Al Maaref University

Faculty of Sciences
Department of Computer Science

CSC 470 – Software Engineering

Al Mahdi Schools English Teachers Management System

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Presented to:
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PHASE 0: INFORMATION SYSTEM SERVICE

Executive Sponsor: Fatima Khadra
Title: Al Mahdi Schools English Teachers Management System

Submitted by: Fatima Khadra
Title: Programmer
Request Date: Decemeber-16-2022

Type of service requested:

- ☐ **New** Development

COMPANY BACKGROUND AND HISTORY:

The institute requesting this management system is an educational institute. It has many schools in different branches all across Lebanon. The institute wants to organize the data of its English teachers for easier accessibility. In this project, I will collect and analyze the requirements demanded by this institute and design its management system.

STATEMENT OF PROBLEMS, OPPORTUNITIES, OR DIRECTIVES:

Teacher's data and information are being saved manually and archived in papers. With the rapid increase of number of teachers, this strategy wastes time, consumes so much effort and is impractical in saving big data.

So, we aim to automate the data entry and to organize the data storage in a database. This enables more efficient interaction between the user and the data as well as save time and energy.

DESCRIPTION OF YOUR EXPECTED SOLUTION:

The designed management system will make adding and modifying data more feasible, organized and easy for the administrator to apply. Also, the system will organize the data to be easier to access and view.

PHASE I: PROBLEMS STATEMENT

PART 1 - PROBLEMS STATEMENT

Problem	Effects	System Objective
Searching for any teacher's data in the archive manually.	Wasting time.	System's search feature saves time and searches more efficiently.
Adding many records at the same time manually in wide spreadsheets.	Prone to errors.	System's friendly user interface and well-defined fields make it easier to enter data efficiently and more rapidly.
As data increases, more space for manual archives and softcopy spreadsheets are required.	Financially expensive to find physical space and buy hardware components.	System's connection to a scalable database that can save thousands of records.

STAKEHOLDERS

Name	Responsibility
Administrator	**1. View, search and filter records.** **2. Add new records, edit or delete others.** **3. Export data to excel sheets.**

PHASE II: PROJECT MANAGEMENT

PART 1 - SCHEDULE REPRESENTATION

1. **Deliverability Period**: 25-Dec-2023
2. **Project Tasks**:

Task No.	Task Description	Task Duration (days)	Dependencies
A	Requirements Gathering	7	
B	Risk Analysis	5	
C	Requirements Specification	5	A
D	Software Design	10	C
E	Software Modelling	10	C
F	Writing the Report	5	

