Final documentation

For

Engineering office classification renewal project

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version
-	-	-	-
-	-	-	-

1. Introduction

1.1 Purpose

The purpose of this document is to provide a comprehensive and detailed overview of the requirements for "Renewing the Classification of Engineering Offices". It will explain the purpose and features of the system, and the interfaces of the system. It aims to define the proposed system's scope, functionality, and constraints to guide the development team, stakeholders, and other relevant parties in understanding the project's objectives.

1.2 Product Scope

Our program represents a comprehensive computerized system designed to streamline the renewal process of engineering office classifications. Our primary goal is to offer a user-friendly experience for both Engineers Syndicate members and personnel in engineering offices. The system prioritizes efficiency and effective management, aiming to simplify procedures, speed up decision-making, and optimize time and effort for all involved parties. Additionally, the system ensures accessibility at convenient times for everyone involved, guaranteeing to a more efficient and productive workflow.

1.3 Definitions, acronyms, and abbreviations

Stakeholder	Any person with an interest in the project who is not a developer
User	Syndicate members or Office official
Database	Collection of all the information monitored by this system
Office staff	Owners, Office founders, Heads of specialization and Engineers and Technical and administrative staff
Verification Process	The process includes examining and verifying the information entered in the form related to the engineers working in the office and the rest of the information related to the office. The syndicate also verifies that the office complies with the conditions governing the renewal process, such as field matters and exceptions.

Office official	The person responsible for the process of filling out the form, usually he/she is the office director.

1.4 References

- [Application form for renewal of engineering office classification](#)
- [Consulting work guide](#) Article 18 – 20.
- A field visit to the syndicate building and an interview with Eng. Anwar Arafat - Nablus syndicate Branch Manager.

1.5 Overview

The next chapter, the Overall Description section, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next chapter.

The third chapter, the Specific Requirements Specification section, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the product.

Both sections of the document describe the same software product in its entirety, but are intended for different audiences and thus use different language.

2. Overall Description

2.1 Product Perspective

Our software is a computerized application that is a replacement for the paper-based engineering office classification renewal service, enabling engineering offices to renew their classification electronically periodically. This system is part of the Engineers Syndicate system, which provides us with the requirements of our software in terms of years of experience, place of work, specialty, date of establishment of the office, and other data necessary for the renewal process procedures, which we can obtain from the Syndicate's database.
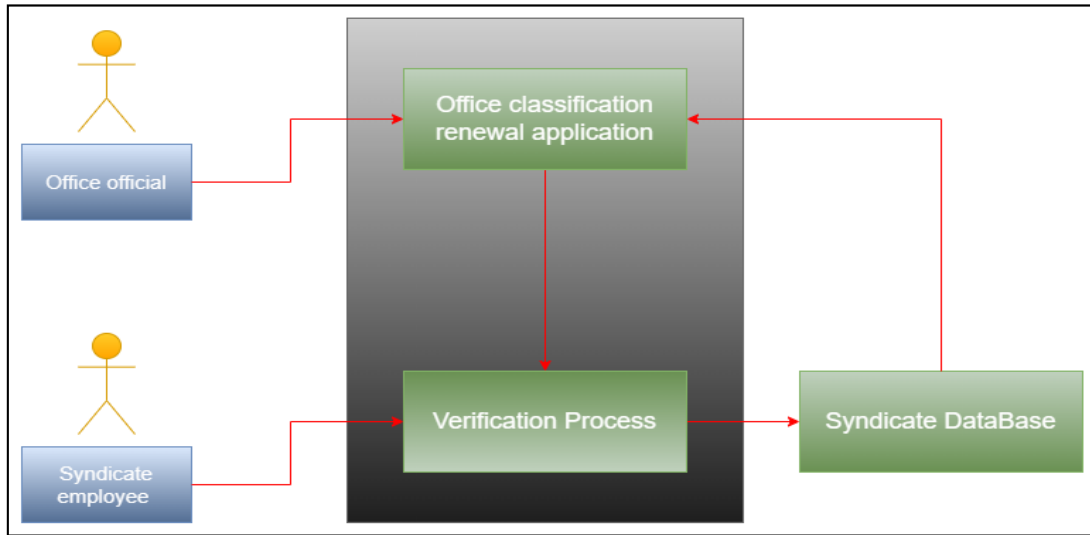
2.2 Product Functions

Main function of the system: The system performs the process of renewing the classification of engineering offices.

Users can perform the follows: -

1) Office official enter data about the office staff to the form.

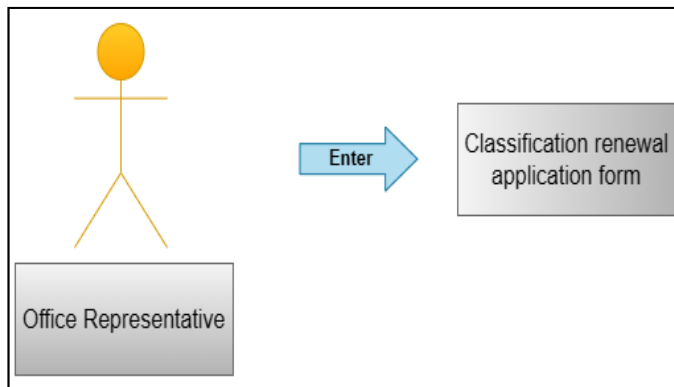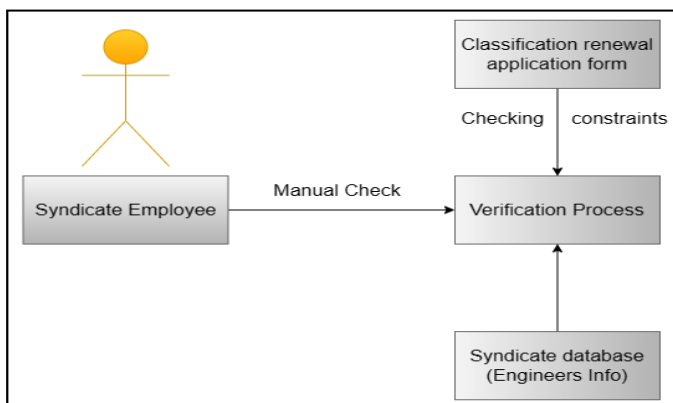2) Syndicate employee/s check the form after our program checks the constraints, engineers, and office information.

3) The result of the verification process is reflected in the syndicate database.
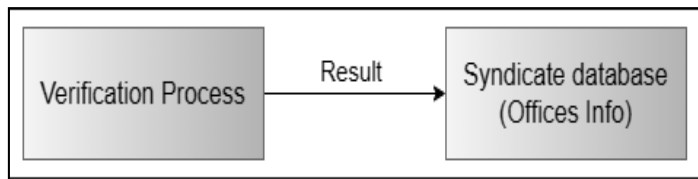
2.3 User Classes and Characteristics

There are several users in the system. On the office side, there is an office official, and on the syndicate side, there are department managers, such as the director of the Financial Affairs Department, the director of the Engineering Offices Department, and the director of technical affairs, in addition to the branch (field) employee, where each of them has the opportunity to review the form and approve and the head of the Offices and Engineering Companies Authority, he can review all the stages that the model goes through and give the final approval decision.

2.4 Use cases

2.4.1 Office official use case

Use case: fill the form
Diagram:
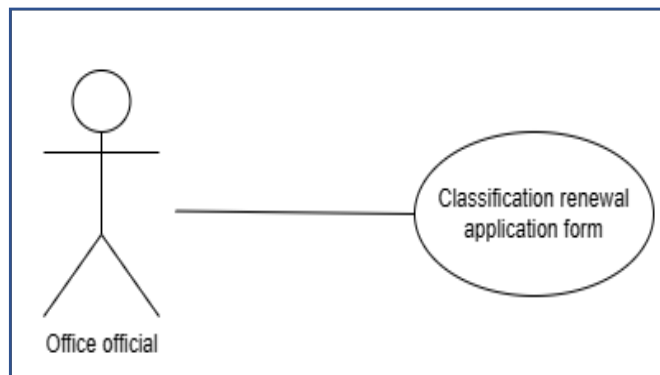
Brief Description
The office official enter data about the office staff to the form.

Initial Step-By-Step Description
Before this use case can be initiated, the office official should enter his/her login ID and password.

1) The office official fills in the required fields about the office information.
2) After that, he/she fills in the required fields related to information about the founders.

3) Then he/she fills in the required fields related to information about the Heads of specialty.
4) Finally, he/she fills in the required fields related to information about the technical and administrative staff working in the office "other than engineers".

Xref: Section 3.2.1, office official

2.4.2 Director of the Financial Affairs Department Use case

Use case: Check financial information.
Diagram:
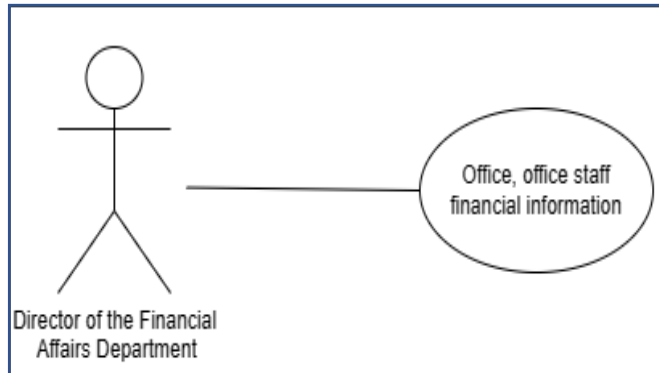
Brief Description
The Director of the Financial Affairs Department check office, office staff financial information.

Initial Step-By-Step Description
Before this use case can be initiated, the Director of the Financial Affairs Department should enter his/her login ID and password.

1) A list of renewing requests appears to the Director of the financial affairs department.
2) After that, he/she chooses one of them to deal with.
3) Then the office name and classification number will appear.
4) Then he/she selects the show button for the office financial information (like Annual subscriptions).
5) Finally, according to that information he/she decides to accept or refuse the request.

Xref: Section 3.2.2, The Director of the Financial Affairs Department

2.4.3 The Director of the Engineering Offices Department Use case

Use case: Check office staff requirements and constraints.

Diagram:

Brief Description
The Director of the Engineering Offices Department check if the office staff information fulfills the requirements and constraints.

Initial Step-By-Step Description
Before this use case can be initiated this case can't start unless the Director of the Financial Affairs Department case done. And the director of the engineering offices department should enter his/her login ID and password.

1) A list of renewing requests appears to the Director of the engineering offices department.
2) After that, he/she chooses one of them to deal with.
3) Then the office name and classification number will appear.
4) Then he/she selects the show button for the office staff information (like Years of experience for engineers and their specializations).
5) Finally, according to that information he decides to accept or refuse the request.

Xref: Section 3.2.3, The Director of the Engineering Offices Department

2.4.4 The Director of Technical Affairs Use case

Use case: Check office requirements and constraints.
Diagram:

Brief Description
The Director of Technical Affairs check if the office information fulfills the requirements and constraints.

Initial Step-By-Step Description
Before this use case can be initiated this case can't start unless the Director of the Engineering Offices Department case done. And the director of the engineering offices department should enter his/her login ID and password.
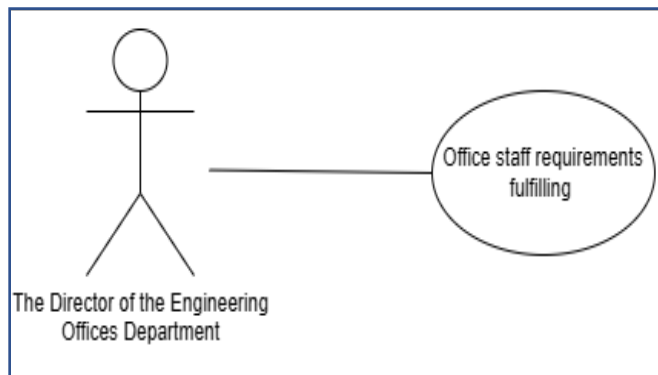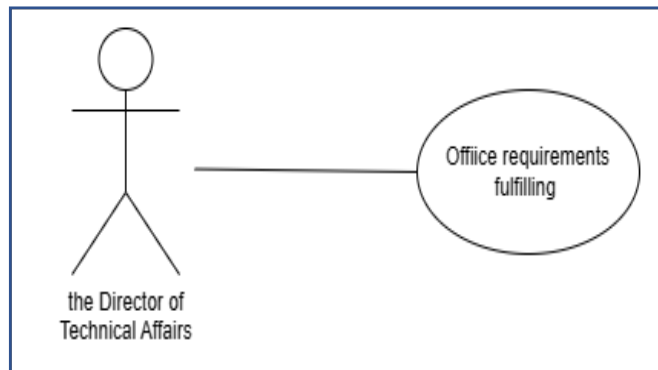
1) A list of renewing requests appears to the Director of Technical Affairs.
2) After that, he/she chooses one of them to deal with.
3) Then the office name and classification number will appear.
4) Then he/she selects the show button for the office information (like the Date of establishment of the office).
5) Finally, according to that information he decides to accept or refuse the request.

