Projet programmation

Application de gestion des étudiants avec Java

Rapport final

Application de gestion des étudiants IMSS

➢ **Réalisé par :**

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➢ **Encadré par :**

- Achraf BERRAJAA
- Mhammed ZINEDDINE

Année scolaire : 2020-2021

THANKS

Before any development of this professional experience, it seemed necessary to us to express our gratitude to the teaching and administrative staff of INSA Euro-Méditéranée for the quality of teaching. We would particularly like to thank Mr BERRAJAA Achraf who has always listened to us and has been able to provide us with unfailing support which has trained and accompanied us throughout this professional experience with a lot of pedagogy, for his confidence and the knowledge that he was able to share with us.

We would also like to thank the efforts of Mr ZINEDDINE Mhammed, who were kind enough to answer our questions and provide all the necessary explanations in Data Modeling part.

SOMMAIRE

INTRODUCTION

In this project we must realize an application that allows the management of students using programming in Java and exactly JavaFX.

The interfaces must be made with JavaFX, from these interfaces, we can access to the database to retrieve, add or modify data.

We will use ECLIPSE as Java programming environment, and MYSQL WORKBENCH for creating databases.

The idea is to computerize the process of managing university students.

The tuition service makes the lists of students available to teachers in order to enter the grades for the different subjects; each teacher enters the grades for the subject he is teaching. At the end of each semester, students take exams, after which there will be deliberations that aim to assess the work of each student. These deliberations are based on the scores collected during the exams. During the different semesters, students follow the courses of each module (a module is made up of one or more subjects). Each subject has an hourly volume of lessons, tutorials (TD) and practical work (TP). It also has a coefficient depending on the module. In this project, based on the information provided by the tuition service, we propose that the students are already registered, we will retrieve the database from the service (we will create a list of virtual students), the teachers will enter the different grades of each module or subject, by

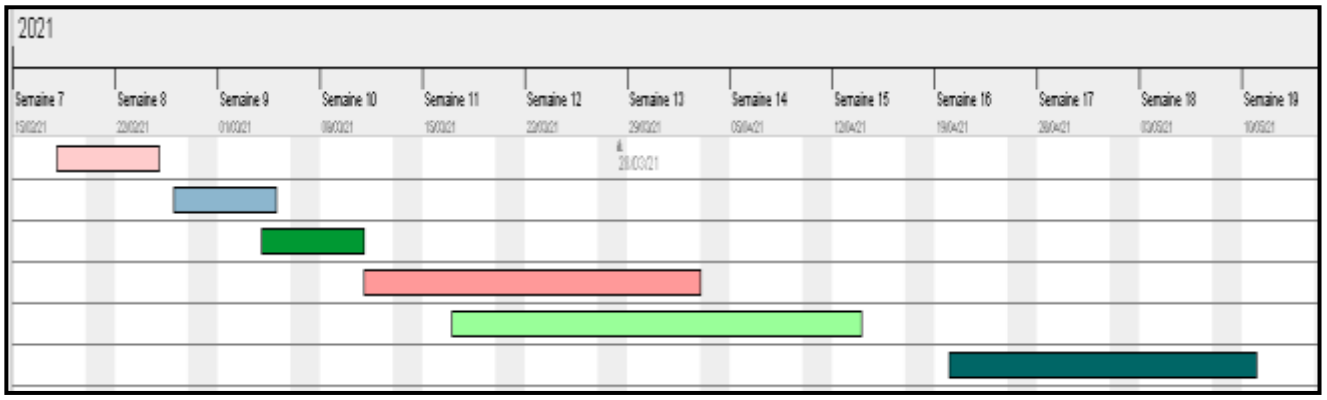
Then the database is made available to the education system to display the results.

GANTT CHART

A Gantt chart, commonly used in project management, is one of the most popular and useful ways of showing activities (tasks or events) displayed against time. On the left of the chart is a list of the activities and along the top is a suitable time scale. Each activity is represented by a bar; the position and length of the bar reflects the start date, duration and end date of the activity.

Here is the Gant chart of our project.

Nom	Date de début	
Presentation of the tools and understand the objective of the project	18/02/21	24/02/21
Connect JAVA & MySQL(insertion, deletion and selection)	26/02/21	04/03/21
Retrieving and inserting data into the database from java code.	04/03/21	10/03/21
Creating interfaces with javaFX.	11/03/21	02/04/21
Modeling the problem.	17/03/21	13/04/21
writing of the report	20/04/21	10/05/21



I. Modélisation:

1. Request for System Services:

DATE OF REQUEST	SERVICE REQUESTED FOR ORGANIZATION
21/mars/ 2021	INSA EUROMED

SUBMITTED BY (key user contact)

Name ☒HAMMOUCHE Fatiha
☒LACHHAB Nouhaila
☒IMANDOU Rachida
☒TOUILEB Diyae

Title Analysts/ Programmers

Office

Phone 0680492634

EXECUTIVE SPONSOR (funding authority)

Name zineddine Mhammed

Title **Professor**

Office **3.47**

Phone ext. 5

TYPE OF SERVICE REQUESTED:

- ☐ Information Strategy Planning
- ☐ Business Process Analysis and Redesign
- ☑ New Application Development
- ☐ Existing Application Enhancement
- ☐ Existing Application Maintenance (problem fix)
- ☐ Not Sure

BRIEF STATEMENT OF PROBLEM, OPPORTUNITY, OR DIRECTIVE (attach additional documentation as necessary)

The current practices for entering grades is not working well, each professor should have his own space for entering grades of his subject. There is also a need for an option to calculate the rate of each subject, and display the list of students with validation signe. The proposal has an opportunity to provide better service to users along with better information to both professors and coordinator.

BRIEF STATEMENT OF EXPECTED SOLUTION

The proposed system will include a space that will offer the opportunity of entering grades and subjects coeffetient. The system will allow the coordinator to view and verify all students information.

ACTION (IT Office Use Only)

- ☑ **Feasibility assessment approved** — **Assigned to** H.F /L.N/I.R/T.D
- ☐ **Feasibility assessment waived** — **Approved Budget $** _____
  Start Date ASAP **Deadline** 13 weeks
- ☐ **Request delayed** — **Backlogged until date:** _____
- ☐ **Request rejected** — **Reason:** _____

Authorized Signatures:

_____

Request for System Services2:

DATE OF REQUEST	SERVICE REQUESTED FOR ORGANIZATION
21/mars/ 2021	INSA EUROMED

SUBMITTED BY (key user contact)

Name HAMMOUCHE Fatiha
LACHHAB Nouhaila
IMANDOU Rachida
TOUILEB Diyae

Title Analysts/ Programmers

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EXECUTIVE SPONSOR (funding authority)

Name ZAGOUR Mohammed

Title **Professor**

Office **3.47**

Phone ext. 5

TYPE OF SERVICE REQUESTED:

- ☐ Information Strategy Planning
- ☐ Business Process Analysis and Redesign
- ☑ New Application Development
- ☐ Existing Application Enhancement
- ☐ Existing Application Maintenance (problem fix)
- ☐ Not Sure

BRIEF STATEMENT OF PROBLEM, OPPORTUNITY, OR DIRECTIVE (attach additional documentation as necessary)

The current practices for displaying list of students is not working, there is also a need of entering grades for each professor .

BRIEF STATEMENT OF EXPECTED SOLUTION

The proposed system will include an option of visualizing and print student list with the sign of validation.

ACTION (IT Office Use Only)

- ☑ **Feasibility assessment approved** — **Assigned to** H.F /L.N/I.R/T.D
- ☐ **Feasibility assessment waived** — **Approved Budget $** _____
- **Start Date** ASAP **Deadline** 13 weeks
- ☐ **Request delayed** — **Backlogged until date:** _____
- ☐ **Request rejected** — **Reason:** _____

Authorized Signatures:

_____

💻 Request for System Services3:

DATE OF REQUEST	SERVICE REQUESTED FOR ORGANIZATION
21/mars/ 2021	INSA EUROMED

SUBMITTED BY (key user contact)

Name ☒HAMMOUCHE Fatiha
☒LACHHAB Nouhaila
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EXECUTIVE SPONSOR (funding authority)

Name ARRAHLI Abdellah

Title **Professor**

Office **3.47**

Phone ext. 5

TYPE OF SERVICE REQUESTED:

- ☐ Information Strategy Planning
- ☐ Business Process Analysis and Redesign
- ☑ New Application Development
- ☐ Existing Application Enhancement
- ☐ Existing Application Maintenance (problem fix)
- ☐ Not Sure

BRIEF STATEMENT OF PROBLEM, OPPORTUNITY, OR DIRECTIVE (attach additional documentation as necessary)

The current practices for calculating the average of each subject is not working automatically , each professor should only enter the TP and exam grades, and the system calculate and display the list of students with validation sign.

BRIEF STATEMENT OF EXPECTED SOLUTION

The system will calculate the average of each subject, for each student and visualize the list.

☑
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_____ _____

2. request for System Services:

PROJECT: Student management application	PROJECT MANAGER: BERRAJAA Achraf
CREATED BY: ✓ HAMMOUCHE Fatiha ✓ LACHHAB Nouhaila ✓ IMANDOU Rachida ✓ TOUILEB Diyae	**LAST UPDATED BY:** ✓ HAMMOUCHE Fatiha ✓ LACHHAB Nouhaila ✓ IMANDOU Rachida ✓ TOUILEB Diyae
DATE CREATED: 03/03/2021	**DATE LAST UPDATED: 15/04/2021**

Brief Statements of Problem, Opportunity, or Directive	Urgency	Visibility	Priority or Rank	Proposed Solution
1. The system should offer the option of entering grades	13 weeks	High	1	New Development
2. The system could display the list of student for the coordinator.	13 weeks	Medium	2	New Development
3. The proposed system should Offer to the coordinator the option of verifying student information	13 weeks	Medium	3	New Development
4. The system should calculate the average of each semester for each student	13 weeks	High	4	New Development

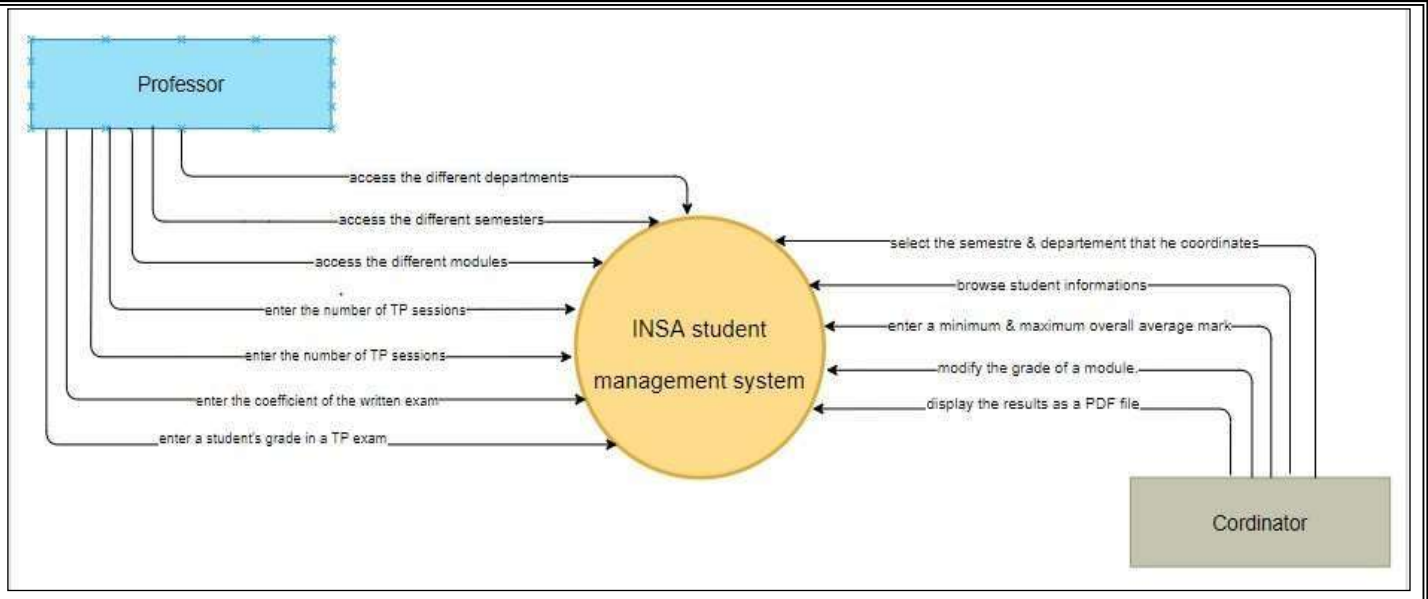
3. PROBLEMS, OPPORTUNITIES, OBJECTIVES AND CONSTRAINTS MATRIX:

PROJECT: Student management application	PROJECT MANAGER: BERRAJAA Achraf
CREATED BY: ✓ HAMMOUCHE Fatiha ✓ LACHHAB Nouhaila ✓ IMANDOU Rachida ✓ TOUILEB Diyae	**LAST UPDATED BY:** ✓ HAMMOUCHE Fatiha ✓ LACHHAB Nouhaila ✓ IMANDOU Rachida ✓ TOUILEB Diyae
DATE CREATED: 03/03/2021	**DATE LAST UPDATED: 15/04/2021**

CAUSE AND EFFECT ANALYSIS	
Problem or Opportunity	**Causes**
The system could not offer the option of entering grades	1.The excel program cannot be the easiest way to enter grades (it displays all students at the same time)
The system could not display the list of student for the coordinator.	1.It can only display the list s for professors Each professor has a space of his subject
The proposed system could Offer to the coordinator the option of verifying student information	1.only professors can view and visualize student information
The proposed system could calculate the average of each semester for each student.	1.The professor can enter TP grades and their coeffetients 2.The professor can enter Exam grades with the coeffetients

4. Context diagram:

A context diagram is a visual representation of the relationship between data and business processes. This diagram has 3 main components which include external entities, system processes, and data flows.



