

Educational Management System

Project Requirements

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BACKGROUND

Many Learning Management System websites are now available to manage educational courses (such as [Acadox](#)). In this one, we can manage students courses, and their grades. Many roles such as **Doctors, Teaching Assistants and Students**. Students submit assignments and Doctors evaluate them. Please explore Acadox or any similar websites to know more about that. In this project, we will try to implement a basic system.

There are many elements that you can think in them in this project:

- Doctors, Teaching Assistants and Students
- Course, Assignments, Assignments Solutions
- Communications between different roles.
- Program Flow (e.g. sign in, see your homepage)

In next sections, we will list some features that we can do through this system. We will develop this system purely as **console** based. Forget about web/GUI based applications in your first 2 years :). If you think something is missing (e.g. what are doctor attributes?), just think and fill the missing information by yourself.

In real life, projects requirements are really big. To make things **simplified** for you, we list requirements in 2 levels. In real life, doing such kind of problem simplification helps you to get the big picture in a gradual manner :)

BASIC LEVEL

DOCTORS

- Each course is created by a doctor. He adds some TAs for the course.
- Course has name, code, and registered students
- Doctors can create assignments, view them, set grades and get statistics
- A Doctor main menu should be
 - "List Courses", "Create course", "View Course", "Log out"
 - Log out option back us to the main menu (sign in / sign up menu)
- If doctor selects **View Course**, his menu may be like
 - "List Assignments", "Create Assignment", "View Assignment", "Back"
 - Back option bring him back to the main menu
- An **Assignment View** menu like
 - "Show Info", "Show Grades Report", "List Solutions", "View Solution", "Back"
- An **Assignment Solution** menu like
 - "Show Info", "Set Grade", "Set a Comment", "Back"
- Please, think what may be else missing...and try to imagine a good requirements for each of the above menu items

STUDENTS

- Have details such as ID, username, password, full name, email
 - email must be validated against wrong formats
- Student main menu should allow him to:
 - Register in course
 - List My Courses
 - View a course
 - Grades Report
 - Log out
- When student choose **Register in a course**, he got list of courses where he is not registered
 - Then, user make a choice to be registered in the course.
- When student choose **View a course**
 - He got a course summary for him
 - Course name, code
 - List Assignments report (see which submitted, which not, any grading)
 - A menu allows him to

- Submit assignment solution
 - Unregister from course
- When student choose **Grades Report**
 - He sees list of courses, with # assignments of each course and the total grades
 - E.g. *Course code CS333 - Total 4 assignments - Grade 101 / 200*

ASSIGNMENTS

- Each assignment belongs to 1 course. Students can submit solutions for assignments.
- Drs can mark assignments...set/update grades...see stats of these grades
- Assignments are solved individually

SYSTEM FLOW

- When user access system he see some menu options (E.g. Sign In, Sign Up)
 - User can be Doctor, TA or Student
- Once logged in, user see menu options customized for him (see previous sections)
- Once logged out, user can go back again to main menu to sign in or signup

DUMMY DATA

- Adding too much data initially is annoying. Try to generate dummy data, such as list courses, Drs, Tas, students, assignments, solutions...etc
- Then system continue doing more sign ups, courses, assignments..etc

RUNNING THE SYSTEM

ASSUME STUDENTS' DATA

```

Student Hussien Samy    with ID 00102345 registered in 6 courses.
    Courses list: CS111 CS112 CS333 CS136 CS240 CS350
Student Ashraf Sayed    with ID 00204690 registered in 7 courses.
    Courses list: CS111 CS112 CS123 CS333 CS136 CS240 CS350
Student Mostafa Hussien with ID 00307035 registered in 4 courses.
    Courses list: CS112 CS123 CS333 CS136
Student Ali Mohamed     with ID 00409380 registered in 6 courses.
    Courses list: CS111 CS112 CS123 CS333 CS136 CS350
Student Hani Sayed      with ID 00501725 registered in 6 courses.
    Courses list: CS111 CS112 CS123 CS333 CS136 CS240
  