Xref: Section 3.2.4, The Director of Technical Affairs

2.4.5 The Council of Engineering Offices and Companies Authority Use case

Use case: Make a final decision.
Diagram:
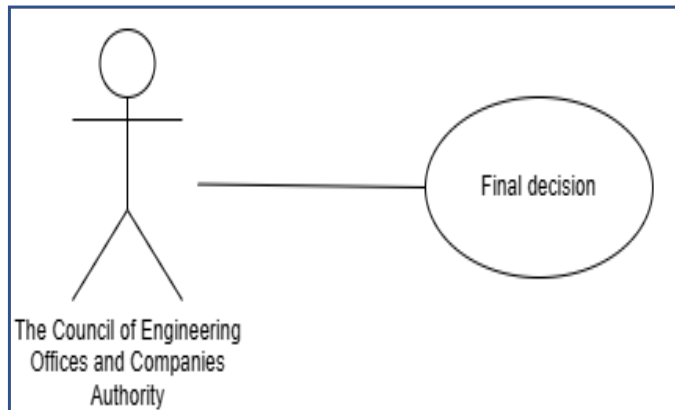
Brief Description
The Council of Engineering Offices and Companies Authority makes the final decision about accepting or rejecting the request to renew the classification of the engineering office.

Initial Step-By-Step Description
Before this use case can be initiated this case can't start unless the Director of Technical Affairs case done. And the Council of Engineering Offices and Companies Authority should enter his/her login ID and password.

1) A list of renewing requests appears to the Council of Engineering Offices and Companies Authority.

2) After that, he/she chooses one of them to deal with.
3) Finally, according to that previous information he decides to accept or refuse the request.

Xref: Section 3.2.4, The Director of Technical Affairs

2.5 Operating Environment

Our program is designed to operate in a Windows 10 (64-bit) and designed to run on x86-64 architecture with a minimum of 4 GB RAM, utilizing the Spyder IDE for Python development. The graphical user interface (GUI) is constructed using the Tkinter library, and interaction with a SQLite database is facilitated through the SQLite3 library. The Python interpreter is fundamental to the execution of our program. It's important to note that the program is assumed to be platform-independent, given the inherent cross-platform compatibility of Python.

2.6 Design and Implementation Constraints

The syndicate policies make it difficult to share data related to offices, in addition to credibility policies that require field inspections by the engineering office and also the involvement of the human side in the application acceptance process, and some of the Fraud operations followed by engineering offices that lead to weak credibility of data. As well as, obstacles related to language requirements and databases to be used.

2.7 Assumptions and Dependencies

Data Availability and Quality: The project assumes that the necessary data for classifying engineering offices will be available and of sufficient quality. So any inconsistencies, incompleteness, or changes in the source data may affect the accuracy and reliability of the classification system.

3. Specific requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

- User logs in with his/her username: -
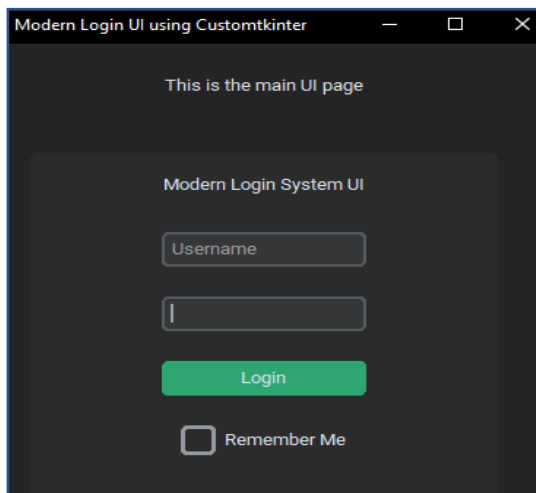
- Office official fill the required fields about the office: -

- Then he/she continue filling the table that contains the information about the owners: -

- After that fill Heads of specialty information: -

- After that fill specialized engineers "other than heads of specialty" information: -

- Finally, fill the technical and administrative staff working in the office "other than engineers" information: -

- After director of the financial affairs department logs in the system, this will appear: -

- Then he selects one of the requests from the list: -

- Then click on the show button that shows whether that office paid the annual subscription or not, and if there are unpaid loans owed by the office and other receivables. And show whether the annual subscriptions for engineers are paid or not, If there are loans owed by the office engineers and other notes.

- The Director of the Engineering Offices Department and the Director of Technical Affairs take the same steps as the Director of the Financial Affairs Department, but the difference is that the Show button for the Director of the Engineering Offices Department chooses to approve the request or not based on meeting the conditions with the comments, then we move to the Director of Technical Affairs who Recommends renewal or not, with office rank and specializations.

- Finally, the final decision comes from the Council of Engineering Offices and Companies Authority.

3.1.2 Hardware Interfaces

Our system is not limited to a specific operating system, it works on different computers, and there is no other customization regarding devices.

3.1.3 Software Interfaces

We used a SQLite database to store and handle data, and among the libraries we used within the Python language were the tkinter library and Custom tkinter.

3.1.4 Communications Interfaces

We will use network server communications protocols, which are TCP-UDP for communication, data transfer, and synchronization

3.2 Functional requirements

3.2.1 Office official use case

Use Case Name	Fill the form
XRef	Section 2.4.1
Requirements Details	I. Before this use case can be initiated, the office official should enter his/her login ID and password. It is based on a unique number for each user, like two digits for the authorizations on the system and 5 digits to make the office unique from the others. II. Office official enters the office data, which is the name of the office/company, the classification number (unique), the rank in which the classification is requested (consultant, first, second, third) - conditions for the classification rank (reference to Consulting work guide), date of establishment, office area, specializations to be classified in, city/town, street/building, mailbox, fax number, phone number, cell number, email, request year. III. Enter the information of the office staff, including founders, heads of specializations, and full-time engineers "other than heads of specializations," where the registration number is distinct. IV. The percentage of engineers among the founders must be no less than 51%. V. Office official enter the technical and administrative staff data for non-engineers working in the office (like Name, the academic qualification (may be empty), job title).

Basic Path	1) The office official logs in to the system.
	2) The office official fills in the required fields about the office information.
	3) After that, he/she fills in the required fields related to information about the founders.
	4) Then he/she fills in the required fields related to information about the Heads of specialty.
	5) Finally, he/she fills in the required fields related to information about the technical and administrative staff working in the office "other than engineers".

3.2.2 Director of the Financial Affairs Department use case

Use Case Name	Check financial information.
XRef	Section 2.4.2
Requirements Details	I. Before this use case can be initiated, the Director of the Financial Affairs Department should enter his/her login ID and password. It is based on a unique number for each user, like two digits for the authorizations on the system and five digits to make the syndicate employee unique from the others.
	II. After logging in, a list of renewal requests appears and he chooses one of them. After choosing, information about the office appears, such as the name of the office, its classification number, and a button to show financial data related to the office and its engineers.
	III. The office's financial information appears (annual subscription, outstanding loans, other financial receivables), and the engineers' financial information appears (engineers' annual subscriptions, unpaid loans owed to the office's engineers, other receivables).
	IV. Based on this information, the Director of the Financial Affairs Department will accept or reject the application, stating the reason.
Basic Path	1) The Director of the Financial Affairs Department logs in to the system.
	2) A list of renewing requests appears to the Director of the financial affairs department.
	3) After that, he/she chooses one of them to deal with.
	4) Then the office name and classification number will appear.
	5) Then he/she selects the show button for the office financial information (like Annual subscriptions).
	6) Finally, according to that information he/she decides to accept or refuse the request.

3.2.3 The Director of the Engineering Offices Department Use case

Use Case Name	Check office staff requirements and constraints.
XRef	Section 2.4.3
Requirements Details	I. Before this use case can be initiated, the Director of the Engineering Offices Department should enter his/her login ID and password. It is based on a unique number for each user, like two digits for the authorizations on the system and five digits to make the syndicate employee unique from the others. II. After logging in, a list of renewal requests appears and he chooses one of them. After choosing, information about the office appears, such as the name of the office, its classification number, and a button to show office staff data like graduation year, specialization. III. Based on this information, the Director of the Financial Affairs Department will accept or reject the application, stating the reason.
Basic Path	1) The Director of the Engineering Offices Department logs in to the system. 2) A list of renewing requests appears to the Director of the engineering offices department. 3) After that, he/she chooses one of them to deal with. 4) Then the office name and classification number will appear. 5) Then he/she selects the show button for the office staff information (like Years of experience for engineers and their specializations). 6) Finally, according to that information he decides to accept or refuse the request.

3.2.4 The Director of Technical Affairs Use case

Use Case Name	Check office requirements and constraints.
XRef	Section 2.4.4
Requirements Details	I. Before this use case can be initiated, the Director of Technical Affairs should enter his/her login ID and password. It is based on a unique number for each user, like two digits for the authorizations on the system and five digits to make the syndicate employee unique from the others. II. Secondly, a list of renewal requests appears and he chooses one of them. After selecting, information about the office appears, such as the name of the office, its classification number, the year of establishment, the rank by which the classification is requested, and data about the heads of the specialty, such as specialty and years of experience.

	III. Based on this information, the Director of the Technical Affairs will accept or reject the application, stating the reason.
Basic Path	1) The Director of Technical Affairs logs in to the system. 2) A list of renewing requests appears to the Director of Technical Affairs. 3) After that, he/she chooses one of them to deal with. 4) Then the office name and classification number will appear. 5) Then he/she selects the show button for the office information (like the Date of establishment of the office). 6) Finally, according to that information he decides to accept or refuse the request.

3.2.5 The Council of Engineering Offices and Companies Authority Use case

Use Case Name	Make a final decision
XRef	Section 2.4.5
Requirements Details	I. Before this use case can be initiated, the Council of Engineering Offices and Companies Authority should enter his/her login ID and password. It is based on a unique number for each user, like two digits for the authorizations on the system and five digits to make the syndicate employee unique from the others. II. After logging in, a list of renewal requests appears and he chooses one of them. After selecting, a comprehensive report of the request appears. III. Finally, based on the information contained in the report, he makes a decision.
Basic Path	1) The Council of Engineering Offices and Companies Authority logs in to the system. 2) A list of renewing requests appears to the Council of Engineering Offices and Companies Authority. 3) After that, he/she chooses one of them to deal with. 4) Finally, according to that previous information he decides to accept or refuse the request.

3.3 Other Nonfunctional Requirements

3.3.1 Security Requirements

The server on which the database resides will have its own security to prevent unauthorized write/delete access. The use of user ID and password by a user is on the client systems and thus is external to the system, so every user has its own view.

The server on which the database resides will have its own security. Only the admins and developers will have physical access (read, write, update, and delete) to the machine and the program on it.

3.3.4 Software Quality Attributes

- **Portability**:
  Developer Perspective: A portable application that can run across different platforms with minimal modification. This reduces the effort required for platform-specific development and maintenance. We use a scripting language (python) that support this characteristic. User Perspective: Users appreciate the ability to access the application from various devices and operating systems, ensuring a consistent experience whether they are on a desktop, laptop, or tablet.
- **Reusability**:
  Developer Perspective: Developers benefit from reusable code components that save time and effort in future projects. Well-documented and modular code makes it easier for developers to understand and reuse each component.
- **User-friendliness**:
  A user-friendly application is designed with the user's experience in mind, providing an intuitive interface, clear navigation, and overall ease of use. This approach ensures that individuals with varying levels of technical proficiency, including the elderly or those less familiar with technology, can comfortably and effectively interact with the application.

