Due date: 22.03.2021 23:59

CENG431 – Building Software Systems
Midterm 1 Project

In this project you are expected to build a software system called "***TeamsTECH***" that is responsible of managing courses. You should fulfill the concepts of:

- Object Oriented Analysis and Design
- Object Orientation Fundamentals, Abstract Data Types
- Inheritance, Polymorphism, Abstract Classes, Interfaces, Exceptions
- Collections
- UML Design with Class Diagrams
- Mediator Design Pattern

In this software, a team corresponds to one of the courses that is opened in IZTECH. Each team will have a name, a team id and at least one default meeting channel which is accessible by every member of the team. Whenever a team is removed its meeting channels will be removed as well. Also, each team will have a set of members and at least one team owner.

A user who has a user id, name, email, password and a department i.e., "Computer Engineering" could be a member of a team (There may be users who are not a member of any team). Students and academicians are users.

A user id will be randomly generated number between 1 and 1000. The password will be a randomly generated string of length 4. The email addresses of the users will be determined by the following convention: "first name + last name + @ + domain".

The domain of email is "std.iyte.edu.tr" if a user is a student. The domain of email is "iyte.edu.tr" if a user is an academician. Instructors and teaching assistants are academicians. Only instructors can create a new team and become a team owner. Additionally, instructors can add teaching assistants as team owners. Only team owners can add other users as team owners, otherwise an UnauthorizedUserOperationException occurs.

A meeting channel in a team is a standard channel by default which is accessible by each member of a team. Also, private channels exist which are accessible only by a list of participants. Any user can create private channels. A meeting channel could have an updatable, organized meeting which occurs at the same day and time every week such as "Monday 09:45 AM".

For this project, you are given a CSV file namely "userList.csv" which consists of (User Type, User Name, User ID, Email, Password, Team ID) columns. The user type and the user name columns are already filled. Please fill user id (except for lines 4 and 5), email and password (except for lines 4 and 5) columns for each user according to the instructions above. In the file, at the end of each line for each user, there is the id of the team or teams that the users join. Also, you are given the file "teamList.csv" which consist of (Team Name, Team ID, Default Channel, Default Meeting Day and Time, Meeting Channel, Meeting Day and Time, Participant ID) columns. Please, create the users and the teams written in these file and adjust the team members and owners.

Additionally, you are expected to implement a mediator class for this project which is responsible of:

- Adding, finding and removing of teams
- Updating a team by:
  - Adding and removing a meeting channel,
  - Updating a meeting channel by:
    - Adding and removing participants, if it is private
    - Updating meeting day and time
  - Adding and removing a member (only academicians)
  - Finding and updating a member as a team owner (only team owners)
  - Monitoring each team's meeting channels, meeting channels' meeting time and participants (if the channel is private)
  - Finding number of distinct students, instructors and teaching assistants.

For this project, please create a user-friendly menu which always lists the options to the user and guides the user about inputs. For example:

```
What would you like to do?
1- Add a team
2- Remove a team
3- Update a team
Please enter a number between 1-3: 3
```

Also, remember to update the files accordingly to the changes in the teams or users e.g., a user may join another team or a private channel could be added to one of the teams etc.

Please, design and implement the project according to the requirements mentioned above. Attach the UML class diagram of your project design before submission.

Project Submission Rules

1. Cheating is not allowed. If any cheating has been detected, they will be graded with 0 and there will be no further discussion on this.
2. You are expected to submit your project in groups. Therefore, only one of you will be sufficient to submit your project.
3. Make sure you export your project as Eclipse projects. You can use other IDEs as well, however, you must test if it supported by Eclipse.
4. If you are using an external library, make sure that ".jar" library is in your project after you exported it. Unfortunately, from our previous experiences we have encountered project submissions that uses libraries from their "**Desktop**".
5. Please submit your project through Cloud-LMS (https://cloud-lms.iyte.edu.tr/).
6. Please export your Java Project as the given format with your assigned.
   Example:
   G02_CENG431_Midterm1.zip. (Your group IDs will be announced on Microsoft Teams).
7. Please be informed that your submissions may be anonymously used in software testing and maintenance research studies. Your names and student IDs will be replaced with non-identifying strings. If you do not want your submissions to be used in research studies, please inform the instructor (Dr. Tuglular) via e-mail.