PART 2 - GANTT CHART

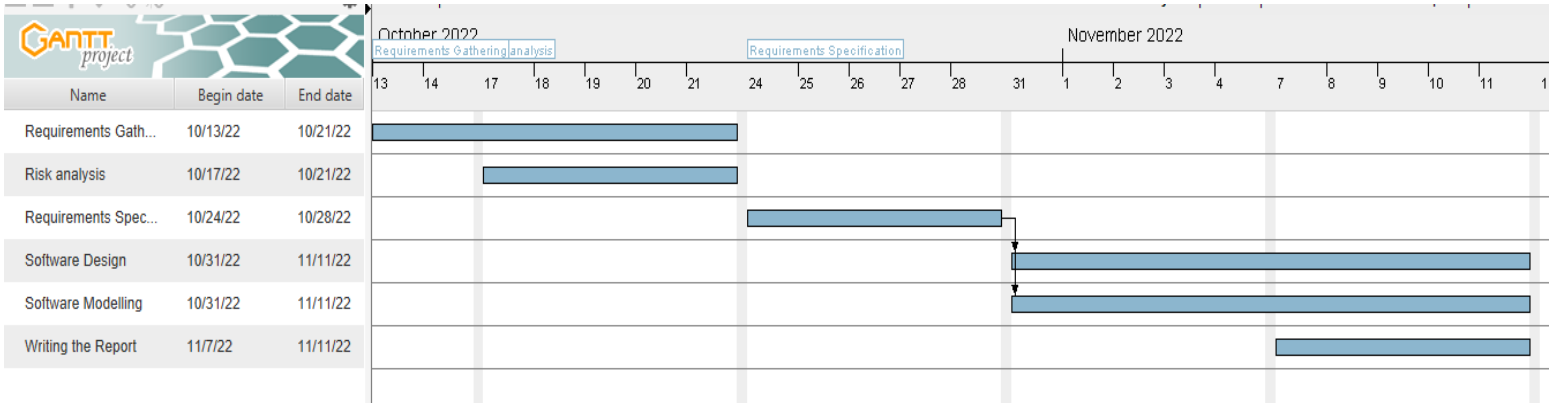

Figure 1. The Gantt chart of the project's tasks

PHASE III: RISK MANAGEMENT

PART 1 - RISKS IDENTIFICATION

Risk	Category	Type	Description
Changes in requirements	Product and project	Requirements	A lot of changes in requirements which is hard to anticipate.
UI design delay	Project and product	Requirements	Delay in the design of the interface required to launch working.
Lagging in database transactions	Product	Technology	The database couldn't apply as many transactions per second as expected.
Staff sick leave	Project	People	A professional and well experienced team member will leave before the project is finished.
Sponsor financial problems	Project	Organizational	The project's sponsor faces a financial problem where it couldn't afford the budget set for the project.
The client's company is restructured	Project	Organizational	The institute demanding the system is restructured so the new members have different and new perspectives and needs from the system.

PART 2 - RISKS ASSESSMENT

Risk	Probability	Effect
Change in requirements is causing major design rework	Moderate	Serious
The database couldn't apply as many transactions per second as expected.	Moderate	Serious
Delay in the design of the interface required to launch working.	Low	Serious
A professional and well experienced team member will leave before the project is finished.	Moderate	Serious
The project's sponsor faces a financial problem where it couldn't afford the budget set for the project.	Low	Catastrophic
The institute demanding the system is restructured so the new members have different perspectives and needs from the system.	High	Serious

PART 3 - RISKS PLANNING

Risk	Strategy
UI design delay	Alert the team to the drawbacks and impact of such delay.
Changes in requirements	Derive traceability information to assess requirements change impact by maximizing information hiding in the design.
Sponsor financial problems	Prepare a document showing the importance and the contribution of this project to the business goals and how cutting the budget out from this project won't be cost-effective.

The client's company is restructured	Prepare a document showing the advantages and contribution of this project to the institute's evolvement.
Staff sick leave	Reorganize the team so that there's more overlap of work and members understand each other's work.
Lagging in database transactions	Investigate and well-study the plan of buying a higher-performance database.

PHASE IV: REQUIREMENTS ANALYSIS

PART 1 – LIST OF FUNCTIONAL REQUIREMENTS (FRS)

Requirements
1. The administrator shall be able to add for a new enrolled teacher its: first name, middle name, last name, date of birth, number of experiences, year joined, proficiency test name, proficiency test score, proficiency test date held, academic level, branch name, grades teaching, courses taken, performance grade and performance date.
2. The administrator shall be able to edit first name, middle name, last name, date of birth, number of experiences, year joined, proficiency test name, proficiency test score, proficiency test date held, academic level, branch name, grades teaching, courses taken, performance grade and performance date of any enrolled teacher.
3. The administrator shall be able to delete a teacher record by its first name, middle name and last name.
4. The administrator shall be able to search all records by entering one of these data fields: teacher's first name, last name, proficiency test grade, school branch, grade or cycle.
5. The administrator shall be able to filter the search results by choosing one of these options: the proficiency test score, proficiency test date, courses, school branch, grade or cycle.
6. The administrator shall be able to export search results into an excel sheet.
7. The administrator shall be able to add a school branch records: name, region, country, number of English teachers in and number of cycles in.
8. The administrator shall be able to edit school branch records by its number of English teachers in.
9. The administrator should delete school branches records by its name.