3.4 Logical database requirements

3.4.1 ER Model
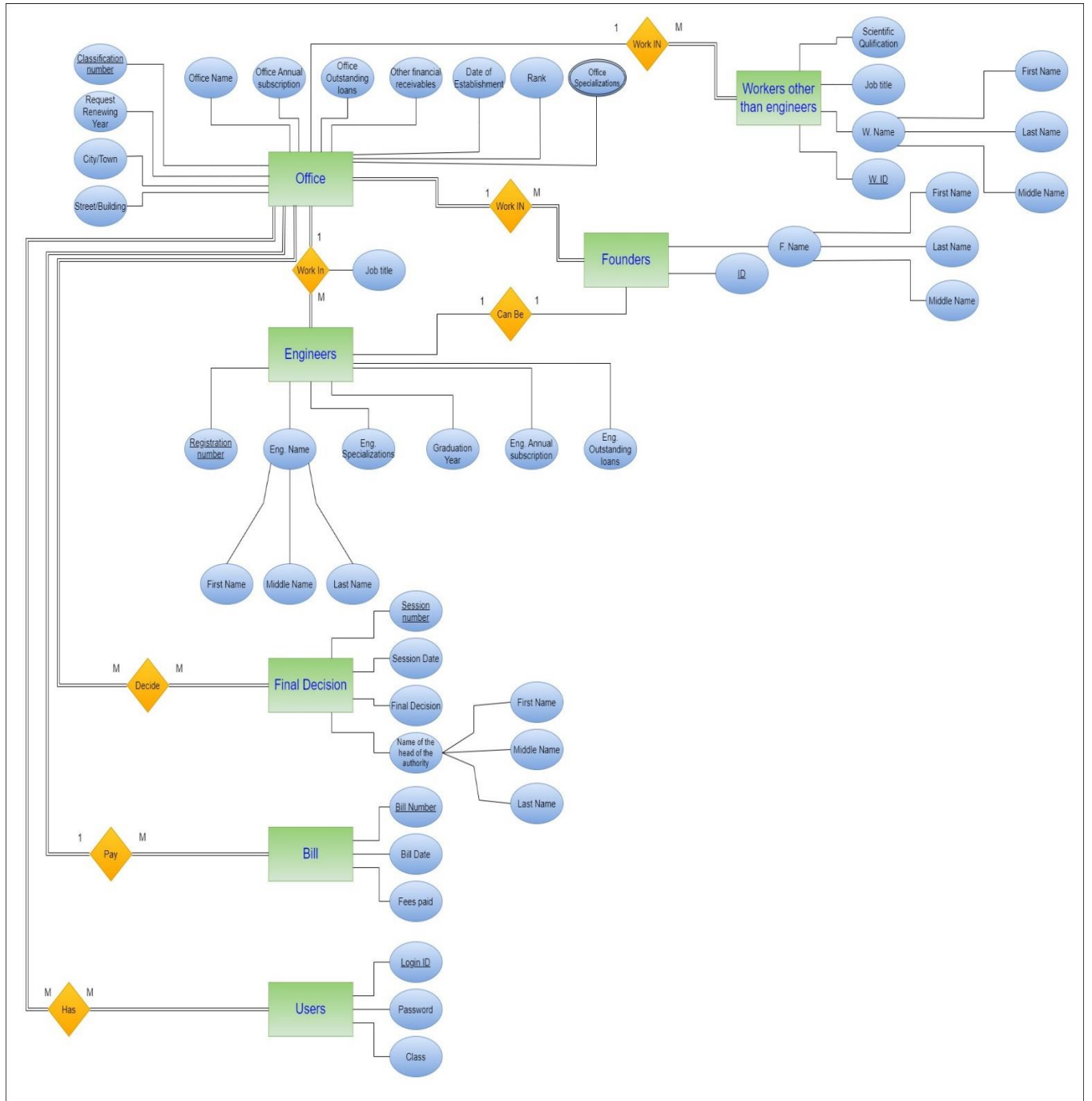
3.4.2 The data descriptions of each of these data entities is as follow

I.   Office Table: -

Data Item	Type	Description	Constraints
Office Name	Text	The name of the office	Not null
Classification Number	Number	Office classification number	Primary key
Office Specialization	Text	Like Civil, Architectural, Engineering	Not null
Rank	Text	Like Consulting office /primary /second/tertiary engineering office	Not null
Date of Establishment	Date	Establishment Date for the office DD/MM/YY	Not null
Request Renewing Year	Number	Request to renew office classification for the year...	Not null
Office Annual subscription	Number	Office annual subscription for the syndicate	-
Office Outstanding loans	Number	Unpaid loans owed by the office	-
Other financial receivables	Number	Other financial dues for the office	-

II.   Engineers Table: -

Data Item	Type	Description	Constraints
Registration Number	Number	Syndicate registration number for engineers	Primary key
Eng. First Name	Text	Engineer's first name	Not null
Eng. Middle Name	Text	Engineer's middle name	Not null
Eng. Last Name	Text	Engineer's last name	Not null
Eng. Specializations	Text	Like Civil/Architectural, Engineering	Not null
Graduation Year	Number	Engineer's graduation year from the university	Not null
Eng. Annual subscription	Number	Engineer's Annual subscription for syndicate	-
Eng. Outstanding loans	Number	Other financial dues for the engineers	-

Classification Number	Number	Office classification number	Foreign key, Not null
Job title	Text	Like Heads of specialty / Full-time engineers (other than heads of specialty)	Not null

III.   Founders Table: -

Data Item	Type	Description	Constraints
F. First Name	Text	Founder's first name	Not null
F. Middle Name	Text	Founder's middle name	Not null
F. Last Name	Text	Founder's last name	Not null
F. ID	Number	Founder ID number	Primary key
Classification Number	Number	Office classification number	Foreign key, Not null

IV.   Engineers – Founders (according to one-to-one relationship with both side partial participation): -

Data Item	Type	Description	Constraints
Eng. Registration Number	Number	Syndicate registration number for engineers	Primary key
Founder ID	Number	Founder ID number	Unique

V.   Workers other than engineers

Data Item	Type	Description	Constraints
W. First Name	Text	Worker's first name	Not null
W. Middle Name	Text	Worker's middle name	Not null
W. Last Name	Text	Worker's last name	Not null
W. ID	Number	Worker ID number	Primary key
Job title	Text	Like secretary	Not null
Scientific Qualification	Text	Diploma in secretarial	-
Classification Number	Number	Office classification number	Foreign key, Not Null

VI.   Final Decision Table: -

Data Item	Type	Description	Constraints
Session Number	Number	Decision session number	Primary key
Session Date	Date	Date of the session DD/MM/YY	Not null
Final Decision	BOOLEAN	Accepted / refused	Not null
Name of then Head of the Authority	Text	The Council of Engineering Offices and Companies Authority	Not null

VII.   Office – Final (according to many-to-many relationship): -

Data Item	Type	Description	Constraints
Session Number	Number	Decision session number	Primary key – composite, each of them is a foreign key
Classification Number	Number	Office classification number	

VIII.   Bill Table: -

Data Item	Type	Description	Constraints
Bill Number	Number	Receipt number	Primary key
Bill Date	Date	Receipt number DD/MM/YY	Not null
Fees paid	Number	The date the receipt was issued	Not null
Classification Number	Number	Office classification number	Foreign key, Not null

IX.   Users Table: -

Data Item	Type	Description	Constraints
Login ID	Number	Like 120…….	Primary key
Password	Text	Passcode	Not null

Class	Text	Like office official / The Council of Engineering Offices and Companies Authority	Not null

X. Office – Login: -

Data Item	Type	Description	Constraints
Login ID	Number	Like 120…….	Primary key - composite, each of them is a foreign key
Classification Number	Number	Office classification number	

❑ A, D and E parts solution in the above tables and ERD.

3.4.3 Frequency of use

There is a lot of data that can be accessed in terms of reading or modifying it and displaying information based on it, such as the name of the office, its classification number, the date of its establishment (office table), and the heads of the specialty, such as the year of graduation and registration number.

3.4.4 Accessing capabilities

The server on which the database resides will have its own security. Only the admins and developers will have physical access (read, write, update, and delete) to the machine and the program on it.

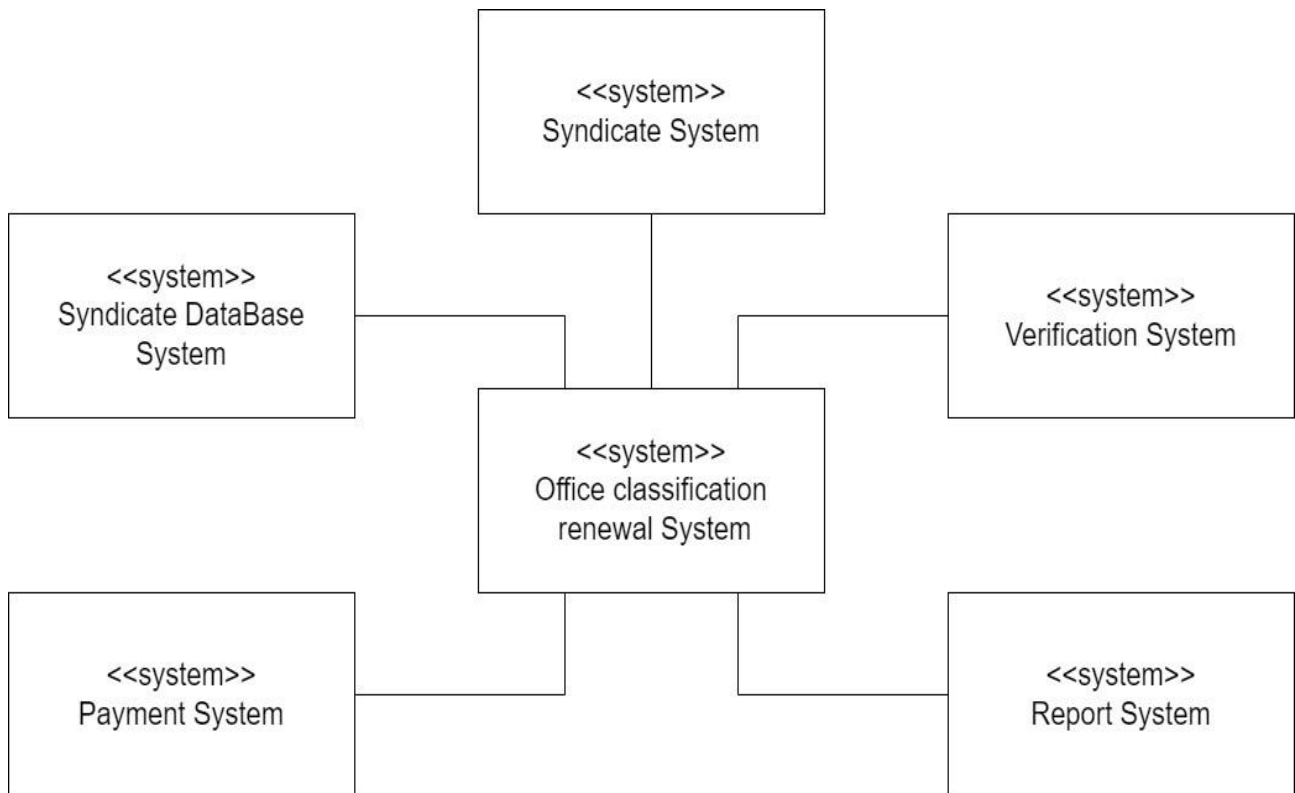Users can access their usage data through the graphical user interface that is displayed to them. Every user has his own view.

3.4.5 A Data retention requirements

Data related to the office classification renewal process, such as the date of issuance and the bill, is stored after the process is completed and accepted for a period of one year until the time for a new renewal request comes.

