

CSE251 -Software Engineering

University Management System

System that manages and organize all university aspect to students and staff

Project Manager:

Ayten Hossam -21100785

Team members:

Ahmed Elsayed -21100818

Hana Mohamed -21100863

Aysha Mohamed -21100798

Ahella Mohamed -21100824

Customer Requirements:

I. ***AS a new student:***

- 1) A system that you can register on as a new student with typical registration requirements with fast response.
- 2) A brief of each faculty and good representation on them.

II. ***As new employee:***

- 1) A system that you can register as a new employee with typical registration requirements with fast response.
- 2) Show available different positions that you can choose from.

III. ***As an existing student:***

- 1) **ADDING OR DROPPING COURSES**: enrolling into courses and if wanted dropping any course at anytime
- 2) **GUIDNESS TRANSCRIPT**.
- 3) **CALCULATING EACH SEMESTER'S GPA**: when each semester is done when receiving final grades system should provide the GPA for the semester.
- 4) **GPA CALCULATOR**: if the student would like to do his own calculations on what he expects to get.
- 5) **CLINIC RESERVATION**: there should be an option to reserve a clinical appointment to avoid being crowded.
- 6) **INVOICES ON EACH SEMESTER PAYMENT WITH ONLINE PAYMENT METHODS**: the system should provide the invoice on each payment of every semester.
- 7) **QUESTIONER**: Adding an option for the student to ask and interact with the university staff.
- 8) **LIBRARY ACCESS**: Giving the student the access for Library from books to whatever he wants and showing their availability.
- 9) **KEEPING TRACK OF STUDENTS' PERFORMANCE**: The student should be provided his time-by-time performance to keep track of his marks and to have easy access to them.

- 10) **ACADEMIC ENTERTAINMENT NEWS:** on every entertainment related news should also be provided.
- 11) **STUDENT APPEAL:** If the student would like to make sure that the final mark, he got is really correct.
- 12) **WORK SUBMISSIONS:** An option that allows the student to submit his work and reviewing it to doctors / TA.
- 13) **BUS BOOKING:** At the beginning of each semester there should be a bus booking option to make it easy for the student.
- 14) **FINAL EXAM EXCUSES:** If there were any real-life excuses for the student to not to attend the final exam so there should be an option to put on these kinds of excuses.
- 15) **STUDENT PROFILE AND INFO:** Giving access for the student's profile.
- 16) **SETTINGS:** allowing the student to change any info related to his account like password.
- 17) **TECHNICAL SUPPORT:** In case of any technical issues students should be provided the help for it.
- 18) **CONTACT THE OFFICE:** In case of wanting to ask about any questions regarding the university.

IV. ***As an existing employee:***

- 1) **As a doctor:** You can view your student's data and adding their performance/editing them. View Salary history and raises. View attendance on lectures. Dropping courses for students. Giving students grades and updating them with their performance based on the last marks.
- 2) **As a Teaching assistant:** You can view your student's data and adding their performance/editing them. View Salary history and raises. View attendance on lectures. Dropping courses for students. Add lab performance and answer students' question on questioner.
- 3) **As a department member:** Having access to all university members' accounts but, answering to any problems facing any user, accepting new registered students based on the requirements, accepting who applied for available jobs, reading and accepting students appeal and then sending them to their proper doctors.
- 4) **Staff:** Viewing their salary/raises history and attendance on work days.

Subsystem we have in this system:

We have 8 subsystems:

Logging in Management: It is a system for all different users to enable them to log in to the system with the provided username and passwords.

Salary Management: It is a sub system for doctors and teaching assistants A) that automatically update them with their monthly salary B) shows their salary history.

Student Record Management: is a subsystem for students to view their A) performance in case of showing attendance and grades in general in the course they chose to view their performance in B) view final grades of the past semester when the student chooses the semester, they would like to view the grades in a report appears with CGPA and term GPA and course codes with total credit hours of semester and credit hours of each course along with grades.

Courses Management: Is a subsystem for students that has A) adding and dropping courses for student, the student chooses the course he would like to add or drop then the system automatically removes or add it. B) after that can view their timetable C) can also view the guideness transcript for the courses.

Payment options Management: it is a subsystem for students that A) Has an option of printing the invoice of the semester

And paying by the bank. B) Or paying online with Mastercard.

Class Material Management: is a subsystem made for the students to view the course material that the doctor/TA has added.

System management: subsystem that the department handles and A) has access to all users B) sending invoices to students and C) salary for employees D) Creates and send s the reports of each semester to the students.

Courses in progress Management: is a subsystem for the courses that the doctor has, he has access to add material, drooping courses for some students that their performance didn't satisfy the needed mark, add attendance/marks and being able to edit them.

