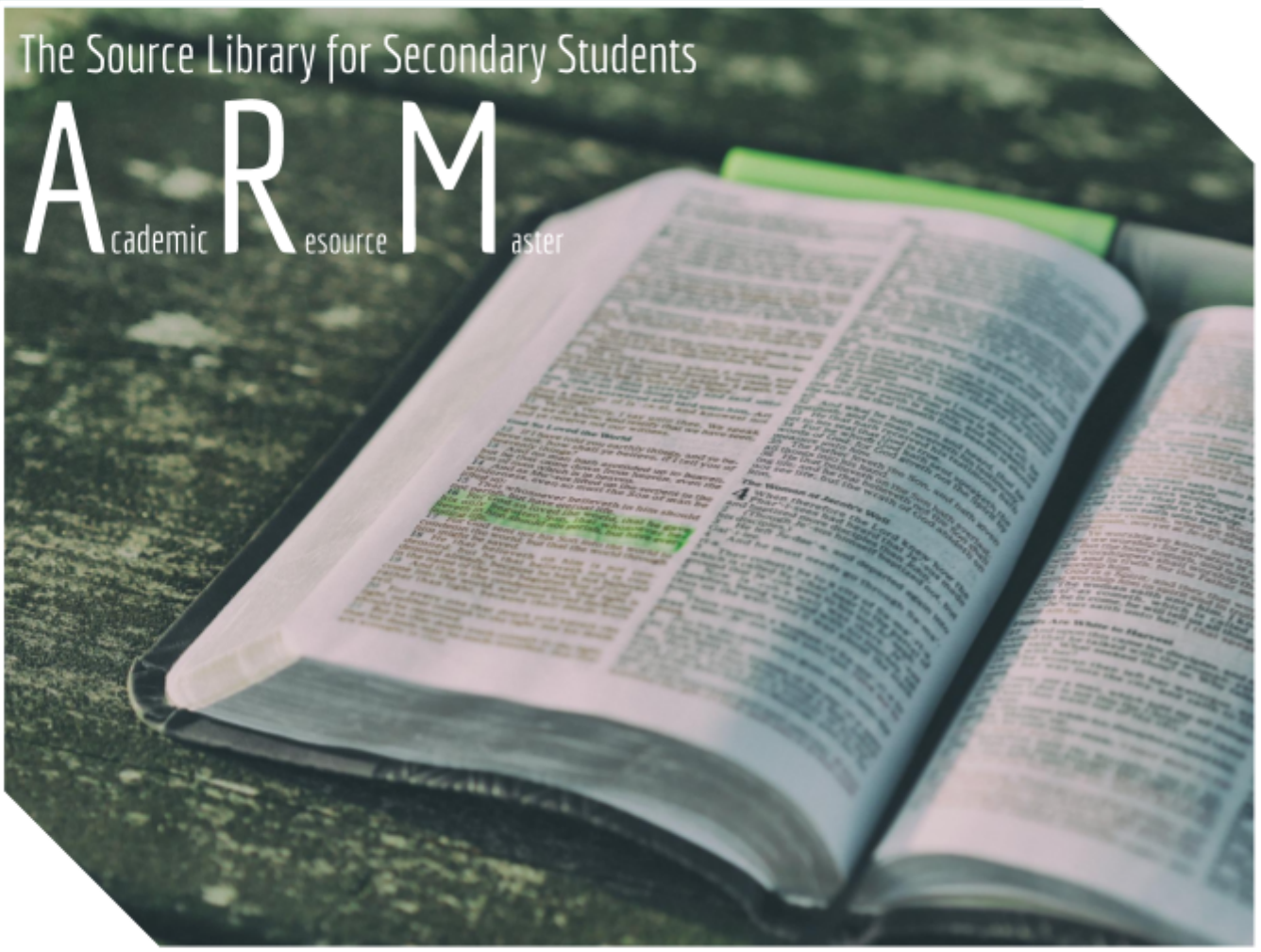


CSCI 3100 SOFTWARE ENGINEERING - GROUP 15

Wong Sin Yi(1155110677)	Computer Science, The Chinese University of Hong Kong
Cheung Kam Ho(1155092634)	Computer Science, The Chinese University of Hong Kong
Cheung Chi Hang Calvin(1155110302)	Computer Science, The Chinese University of Hong Kong
Cheung Tsz Ho(1155102444)	Computer Science, The Chinese University of Hong Kong
Yuen Ching Yin(1155110657)	Computer Science, The Chinese University of Hong Kong

CONTENTS

1. Introduction

1.1. Project Overview

We are going to develop an open online learning system including library, forum, and mailbox technique. It is a platform for users to find learning materials, share school exercise or exam paper source to others so as to build a friendly relationship with others.