4. Architectural design.

4.1 Block diagram.

```
                        ┌─────────────────────┐
                        │     <<system>>      │
                        │   Syndicate System  │
                        └──────────┬──────────┘
                                   │
┌─────────────────────┐           │           ┌─────────────────────┐
│     <<system>>      │           │           │     <<system>>      │
│  Syndicate DataBase │───────┐   │   ┌───────│  Verification System│
│       System        │       │   │   │       │                     │
└─────────────────────┘       │   │   │       └─────────────────────┘
                        ┌──────┴───┴───┴──────┐
                        │     <<system>>      │
                        │ Office classification│
                        │   renewal System    │
                        └──────┬───────┬──────┘
┌─────────────────────┐       │       │       ┌─────────────────────┐
│     <<system>>      │───────┘       └───────│     <<system>>      │
│   Payment System    │                       │    Report System    │
└─────────────────────┘                       └─────────────────────┘
```

4.2 Text description.

Components:

Syndicate System: This component contains laws, rules and conditions for Office Classification Renewing.

Syndicate Database System: This central component stores and manages syndicate-related data, including information about syndicates, members, activities, and transactions.

Verification System: This component is responsible for verifying correctness of data exsisted in the system and the constraints on it provided by Syndicate system, ensuring data integrity and security.

Office Classification Renewal System: This system focuses on managing the renewal of office classifications.

Payment System: This component handles financial transactions within the Syndicate System, processing payments for fees, services, or other syndicate-related activities.

Report System: This component generates reports based on syndicate data, for analysis, decision-making, record-keeping, or compliance purposes.

Relationships:

Syndicate Database System: It interacts with all other components, storing, providing and receiving data as needed for verification, payment processing, report generation, and office classification renewal.

Verification System: It interacts with the Syndicate Database System to access and verify syndicate information, responsible for verifying correctness of data existed in the system and the constraints on it provided by Syndicate system, ensuring data accuracy and preventing unauthorized access.
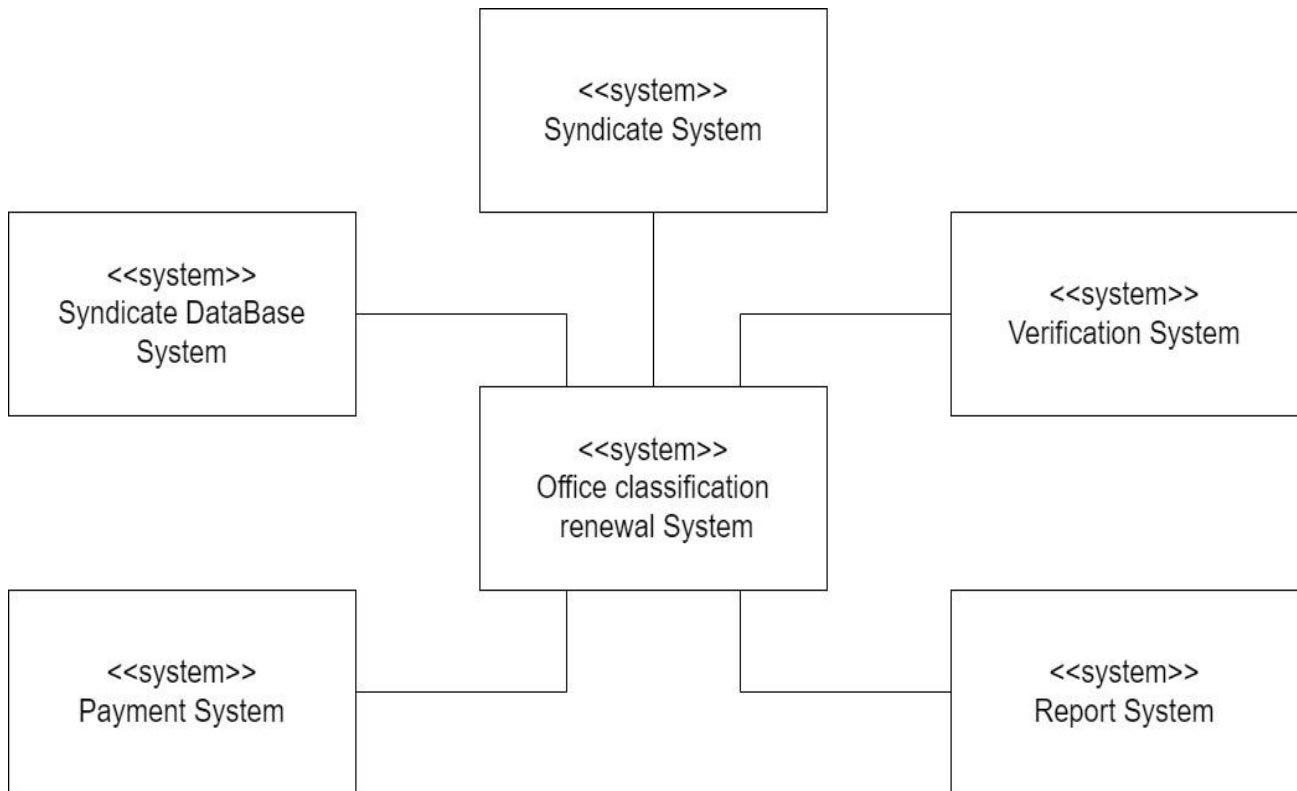
Payment System: It interacts with the Syndicate Database System to access Office Classification Renewal information for payment processing and updates financial records within the database.

Report System: It interacts with the Syndicate Database System to retrieve data for report generation, providing insights for decision-making and administrative tasks.

Office Classification Renewal System: The request process cannot be started without paying the fees through the payment system, the system accesses and update syndicate Database system, it takes rules and laws from Syndicate System, data existed in it checked by Verification System and generate reports based on data and decisions.
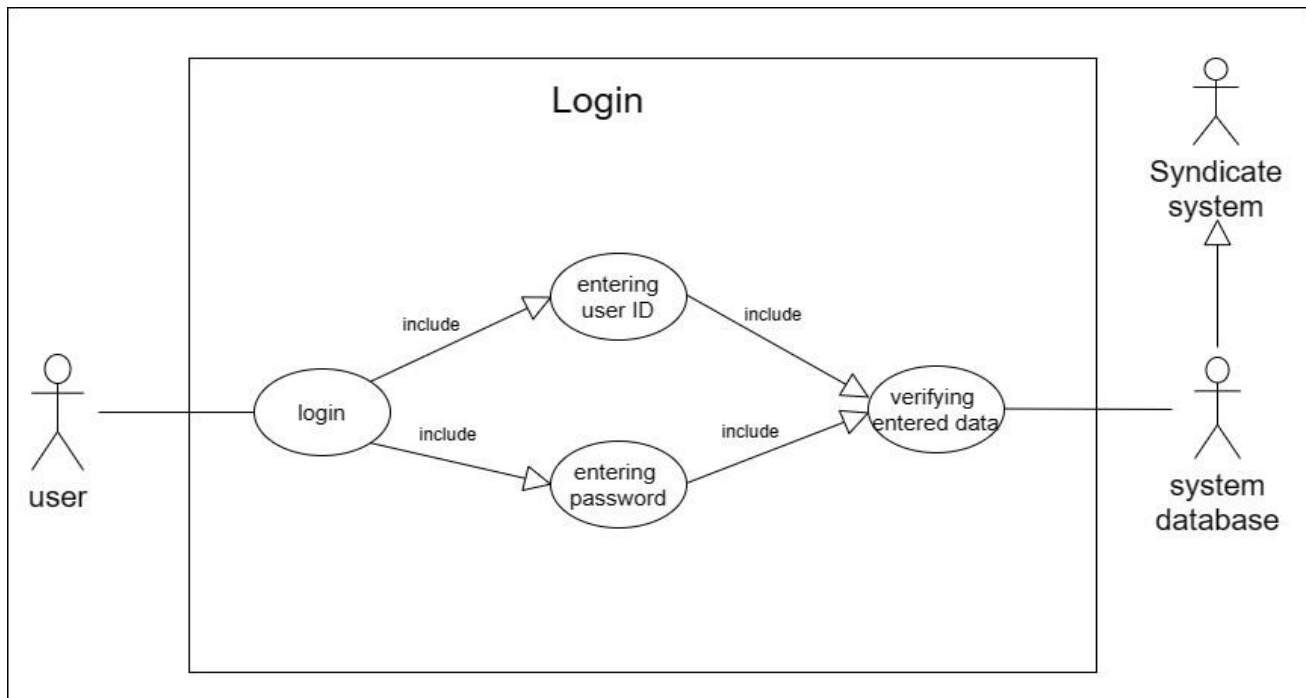
5. System Models