- **The traceability matrix:**

| Features | Salary Management | Student Record Management | Courses Management | Payment options Management | System management | Courses in progress Management | Class material Management |
|-------------------------------|-------------------|---------------------------|--------------------|----------------------------|-------------------|--------------------------------|---------------------------|
| Adding or dropping courses | | | ✓ | | | | |
| Guidness transcript | | | ✓ | | | | |
| Calculating each semester GPA | | ✓ | | | | | |

| | | | | | | | |
|--|---|---|--|---|---|---|---|
| Tracking of students' performance | | ✓ | | | | | |
| Invoices on each semester | | | | ✓ | | | |
| Adding materials | | | | | | ✓ | |
| View class material | | | | | | | ✓ |
| Department sending invoices | | | | | ✓ | | |
| Viewing final student grades | | ✓ | | | | | |
| Doctor/TA updating students' performance | | | | | | ✓ | |
| View Salary Salary/Payment history | ✓ | | | | | | |
| Access to all members by department | | | | | ✓ | | |

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|--|--|--|--|--|---|--|--|
| Sending invoices to students and salary bills to TA/DR | | | | | ✓ | | |
|--|--|--|--|--|---|--|--|

Interface Definitions:

Interface 1: Log In interface

- Public void EnterUsername(username str);
- Public void EnterPassword(password str);
- Public void GuidToGetHelp();

Interface 2: Calculations

- Public void CalculateCGPA(allGPAs ArrayList <Integer>);
- Public void CalculateSalaryBill(Salary Double, Tax Double, Raise Double);
- Public void CalculateInvoice(Invoice int, PastInvoice int, ExtraInvoice int, ChargeandDeposit int);
- Public void CalculateTotalCreditHours(EveryCourseCreditHours ArrayList<Integer>);
- Public void CalculateNumberOfCourses(Coueses ArrayList<Integer>);

Interface 3: Class Material

- Public void AddClassMaterial(Materials ArrayList<Objects>);
- Public void DeleteClassMaterial(Materials ArrayList<Objects>);
- Public void ViewClassMaterial Materials ArrayList<Objects>);

Interface 4: Salary Related

- Public void SetSalaryBill(Salary int);
- Public void ViewSalaryBill();
- Public void ViewSalaryHistory(Salarypast ArrayList <Objects>);
- Public void ViewSalaryMonths(Salarymonth ArrayList <Objects>):
- Public void ViewSalaryRelated(Salarypast ArrayList <Objects>);
- Public void SendSalaryUpdates(Salarypast ArrayList <Objects>);

Interface 5: Invoices

- Public void PrintInvoice(Invoice ArrayList <Objects>);
- Public void ViewInvoice(Invoice ArrayList <Objects>);
- Public void AddInvoice()
- Public void SendInvoice(Invoice ArrayList <Objects>);
- Public void RemoveInvoice(Invoice ArrayList <Objects>);

Interface 6: Report

- Public void AddReports(Reports ArrayList <Objects>);
- Public void AddCourseToReport(Course Object, Reports ArrayList <Objects>);
- Public void DisplayReports(Reports ArrayList <Objects>)
- Public void RemoveReport(Reports ArrayList <Objects>)
- Public void ArrangeReportAccordingToSemester(Reports ArrayList <Objects>);
- Public void SendReportToStudent(Reports ArrayList <Objects>);
- Public void ForbidStudentFromReport(Reports ArrayList <Objects>);
- Public void ArrangeReportBySemester(Reports ArrayList <Objects>)

Interface 7: Timetable

- Public void AddCourseToTimeTable(Course str TimeTable ,ArrayList <Objects>)
- Public void RemoveCourseFromTimeTable(TimeTable ArrayList <Objects>, Course str);
- Public void DisplayTimeTable(TimeTable ArrayList <Objects>);

Interface 8: Performance of Student

- Public void AddAttendance(Attendance ArrayList <Objects>);
- Public void RemoveGradeQuiz(Grades ArrayList <Objects>, Grade Object);
- Public void AddGradeQuiz (Grades ArrayList <Objects>, Grade Object);
- Public void RemoveGradeAssignment(Grades ArrayList <Objects>, Grade Object);
- Public void AddGradeAssignment(Grades ArrayList <Objects>, Grade Object);
- Public void RemoveGradeMidtermGrades ArrayList <Objects>, Grade Object);
- Public void AddGradeMidterm(Grades ArrayList <Objects>, Grade Object);
- Public void ViewPerformance (Grades ArrayList <Objects>)

Interface 9: Payment

- Public void PayByMasterCard(Cardnumber int, Cvv int);
- Public void ViewPaymentPage();
- Public void PayByCash(Payment Double);
- Public void ConfirmPayment(Payment Double)
- Public void ViewPaymentPage();

Interface 10: Add Courses

- Public void AddCourseByStudent(Course Str,Courses ArrayList <Courses>,TimeTable ArrayList<Objects>);

Interface 11: Remove courses

- Public void DropCourseByStudent (Course Str,Couses ArrayList <Courses>,TimeTable ArrayList<Objects>);
- Public void DropCourseByDoctor(Course Str,Couses ArrayList <Courses>,TimeTable ArrayList<Objects>);

Interface 12: Management

- Public void AccessAllAccounts(Accounts ArrayList<objects>);