5. Tentative List of Requirements:

Requirements	**Classification**
The system should enter the subject grades	Functional
The system should display the list of students for professors	Functional
The system should display for each professor the space of the his subject	Functional
The system should generate the two spaces(coordinator and professor)	Functional
The system should display the validation signes of validation	Functional
The system should display for the coordinator the students results	Functional
The system should calculate the average of each semester for each student	Non - Funtional
The system should calculate the average of each subject for each student	Non -functional
The system should display all modules , validation signe for the the coordinator of departement	Functional
The system should calculate the average of each subject which is based on TPS grades , exams .	Functional
The system should delete automatically left students	Functional

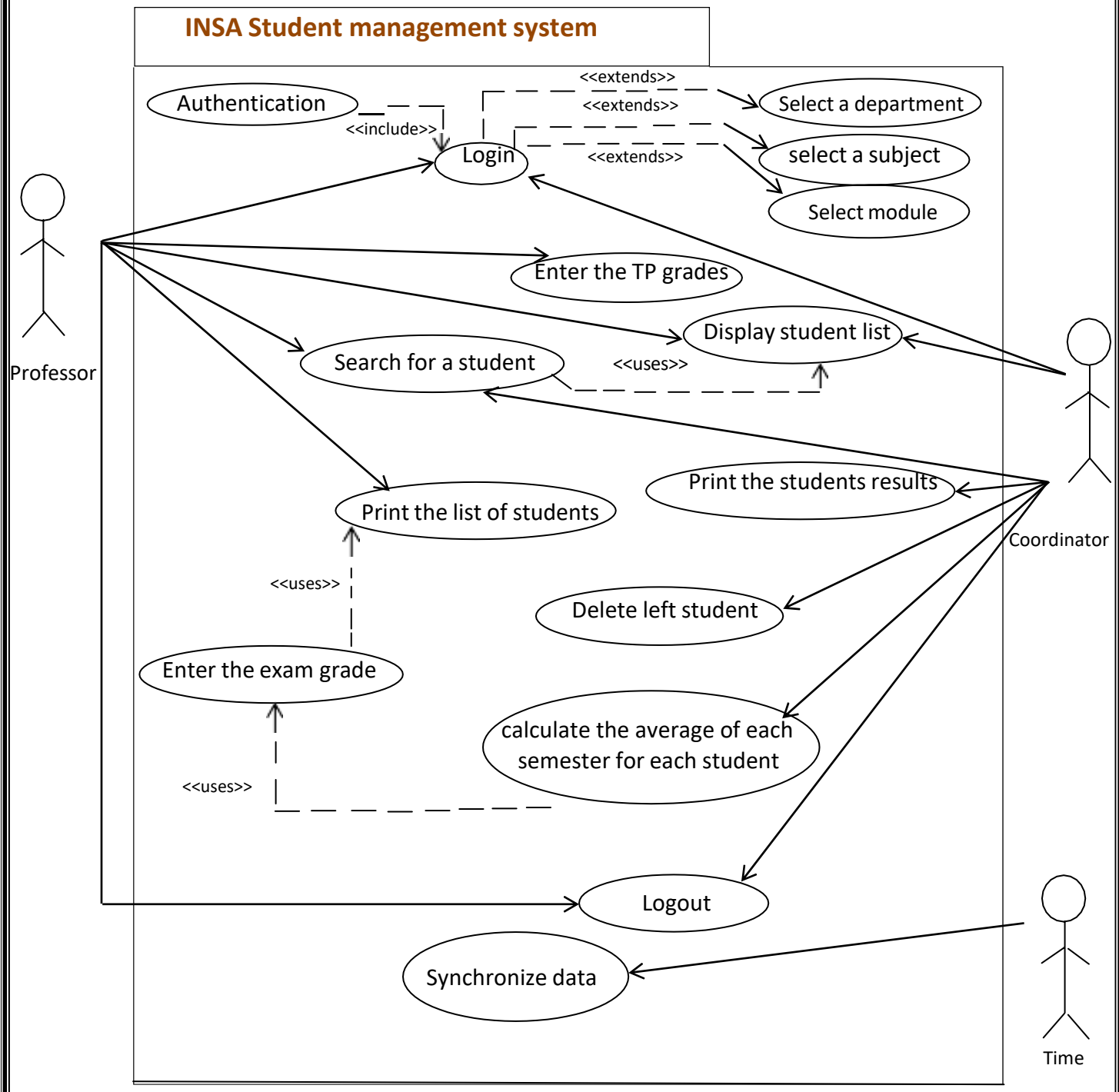
6. Use-Case Glossary

The Use Case Glossary is typically in table-format to show who can use the system in different ways. For instance, you may want the accountant to update invoices but you want the warehouse employees to avoid that section. It's easy to set up the information system to allow each department access to different parts of the system based on their login criteria.

Use-Case Glossary		
Use-Case Name	**Use-Case Description**	**Participating Actors and Roles**
Enter the TP grades	This use case describes the event of entering TP grades.	professor
Display student list	This use case describes the event of displaying a list which contains student information.	Professor coordinateur
Enter the exam grade	This use case describes the event of a professor entering exam grade.	Professor
Search for a student	This use case describes the event of searching for a student to modify his informations.	Professor Coordinator
Print the list of students	This use case describes the event of printing the list of students.	Professor Coordinator
Print the students results	This use case describes the event of printing the students results as a list.	Coordinator
calculate the average of each semester for each student	This use case describes the event of calculating the average of each semester.	System
Delete left students	This use case describes the event of deleting the left student from the list.	Coordinator

7. Use-Case Model Diagram

A use-case model is a model of how different types of users interact with the system to solve a problem. As such, it describes the goals of the users, the interactions between the users and the system, and the required behavior of the system in satisfying these goals.



8. Use-Case Narrative:

A Use case narrative is a textual description of the business event and how the user will interact with the system to accomplish the task.

Here is the use-case narrative for one use case in the system.

INSA Student management System

Authors : Fatiha HAMMOUCHE/Nouhaila LACHHAB/Rachida IMANDOU/Diyae TOUILEB **Date:** 10/03/2021

Use-Case Name:	Enter the exam grades	**Use Case Type** **Business Requirements** ☑
Use-Case ID:	ISMS-005	
Priority:	High	
Source:		
Primary System Actor:	Professor, coordinator	
Primary Business Actor:	Professor	
Other Participating Actors:	Professor,coordinator	
Other Interested Stakeholders:		
Description:	This use case describes the event of entering the grades. A professor can enter only the grades of his subject for his students. A coordinator can view all of subjects grades for all professors.	
Precondition:	The user must have previously logged on so that the system can identify the user as a professor or coordinator user.	
Trigger:	The use case is initiated when the user selects this option from the user interface.	
Typical Course Of Events:	**Actor Action**	**System Response**
	Step 1: This use case is initiated when a user selects the option to enter TP grades **Step 3**: The user may modify student information. **Step 5**: professor user may request to view another student.	**Step 2**: The system responds by displaying an interface of information related to the student **Step 4**: The system displays detailed information about the student. This display will include an option for returning to the ancient page. **Step 6**: The system will verify that the grade of this student has already entred or not.
Alternate Courses:	**Alt Step 2a**: If the user is coordinator then the system displays all students grades for all TPs .	
Conclusion:	This use case concludes other information of students not only TP grades.	
Postcondition:	None	
Business Rules:	None	
Implementation Constraints and Specifications:	Desktop programming to be used so professors can have easy access.	
Assumptions:	None	
Open Issues:	-Need to Know from the list of students whether or not a student grade has already entered .	

9. Entity/Definition Matrix

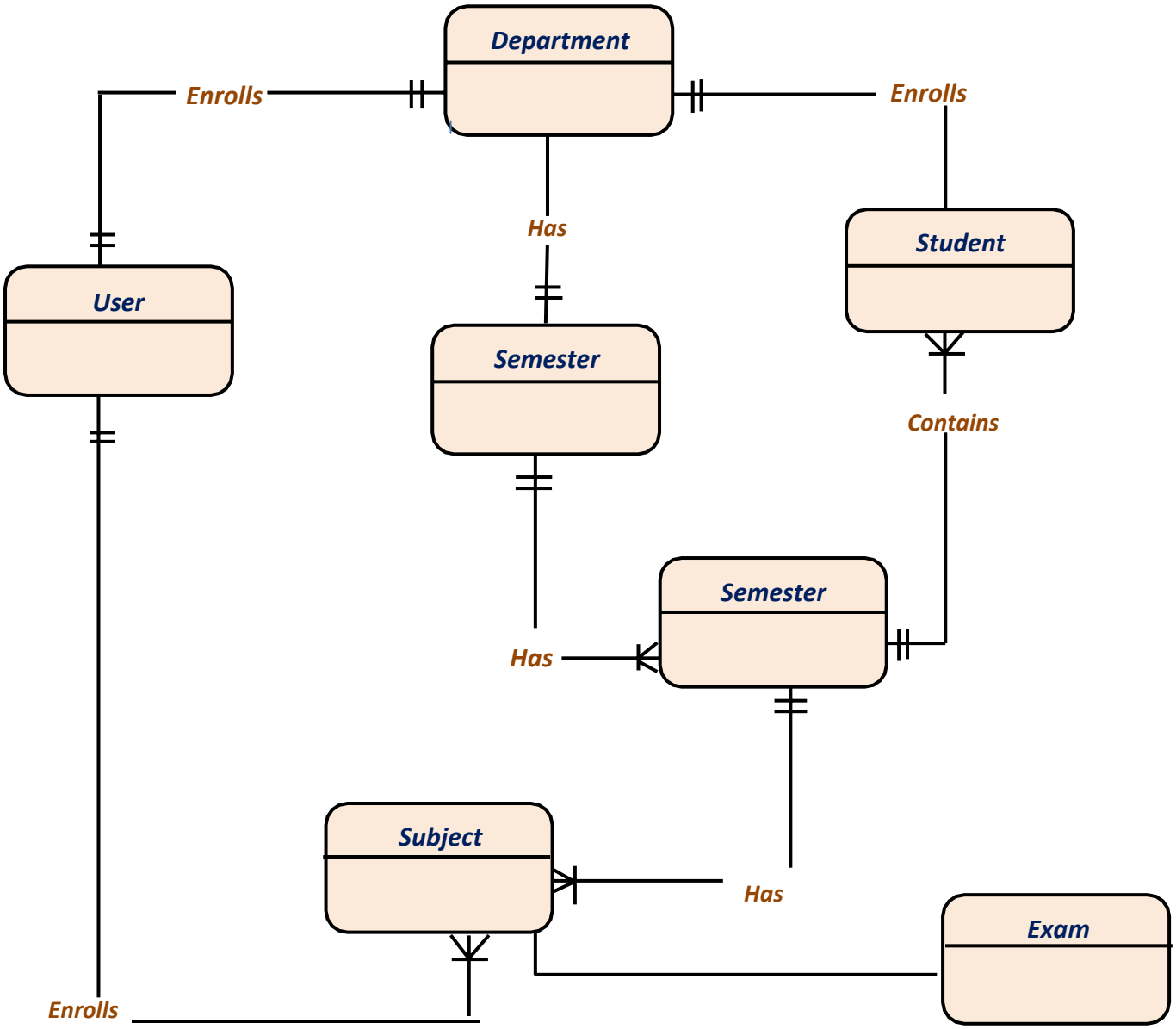
Entity definition matrix consists of a table including two columns one for the entity and the other for description

ENTITY	BUSINESS DEFINITION
Student	A person who studies at INSA .
Departement	A set of modules related to each other
Module	A set of subjects taught by different professors.
User	A professor or a coordinator.
Semester	The half of the year includes modules.
Subject	A set of courses taught by a professor.

10. Context data model

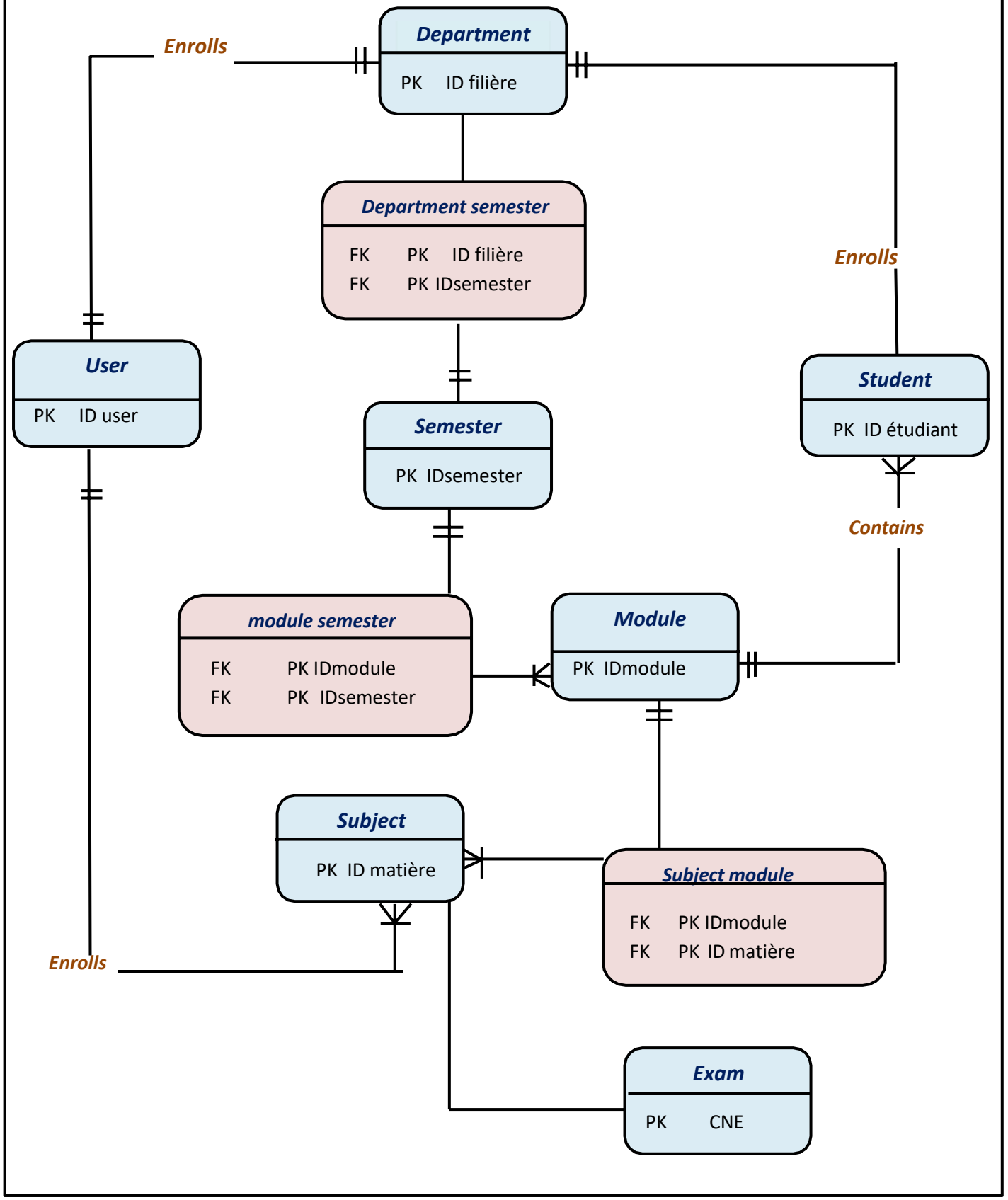
Context Data Model is a collection of several models. This consists of models like network model, relational models etc. Using this model we can do various types of tasks which are not possible using any model alone.