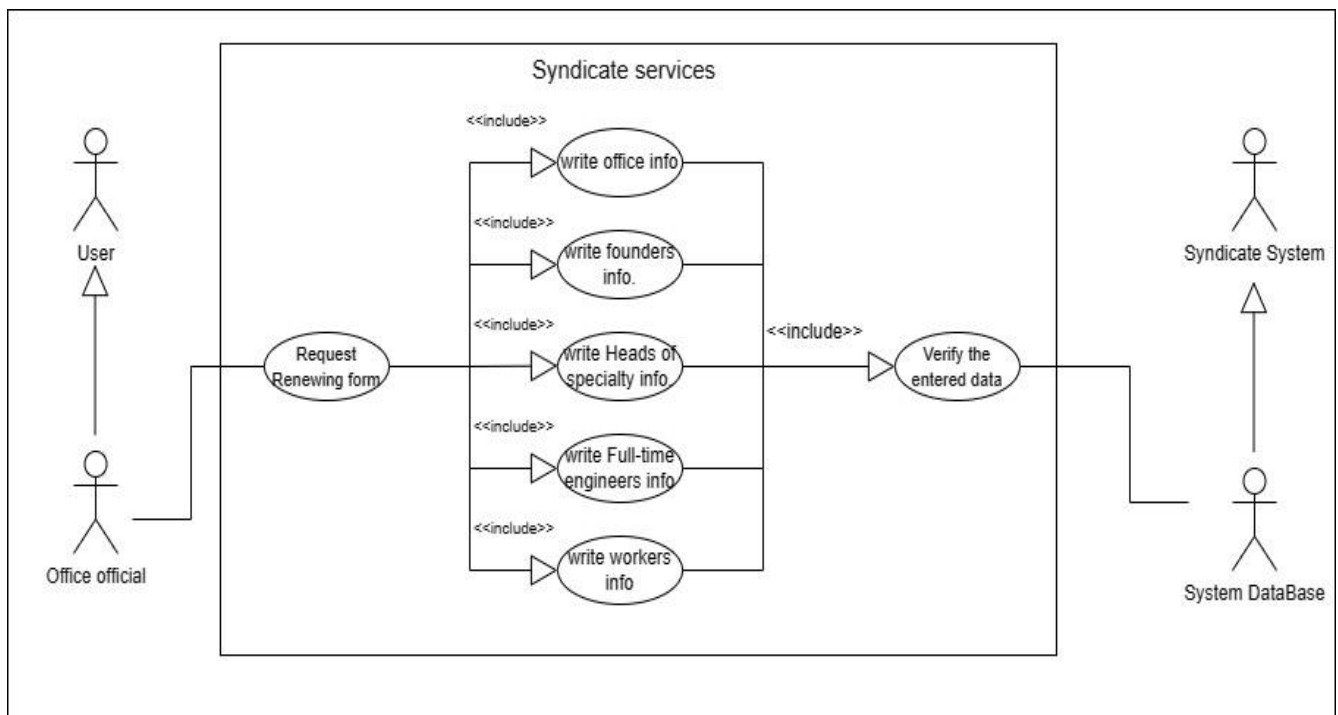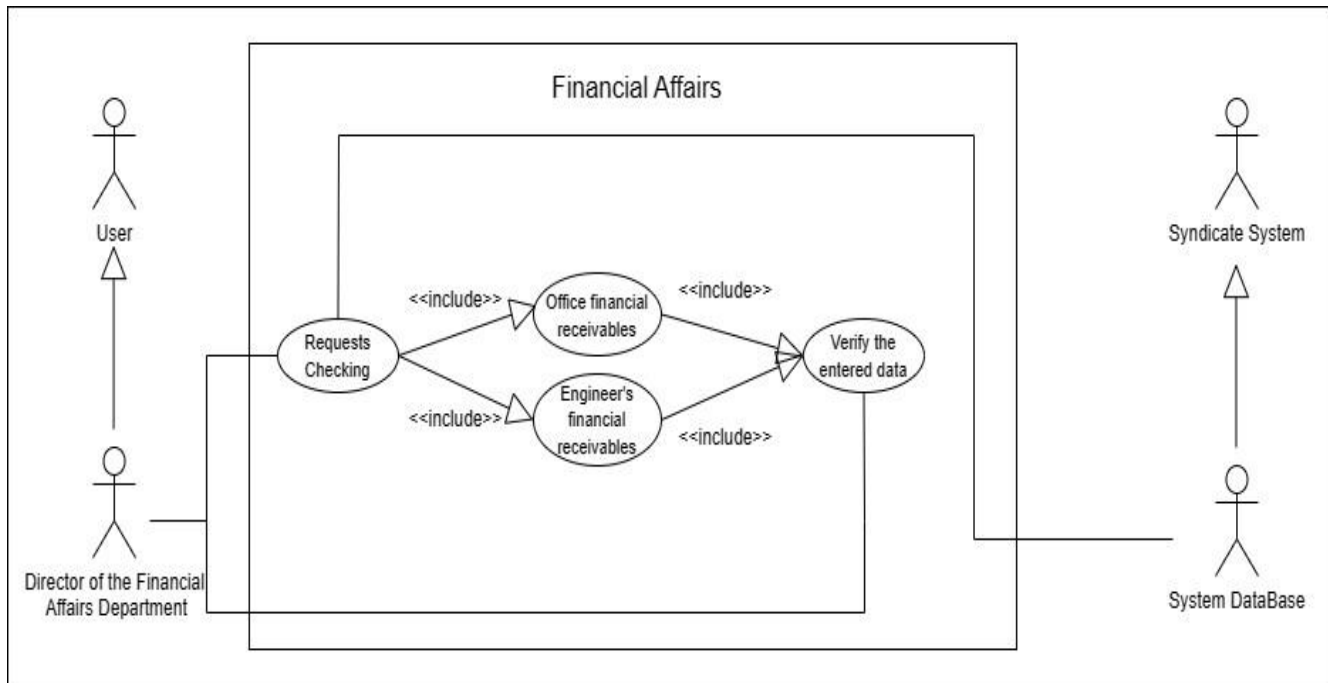## 5.1 Block diagram (context model)

```
                    ┌─────────────────────┐
                    │     <<system>>      │
                    │  Syndicate System   │
                    └──────────┬──────────┘
                               │
┌─────────────────────┐       │       ┌─────────────────────┐
│     <<system>>      │       │       │     <<system>>      │
│  Syndicate DataBase ├───┐   │   ┌───┤ Verification System │
│       System        │   │   │   │   │                     │
└─────────────────────┘   │   │   │   └─────────────────────┘
                          └───┴───┘
                    ┌─────────────────────┐
                    │     <<system>>      │
                    │ Office classification│
                    │   renewal System    │
                    └──┬───────────────┬──┘
┌─────────────────────┐│               │┌─────────────────────┐
│     <<system>>      ││               ││     <<system>>      │
│   Payment System    ├┘               └┤   Report System     │
│                     │                 │                     │
└─────────────────────┘                 └─────────────────────┘
```
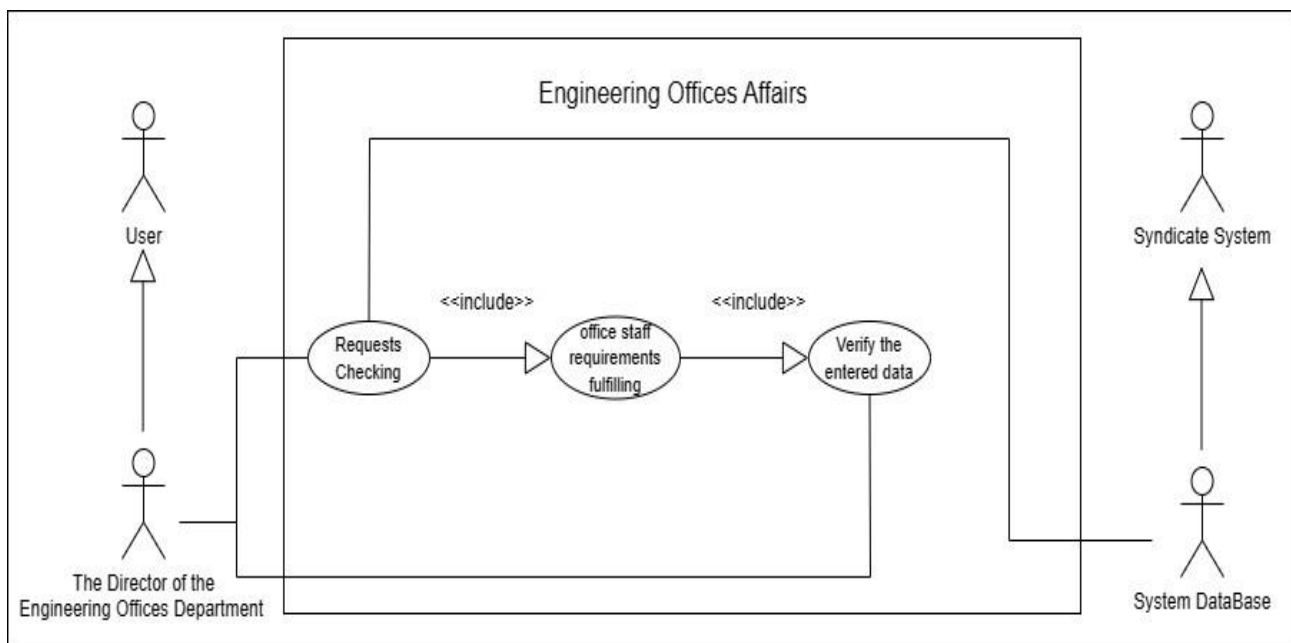
5.2 Use cases

5.2.1 Login use case

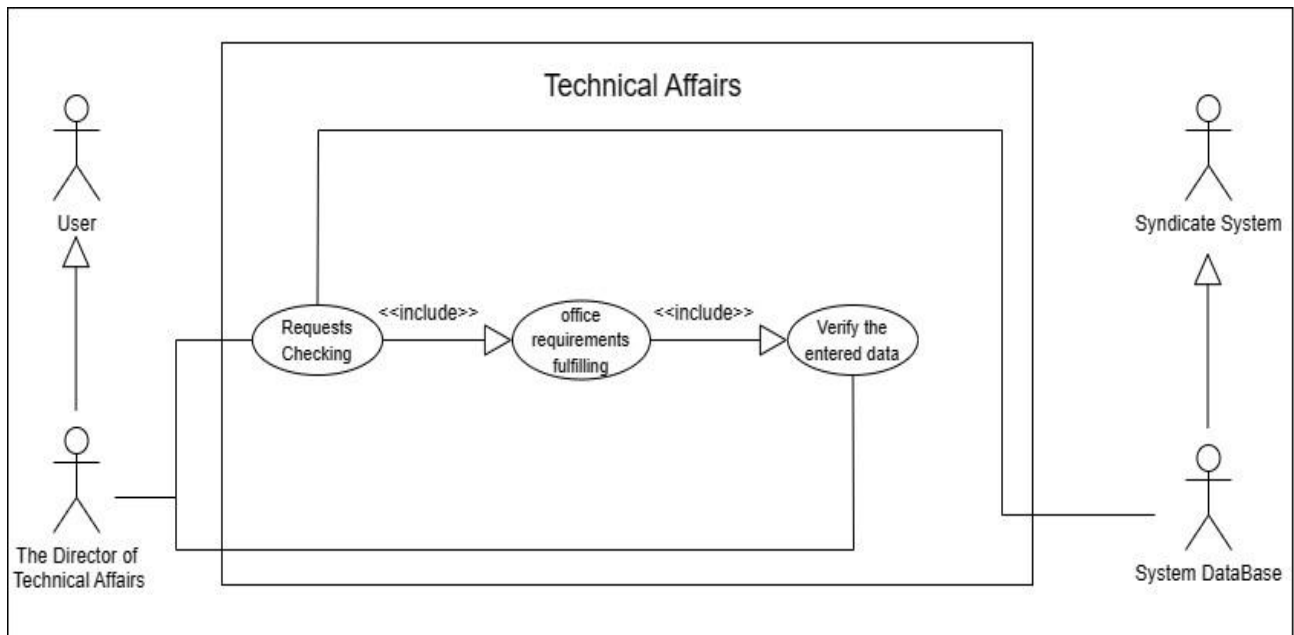### 5.2.2 Office official use case
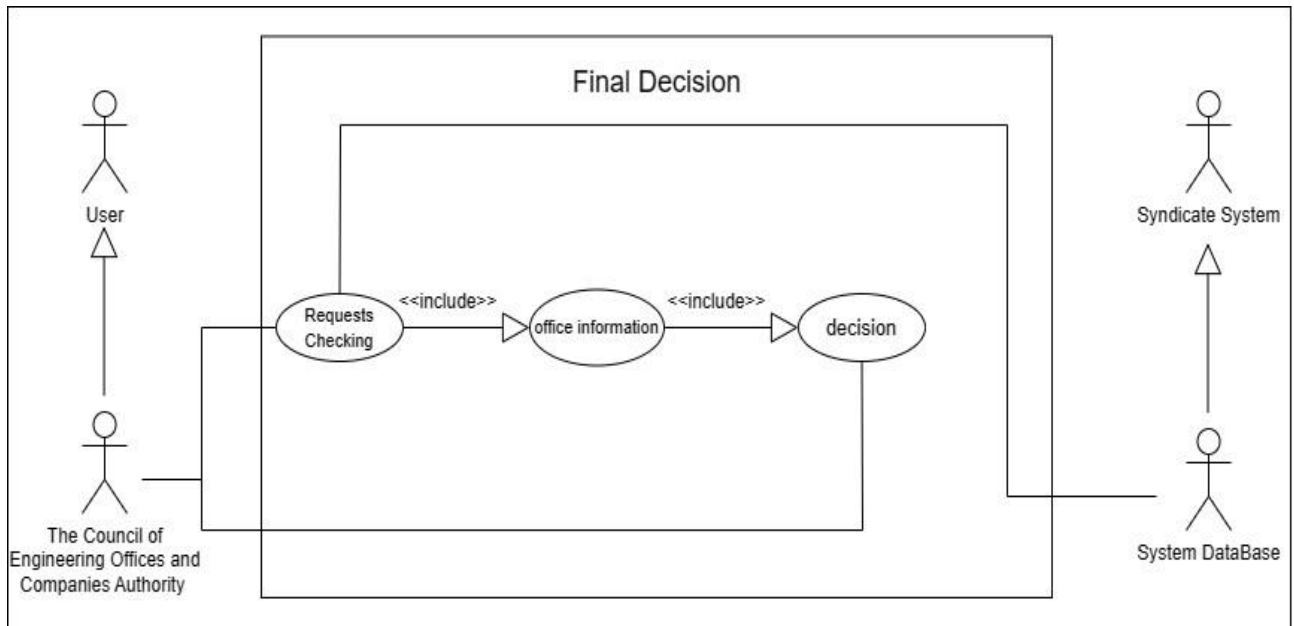
5.2.3 Financial Affairs Department Use case