10. The administrator shall be able to add school Cycle records by its: name and grades included.
11. The administrator shall be able to delete school Cycles by its name.
12. The administrator shall be able to add offered courses by its: name, type, cycle and band.
13.The administrator shall be able to delete offered course by its: name.
14. The administrator shall be able to edit offered course by its: cycle or band.
15. The administrator shall be able to add performance records by its: date, performance in class, language in class.
16. The administrator shall be able to add grades by its name and number.
17. The administrator shall be able to delete grades by its name and number.
18. The administrator shall be able to add, edit or delete proficiency test by its name and date held.
19. The administrator shall be able to change its password.
20. When the administrator presses on change password button, the management system shall pop up a confirmation message.
21. The management system shall display a successful message after any add, edit or delete action.
22. The management system shall display an error message in case of any invalid input.

PART 2 – LIST OF NON-FUNCTIONAL REQUIREMENTS (NFRS) – PERFORMANCE CATEGORY

Requirements
1. The management system shall view search results within 2 seconds.

PART 3 – LIST OF NON-FUNCTIONAL REQUIREMENTS (NFRS) – QUALITY CATEGORY

Requirements	**Quality Attribute**
1. Only the administrator can access the management system.	Security

2. The password used for login must not contain $, %, &.	Security
3. The password used for login must contain only 3 numbers.	Security
4. The administrator can login 2 more times in case the first login failed.	Security
5. Each time the management system is to be accessed, the administrator shall login.	Security
6. The management system shall be available all days of the weeks except Sunday.	Availability
7. The administrator shall be able to use the management system after 3 hours training.	Usability

PART 4 – LIST OF NON-FUNCTIONAL REQUIREMENTS (NFRS) – CONSTRAINTS CATEGORY

Requirements
1. The management system shall be developed for Windows.
2. The management system shall only run-on desktops.

PHASE V: MODELING SYSTEM REQUIREMENTS

PART 1 - HIGH LEVEL BUSINESS OBJECTIVES, USER GOALS & SUB-FUNCTIONS

This management system aims to manage the data records of the teachers and make its access easier. This is done by giving the head department several roles that can be applied to this system such as adding records, deleting and editing others.

PART 2 – USE CASE GLOSSARY

Use Case Name	Use Case Description	Participating Actors
manage teachers	The administrator shall be able to add, edit or delete a teacher.	Administrator
manage school branch	The administrator shall be able to add, delete or edit a school.	Administrator
Manage grades	The administrator shall be able to add or delete grades records.	Administrator
manage cycle	The administrator shall be able to add or delete school's Cycles records: name, grades included.	Administrator
manage course	The administrator shall be able to add an offered course or delete or edit it by either its cycle or band.	Administrator
Add performance	The administrator shall be able to add performance records by its: date, performance in class, language in class.	Administrator

manage proficiency test	The administrator shall be able to add, edit or delete a proficiency test record.	Administrator
Search data	The administrator shall be able to search all records using the teacher's first, middle and last name, proficiency test grade, school branch, grade or cycle.	Administrator
Filter results	The administrator shall be able to filter results only if he searched for records.	Administrator
Export results	The administrator shall be able to export only the searched results into an excel sheet.	Administrator
Authenticate	The administrator shall be able to login to apply any edits to the database.	Administrator
Change password	The administrator shall be able to change password whenever needed.	Administrator