Here is the context data model of INSA student management system.



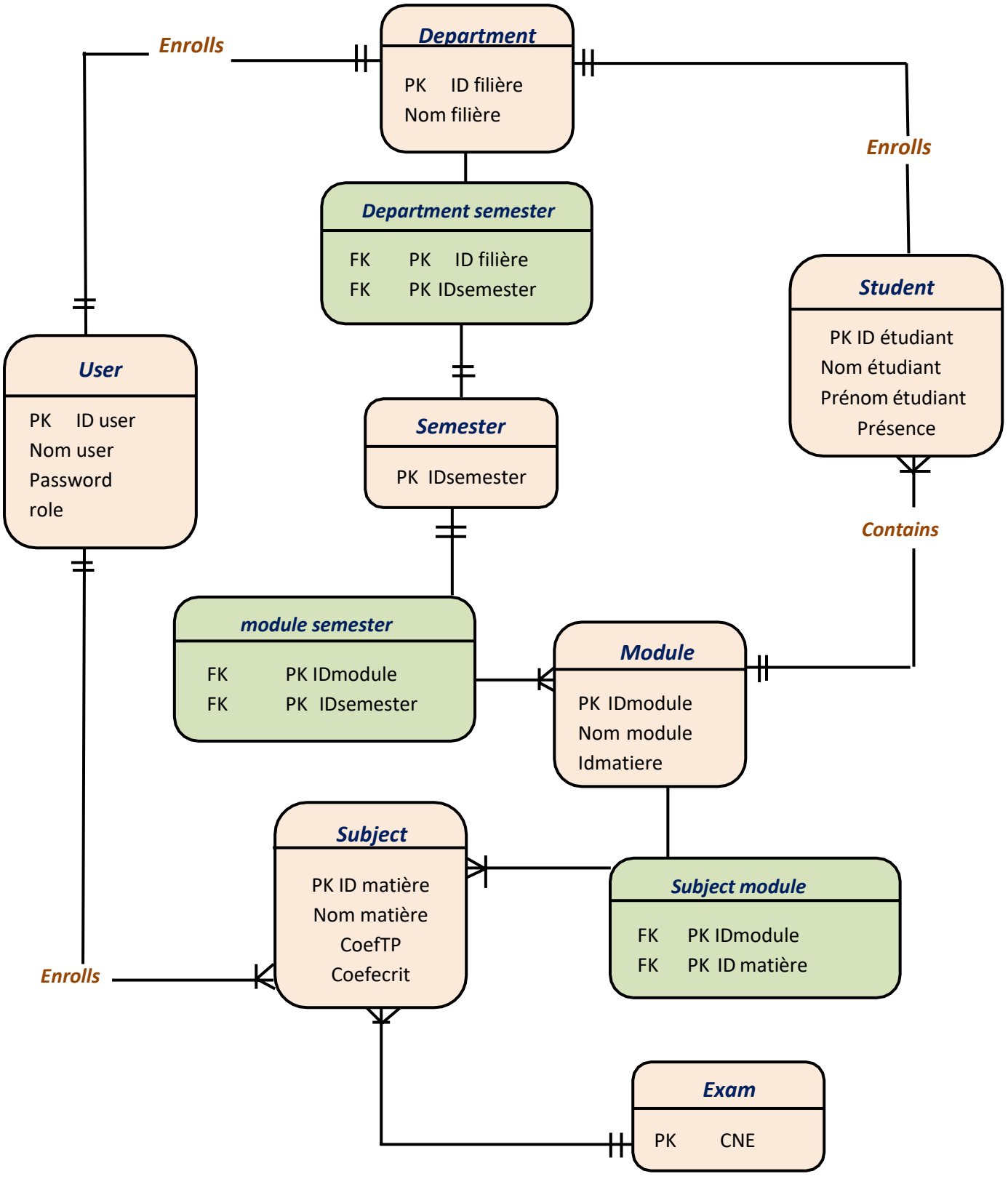
11. Key-Based Data Model

key-based (KB) model is a data model that fully describes all of the major data structures that support a wide business area. The goal of a KB model is to include all entities and attributes that are of interest to the business.


Department
PK ID filière
Enrolls
Department semester
FK PK ID filière
FK PK IDsemester
Enrolls
User
PK ID user
Semester
PK IDsemester
Student
PK ID étudiant
Contains
module semester
FK PK IDmodule
FK PK IDsemester
Module
PK IDmodule
Subject
PK ID matière
Subject module
FK PK IDmodule
FK PK ID matière
Enrolls
Exam
PK CNE

12. Fully Attributed Data Model

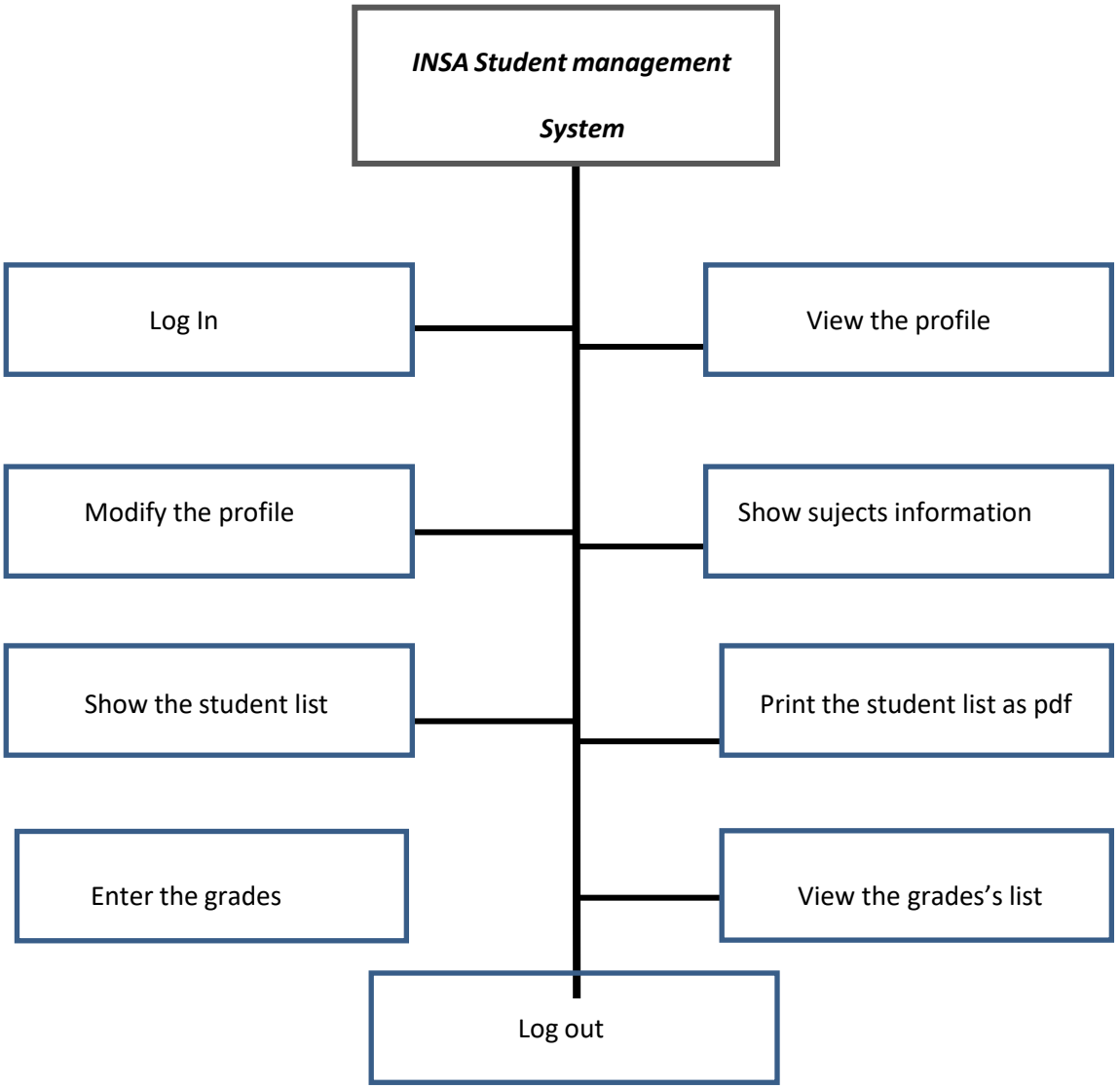
A fully-attributed (FA) model is a third normal form data model that includes all entities, attributes, and relationships required by a single project. The model includes entity instance volumes, access paths and rates, and expected transaction access patterns across the data structure.
Here is the fully attributed data model for our project.



13. Event decomposition diagram:

One technique that can be relied upon to identify use cases is to use the event decomposition techniques. Event decomposition technique is a technique for identifying use cases with external business events determine what happened and how the system should respond. Event decomposition technique begins by identifying all the business events that could result in information systems to respond to it, where the latter every event will culminate in a use case.

Here is the event decomposituin digram for our project.

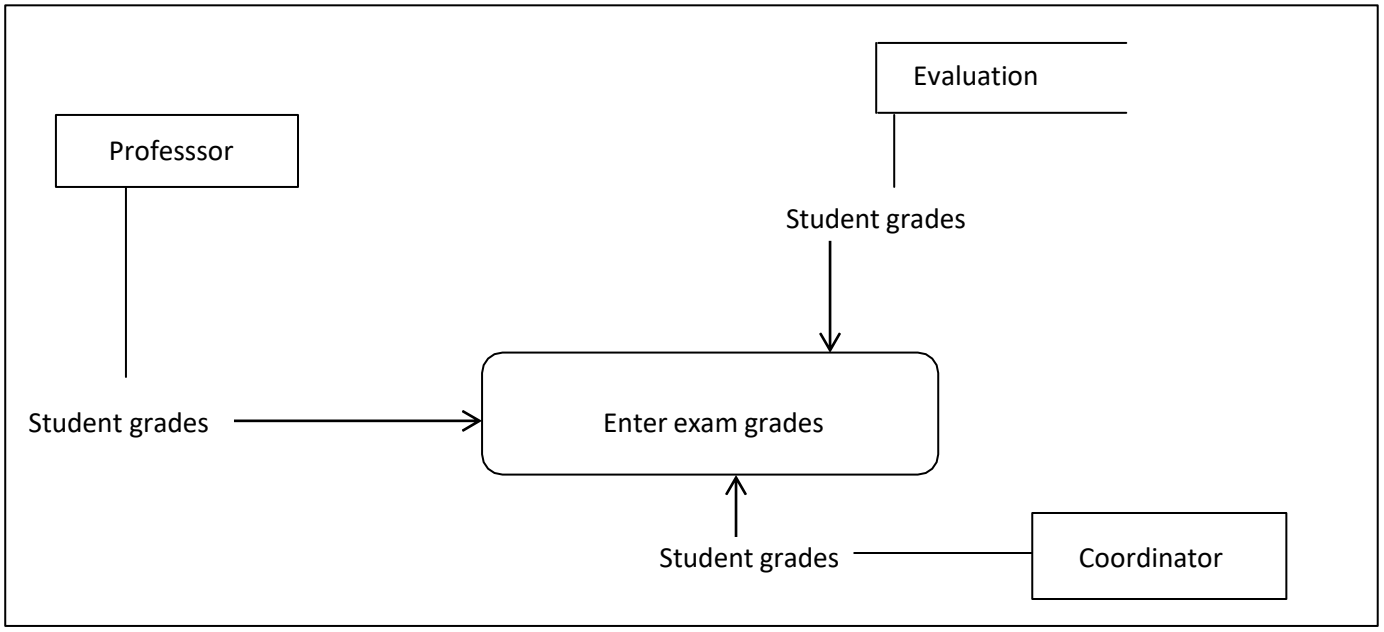


14.Event Diagrams

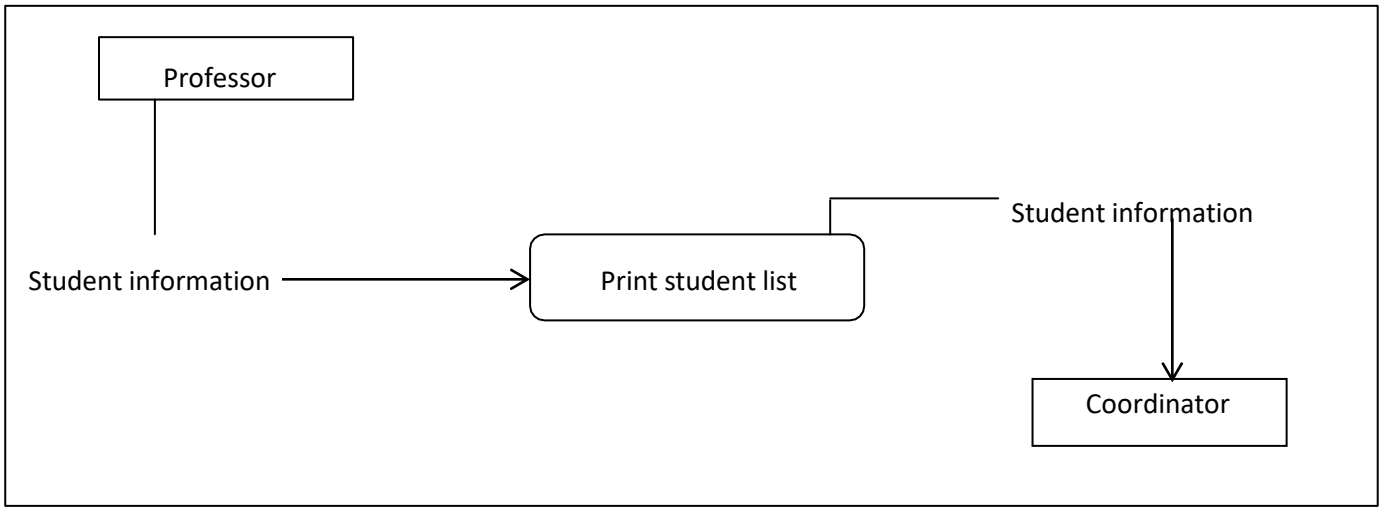
An **event diagram** is constructed to get a visual representation of the various events and functions and the linkage between them. It is a very common tool used by managers to evaluate the timely project completion feasibility.