5.2.4 Engineering Offices Department Use case

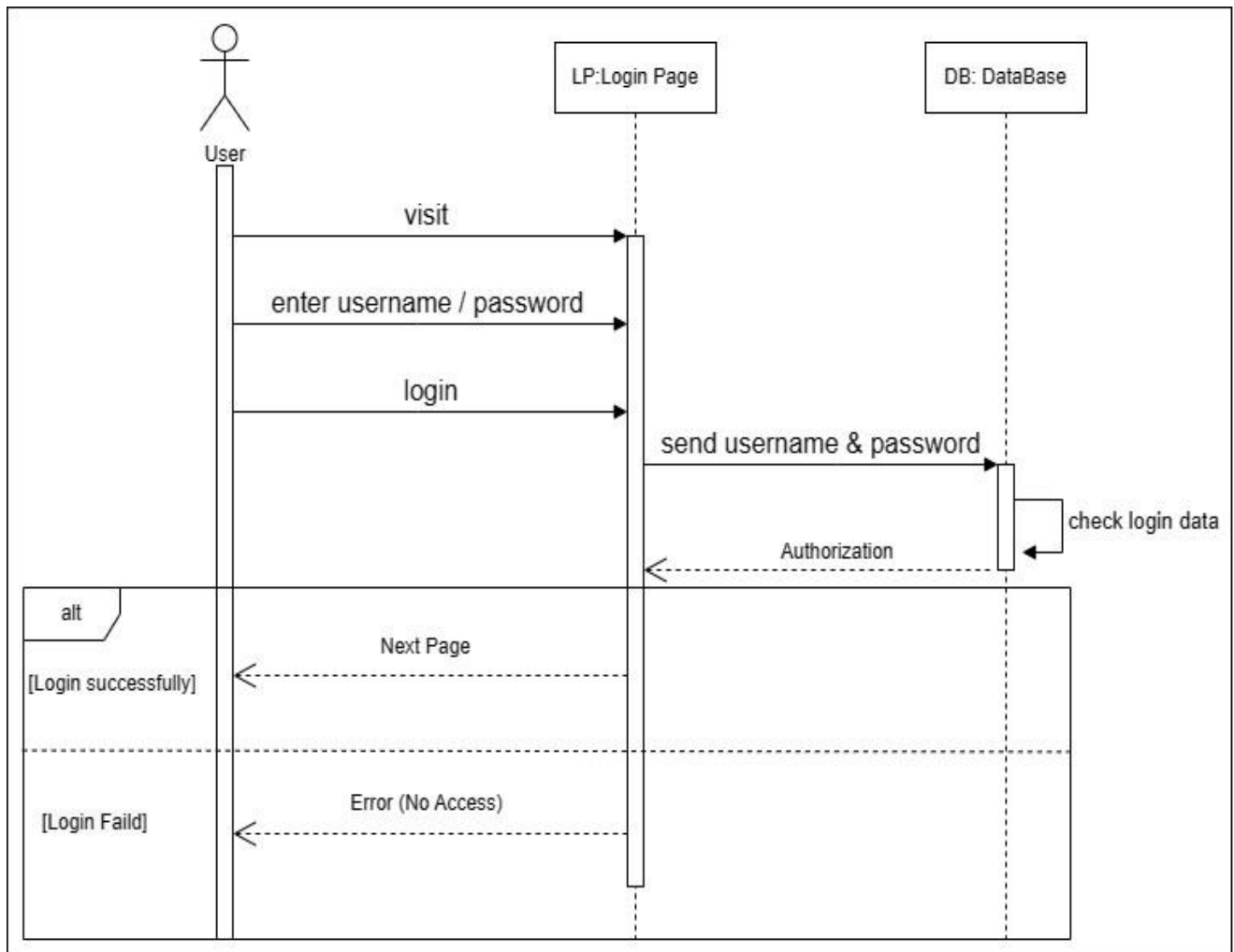### 5.2.5 Technical Affairs Use case

5.2.6 Engineering Offices and Companies Authority Use case
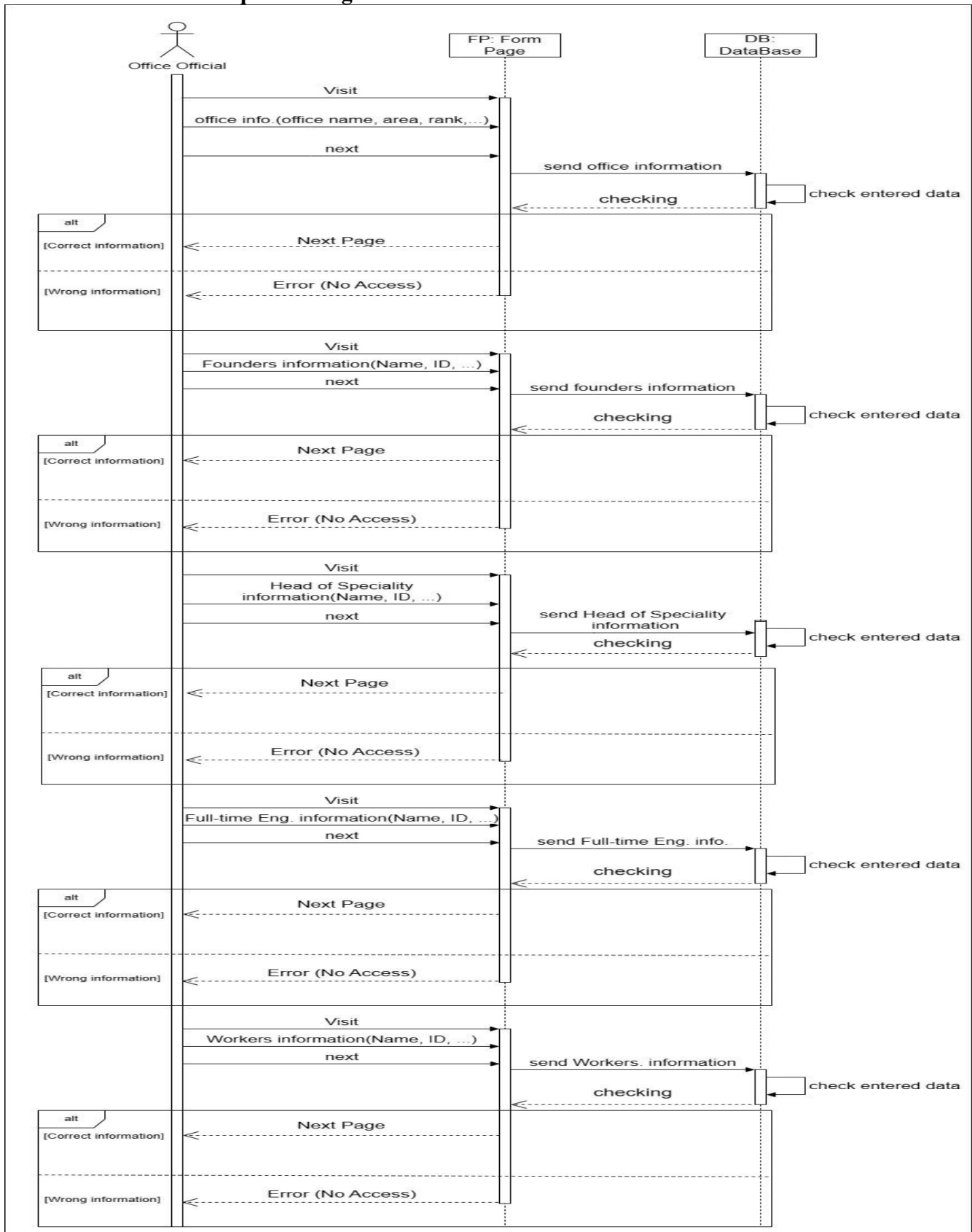
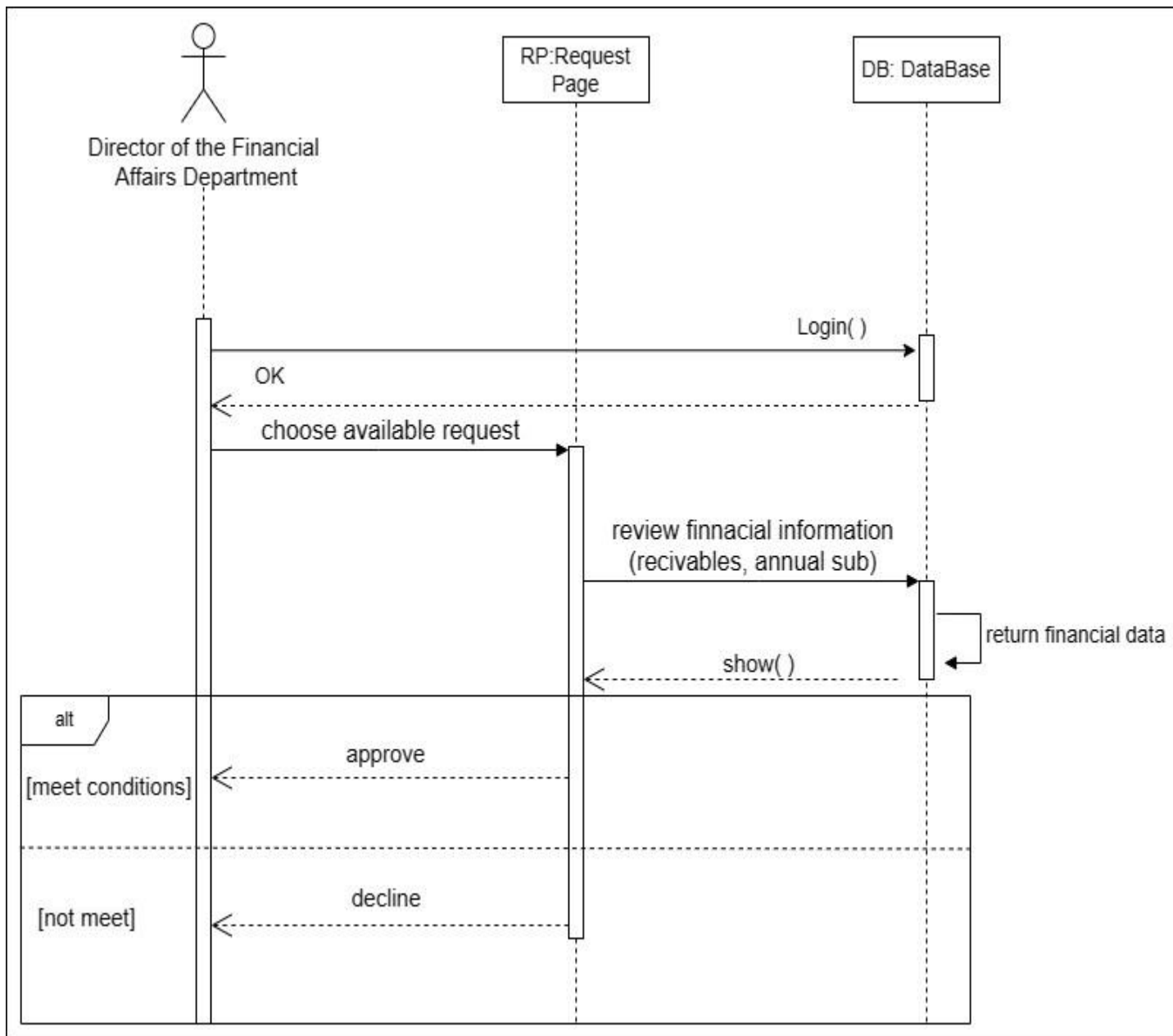## 5.3 Sequence diagram for every use case