PART 3 – USE CASE DIAGRAM

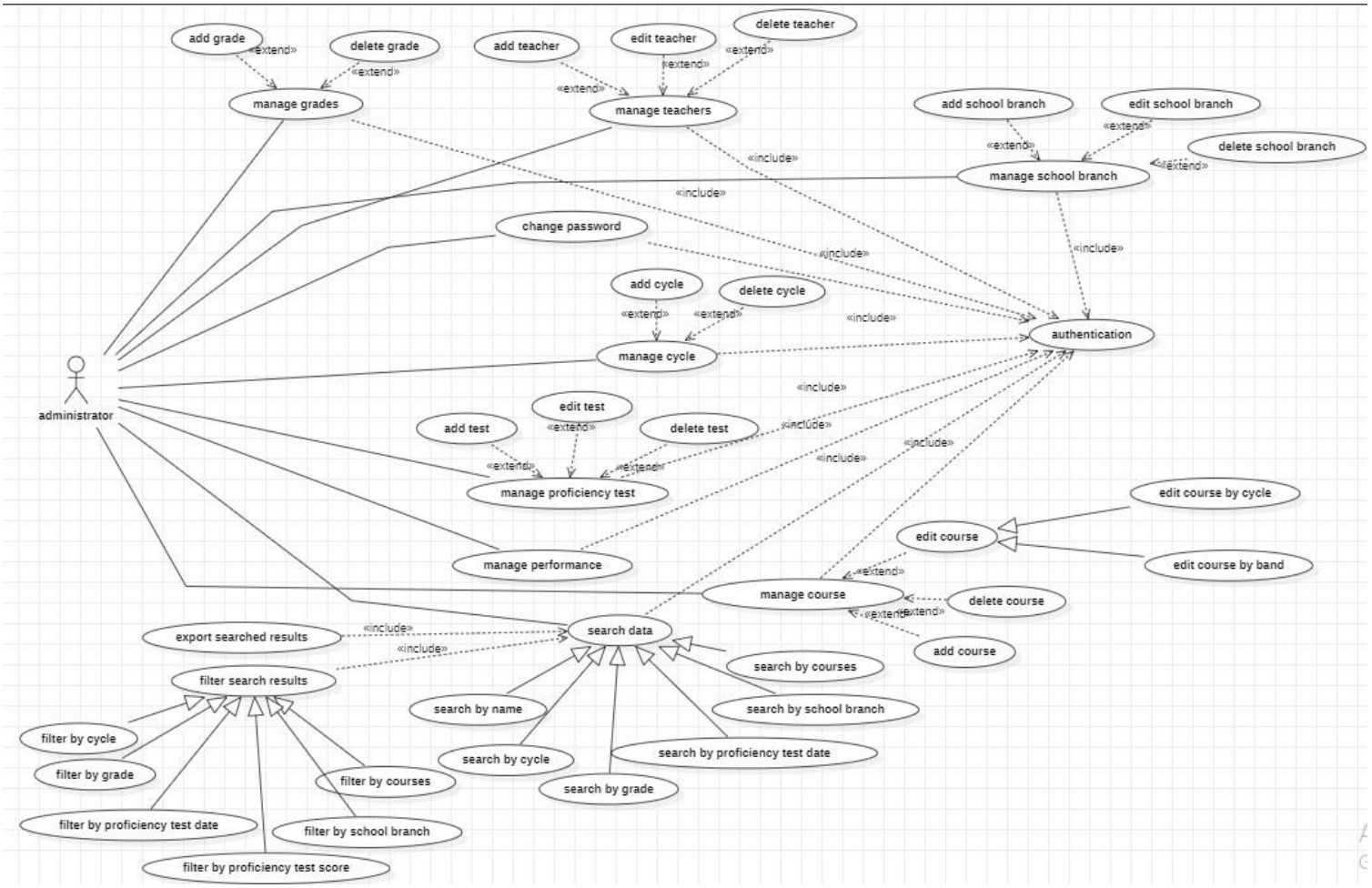

Figure 2. The use case diagram of the management system

PART 4 - SCENARIOS (USE CASE NARRATIVE)

Table 1. Scenario of adding a new teacher record

Scenario Name:	Adding a teacher
Participating Actors:	Administrator, management system
Description:	It shows how the administrator can add a new enrolled teacher
Entry conditions:	The administrator must be logged in
Flow of events:	**Administrator:** 1. The administrator will press on “Add teacher” from the home page. 2. Enter all the information about the teacher. 3. Press on “Add”. 4. Confirmation message pops up upon success. **System:** 1. Ask the user to enter the teacher’s information. 2. Check if the input is valid. 3. Check if the adding process is successfully accomplished.
Exit conditions:	The administrator added a new teacher to the database.
Exceptions:	The administrator entered invalid input; an error message will pop up. The administrator shall re-enter the data again. The system fails to add the teacher record to the database, the user must send an add request again.

Table 2. The scenario of filtering search results

Scenario Name:	Filter search results
Participating Actors:	Administrator
Description:	It shows how the administrator can filter search results based on different criteria.
Entry conditions:	The administrator must be logged in and applied a search
Flow of events:	1. The administrator will press on “Filter”. 2. Select a criterion: proficiency test score, proficiency test date, courses, school branch, grade and cycle.

	3. Choose the option from the dropdown list of the corresponding criteria. 3. Press on “Filter”. 4. Administrator can export the results to csv file.
Exit conditions:	The administrator filtered the search results for more specific results.
Exceptions:	-

PART 5 - CLASS DIAGRAM (NOUN/VERB ANALYSIS)

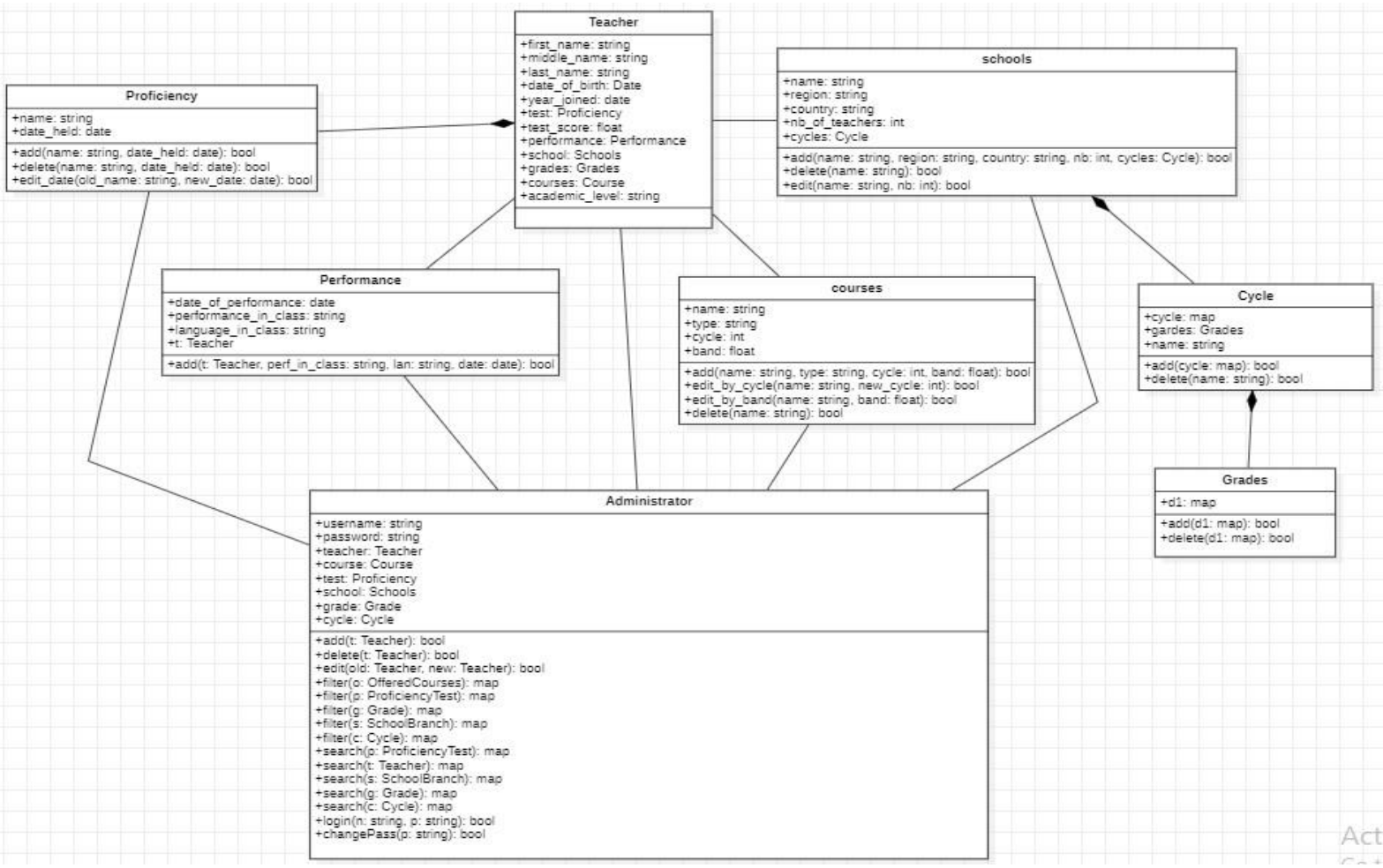