1.2. Objective

University provides good learning environment that students can receive enough academical supports. Students can get study materials freely and easily from their friends and university library. However, in secondary education, we notice many students apply for tutorial beyond their school because the tutor centres provide extra materials for them. Because of that, the tuition fee is unaffordable by most of the students. These facts imply that the commodification of education is very serious in society.

To change this trend, we encourage open online learning platform to secondary students that the resources can be shared among the peers. We also hope it will be a good business platform for education publisher to sell their materials in a lower price.

1.3. Expected Customers and Market

We expected students and publishers will use our services.

Nowadays, secondary students attend different tutoring class. their study schedule really depends on the tutors or teachers. We advocate self-learning that students can find a related resource related to what they want to learn. Therefore, students can use our services directly to find more learning materials. This platform provides different features related to their studies like homework asking and material searching. The platform will provide an alternative way for studies.

In the aspect of publisher, it will be a system for them to enhance the quality of their business. Although the publisher starts to develop e-recourse reviewing from the textbook and the subjects in a recent year. We realize that there are not enough marketing channel to promote their products. With our system feature, the publisher can upload the material such as textbook, documents, and exercise to the platform. For the token payment system, each publisher has their own account after getting the token from the students if they buy the products. We allow the token convert to money, and achieve the selling process.

1.4. System Features

In this project, we build a different feature in the system. The main function is a open library system that users can store or download the material. Second, we build a forum feature for users for discussion. To encourage students to use our services, it also includes a token system, that user can earn tokens by uploading resources and materials.

2. Background

HKDSE (Hong Kong Diploma of Secondary Education) is important for every students in Hong Kong as it will affect their future. Buying different mock exercises in stores, joining tutoring classes and practicing past exam papers are the ways for students to achieve good performance in exam. Especially the form 6 students, they will spend lots of time and money in studying. Therefore, it is applicable to provide a new platform for every secondary student. In this generation, everything becomes open-source such as recipe and software. We need a library for students that they can upload and retrieve learning material.

To be more specific, the platform requires students to do registration. After signing in the account, users can search for what material they want. To encourage users to share their own resource instead of getting materials only, we implement a token system that users can get the token by uploading their own resources, then use the tokens for downloading other resources. To provide extra support with users, the platform includes forum features. Therefore, users can ask questions related to the study problems. To perform good resources management, users can sort and filter the material by related categories.

3. Specification

Our system provides functions for the user to share their own resources and retrieve other people materials.

3.1 System and Function

3.1.1 Personal Account System

Personal Account System is a database system to provide the identity for students and publisher in server and interact with others.

This system contains the following functions:

- **Account registration**, which is for the user registers with student or publisher account. This function will check whether the information user input is valid. If all information is in valid format, and keyfield is without duplication, create a new account related to the user information and report successful message, otherwise, request the user to input correct format information.
- **Account Login**, which gets a pack of user input which is ID and password, and checks the correctness from the account database. Log in to the server with user identity if the input is valid, otherwise request the user to input again.
- **Forget password**, which checks the identity of the user and allows the user to reset the password.
- **Change password**, which is for user set new password.
- **Logout**, which stops the access permission with a logged in account.

3.1.2 Academic Resource System

This is the system provides user to upload new academic paper into the resource database and download an existing file from the server.

This system contains the following function:

- **Upload File**, which receives the file input from the user and checks if the type of the file in proper format. Reject all the improper file and display an error message to the user. For proper format, request the user to categorize the file and upload it with the marking of the user ID and the category information into the database.
- **Search File by categories**, which is a search function receive file categories selection input or user personal information and search all matching file.
- **Preview File**, which displays a part of the file for the user for a preview on the web page before they pay and download the full version of the file.
- **Download File**, which extracts the selected file from the server and downloads to the machine of the user.
- **Comment**, which provides user input comment on the file. The comment would be saved and categorized to the file.
- **Retrieve comment**, which extracts and return all the related comment with the file.

3.1.3 Token System

The token system is money like a credit system for the user when dealing with resources in the server. Publisher distributes notes, homework or any paperwork to other users by setting the cost and others pay tokens to the publisher for getting the permission of file download.

This system contains the following function:

- **Set Token**, which is for publishers to set the price of a file they uploaded in term of the token.
- **Payment**, which checks whether enough amount of token due to the customer ID, reject the payment request if it is not. Otherwise, transfer the set token from the customer to the publisher.
- **Charge token**, which adds requested amount of tokens to a user account in the token system.

3.1.4 Question Discussion System

This is a forum like a system for the user to discuss an academic topic, homework, and any and questions. The user could ask a new question, reply to the existing question and grade an answer.