Interface 13: Lists

- Public void DisplayStudentList(Students ArrayList<Objects>);
- Public void DisplayDoctorsList(Doctors ArrayList<Objects>);
- Public void DisplayStudentList(Students ArrayList<Objects>);
- Public void DisplayTAsList(Students ArrayList<Objects>);
- Public void DisplayTimetable(Timetable ArrayList <objects>);
- Public void DisplaySalaryHistoryList(SalaryHistory ArrayList <objects>);
- Public void DisplayCoursesList(Courses ArrayList <objects>);
- Public void DisplayRepotList(Report ArrayList <objects>);

| Subsystem Name | Subsystem Function | Subsystem Interface |
|----------------------------------|--|--|
| Logging in Management | It is a system for all different users to enable them to log in to the system with the provided username and passwords. | <ul style="list-style-type: none">• Log in |
| Salary Management | It is a sub system for doctors and teaching assistants A) that automatically update them with their monthly salary B) shows their salary history. | <ul style="list-style-type: none">• Calculations• Salary Related• Invoices• Display |
| Student Record Management | is a subsystem for students to view their A) performance in case of showing attendance and grades in general in the course they chose to view their performance in B) view final grades of the past semester when the student chooses the semester, they would like to view the grades in a report | <ul style="list-style-type: none">• Lists• Calculations• Display• Performance of student• Report |

| | | |
|---------------------------------------|---|---|
| | appears with CGPA and term GPA and course codes with total credit hours of semester and credit hours of each course along with grades. | |
| Courses Management | Is a subsystem for students that has A) adding and dropping courses for student, the student chooses the course he would like to add or drop then the system automatically removes or add it. B) after that can view their timetable C) can also view the guideness transcript for the courses. | <ul style="list-style-type: none"> • Lists • Display • Add course • Remove Course • Timetable |
| Payment options Management | it is a subsystem for students that A) Has an option of printing the invoice of the semester And paying by the bank. B) Or paying online with Mastercard | <ul style="list-style-type: none"> • Calculation • Lists • Payment • Invoices |
| Class Material Management | is a subsystem made for the students to view the course material that the doctor/TA has added. | <ul style="list-style-type: none"> • Lists • Class material |
| System management | subsystem that the department handles and A) has access to all users B) sending invoices to students and C) salary for employees D) Creates and send s the reports of each semester to the students | <ul style="list-style-type: none"> • Lists • Management • Invoice • Payment • Report • Salary Related • Calculations |
| Courses in progress Management | is a subsystem for the courses that the doctor has, he has access to add material, drooping courses for some students that their performance didn't satisfy the needed mark, add attendance/marks and being able to edit them. | <ul style="list-style-type: none"> • Lists • Remove Course • Performance • Calculations |

The Manual Script for each User:

1.Once the website is open the user can log in to an existing account or type in his username and password that was given by the university department.

1.1.the user have the option to use google password manager for easy access to his account

1.2. For our system according to each account the user receives his requirements as (Student,TA,Doctor,...)

1.3. Upon logging successfully, the user will get his desired requirements.

1.4. The user now will be able to make his choice.

2.This is the student manual script.

2.1. Firstly, a tab will appear with 4 different options [**Courses button, Class material button, Record button and payment button.**]

2.2.1. if the student chooses **Courses button**

- a tab will appear with 3 options (**Add/Drop classes button, Guide transcript button and view timetable button**)

2.2.1.1. **In case of choosing Add/Drop classes.**

- A tab will appear with two buttons (Add class/Drop class)
- The student chooses one of them.

A) In case of choosing Add class:

1)The system provides the user with all the courses that are available and he can enroll to (according to the semester he is in and his GPA)

2)Then the student chooses which course he would like to enroll to.

3)Upon choosing the course, a tab will appear with all available timings for the course.

4) Then the student chooses his suitable timing.

5) After that a message will appear that he enrolled successfully.

B) In case of choosing Drop class:

- 1)The system provides the student with all of his already enrolled to courses
- 2)Then the student makes his discussion of dropping which class.
- 3)A successful message appears of dropping this course

2.2.1.2. In case of choosing Guide Transcript

- A tab will appear with a semester from 1 to
- The student chooses the semester that he is about to be in
- A list of courses appears and that would be the system giving him some sort of an example of what to take in this semester to help him with adding the courses in this semester.

2.2.1.3. In case of choosing View Timetable

- A tab will appear with a table that shows all courses student has enrolled to and classified throughout the week with the proper timing of each course's(Lecture,Lab,Tutorial,.....) and total number of courses enrolled to.

2.2.2. If the student chooses class material button

- a tab with the option of viewing every class the student enrolled in
- The student can choose any course to open.
- another tab to view the class material: lectures (slides, videos) Tutorial (slides, videos), Quizes answer.

2.2.3. In case of choosing Record button.

- A tab will appear with two buttons (**Performance/Semester past Grades**)
- The student chooses one of them.

A) In case of choosing performance:

1)The system provides the student with a list of his already enrolled to courses.

2)Student chooses the course he would like to view his performance in.

3)A tab will appear with a table containing all his semester work added on by the doctor or TA throughout the whole semester.

B) In case of choosing Semester past Grades:

1) A tab will appear with a list of all the semester that the student passed and the system calculated his GPA in (either **CGPA or GPA**)

2) The student chooses which of the semesters he would like to check on his marks.

3) A report will appear with:

- Each course name and the hours for it to be completed and its grade.
- The total GPA of the semester only.
- The CGPA of all the semesters passed
- The total credit hours he took in the semester.