Figure 3. The class diagram of the management system

PART 6 - SEQUENCE DIAGRAMS

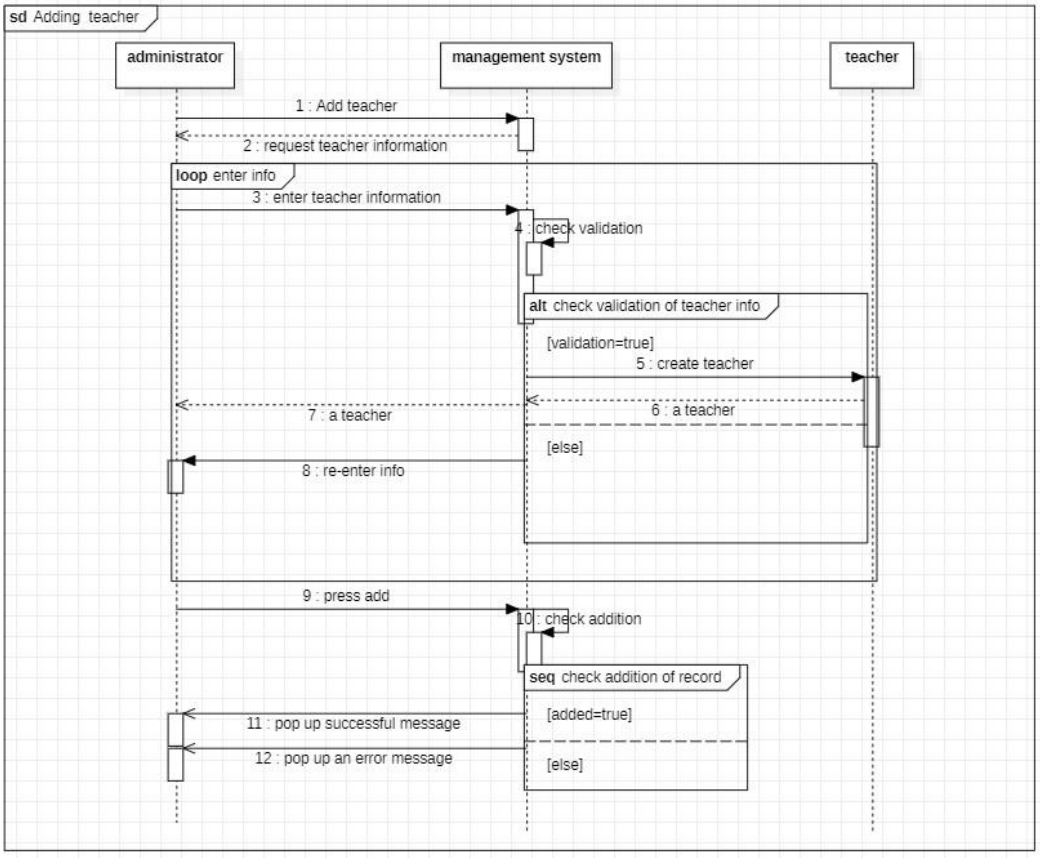

Figure 4. sequence diagram of adding a teacher

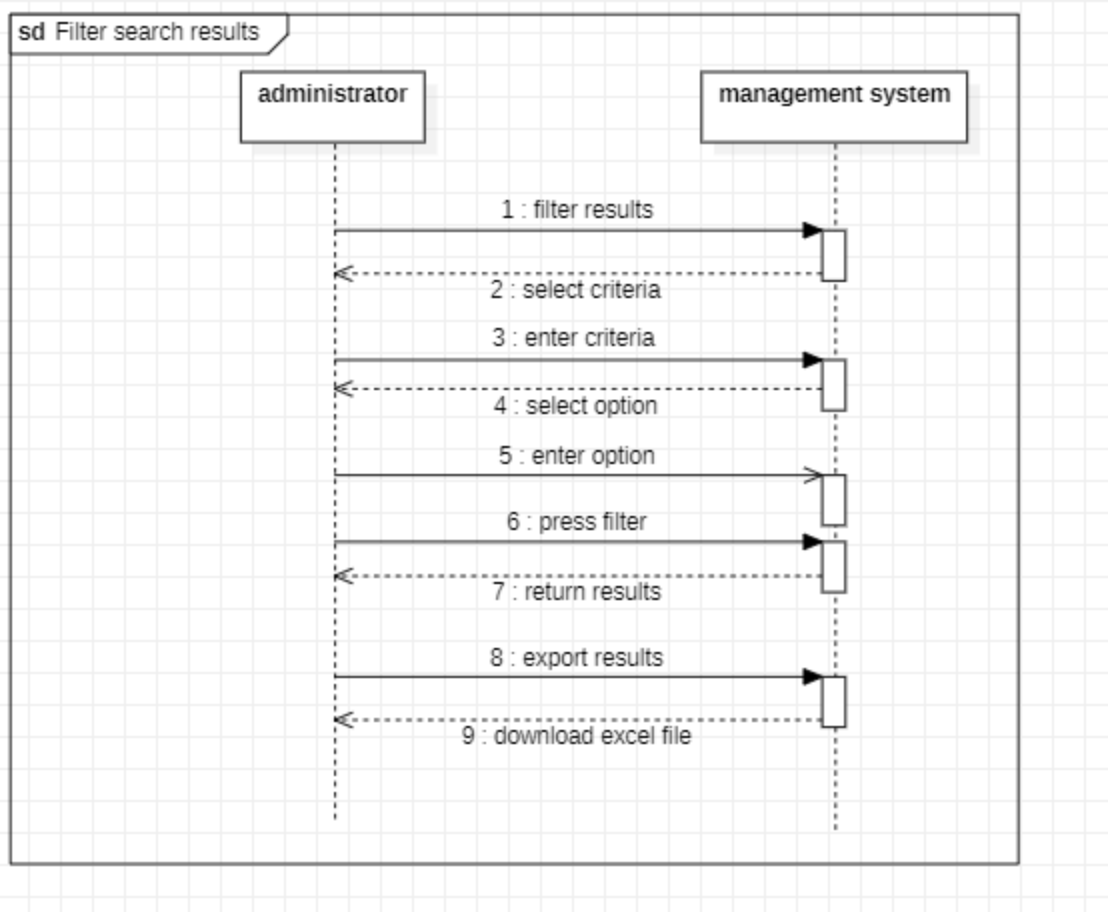

Figure 5. sequence diagram of filtering search results

PART 7 - ACTIVITY DIAGRAMS

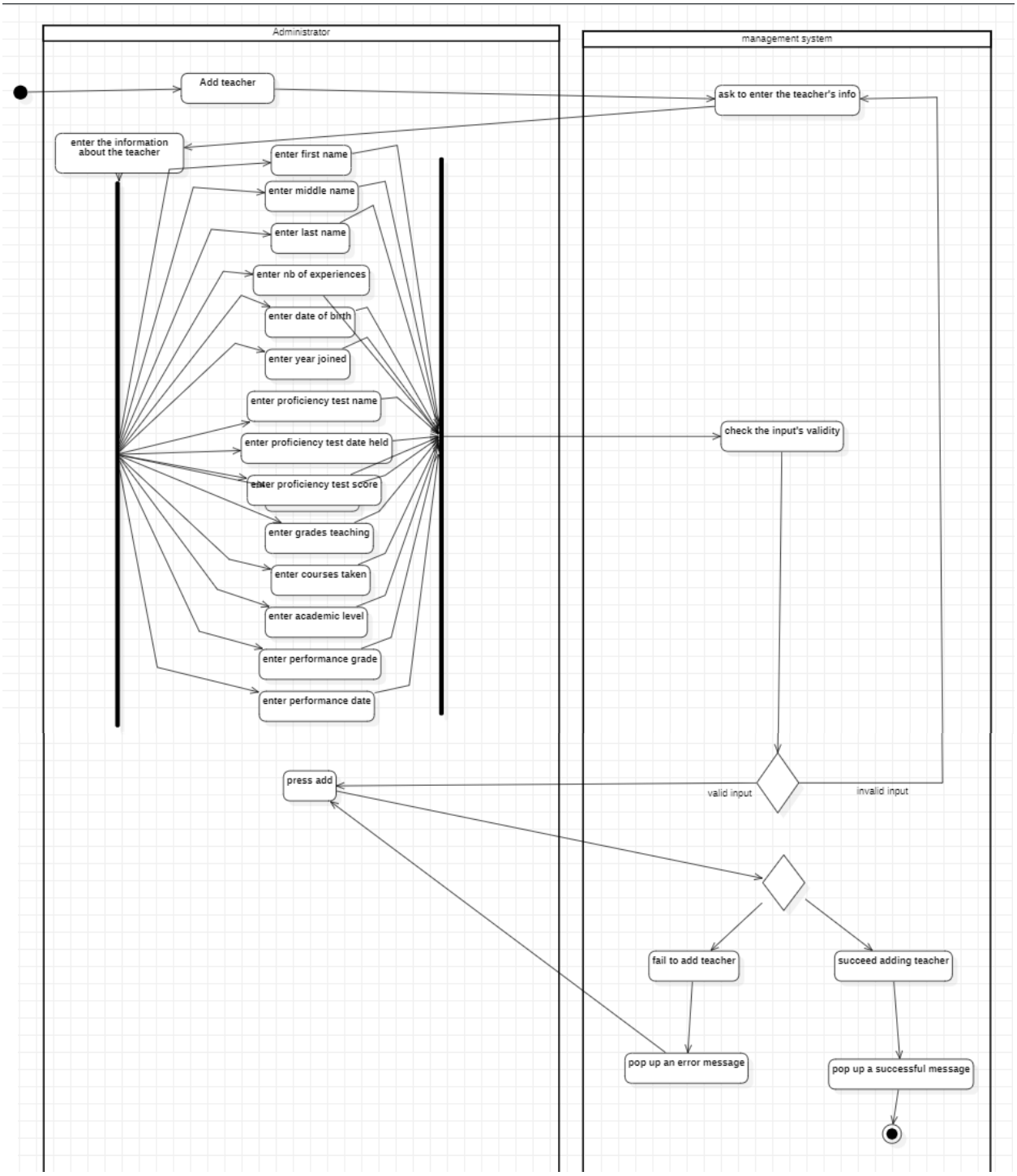

Figure 6. The activity diagram of adding a new teacher

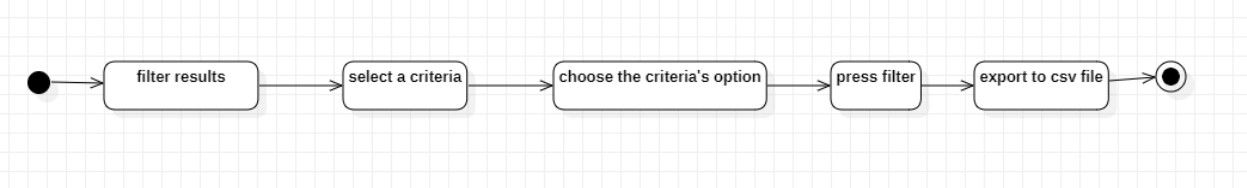

Figure 7. The activity diagram of filtering results

SUMMARY

This management system manages data records. It saves time and effort. It allows the administrator to organize the records and easily access them. Also, it permits the head department to add new records in an organized way as well as edit specific fields based on the required needs.