- **Create Question**, which is for creating a new question object and save user question related to the chosen categories into the question-answer database.
- **Search By Question Categories**, which is a search function receive question categories selection input and return all matching question.
- **Create Answer**, which is for creating a new reply due to a specific question and save into the question-answer database.
- **Retrieve Answer**, which searches and return all the answer to a specific question.
- **Set Rating**, which receives user grading input for an answer.
- **Retrieve Rating of answer**, which accesses the question-answer database, search the chosen answer and return the rating of that answer.

3.1.5 Mail System

Mail System is a private message system allows user exchanging message.

- **Send Mail**, which reads user ID(s) and message content as user input and records the message content into the mail database refer to the user ID.
- **Retrieve Mail**, which reads a user ID, access into the mail database and returns the content inside refer to the user ID.

3.2 Data Base

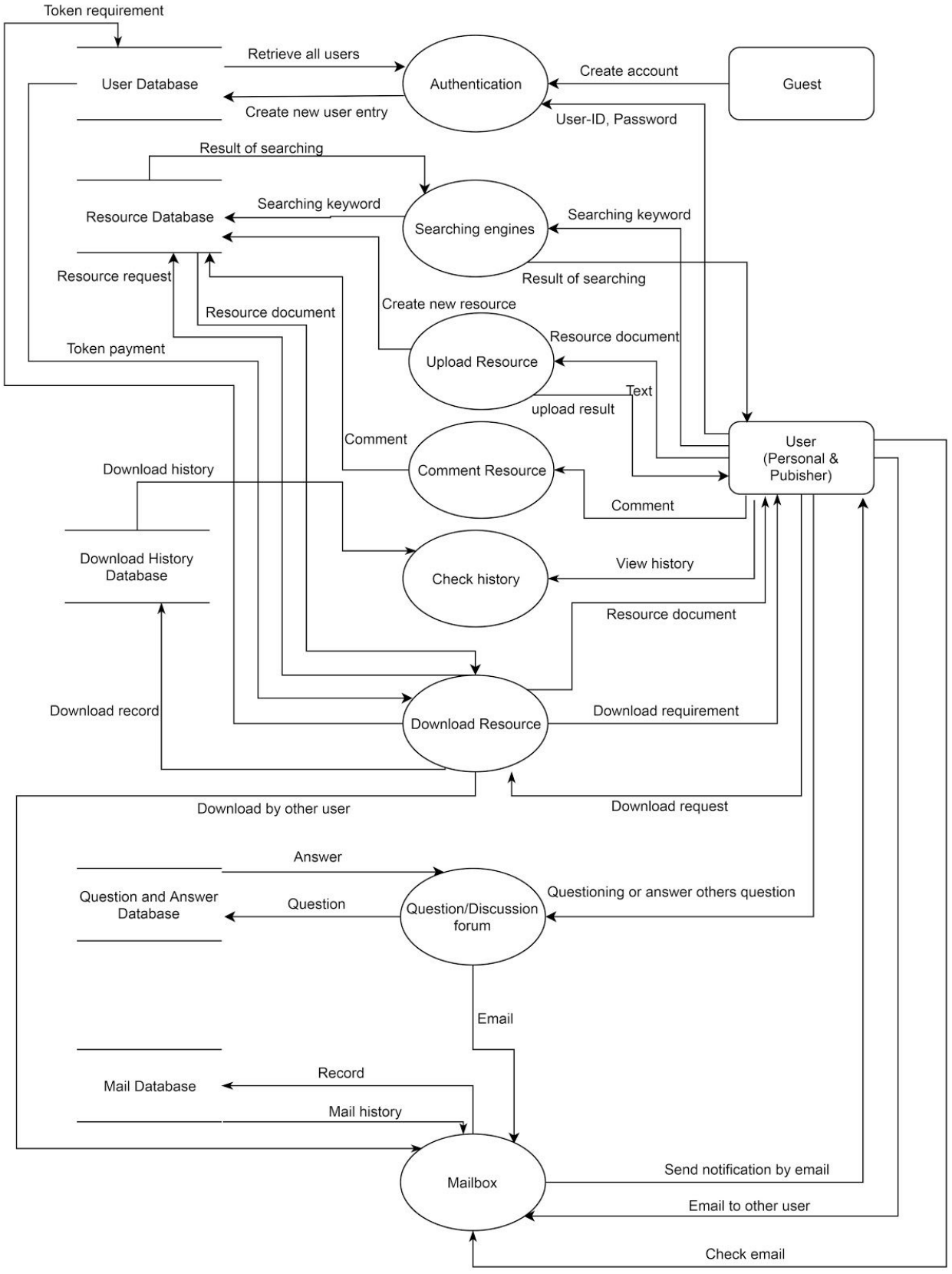
The database of ARM is shown below.

1. User Database includes the user account, account password, user token points
2. Resource database includes the resource content(SRID, ULID, name, category, school, uploader, download frequency, the rating, comment of the source, free or purchase)
3. History database includes the download resource record

4. Question and Answer database includes the question (categories, reply, the rating for the reply)
5. Mail database includes the mail history

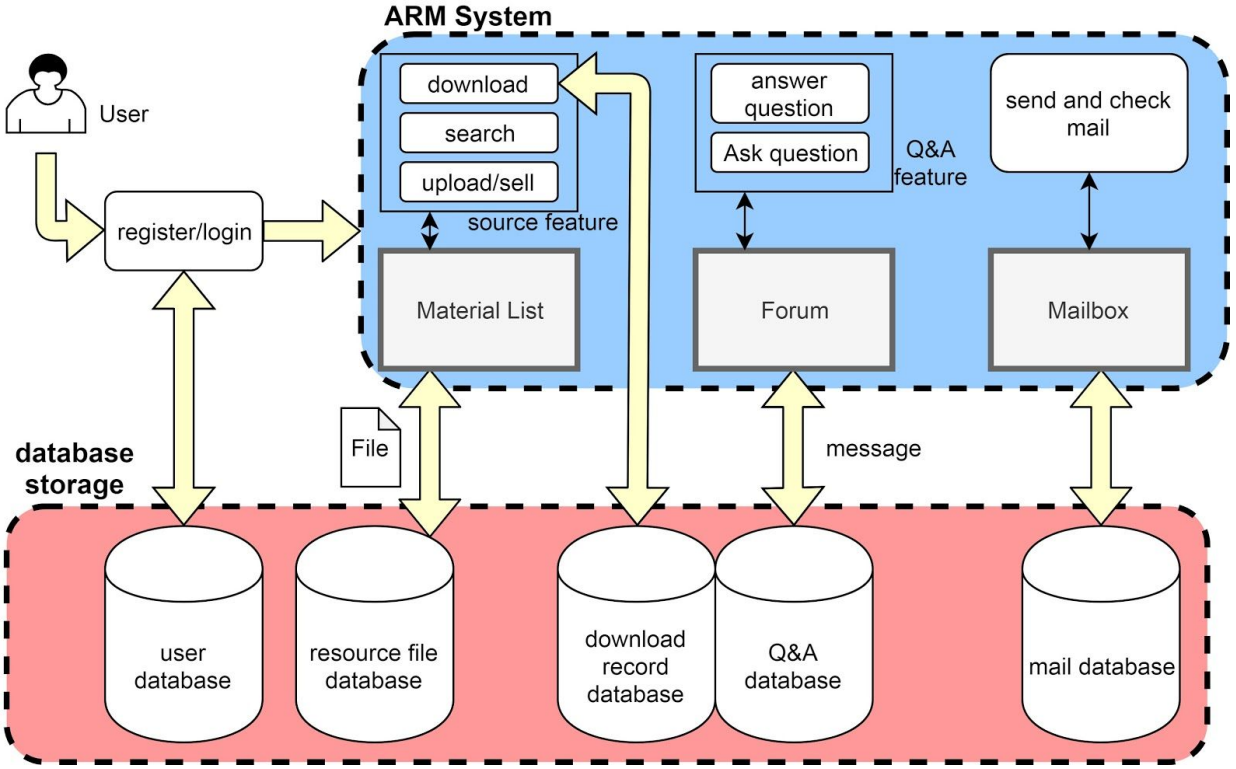
3.3 Data Flow Diagram

Data Flow Diagram of our main functions is shown below.


Token requirement
Retrieve all users
User Database
Authentication
Create account
Guest
Create new user entry
User-ID, Password
Result of searching
Resource Database
Searching keyword
Searching engines
Searching keyword
Resource request
Result of searching
Create new resource
Resource document
Resource document
Token payment
Upload Resource
Text
upload result
Comment
User
(Personal &
Pubisher)
Download history
Comment Resource
Comment
Download History
Database
Check history
View history
Resource document
Download record
Download Resource
Download requirement
Download by other user
Download request
Answer
Question and Answer
Database
Question
Question/Discussion
forum
Questioning or answer others question
Email
Record
Mail Database
Mail history
Mailbox
Send notification by email
Email to other user
Check email