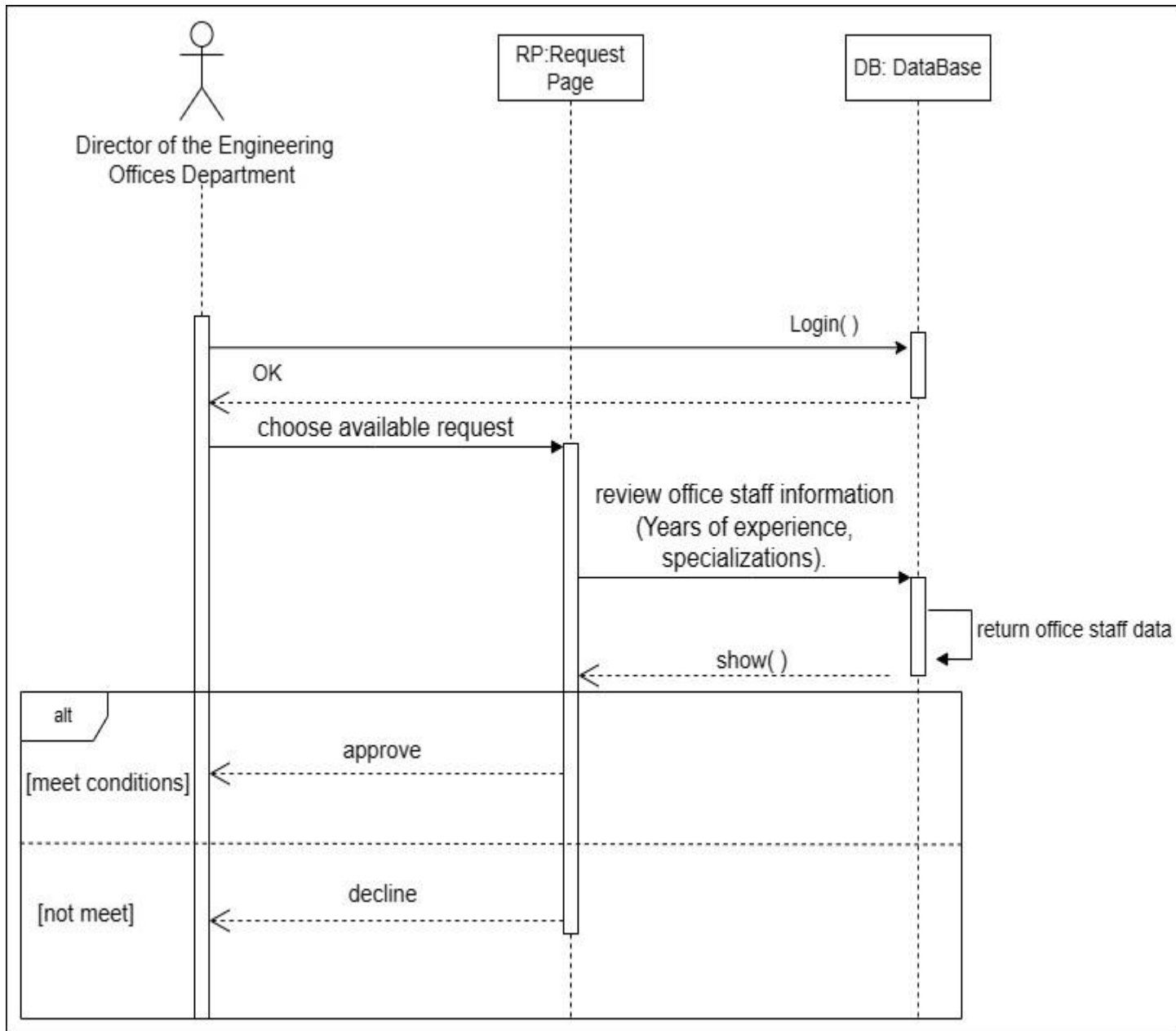### 5.3.1 Login sequence diagram

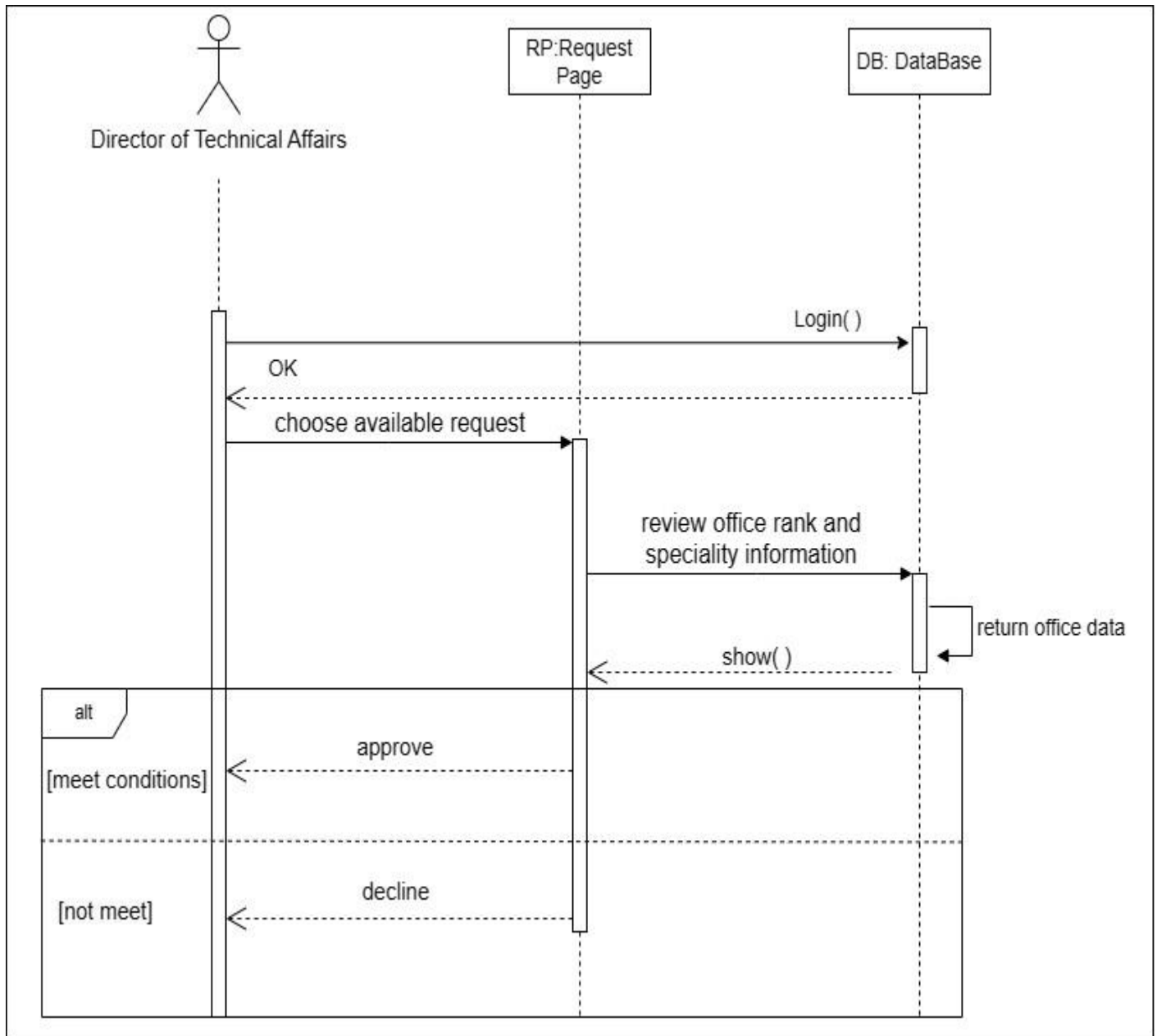## 5.3.2 Office official sequence diagram

5.3.3 Financial Affairs Department sequence diagram
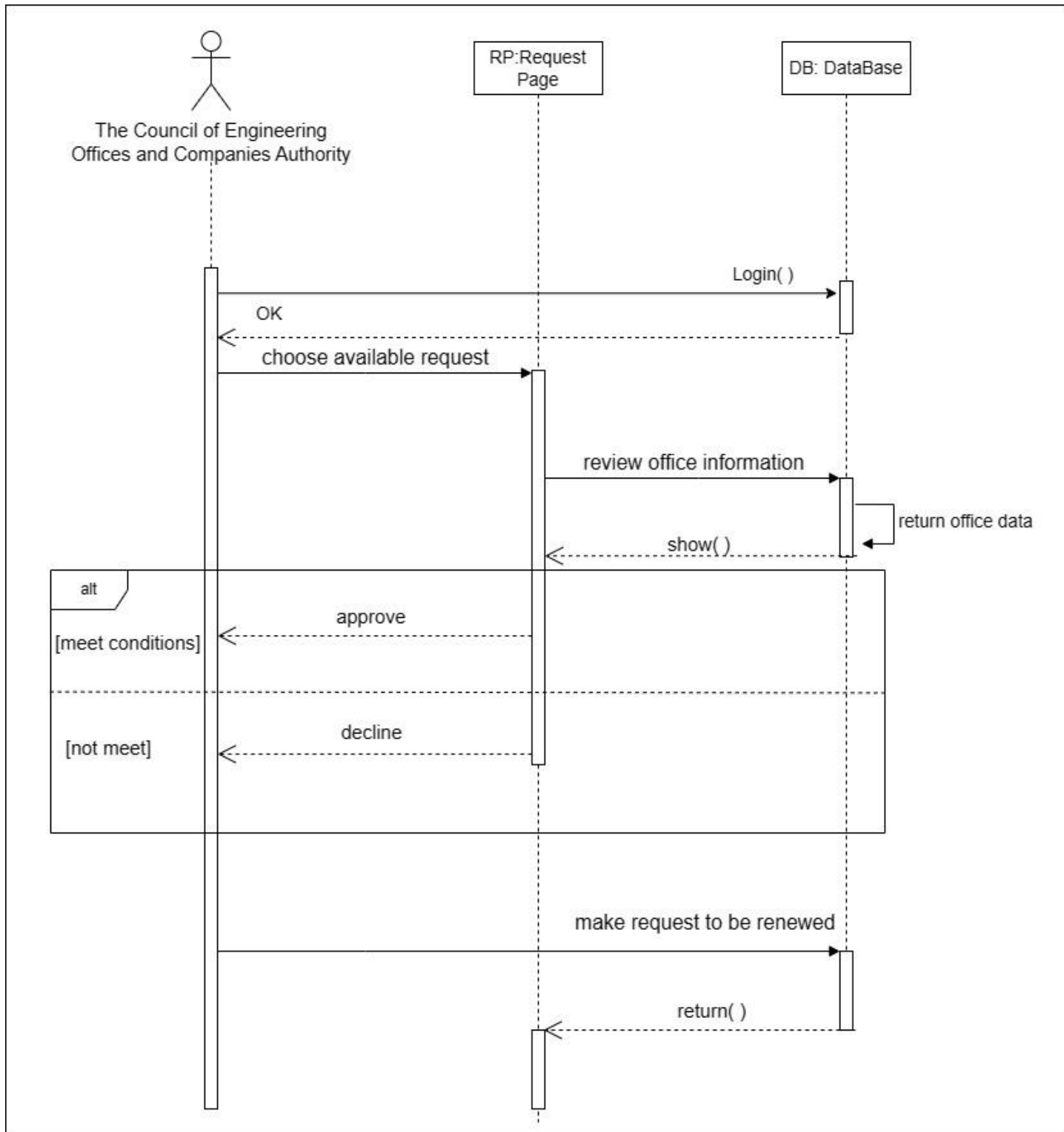
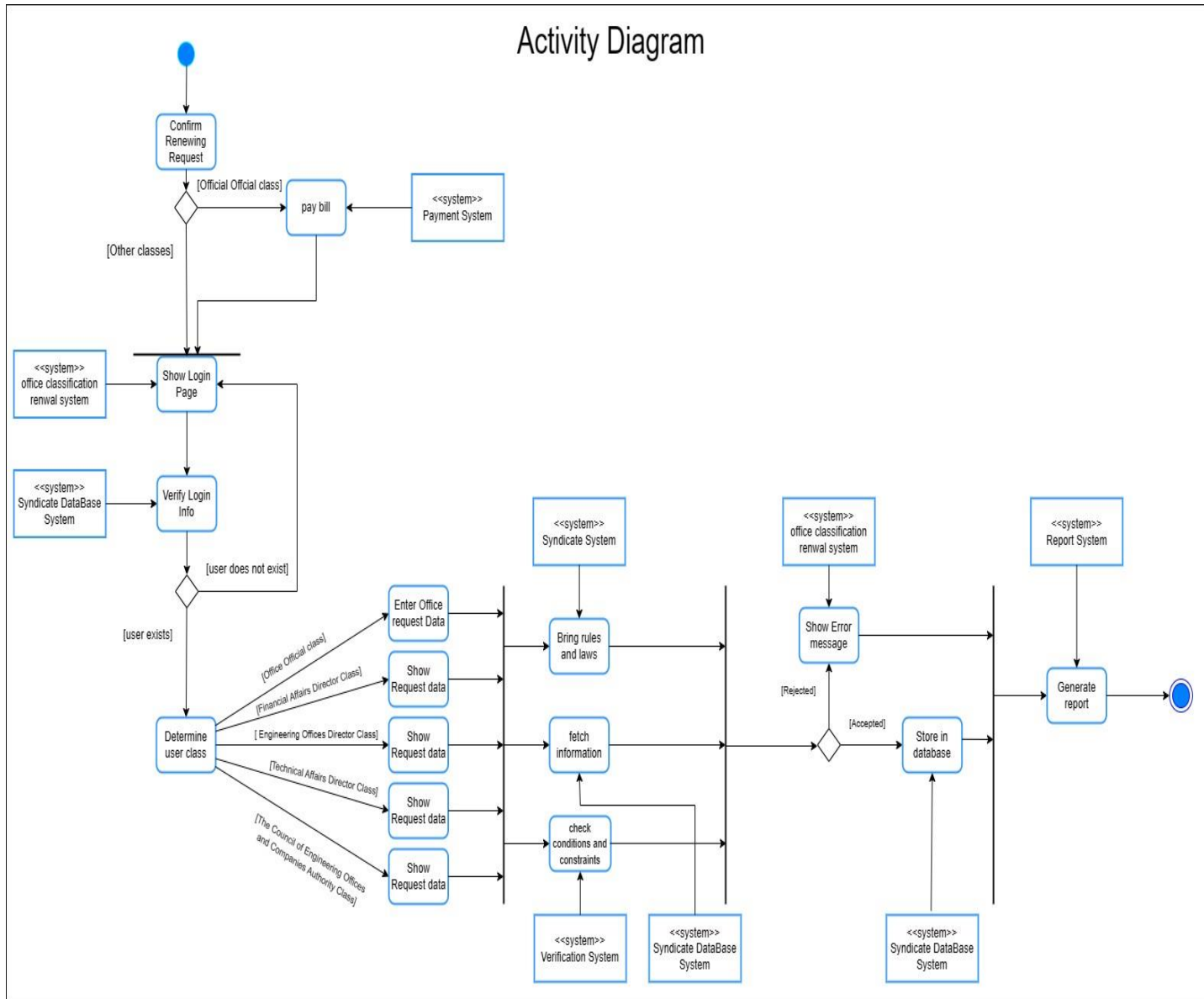### 5.3.4 Engineering Offices Department sequence diagram