2.2.4. If the student chooses **Payment button**,

- a tab will appear with 2 options (**Online payment button and print invoice button**)

A) In case of choosing online payment button

- a tab will appear with different methods to choose from to pay student invoice (visa card, master card, apple pay, fawry pay...)
- a tab will appear with card information so the student can fill them and the bill will appear afterwards

B) In case of choosing print invoice button

- a tab will appear with student invoice and print button options so the student can print it as receipt.

3. This is the Doctor's manual script.

3.1. Firstly, a tab will appear with 2 different options (**Courses in progress/Salary**)

3.1.1. If his choice is **courses in progress**

- The system shows a list of all courses that the doctor gives this semester.
- The doctor chooses which course he would like to view.
- it will appear the tab that has 4 options (**adding/view materials, dropping courses, adding/edit marks and attendance, show students enrolled**)

3.1.1.1. If his choice is **Adding /view materials**:

- doctors and TA have access to upload their lectures,recordings,tutorials and assignments.

3.1.1.2. If his choice is **dropping courses**:

- A list of all students appears.
- The doctor chooses which student that his performance wasn't enough for the course
- Then a confirmation message appear that the student now is no longer in the course.

3.1.1.3. If his choice is **adding/edit marks and attendance**:

- the doctors have sheet about student's name,ID and each student absence and presence in the past lectures.
- The doctor has ability to put (project,midterms,exams,quizes,assignments,semester work,attendance) marks and edit them whenever he needs to.

3.1.1.4. If his choice is **showing students enrollment**:

- A list of students who have enrolled in the course will appear.

3.1.2. if the doctor chooses "**salary**"

- New tab with 2 options will be appear (**View my salary, salary history**)

A) if he chooses View my salary:

- a blank tab will be appeared with his monthly salary.

B) if he chooses salary history:

- a tab will be appeared with all months from he started to work till now.
- then he will choose the month that he wants to know the salary of.
- after choosing the months the blank tab with his salary will be appear

4.This is the TA's manual script.

4.1. Firstly, a tab will appear with 2 different options (**Courses in progress/Salary**)

4.1.1. If TA choice is **courses in progress**

- The system shows a list of all courses that the TA gives this semester.
- The TA chooses which course he would like to view.
- it will appear the tab that has 4 options (**adding/view materials, adding/edit marks and attendance, show students enrolled**)

3.1.1.1. If TA choice is **Adding /view materials:**

- TA have access to upload their lectures,recordings,tutorials and assignments.

3.1.1.2. If his choice is **adding/edit marks and attendance:**

- the TA have sheet about student's name,ID and each student absence and presence in the past lectures.
- The TA has ability to put (project,midterms,exams,quizes,assignments,semester work,attendance) marks and edit them whenever he needs to.

3.1.1.3. If TA choice is **showing students enrollment:**

- A list of students who have enrolled in the course will appear.

4.1.2. if the TA chooses “**salary**”

- New tab with 2 options will be appear (**View my salary, salary history**)

A) if he chooses View my salary:

- a blank tab will be appear with his monthly salary.

B) if he chooses salary history:

- a tab will be appeared with all months from he started to work till now.
- then he will choose the month that he wants to know the salary of.
- after choosing the months the blank tab with his salary will be appear

5.This is the Department manual script.

5.1. Firstly, a tab will appear with 3 different options [**Access to all accounts, sending salary, sending invoices, Sending /creating Reports of each semester**]

5.2.1. if the Department chooses **Access to all accounts**

- A list with choosing either(student,doctor,TA)
- Then a tab with a list of all account appears
- The department can edit or do whatever he wants

5.2.2. if the Department chooses **Sending salary**

- A tab will appear with two icons doctor or TA
- Then a list of all Doctors or TA
- Then the department chooses who he would like to send
- And press the upload button to upload the bill

5.2.3. if the Department chooses **Sending invoices**

- A tab will appear with all student names
- The department chooses which to send to
- Then press upload button to upload the invoice