4. System Architecture

4.1. Architecture Diagram

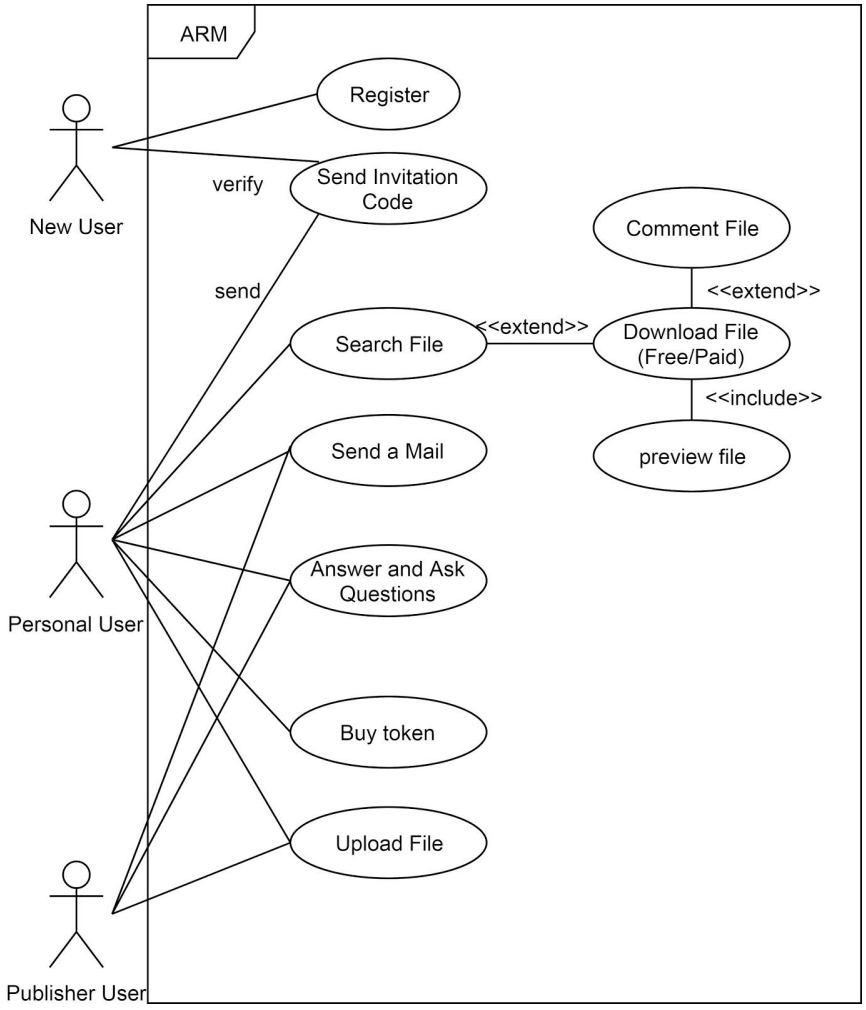


4.2. System Components

users(Student)	Users that can use download, search, and upload in Source feature.
users(Publisher)	Users that can use download, search, upload and sell in Source feature.
Mailbox System	The system allows users to send emails to others.
Forum	List of question collected from Q&A database, allows users to ask and answer.
Question	Component of a forum.
Material List	List of resource file display to users.
source file	Component of material list. it has 2 types: Free source and sale source. For sale source, students need to pay tokens for it.
Token	The credit that bought for payment in the system

4.3. Description of Major System Components

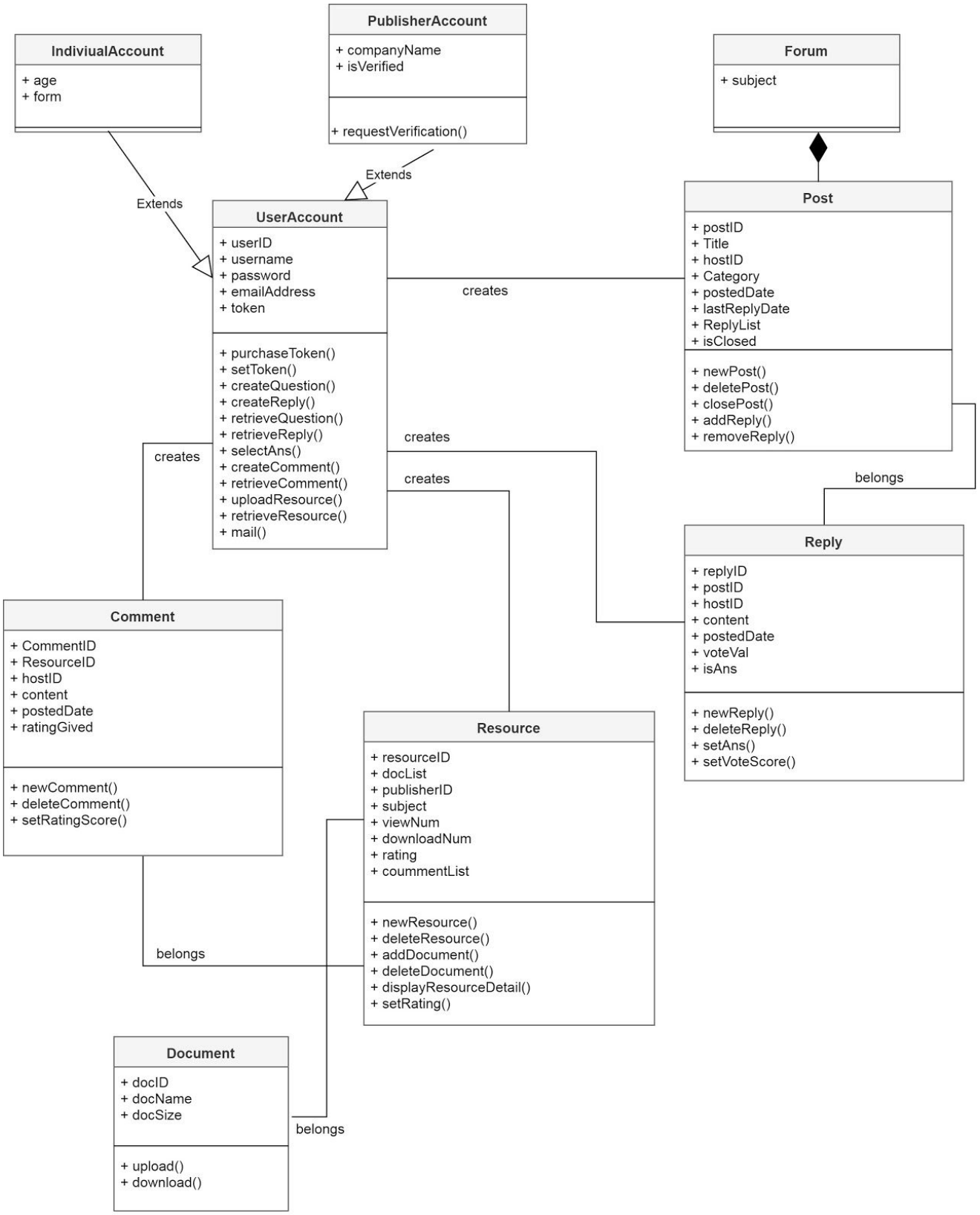
4.3.1 use-case diagram



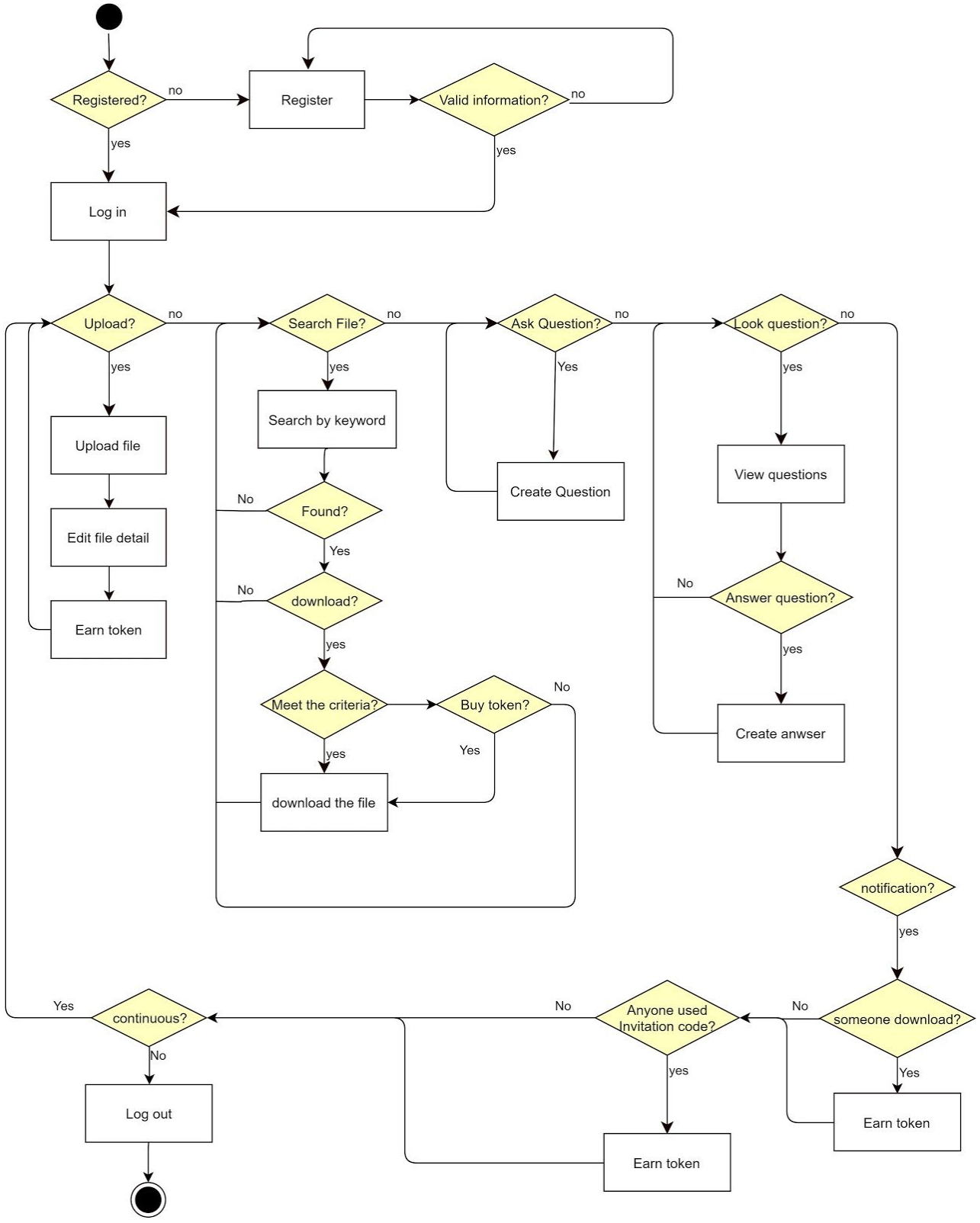
Personal user can send invitation code to the new user. Then, the new user can register with invitation code which is sent by the user.