Here are some Event diagrams for a diverse use cases.

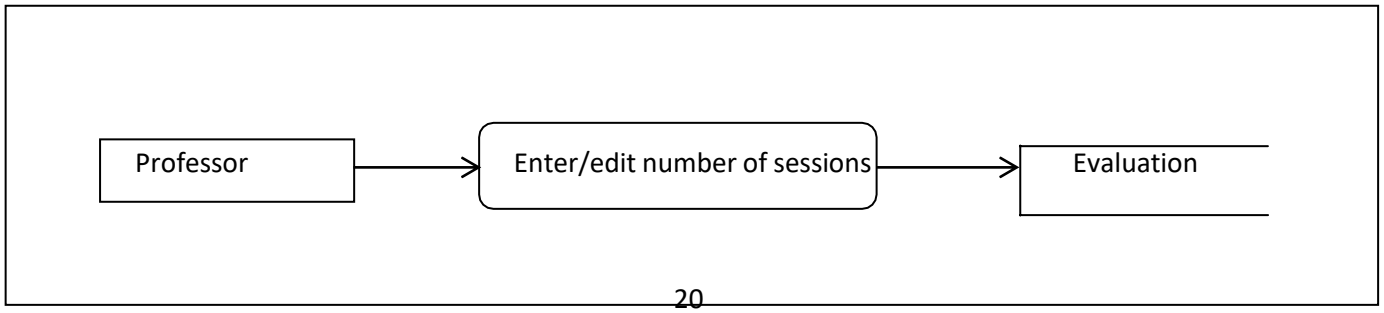
Event1:



Event2:

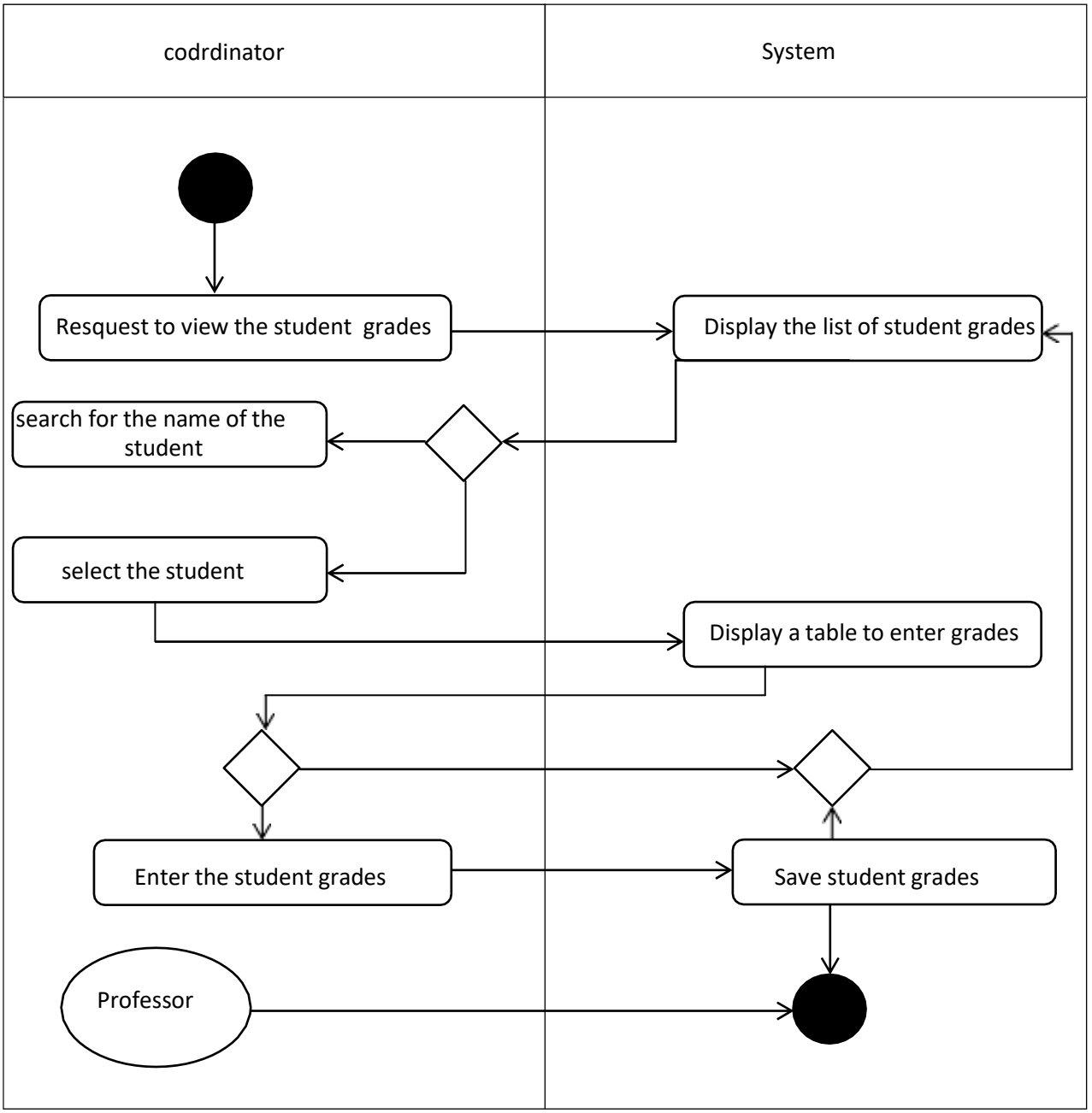


Event3:



15.Activity digram:

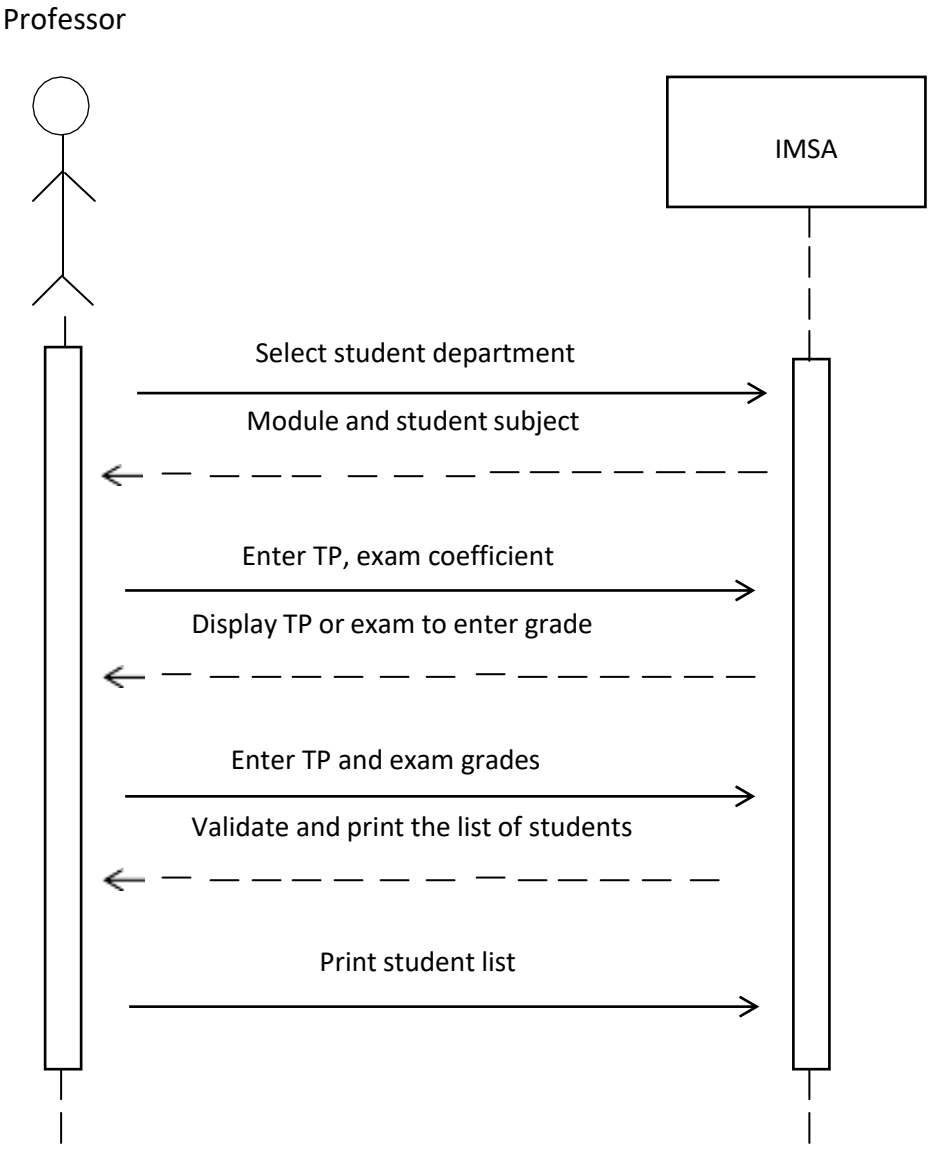
Activity Diagrams describe how activities are coordinated to provide a service which can be at different levels of abstraction. Typically, an event needs to be achieved by some operations, particularly where the operation is intended to achieve a number of different things that require coordination, or how the events in a single use case relate to one another, in particular, use cases where activities may overlap and require coordination.



16.System Sequence Diagram

a system sequence diagram (SSD) is a sequence diagram that shows, for a particular scenario of a use case, the events that external actors generate, their order, and possible inter-system events.

Below is one solution for one scenario of one use case for our project.



Potential Object List

Those answers are depending on our group members assumptions, we can have many other ones .

Potential Object	Notes	Obj	Reason
Professor	Someone who has a username to log to the application	√	
subjectname	A name that identifies subjects	X	Attribute of subject
Module	A part of semester that contains many subjects	√	
Subject	A part of a module, teaches by a professor.	X	Attribute of Client
user	It can be a professor or a cordinator	√	
Studentname	The name of a student	X	Attribute of student
idsemester	A number that identifies semester	X	Attribute of semester
Tpgrade	The grade of workshops	√	Attribute of evaluation

application Guide:

➢ Work environment:

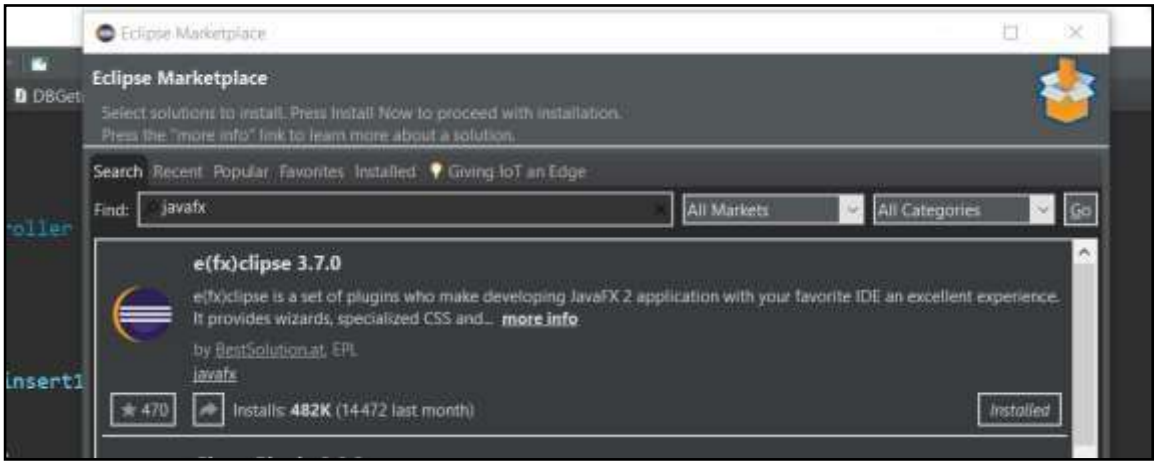
In order to achieve our goal which is creating an application desktop for student management, we have used Eclipse as an integrated development environment, for implementing JavaFX language.

First of all, JavaFX is an open source, next generation client application platform for desktop, mobile and embedded systems built on Java. It is a collaborative effort by many individuals and companies with the goal of producing a modern, efficient, and fully featured toolkit for developing rich client applications.
Considering interfaces design, we Scene builder, it allows you to easily layout JavaFX UI controls, charts, shapes, and containers, so that you can quickly prototype user interfaces. Animations and effects can be applied seamlessly for more sophisticated UIs.

As we know this application is base of course on database, hence we worked with MySQL Workbench for manipulating and stocking our data. In fact MySQL Workbench is a unified visual tool for database architects, developers, and DBAs. MySQL Workbench provides data modeling, SQL development, and comprehensive administration tools for server configuration, user administration, backup, and much more.

