

Homework 1

CENG431 – Building Software Systems

In this homework you are expected to implement a “Project Management System” in Java.

You should fulfill the concepts of;

- Inheritance
- Polymorphism
- Abstract Data Type
- Collections
- Mediator Pattern

The object and class diagram of the system is given below. You are asked to implement the system as given in the class diagram and to extend Resource class with **Person** superclass, which has **Employee** and **Consultant** subclasses.

Also, you are expected to implement a Project Management System class which should be your **Mediator** and is responsible of:

- Adding a project
- Finding and removing a project
- Finding and updating a project by
 - Adding, removing and updating an activity
 - Adding, removing and updating a task
 - Adding, removing and updating a resource
 - Assigning a resource to a task
 - Unassigning a resource from a task
- Calculating project, activity, and task duration by hours
- Finding number of distinct employees and consultants assigned to a project, activity, and task

The user should be able to select commands from menu and enter data from command line to manage projects and resources and display project and resource details. Projects should be stored in a file named Projects-YYYY-MM-DD.txt. When program starts, the program should find latest file and read project details to corresponding objects. When user exits, all project data should be saved to a file. Make sure you have three-layer architecture implemented.

Assignment Rules

1. In this lecture’s homework, there are no cheating 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 homework in groups. Therefore, only one of you will be sufficient to submit your homework.
3. Make sure you export your homework 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 homework submissions that uses libraries from their "**Desktop**".
5. Please submit your homework through CMS.
6. Please export your Java Project as the given format with your assigned.

Example:

G02_CENG431_HW1.zip (Your group IDs will be announced on CMS).

