

Selected Topics in Computer Science-1

Assignment 2

As part of applying design patterns process for an e-learning platform such as Blackboard, you are requested to add a new feature that allows the system to notify users of critical information. The newly added feature should be implemented as a "Notification" module.

The "Notification" module should support different types of messages, typically: TaskAdded, GradesAnnouncement and Daily-News messages. There is a need for flexibility of the application. Therefore, notifications as sent as either a mobile SMS, an email or both.

Each message has a *prepare message* function which prepares the message by replacing placeholders used in this Message. Place holders refer to functionality such as *Task Added* which has a task type, due date place holders. Another announcement type is *Grades Announcement* which has properties a *task name* and *student grade*. For example, as message with format: " Dear {x}, The grades of task {y} is announced and you can find it at {z}."

The system should support two gateways, EmailGateway and SMSGateway, each of them accepts a message and sends it to user.

Three types of users are supported:

- 1- Professor (Name, Department, CurrentCourses as strings list, HirtingDate, PhDTopic: string) and has notifyMe function that should be called when any updates happen to course he is interested in.
- 2- TA (Name, Department) and have updateMe function that should be called when any updates happen to course he is teaching.
- 3- Student (Name, Id) and have updateMe function that should be called when any updates happen to course he is registered in.

Also, we have a Course class that has (Name, Code) and AddAssignment, AddExam, PostGrades, PostAnnouncement functions that Professors and TAs can use to organize communicate with students.

Assume that Both gateways need some configurations and preparation steps need to be done before initiating objects from Gateway class, find a suitable pattern that helps you reduce this complexity.

If you used any Factory in the system, you should return the same factory object every time it is requested.

Project Implementation

You are expected to use the attached java project as your baseline for fulfilling the described requests.

You will work on this assignment in teams of **2-3** members from the **same group**,

You will submit a zip file with all deliverables named is: Group_1stStudentId_2ndStudentId_3rdStudentId.

Deliverables:

- 1- Class Diagram for the project after using design patterns
- 2- Refactored Code
- 3- Create a git-hub repository contains the project and class diagram (all of the team members must contribute to the repo) **don't push all of the work as one commit**.