```

ASSUME DOCTORS' DATA

Doctor Ali is teaching 0 courses.
 Doctor Mostafa is teaching 0 courses.
 Doctor Hani is teaching 1 courses. Courses Codes: CS333
 Doctor Mohamed is teaching 0 courses.
 Doctor Ashraf is teaching 1 courses. Courses Codes: CS123
 Doctor Samy is teaching 1 courses. Courses Codes: CS111
 Doctor Morad is teaching 2 courses. Courses Codes: CS112 CS350
 Doctor Sayed is teaching 1 courses. Courses Codes: CS136
 Doctor Hussien is teaching 1 courses. Courses Codes: CS240

ASSUME COURSES' DATA

Course name = Prog 1 Code = CS111 - Taught by Dr: Samy
 Registered students ID: 01402830 00204690 00706415 01003450 01105795 016075
 Course name = Prog 2 Code = CS112 - Taught by Dr: Morad
 Registered students ID: 00604070 01105795 02006900 00204690 01802210 001023
 Course name = Math 1 Code = CS123 - Taught by Dr: Ashraf
 Registered students ID: 00501725 02006900 01607520 00204690 01709865 003070
 Course name = Math 2 Code = CS333 - Taught by Dr: Hani
 Registered students ID: 00808760 01709865 01802210 00204690 00501725 019045
 Course name = Prog 3 Code = CS136 - Taught by Dr: Sayed
 Registered students ID: 00501725 01402830 00409380 00901105 01208140 018022
 Course name = Stat 1 Code = CS240 - Taught by Dr: Hussien
 Registered students ID: 00501725 02006900 01208140 00204690 01709865 019045
 Course name = Stat 2 Code = CS350 - Taught by Dr: Morad
 Registered students ID: 01208140 01003450 00102345 00808760 01402830 020069

RUNNING THE SYSTEM

Please make a choice:

- 1 - Login
 - 2 - Sign up
 - 3 - Shutdown system
- Enter Choice: 1

Please enter user name and password:

User Name: s001

Password: s001

Welcome Hussien Samy. You are logged in

Please make a choice:

- 1 - Register in Course
 - 2 - List My Courses
 - 3 - View Course
 - 4 - Grades Report
 - 5 - Log out
- Enter Choice: 3

My Courses list:

- 1) Course Prog 1 - Code CS111
- 2) Course Prog 2 - Code CS112
- 3) Course Math 2 - Code CS333
- 4) Course Prog 3 - Code CS136
- 5) Course Stat 1 - Code CS240
- 6) Course Stat 2 - Code CS350

Which ith [1 - 6] course to view? 1

Course Prog 1 with Code CS111 - taught by Doctor Samy
Course has 3 assignment
Assignment 1 submitted - NA / 24
Assignment 2 NOT submitted - NA / 46
Assignment 3 NOT submitted - NA / 28

Please make a choice:

- 1 - UnRegister from Course
 - 2 - Submit solution
 - 3 - Back
- Enter Choice: 1

Please make a choice:

- 1 - Register in Course
 - 2 - List My Courses
 - 3 - View Course
 - 4 - Grades Report
 - 5 - Log out
- Enter Choice: 3

My Courses list:

- 1) Course Prog 2 - Code CS112
- 2) Course Math 2 - Code CS333
- 3) Course Prog 3 - Code CS136
- 4) Course Stat 1 - Code CS240
- 5) Course Stat 2 - Code CS350

Which ith [1 - 5] course to view? 2

Course Math 2 with Code CS333 - taught by Doctor Hani
Course has 4 assignment
Assignment 1 NOT submitted - NA / 35
Assignment 2 NOT submitted - NA / 52
Assignment 3 submitted - NA / 25
Assignment 4 NOT submitted - NA / 48

Please make a choice:

- 1 - UnRegister from Course
- 2 - Submit solution
- 3 - Back

Enter Choice: 2

Which ith [1 - 4] assignment to submit? 1

Enter the solution (no space)

heee100000

Please make a choice:

- 1 - UnRegister from Course
- 2 - Submit solution
- 3 - Back

Enter Choice: 3

Please make a choice:

- 1 - Register in Course
- 2 - List My Courses
- 3 - View Course
- 4 - Grades Report
- 5 - Log out

Enter Choice: 3

My Courses list:

- 1) Course Prog 2 - Code CS112
- 2) Course Math 2 - Code CS333
- 3) Course Prog 3 - Code CS136
- 4) Course Stat 1 - Code CS240
- 5) Course Stat 2 - Code CS350

Which ith [1 - 5] course to view? 2

Course Math 2 with Code CS333 - taught by Doctor Hani

Course has 4 assignment

Assignment 1 submitted - NA / 35

Assignment 2 NOT submitted - NA / 52

Assignment 3 submitted - NA / 25

Assignment 4 NOT submitted - NA / 48

Please make a choice:

- 1 - UnRegister from Course
- 2 - Submit solution
- 3 - Back

Enter Choice: 3

Please make a choice:

- 1 - Register in Course
- 2 - List My Courses
- 3 - View Course
- 4 - Grades Report
- 5 - Log out

Enter Choice: 4

Course code CS112 - Total submitted 2 assignments - Grade 21 / 83

Course code CS136 - Total submitted 3 assignments - Grade 4 / 68

Course code CS240 - Total submitted 2 assignments - Grade 4 / 31

Course code CS350 - Total submitted 1 assignments - Grade 4 / 46

Please make a choice:

- 1 - Register in Course
- 2 - List My Courses
- 3 - View Course
- 4 - Grades Report
- 5 - Log out

Enter Choice: 5

Please make a choice:

- 1 - Login
- 2 - Sign up
- 3 - Shutdown system

Enter Choice: 3

ADVANCED LEVEL

Note:

- I did not put much time to validate the below requirements...they are just given to let you think about real system features
- Feel free to adjust requirements.

DUMPING SYSTEM TO FILE

- Our system is usually in memory
- Think in a simple text way to save the whole system to hard disk.
- When system starts, load all your data (e.g. courses, students, grades..etc)

DOCTORS

- Doctors may create password (encrypted internally) for a course to be used by the students
- Doctors send invitation to the teaching assistants..who can accept/reject the invitation.
- Doctors can mark course for some TAs to be able to create assignments
- More Advanced: Doctors can extract course report in XML format.

TEACHING ASSISTANTS

- Receive in his inbox invitations from the doctor. Can accept/reject. Can ask for being TA.
- May be allowed to create assignments

STUDENTS

- You must achieve course pre-requisites before course registration
- Course registration has specific period of acceptance.
- Course too has limit...so student can't always register

ASSIGNMENTS

- Assignment can be solved by groups. It has deadline.

COMMUNICATIONS

- The whole staff need to be able to send internal emails and have inbox. Also have email reply features

ANNOUNCEMENTS

- All system members can post on the course main page. Others can reply.

MORE

- I am just giving more features...you can think in more...and can get ideas from e.g. Acadox

FURTHER SYSTEMS

- You need to do several projects to be good...here is a more guide to help you
- See around you systems that you know how to really use
- WRITE a requirement document describing it in details
 - Go and implement it.
- An Example would be a Facebook application
- Or a Faculty, with its staff, announcements, calendar ... etc. Explore any faculty university system.
- You can develop many games. Google on some games of many rules .. play it, write requirements doc...code it
- Others: Elevator system, ask.fm, Traffic simulations (vehicle, network), grocery store simulations

FACEBOOK SYSTEM EXAMPLE

USER

- Name, pass (encrypt, decrypt), email (primary, secondary), birth date, country
- Verify email format
- Verify password conditions
- Marriage status, person
- Work History, Education History
- Phone number
- Friend list

- I want to: Find friend by name, email, phone
- Invite someone see my invitation list

ADMIN

- Suggest friend for someone: 10 friends maximum where you have maximum 2 persons between you and him
- Basic Search interface: one criteria
- Advanced Search interface
- Get persons according to filters
 - add filter: age > 24
 - add filter: country == Egypt
 - add filter: phone start with 012
 - add filter: had 2+ jobs before
- Complex: Let input be Query style AND / Or
 - Select user where age > 24 AND country = Egypt OR age < 20 AND WorkHistoryLength > 2