5.2.4. if the Department chooses **Sending/Creating Reports**

- A tab will appear with two options Create or send

5.2.4.1. If the department chooses create:

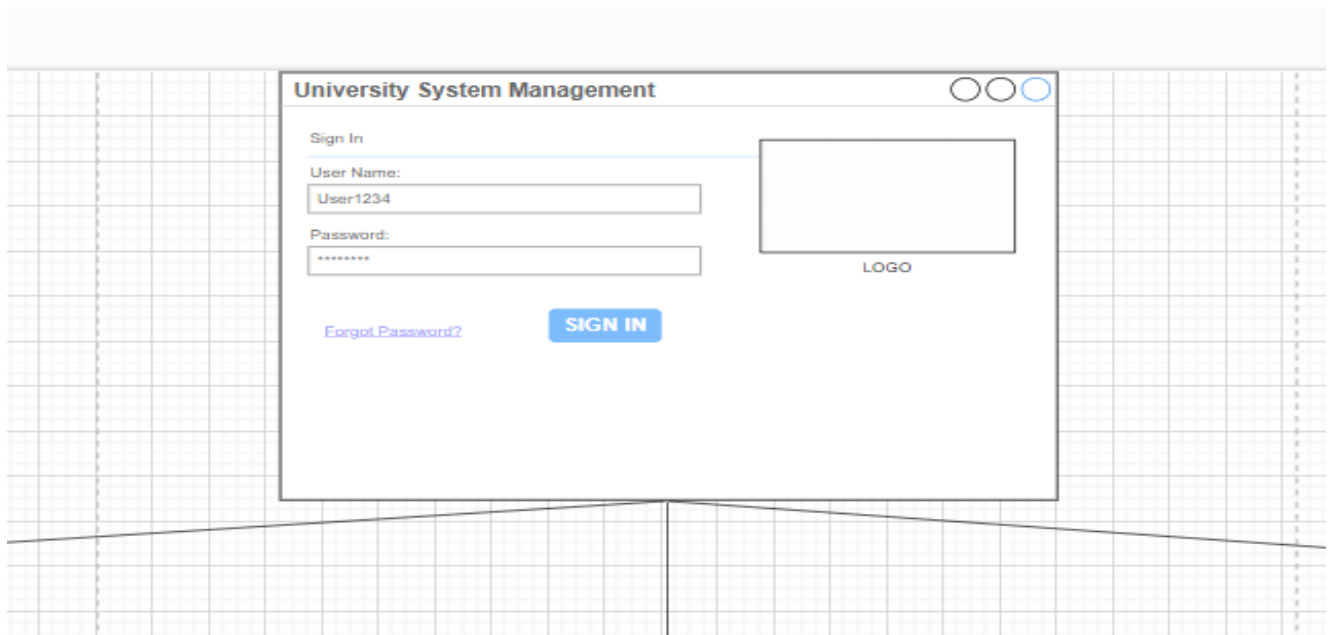
- A blank report page appears and he has to fill in the blanks with student information.
- Then he fills in the courses with grades and credit hours and points
- The system already calculates the CGPA and the GPA according to the courses added by Department.

5.2.4.2. If the department chooses send:

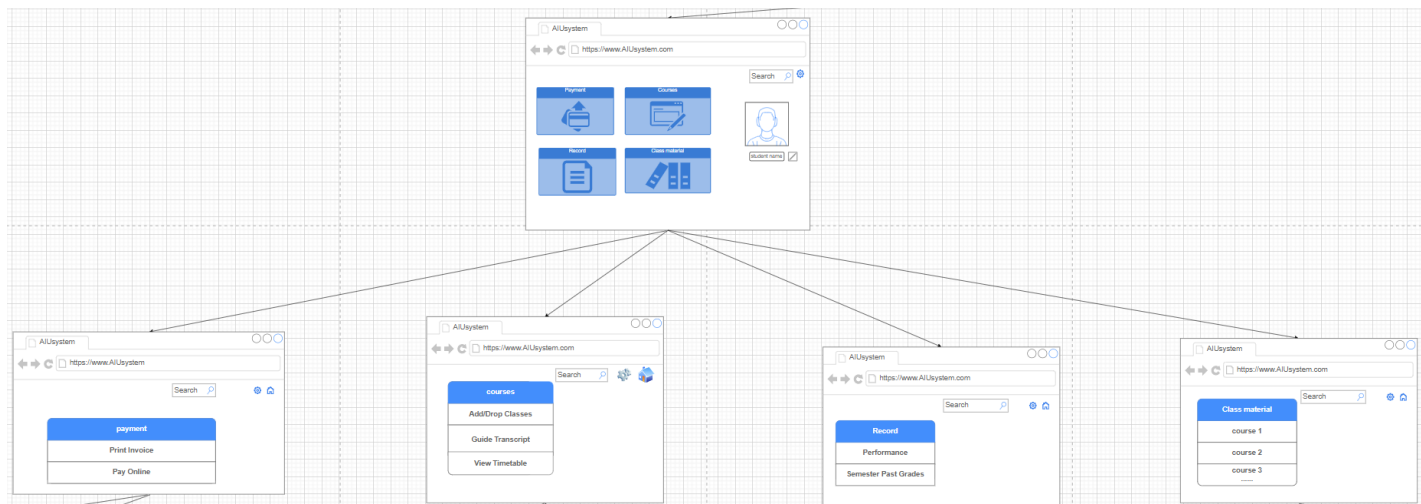
- A list with all students appears.
- The Department chooses.
- Then sends.

