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 opton 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 requreiments 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 registerd 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


Welcomme 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)
heeelooooo


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