✓ Steps how we used this tools to connect between them:

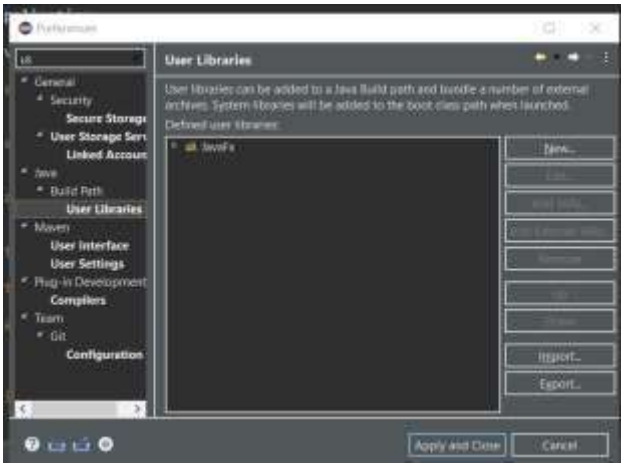
1. Installation of JavaFX SDK on eclipse:



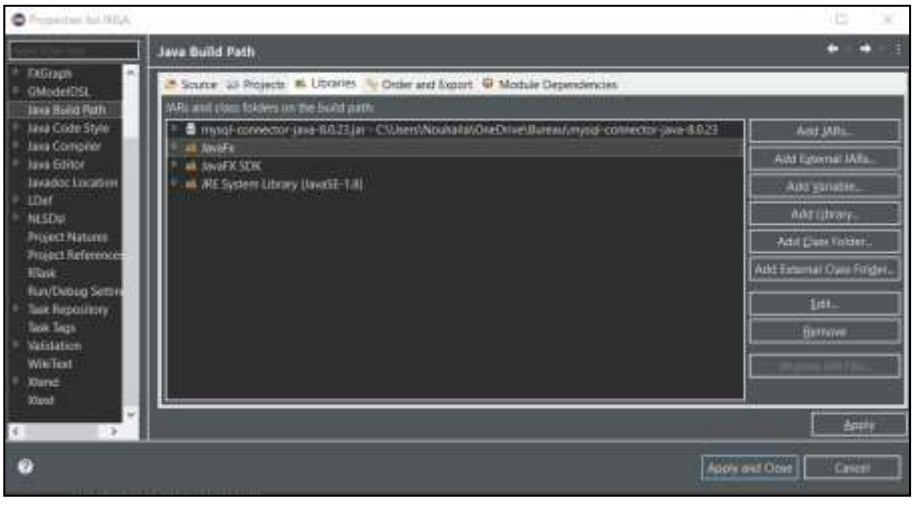
The first step that we did is installing JavaFX software development kit on Eclipse from *Eclipse Marketplace.*

2. Installing JavaFX:

We have installed JavaFX lib so that Eclipse could know something about this language.



Then we went to Windows ->Preferences, then user libraries and we created o library names JavaFx



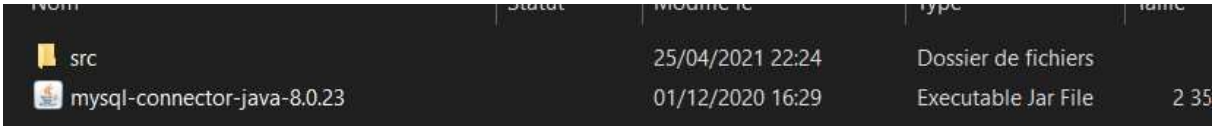
After that we went to our project build path to add the library that we created. So that Eclipse could recognize our Java.

The last step is configuring build path and arguments. So we set up the run configuration by adding the line which is in VM arguments

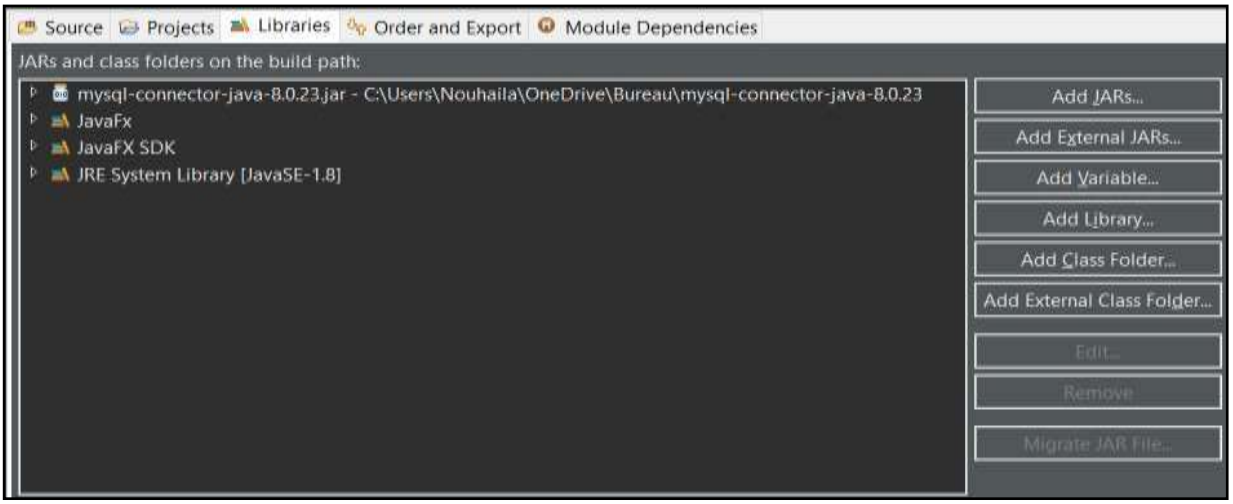
3. Connection to database:

It is obvious that we have to connect Eclipse with database, for this reason we followed those steps to achieve this connection:

1. Download MySQL JDBC driver.



2. Selected project's build path and we added an external JARs to import mysql connector



3. Create DataBase_Manager class which allows us to access to database and implements all the applications' methods on it.

A piece of our class' code source.

➢ Professor interfaces:

First of all this interface is for both users professors and coordinators to authenticate to theirs interfaces.

The login interface for professor :

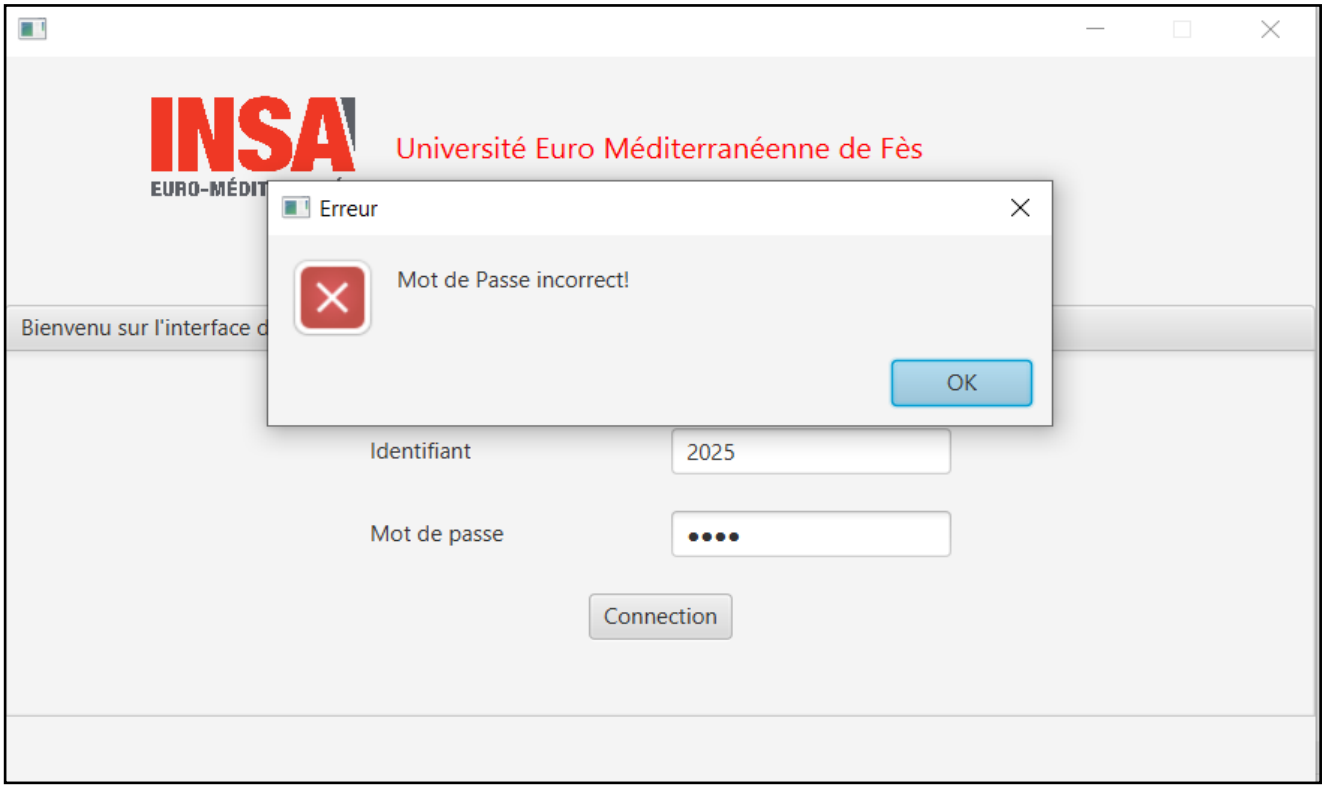
The ok button to verify that the username and password of a professor is registered in the database. So it's through this button that we will redirect to the professor interface. If the professor enters a password or an identifier that does not exist in the database then an alert window will be displayed.

In our cases, we use ID user as the username, because in database it is a primary key and it is unique, for the name of users, we can have many professors with the same name, so to facility this we use ID user.

In this example we will try to access to the professor interface:

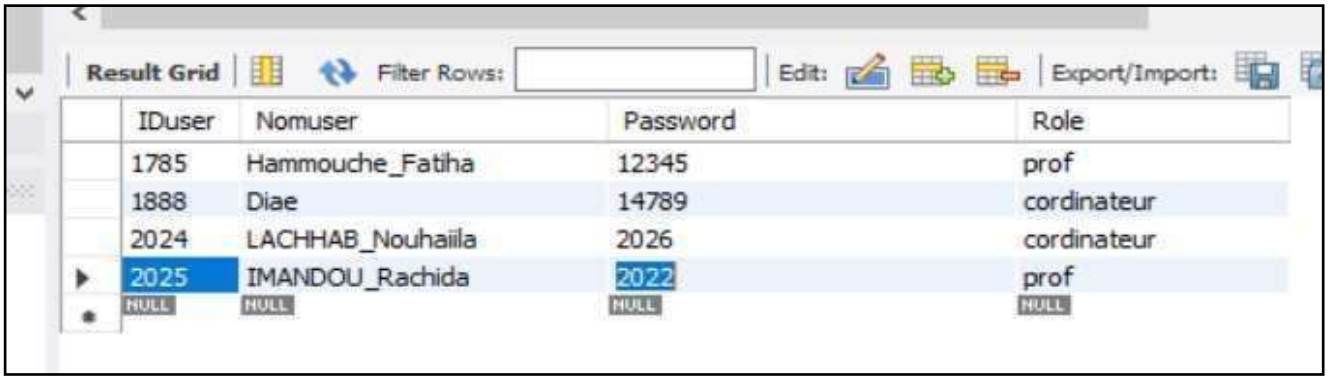
ID user: 2025

Password: 2022



Incorrect password !! the password does not exist in the database
2025 is IDcordinator

Here are idusers and passwords registred in the database!

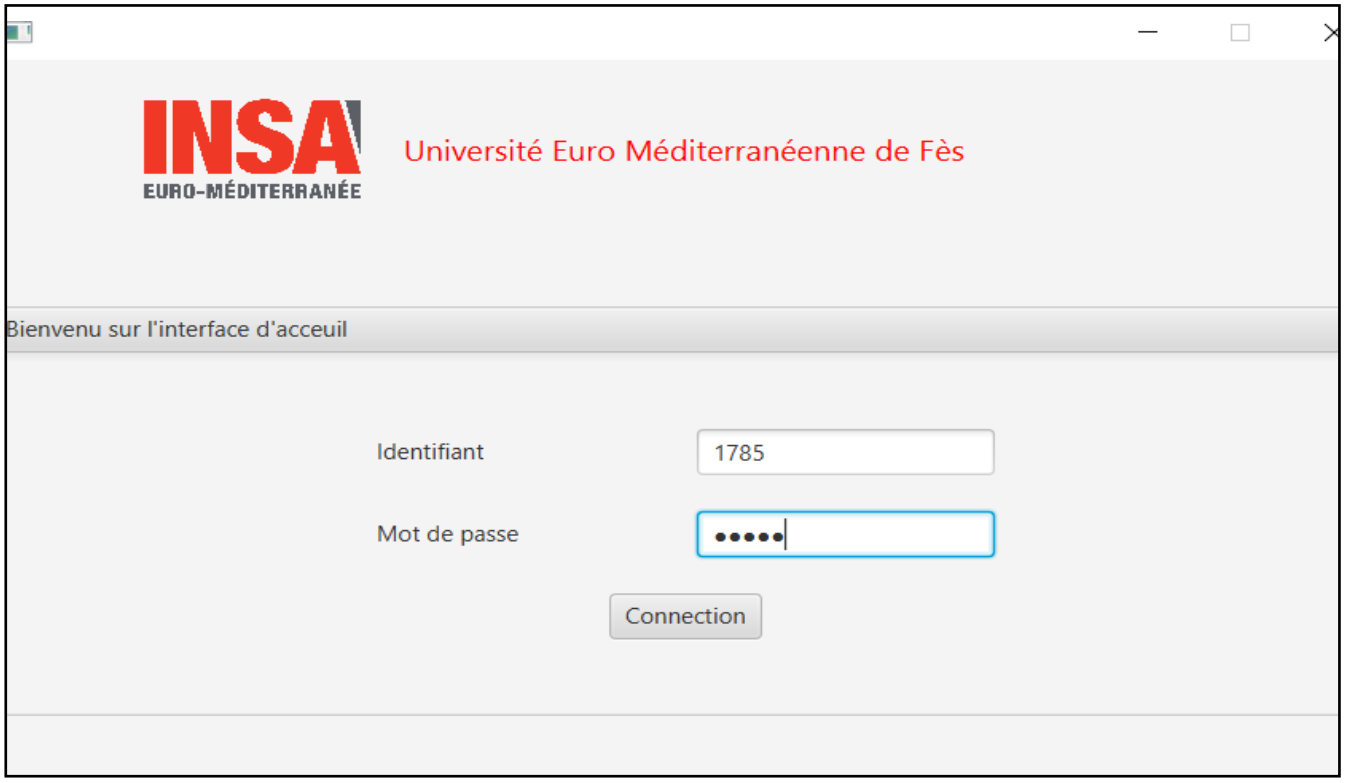


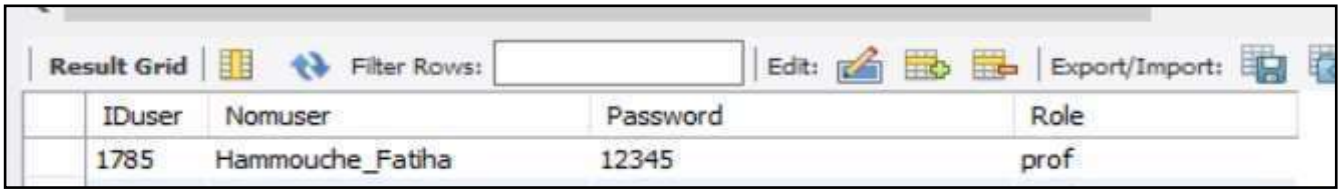
In this example, there is no user with the id 20256 in the database.

The system will display that the user does not exist

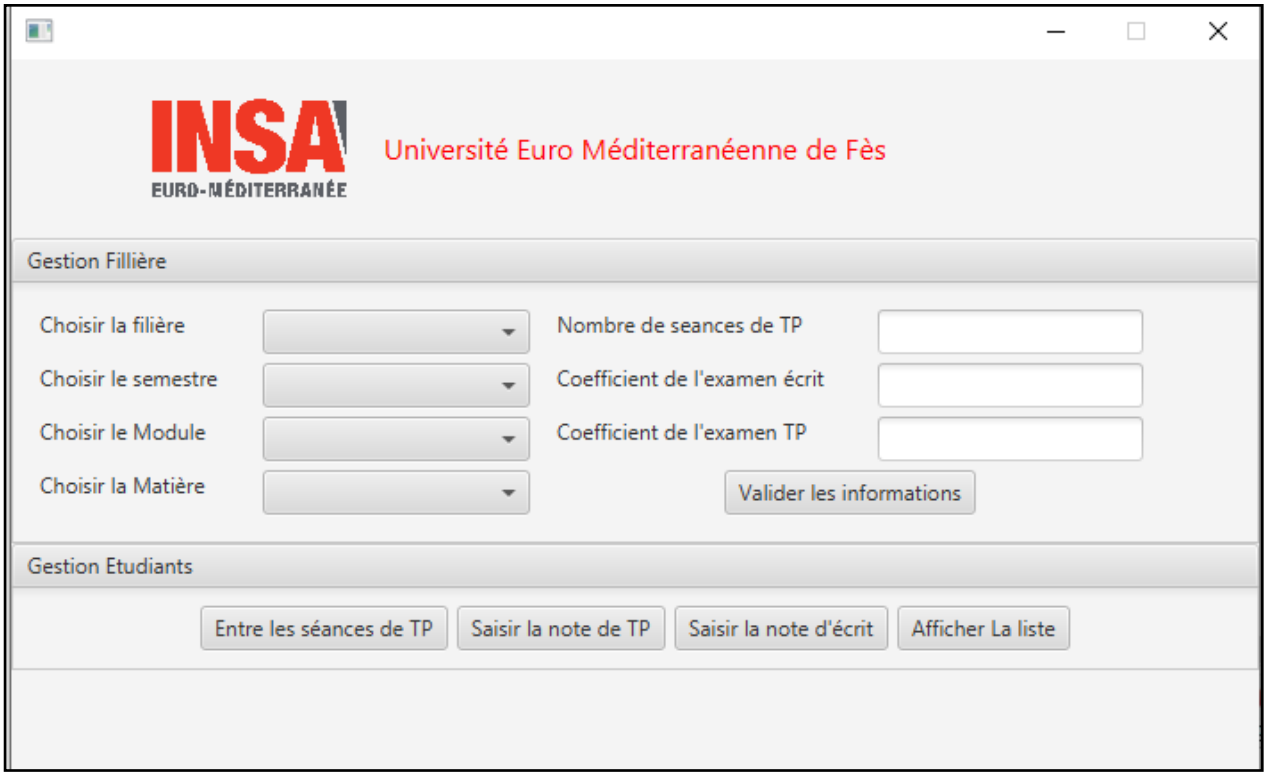
Here in this example the right authentification

Corrected authentication:





the user is connected successfully to the second interface:



Professor interface 2:

Professor has the right to access to different courses, semesters and modules:

In this interface professor would choose a department (SIC, Gme, GE), the application will automatically display the semesters in the second combobox, only modules teached in the chosen semester will be displayed in the next combobox.
A module contains many subjects, only those subjects will be displayed in the last combobox .

Example: here we choose a module and a subject to prove the operation of the comboboxes.

Department: SIC

Semesters: S3, S4…..

Modules: algo_os, Electro_capteur

Matière: (we chose as module: Electro_capteur) electronique and capteur

Result Grid | Filter Rows:

idfiliere	Nomfiliere
1	SIC
2	GME
3	GE
NULL	NULL

Table : filière

idsemestre	Nomsemestre
1	S3
2	S4
NULL	NULL

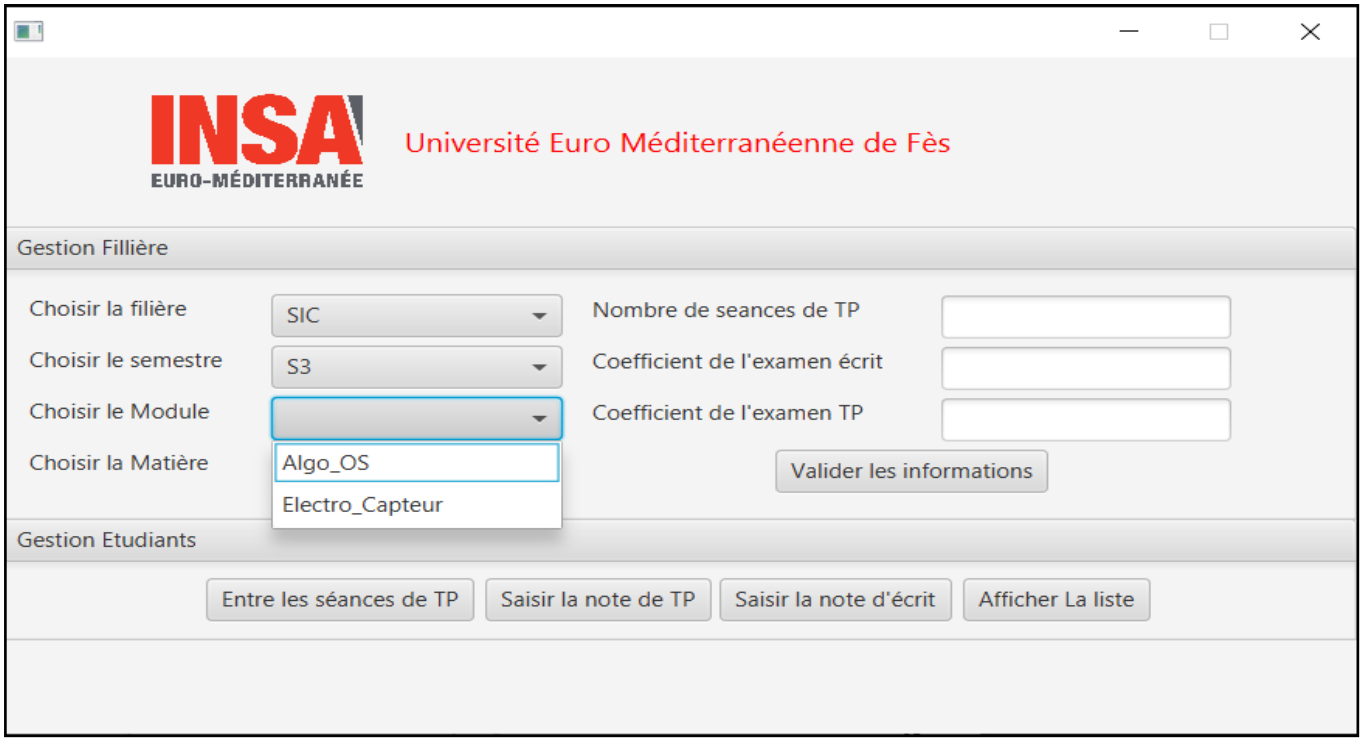
Table : smestre

Result Grid | Filter Rows: | Edit: | Export/Import:

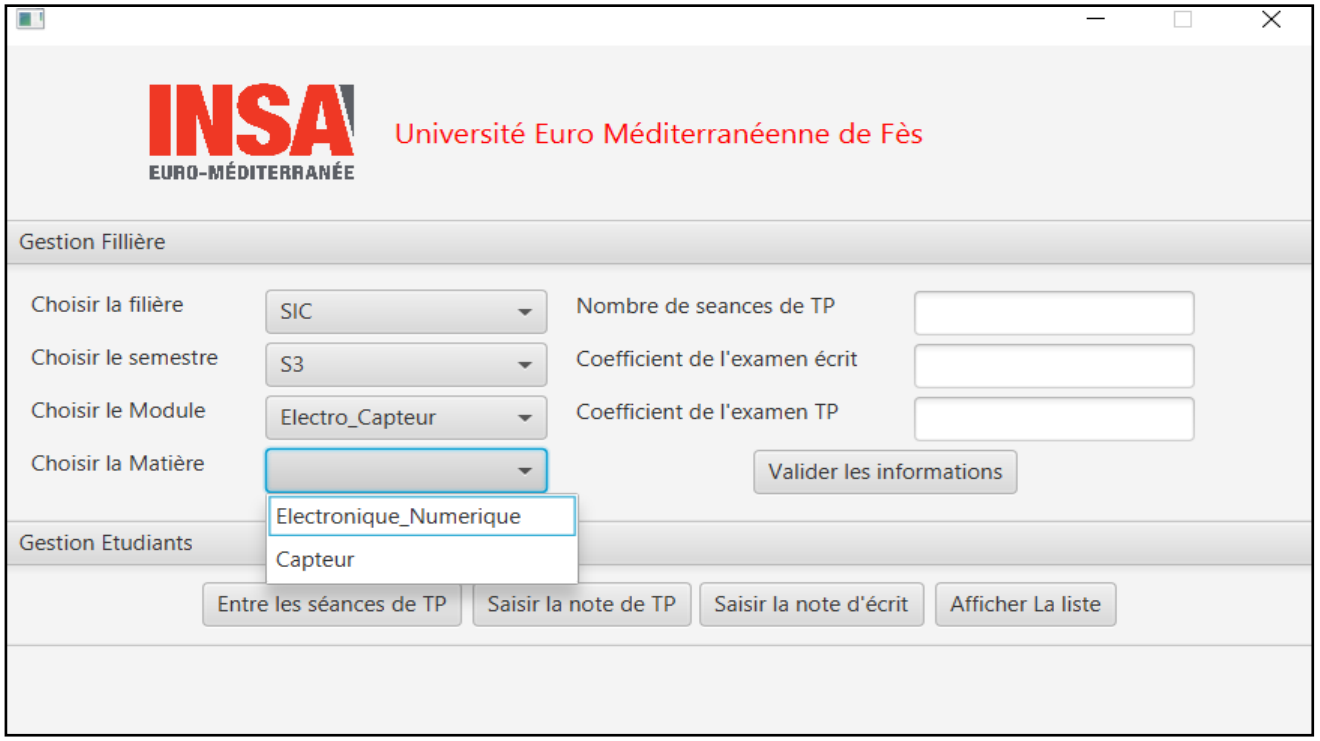
IDmodule	Nommodule	semestre_idsemestre	filiereid
1	Algo_OS	1	1
2	Electro_Capteur	1	1
3	Modelisation_Poo	2	1
4	Automatique_Python	2	1
5	Construction_Meca	1	2
6	Fluides_Vibrations	1	2
7	Procedes_RDM	2	2
8	Meca4_Projet_d'application	2	2
9	Analogique_Electronique	1	3
10	LanguageC_OS	1	3
11	Analogique2_archi	2	3
12	Systemes_signaux	2	3
NULL	NULL	NULL	NULL

Table : module

Those screens illustrate the how comboboxes are fuctionning:



We use combo Box show the multiple choices and they are related



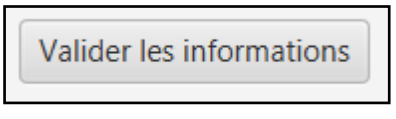
```java
import java.io.IOException;

public class ProfMainController {

    @FXML
    private ComboBox<Filiere> comboFilliere;

    @FXML
    private ComboBox<Semestre> comboSemestre;

    @FXML
    private ComboBox<Module> comboModule;

    @FXML
    private ComboBox<Matiere> comboMatiere;

    @FXML
    private TextField stp_tf;

    @FXML
    private TextField cee_tf;

    @FXML
    private TextField cetp_tf;

    @FXML
    private ComboBox<?> comboSession;
```

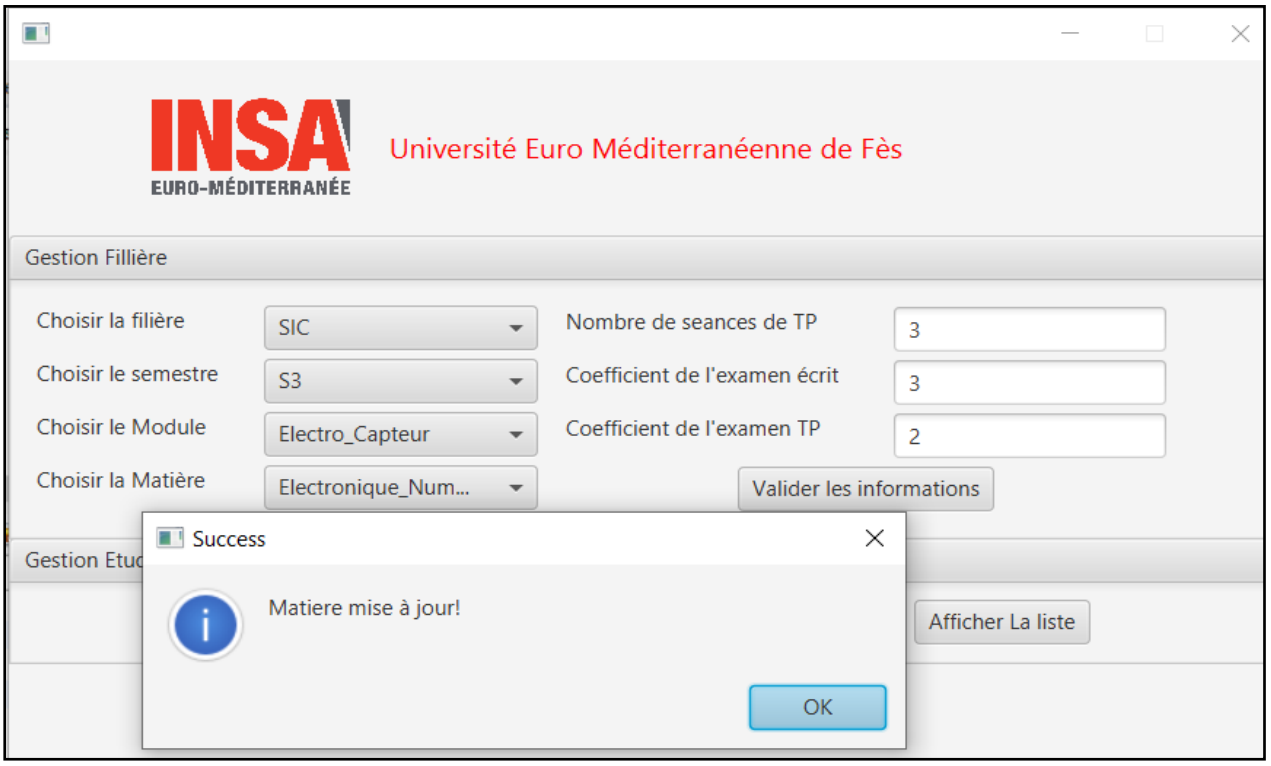
For each student, professor hade to enter:

- The number of TP sessions
- Written exam coefficient
- TP coefficient

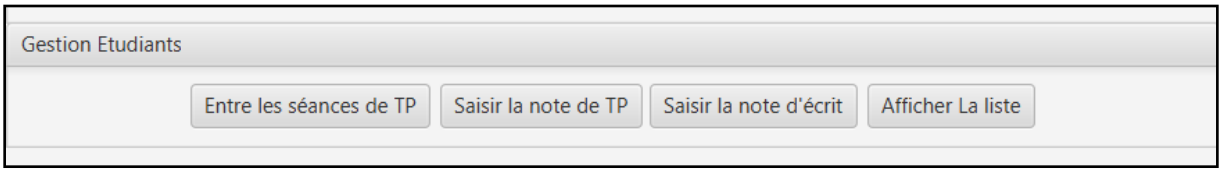
Remark:

- If the student was absent all TP sessions he automatically get -2 as written exam grade.
- To make any modification in the TP sessions, grades… professor has to validate the information first.

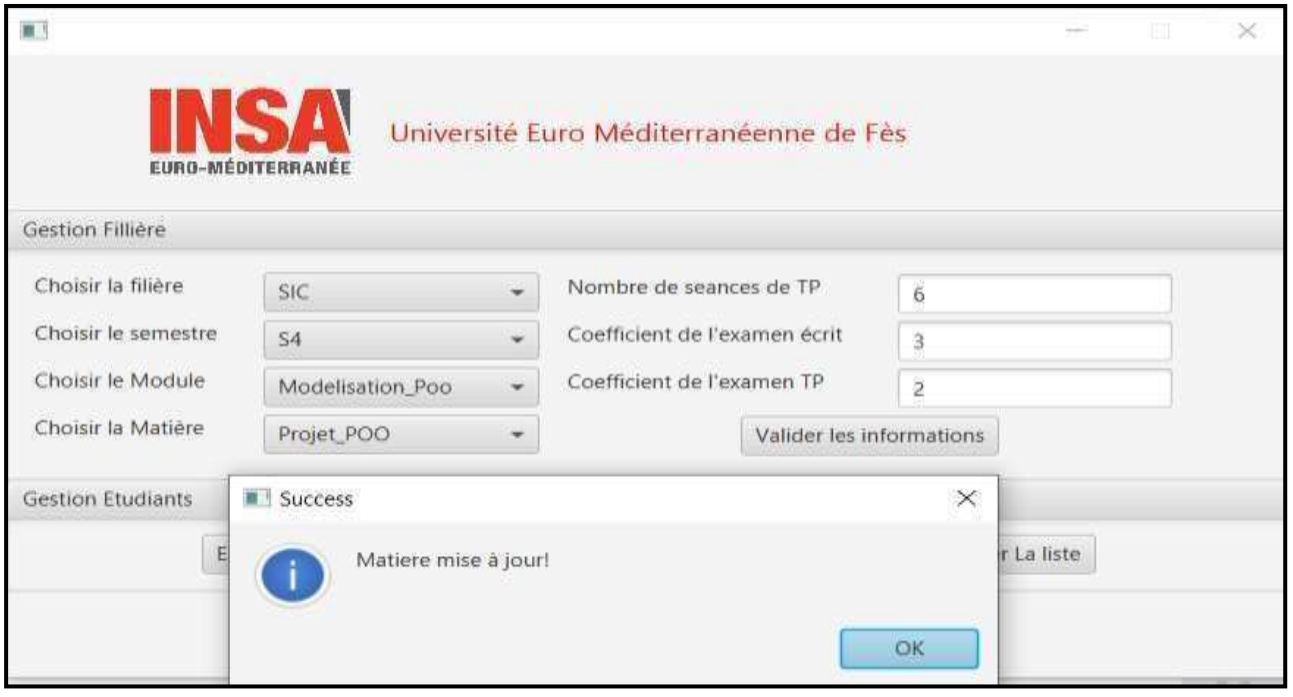


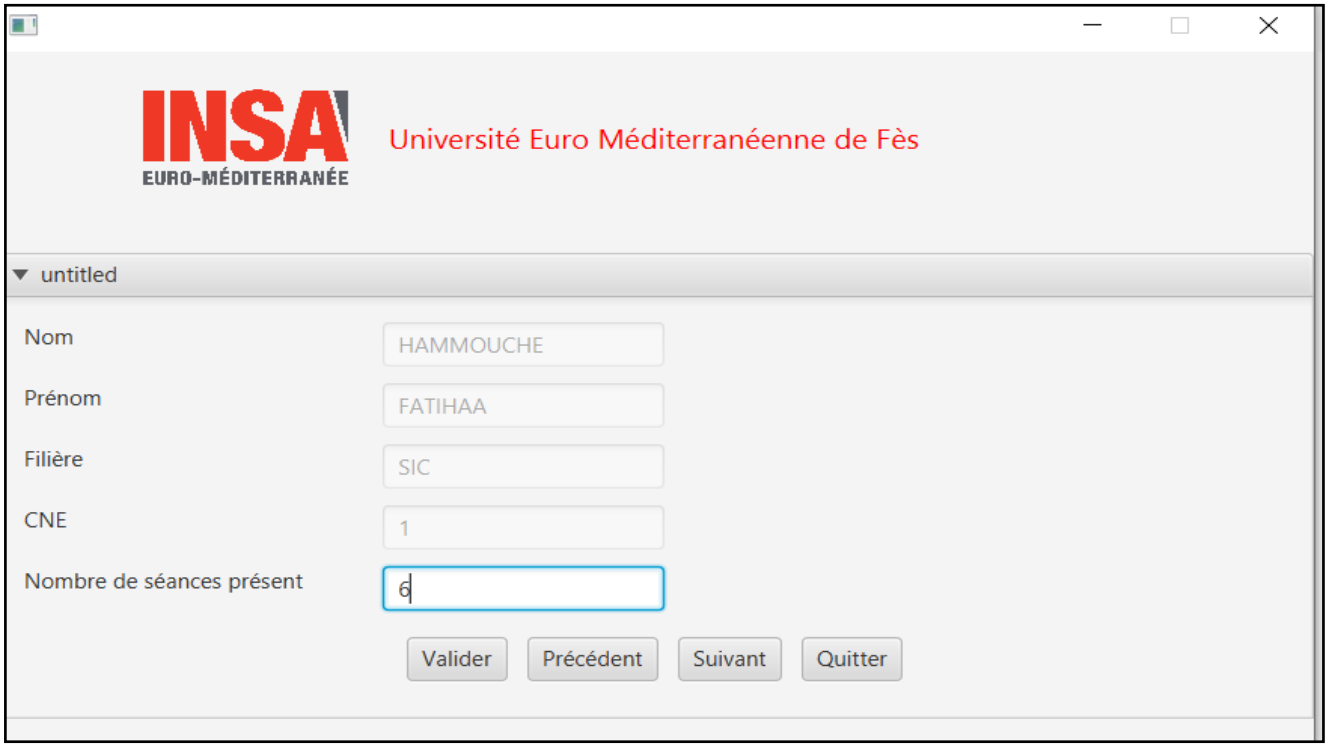


Student management:



- ✓ Enter TP sessions:




INSA
EURO-MÉDITERRANÉE
Université Euro Méditerranéenne de Fès
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Nom
HAMMOUCHE
Prénom
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Filière
SIC
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1
Nombre de séances présent
6
Valider
Précédent
Suivant
Quitter


INSA
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Université Euro Méditerranéenne de Fès
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2
Nombre de séances présent
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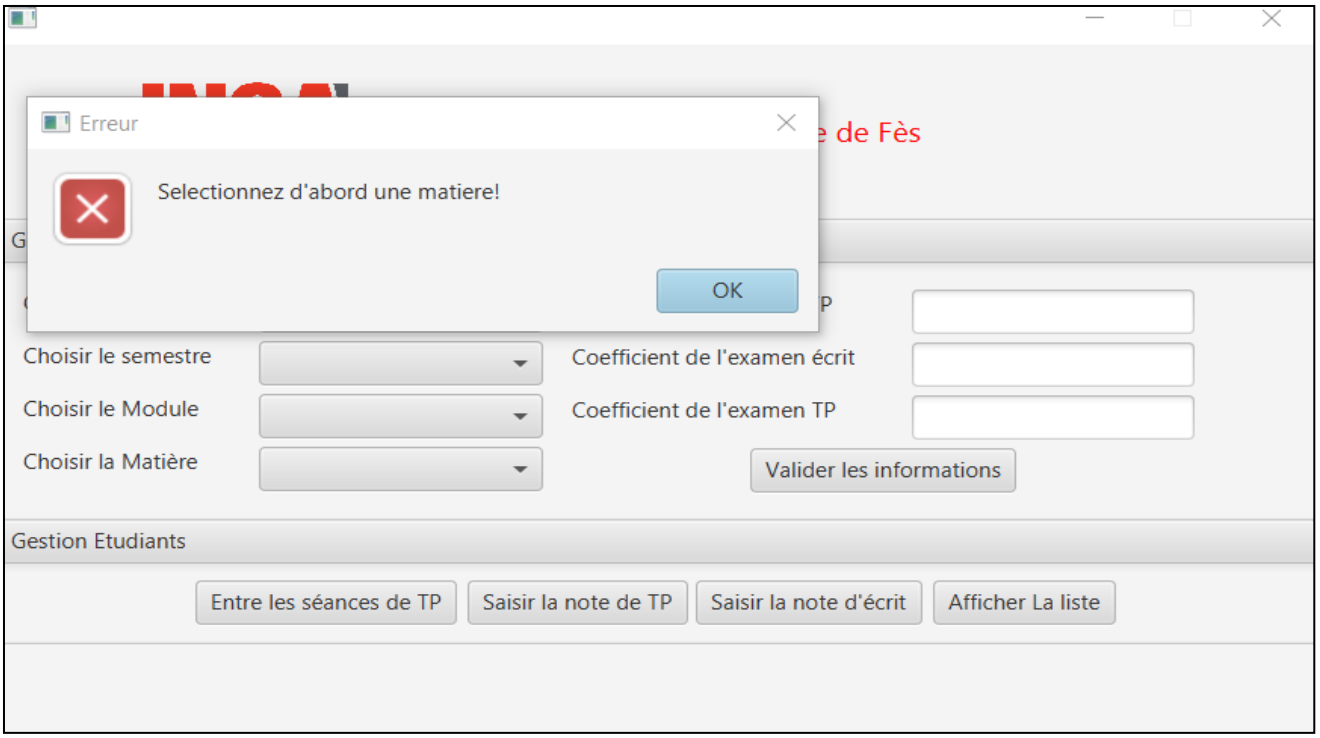
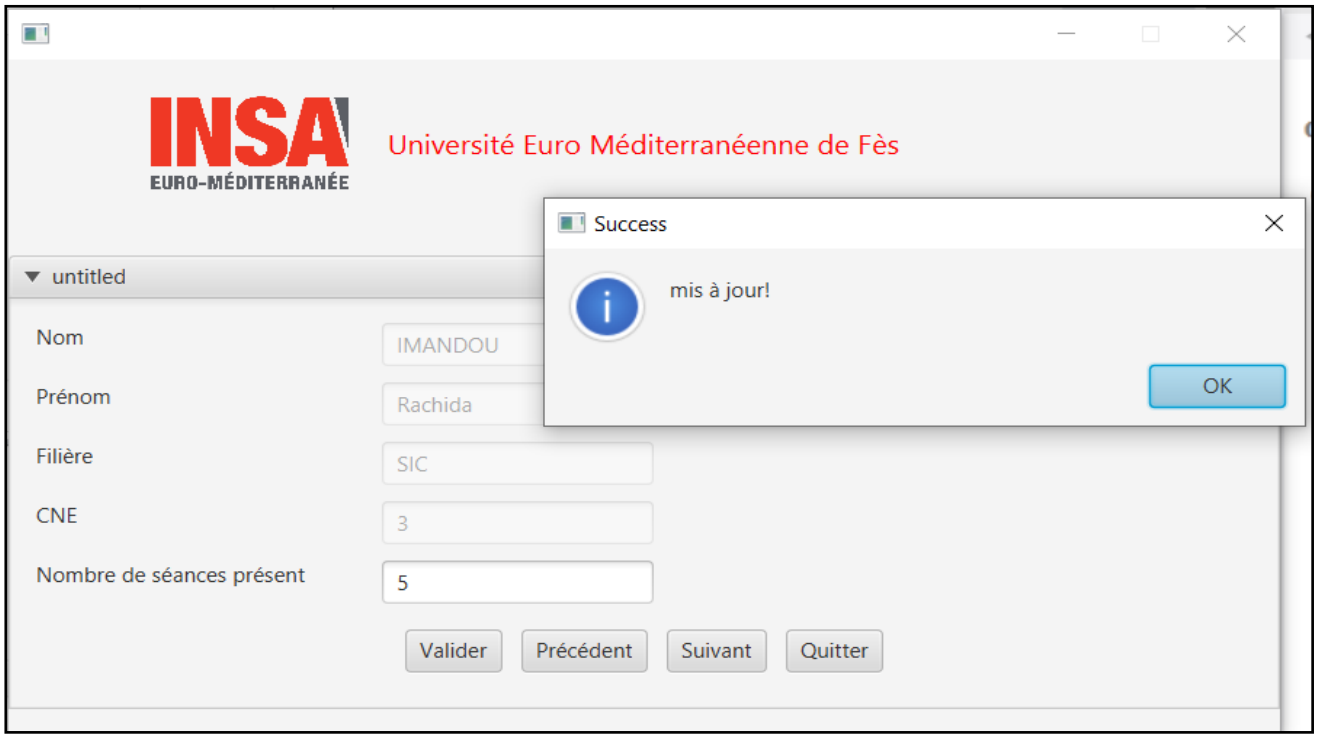
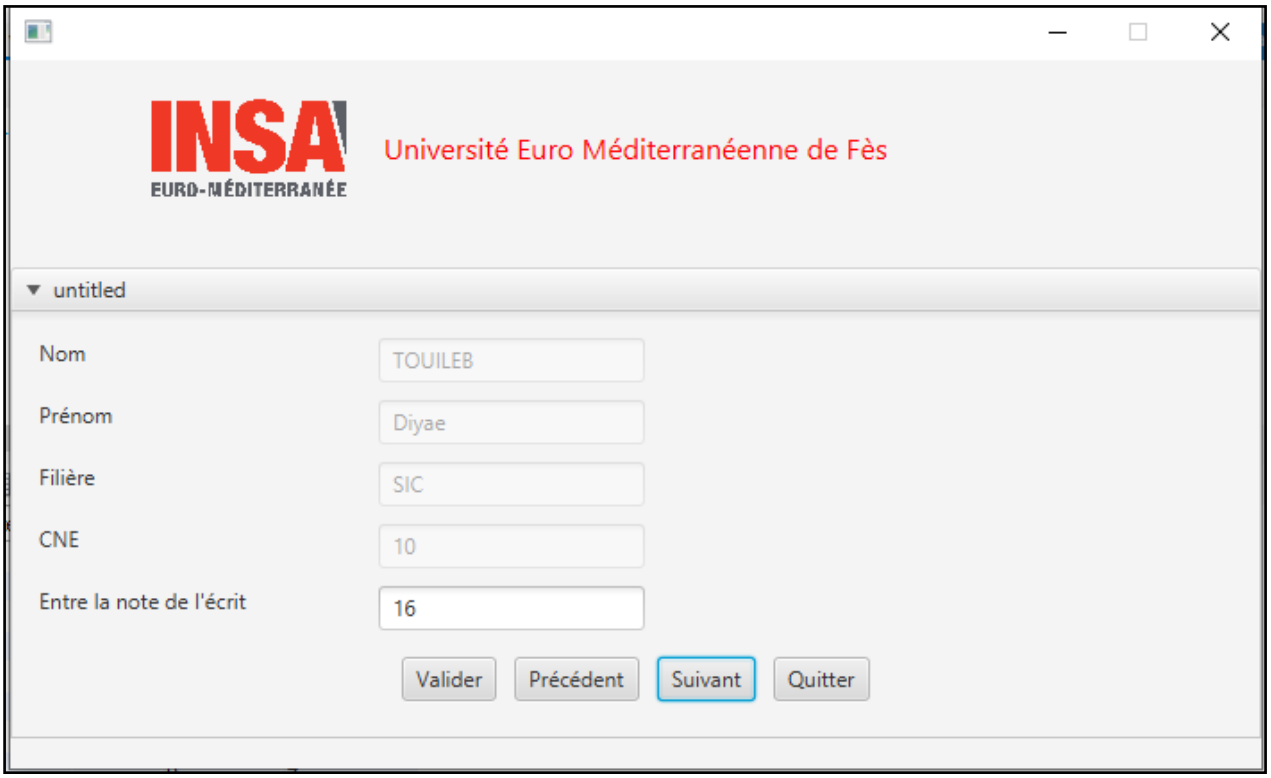
Valider
Précédent
Suivant
Quitter

We should first choose the subject :





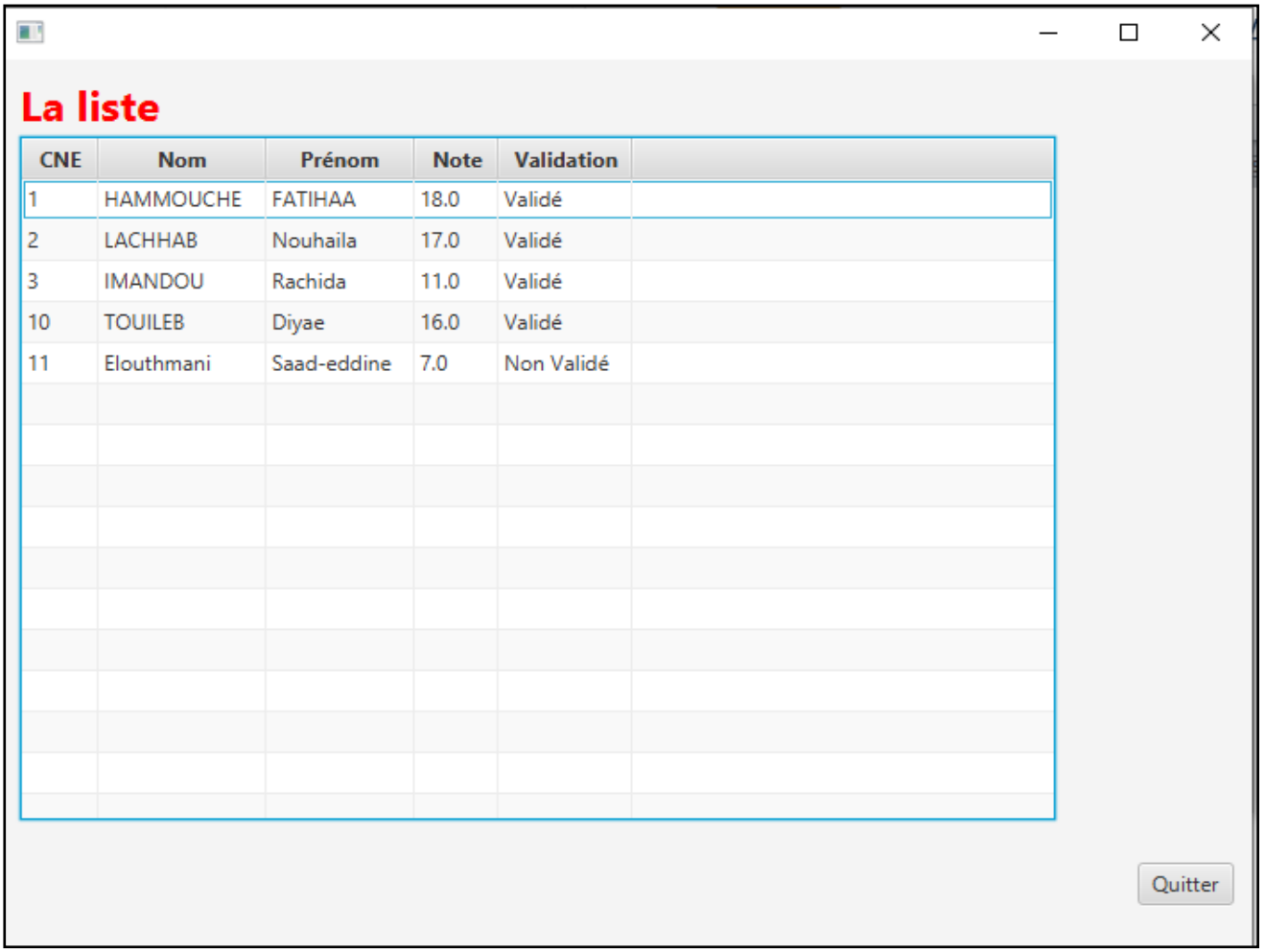
✓ Enter the TP and exam grades:



The grades are well inserted:

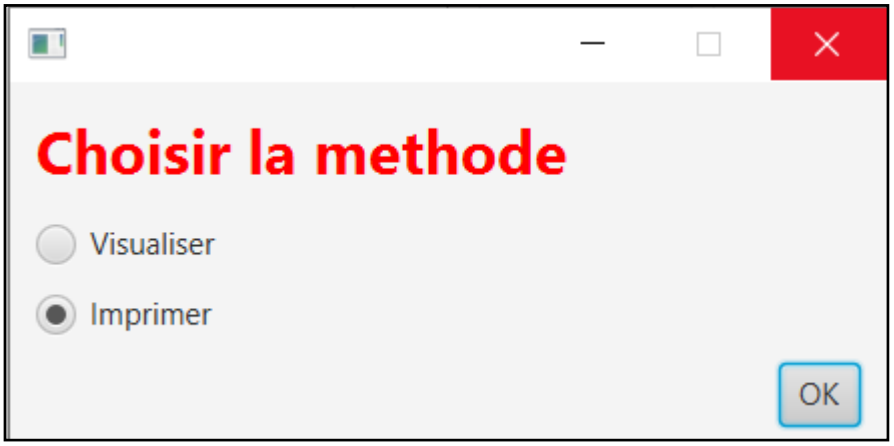
	CNE	Noteecrit	Notetp	id_matiere	presence_tp
	1	18	NULL	6	6
	2	17	NULL	6	6
	3	7	NULL	6	5

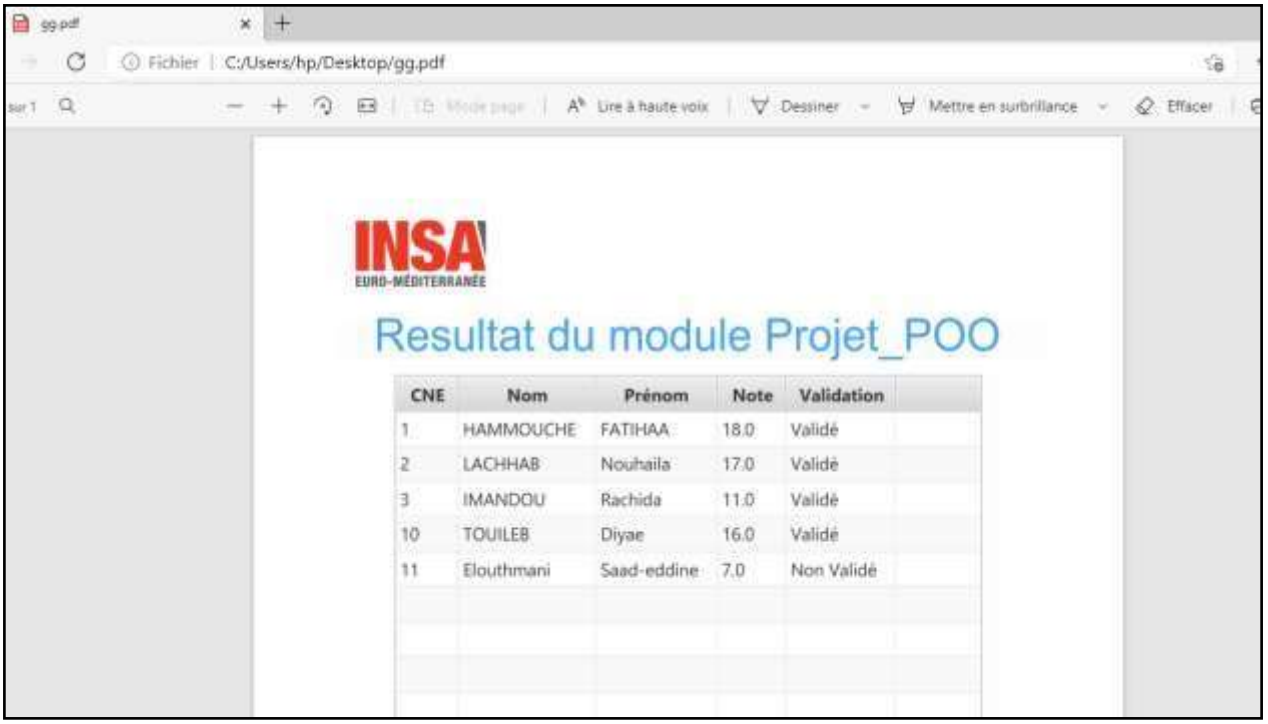
- ✓ Display the list of students(visualize)



✓ Print the list of students:

Here we will print the list of student as PDF, so we will save it as list student.





CNE	Nom	Prénom	Note	Validation
1	HAMMOUCHE	FATIHAA	18.0	Validé
2	LACHHAB	Nouhaila	17.0	Validé
3	IMANDOU	Rachida	11.0	Validé
10	TOUILEB	Diyae	16.0	Validé
11	Elouthmani	Saad-eddine	7.0	Non Validé

Coordinator interfaces:

School Coordinators are teachers or administrators who volunteered on behalf of their schools to ensure that the Field Experience is conducted in accordance with the Tenets School.
On this application we created two sessions: one reference to professor as we have seen, other for coordinator.
Concerning this parts, we will present to you what our application offers to this important member.

1. Connection:

In this part, the coordinator will enter his Id and password for being allowed to the application, but in condition that his id and password should be correct.

In our database we created a tables “user” which contain both professor and coordinator, so according to his id we mentioned his role. So if he is a professor, he could not acceded to this interface.

IDuser	Nomuser	Password	Role
159	Nouha	1789	cordinateur
1785	Fatiha	12345	prof
NULL	NULL	NULL	NULL

This is a simple example that we chose to be sure of our code.

2. Second interface:

- Here the coordinator will choose the department and the semester then he will valid them.
- After that he could click on the button “Resultat par intervalle” that will transfer him to another interface.
- If he clicks on “Afficher Résultat des étudiant”, the coordinator could print the result list.

3. Third interface:

- ✓ The coordinator will determine the minimal average and the maximum one.
- ✓ Then he will click on filtrer for see the module that the student has validated.
- ✓ The final step is to calculate overall average.

CONCLUSION

Conclusion To conclude, this application project was an unforgettable experience thanks to which we acquired a lot of skills, especially in the field of project management. First, we became familiar with computer tools such as Eclipse, JavaFX, and MySQL. Those tools have we used to ensure the proper functioning of our application as well as the interaction with our database. In addition, using this practical activity, we were able to work in project mode, in other words, we avoided working in fusion mode while keeping the spirit of teamwork.

In addition to the positive elements of the work in project mode, its progress and progress was dictated by the appearance of certain problems. Indeed, most of the time, when we encountered a problem, it paralyzed the pursuit of the project because without its resolution we could not move forward. We have encountered problems on both levels, modeling and application.

During this project, we learned how to model a problem using the following steps: “Analysis Design Coding Implementation and testing”.

In nutshell, this project was our first step in our career. It boost my career by having exposure of real-world experience, learning new things and putting into practice my knowledge in IT field.

Bibliographie :

Lien 1 : JavaFxLogInForm/Main.java at main · javacodingcommunity/JavaFxLogInForm · GitHub
Lien 2 : Java Iterator (w3schools.com)
Lien 3 : SQL Tutorial (w3schools.com)
Lien 4 : Modelling & Simulation Tutorial - Tutorialspoint