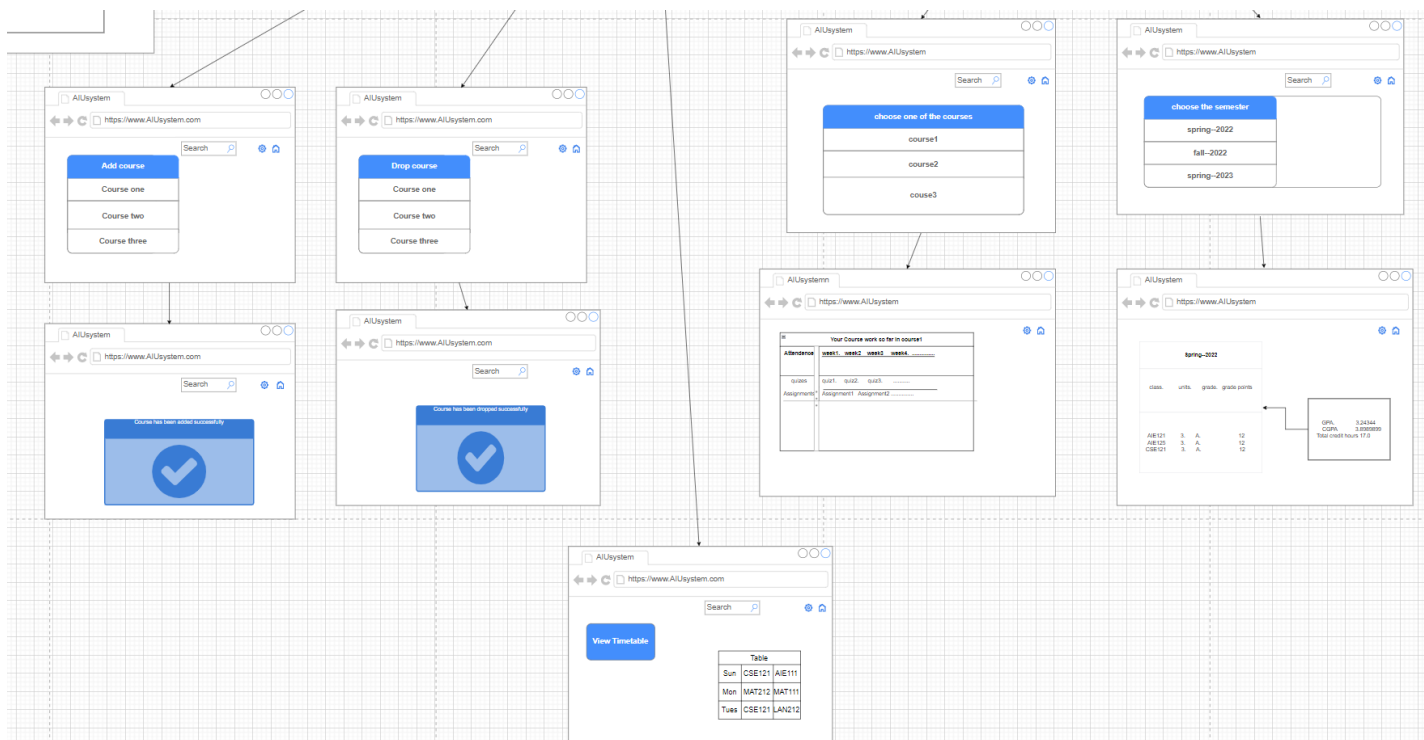
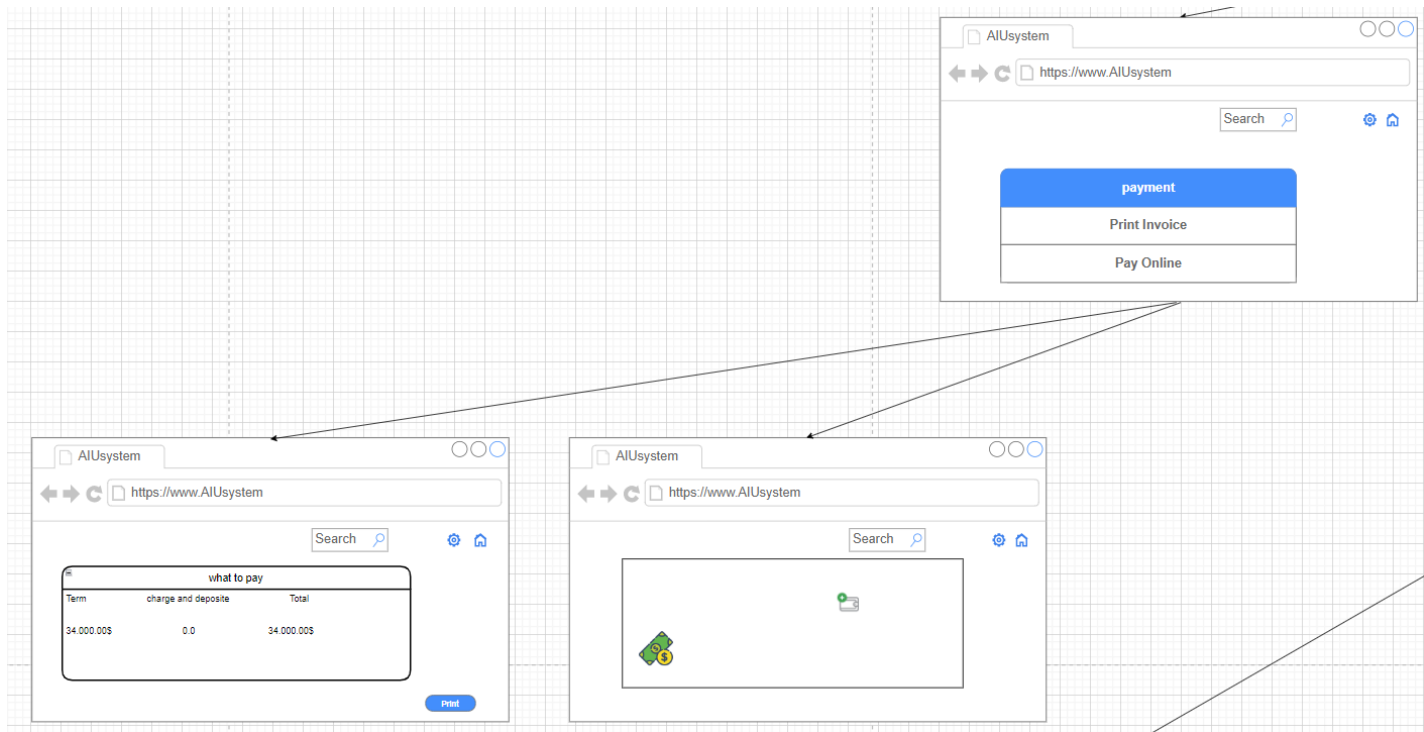
System GUI:

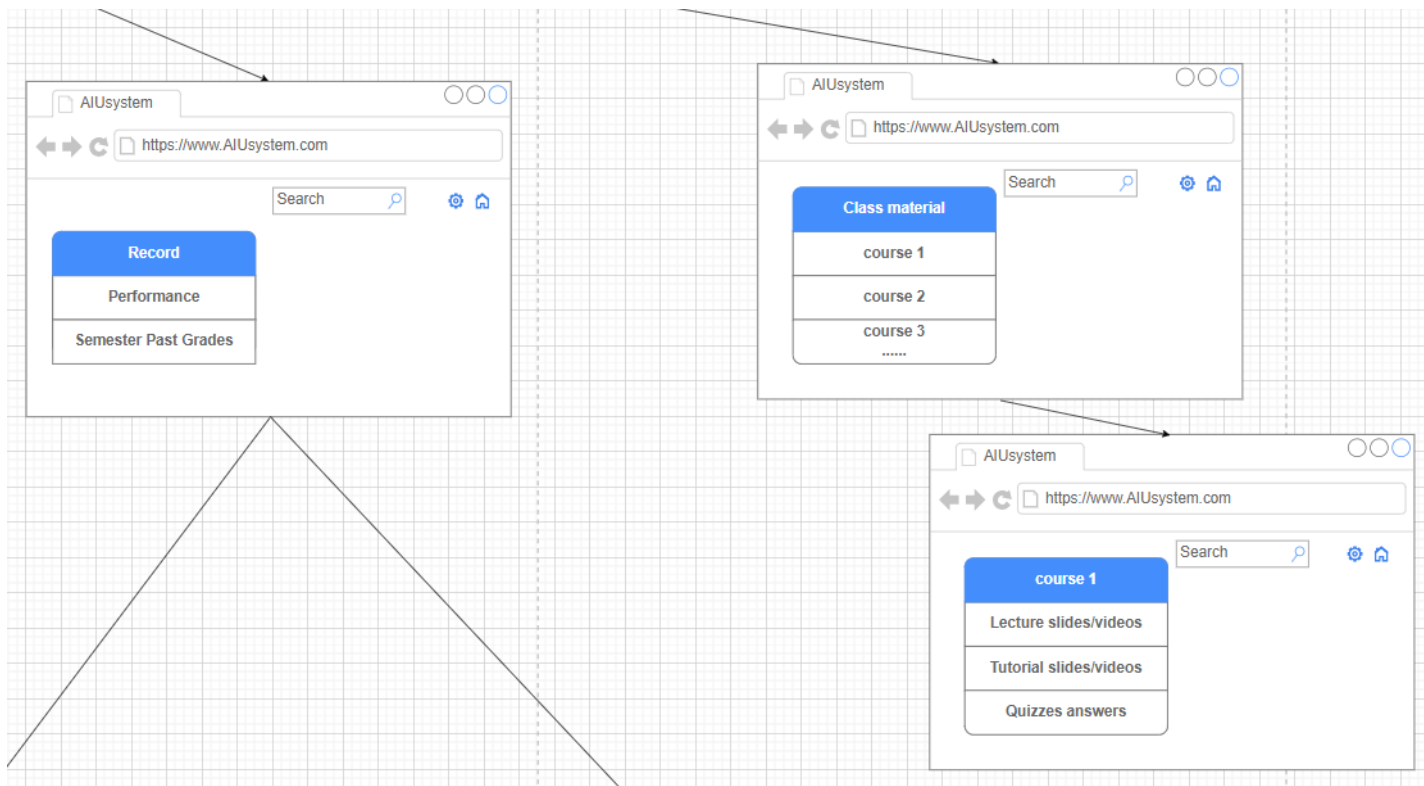
Login Tab:



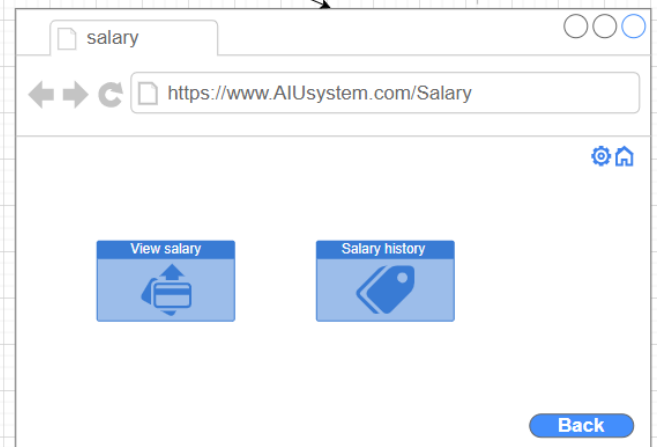
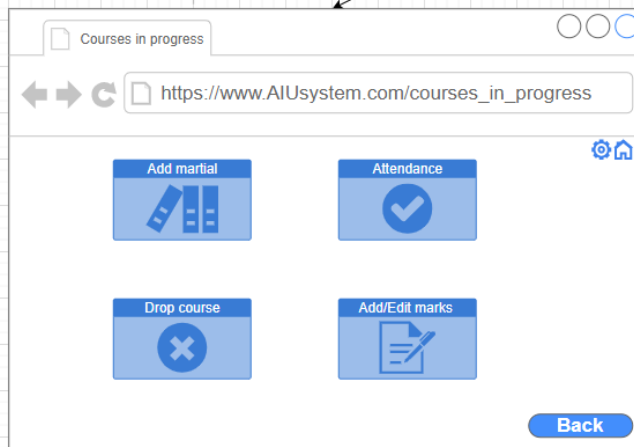
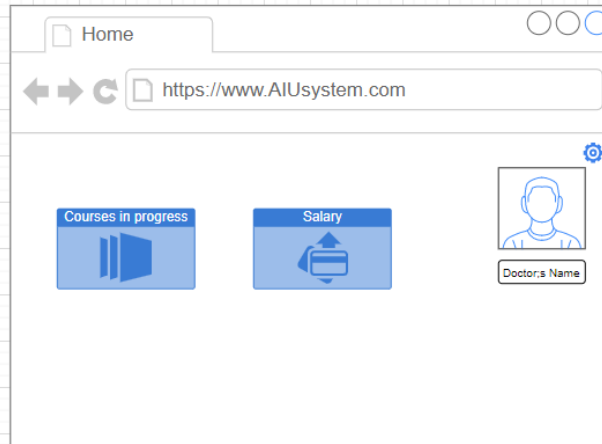
Student Tab:

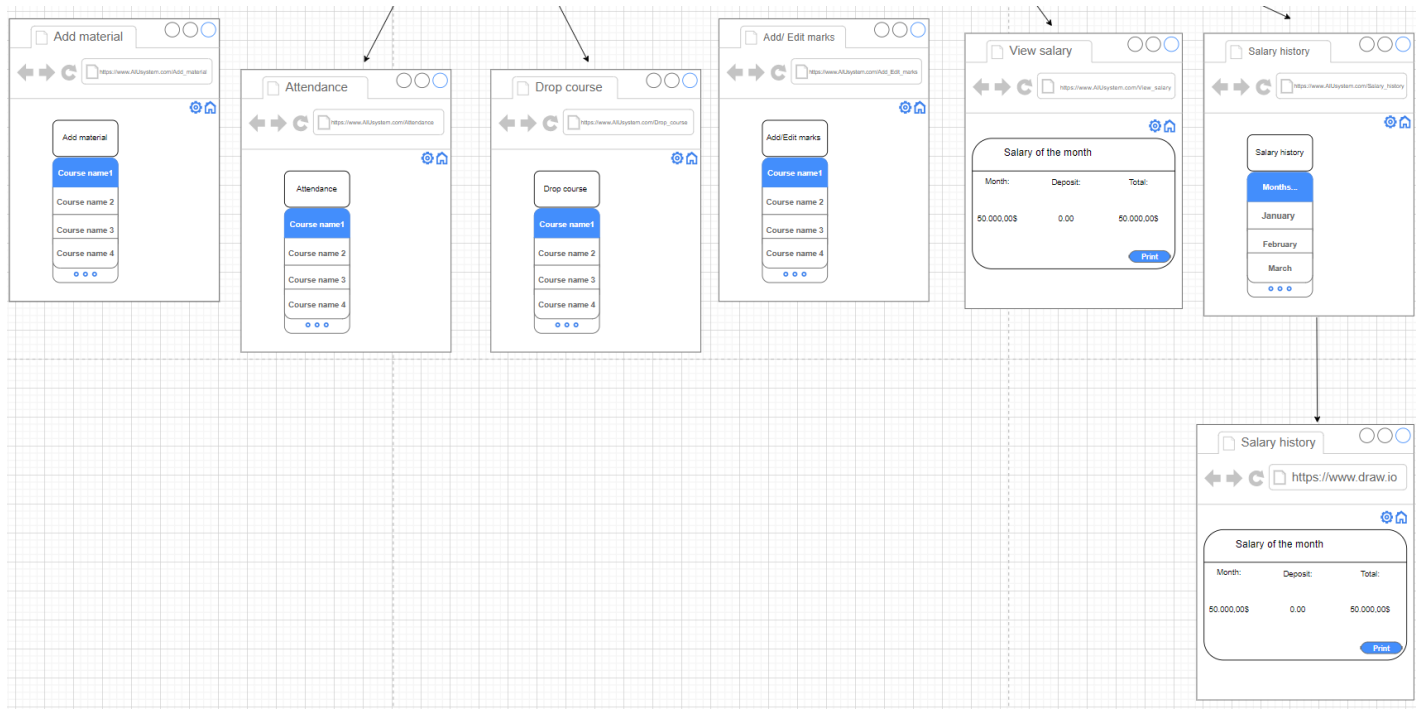






Doctors Tab:





Teaching Assistant tab:

