

# CS 569: Design Patterns and Refactoring-Fall 2016

## Project Timeline and Description (Total Weightage 35%)

September 1, 2016

### 1 Phase 0: Group Formation and Meeting Slot Allocation(1%)

This is a Group Project so the first task is to create a group of four members not less. After selecting the group members please enter the names of the group members according to the appropriate time slots mention in the google sheet provided at the link [https://docs.google.com/spreadsheets/d/1YtDC2k9fbQGgEozQoUV-U1zlYPTHymxcf\\_7T-BmCZqU/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1YtDC2k9fbQGgEozQoUV-U1zlYPTHymxcf_7T-BmCZqU/edit?usp=sharing).

### 2 Phase 1: Understanding the project, detection of code smells and creation of class diagram (5%)

We will provide you a project implemented in java. Your first task is to play with the code and understand the functionality of the project. After that you need to create class diagram of the project. And then you need to detect code smells from the code. For code smells detection, you can use Sonar Qube, SourceMonitor, FindBugs and PMD. Plugins for these tools are also available in eclipse.

*Deliverable: Document Containing Class Diagram and the Code Smells with the snashot of the code where it is present in the code*

### 3 Phase 2: Application of Refactoring Techniques Part-1 (4%)

In this phase, you have to perform class level refactoring techniques to make this code better. You have to perform the following tasks on your code

- Organize data
- Make method calls simpler
- Compose methods

*Deliverable: Refactored source code.*

### 4 Phase 3: Application of Refactoring Techniques Part-2 (4%)

In this phase you will make changes within relationship of different classes. Moving features between objects, dealing with generalization are main tasks of this phase.

*Deliverable: A New class diagram for the entire code accompanied with a report on the code metrics and all kinds of refactoring performed and refactoring tools used. The marks will be given on refactoring performed and report results, and evaluation will be done on the basis of running demo and viva.*

## 5 Phase 4: Identify design patterns (2%)

In this phase, Identify design pattern which are already present in this code. Make a report about your findings.

*Deliverable: Design Pattern Report with snapshots of the code where the design patterns are implemented*

## 6 Phase 5: Application of Design Patterns (6%)

In this phase you are expected to work on redesigning and reorganizing your entire code keeping in mind the design principles and patterns. The idea is to identify the problem areas in your existing code which can be improved with the application of suitable patterns and then modify the code accordingly.

*Deliverable: Source code with patterns applied, a class diagram for the entire code accompanied with a report on the code metrics and all kinds of patterns used. The marks will be given on identification of design problems and correct use of appropriate patterns to effectively solve a design problem and report results, and evaluation will be done on the basis of running demo and viva.*

## 7 Phase 6: Final Project Code Submission, Report (3%)

The final submission should include a detailed consolidated project report documenting work done in all the project phases along with the enhanced, redesigned, refactored and fully functional code. The report should evaluate the variation in code metrics and code smells after each phase work was completed and conclusions should be drawn by observing changes in code metrics across all phases. You will have to justify how your new design is more reusable, flexible and extendable.

*Deliverable: Final Source Code and Report*

## 8 Final Phase: Presentation (5%)

At the end, you have to present your findings and changes you have done in this code. You have to give reasons for each change. The idea is to summarize your work through comparing your edited code with provided code to get the idea that how much you have improved this code. Date and time will be shared with you later for your presentation.

## 9 Project Meetings (5%)

The project will be evaluated on a weekly basis. All team members should be present in the weekly meetings. All team members will have to describe their work done individually. The time slots for the meetings will be strictly followed during semester so choose your time slot accordingly and also send me an email of your selected time slot as well. The whole semester weekly meetings would carry 5% of your project marks.

**Some Rules that you need to follow in this course:**

1. Please be aware of the strict plagiarism policy. Any plagiarism case in any phase will result in 0 marks for that phase.
2. The plagiarism cases will be reported directly to the Disciplinary Committee.
3. The late submission policy is that there will be 20% reduction in marks if it is within 24 hours after the due date. After that 100% reduction in marks, so better not to submit after one day.