In this system, every user can upload resources, search other resources by categories, or download different resources. Before downloading, there will be a preview of the file. Also, users can leave a comment on each file. Users might need to pay for some of the files by token, which they can buy the token. If they have problems for the download document, personal users can send an email to the uploader through the mailbox. On the other hand, if the personal user has academic questions, they can create a question on the question or answer forum. At the same time, other personal users can reply to that question on the forum. Publisher user can also sell file as ARM. And they will get a special marking or promotions.

4.3.2 class diagram

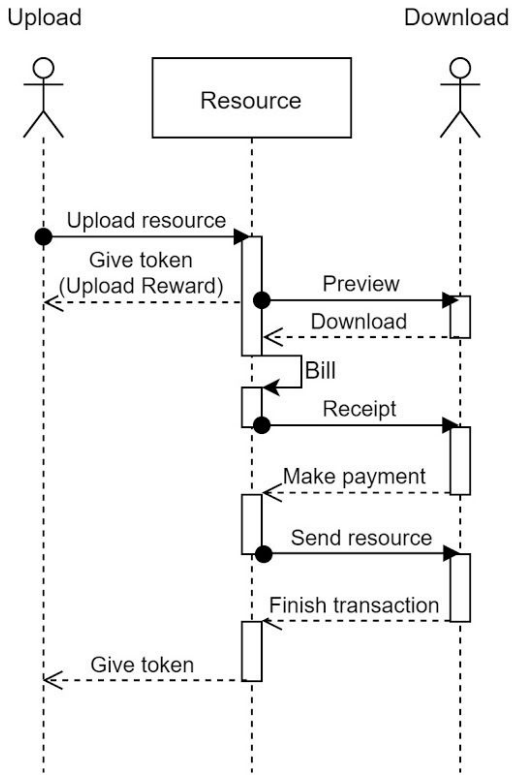


4.3.3 Activity diagram

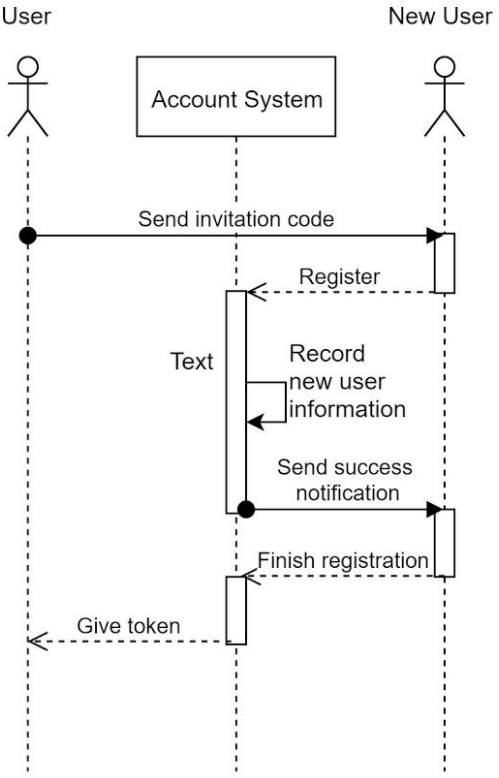


4.3.4 sequence diagram

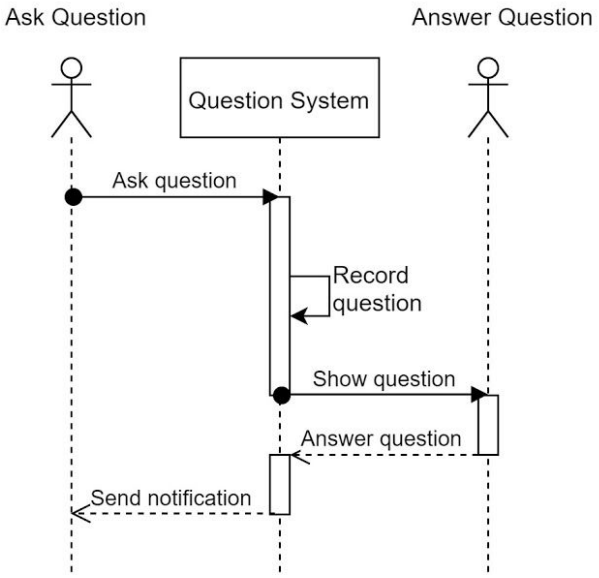
Uploading and downloading a resource

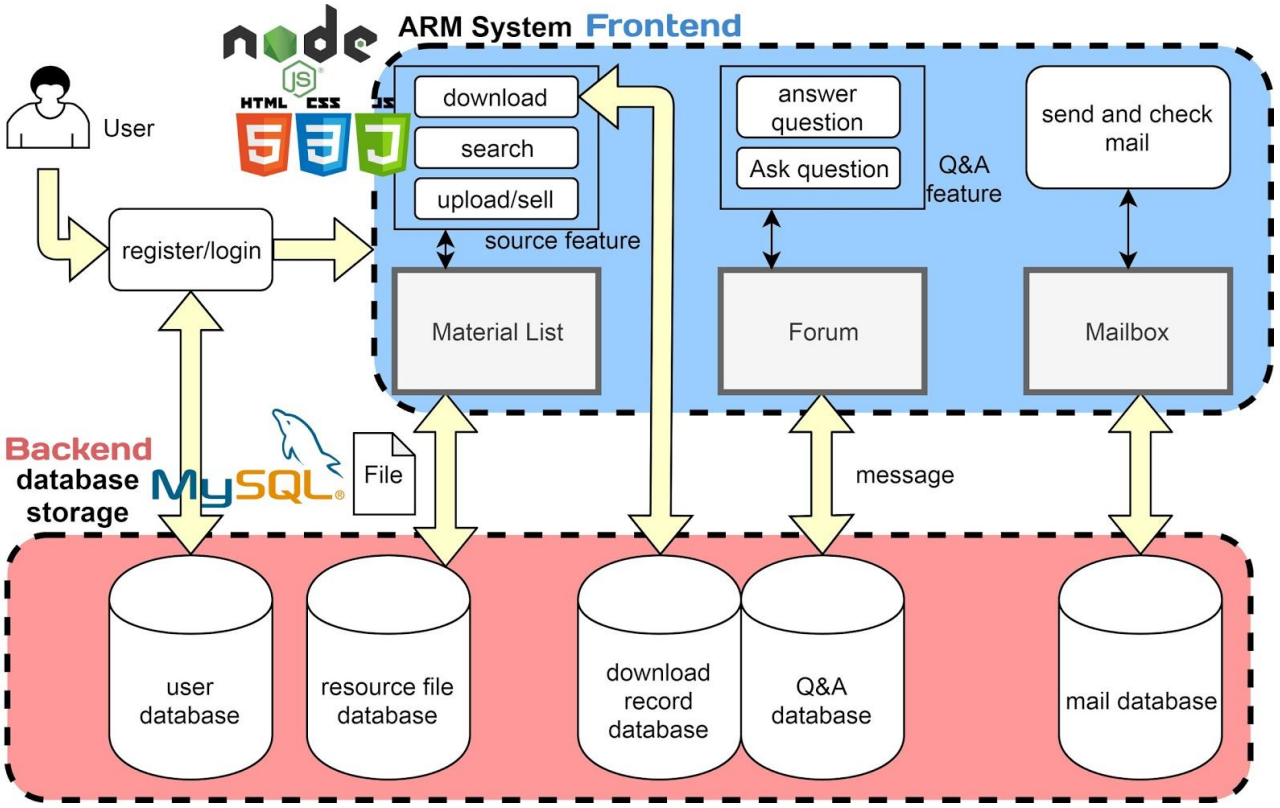


Inviting new user



Asking and answering questions




ARM System Frontend
User
register/login
download
search
upload/sell
source feature
Material List
answer question
Ask question
Q&A feature
Forum
send and check mail
Mailbox
Backend
database
storage
MySQL
File
message
user database
resource file database
download record database
Q&A database
mail database