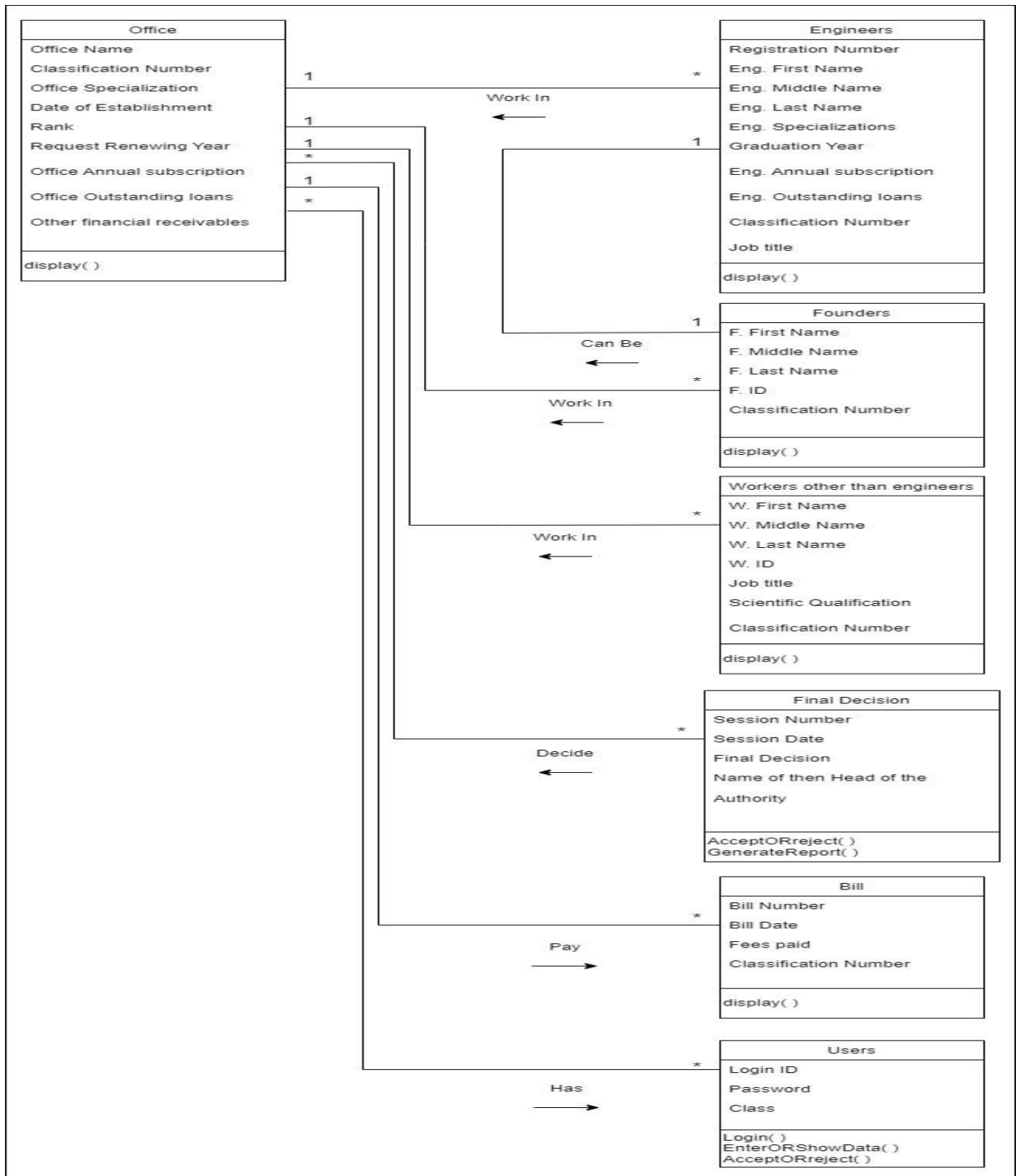### 5.3.5 Technical Affairs sequence diagram

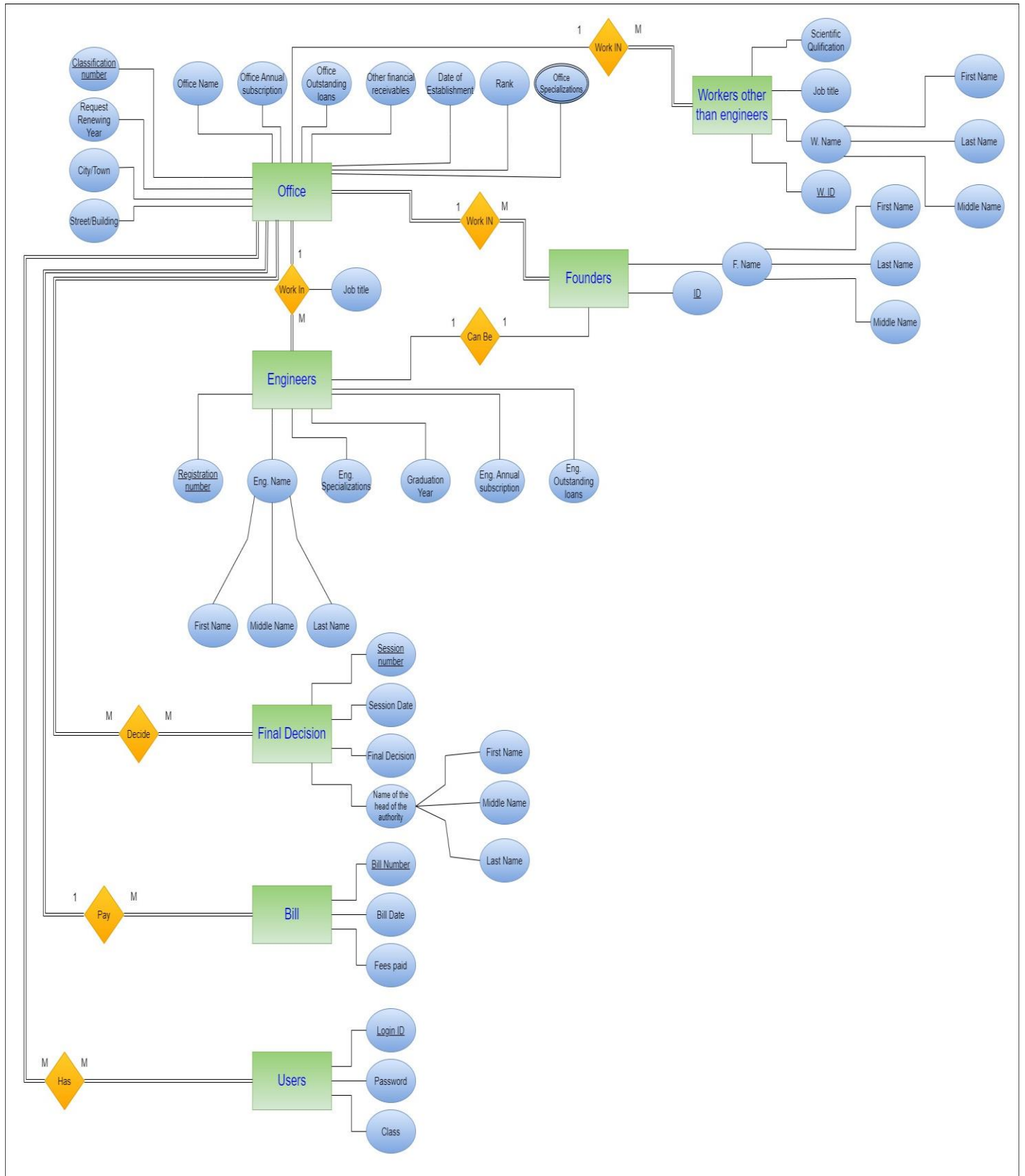### 5.3.6 Engineering Offices and Companies Authority sequence diagram

5.4 Activity diagrams

Activity Diagram

5.5 Class diagrams

Office
Office Name
Classification Number
Office Specialization
Date of Establishment
Rank
Request Renewing Year
Office Annual subscription
Office Outstanding loans
Other financial receivables

display( )

Engineers
Registration Number
Eng. First Name
Eng. Middle Name
Eng. Last Name
Eng. Specializations
Graduation Year
Eng. Annual subscription
Eng. Outstanding loans
Classification Number
Job title

display( )

1 — Work In — *

1
1
*
1
*

1

Founders
F. First Name
F. Middle Name
F. Last Name
F. ID
Classification Number

display( )

1
Can Be

*
Work In

Workers other than engineers
W. First Name
W. Middle Name
W. Last Name
W. ID
Job title
Scientific Qualification
Classification Number

display( )

*
Work In

Final Decision
Session Number
Session Date
Final Decision
Name of then Head of the
Authority

AcceptORreject( )
GenerateReport( )

*
Decide

Bill
Bill Number
Bill Date
Fees paid
Classification Number

display( )

*
Pay

Users
Login ID
Password
Class

Login( )
EnterORShowData( )
AcceptORreject( )

*
Has

5.6 ER Diagram

6. Software Evolution

In the dynamic field of software engineering, our project, "Renewing the Classification of Engineering Offices," embodies the essence of software evolution. Through strategic measures, we ensure the longevity, security, and efficiency of our system.

Client-Server Architecture with UDP:

- Enables real-time communication and responsiveness.
- Lays the foundation for adaptability and scalability.

Improving System Database Security:

- Incorporates encryption, multi-factor authentication, and access controls.
- Shields sensitive information and aligns with compliance standards.

Improving System Database Recovery:

- Implements a comprehensive strategy with regular backups and transaction logs.
- Minimizes downtime and ensures swift recovery from disruptions.

Using Indexing Techniques for Database Efficiency:

- Leverages advanced indexing for faster query execution and improved scalability.
- Maintains optimal performance as the dataset grows.

Our software evolution strategy goes beyond immediate needs, embracing a proactive stance for the future. The integration of a client-server architecture with UDP, fortified database security, recovery strategies, and advanced indexing reflects our commitment to a system that stands the test of time, ensuring continuous improvement and adaptability to evolving engineering office requirements.