## ***CS-242 – Fall 2020***

# Final Project – Rubric & Deliverables

*(150 Points)*

## **Objective**

The objective of the Final Programming Project (in lieu of Exam3) in CS-242 Data Structures is to apply the concepts of Data Structures learnt during the course and implement real world application through Java Programming language. The students will develop a Java programming project that will not only incorporate the data structures concepts learned during the CS-242 course but also helps students explore and apply Programming skills and data structure concepts beyond that were learned during the course. This would entail looking up external resources for utilizing additional Java classes and interfaces, abstract data types, and their associated methods, that maybe required for the completion of the Project.

## **Important Instructions**

The list of tentative Final Project Topics has been provided in the accompanying document, ‘*CS242 Final Project Topics.docx’*.

Students have to work individually on the Final Project. A team of 2 students can be considered if the project decided upon is big enough and necessitates the involvement of 2 persons. Each student needs to necessarily code a minimum of 3 classes whether working individually or in a team.

**A prior discussion and approval on the Project Topic is required from the instructor, before the students begin work on their Final Project.**

Students should decide and enter their final Project Topic in the Excel sheet on the shared Google drive by **Tuesday, December 1, End of Day.**

## **Deliverables**

There will be following **3 deliverables** for the Final Project:

1. Final Project: Uploaded on GitLab

2. Final Project Report

3. Final Project Reflective Writing Document

## **Deliverable1. Final Project: Uploaded on GitLab**

Final Project has to be uploaded on GitLab. There can be multiple commits up until the Due date of Tuesday, 15 December, End of day. Last commit will be taken into consideration for grading.

## **Deliverable2. Final Project Report**

This document (.docx or .pdf format) should be uploaded on Blackboard. It will contain a brief description of your Final Project under following headings:

***Objective***

* Objective of your Project.

What was the objective of the project at the beginning of the project and what were you finally able to achieve?

***Design***

* What Menu Options are there in your project?
* What are the classes and the class hierarchy?
* What are the different instance variables in different classes and the methods used?
* What is the data flow? You may represent the data flow with the help of a UML diagram.

***Output***

* How you expected your final project to look like and execute and how different or same did it turn out to be?
* What data will be expected as input by your project and what will be the expected output?
* What validations for input data did you incorporate?
* Show the sample run of running your program on your data.
* Explain your results and what they mean.

***Challenges***

* Show the most challenging part of your code.
* Explain how your program works overall – you do not need to go over all of your code line-by-line.
* For any sections of your code that were particularly difficult to write, or are non-obvious, or that you are particularly proud of, explain the code in detail.
* What problems did you have and how did you overcome them?
* Did you have any moments of enlightenment?

***References***

Which other references did you use other than the prescribed textbook.

**Deliverable3. Final Project Reflective Writing Document**

Answer the 4 questions as given in the attached document,

*“CS 242 FinalProjectReflectiveWRiting.docx”*

It should be uploaded on Blackboard.

**Rubric**

**Total: 150**

Deliverable1: Final Project – 100 Points (See the Table below)

Deliverable2: Final Project Report –30 Points (8 points each for Design, Output, Challenges; 3 points for Objective and References)

Deliverable3: Final Project Reflective Writing Document – 20 Points (5 points for each question)

**Rubric for Deliverable1: Final Project - Maximum Points:** **100**

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| --- | --- | --- | --- | --- |
| **Parameters** | **Exceeds Expectations** | **Meets Expectations** | **Satisfactory** | **Not Satisfactory** |
| **Points** | **(5)** | **(5)** | **(5)** | **(5)** |
| Application of concepts learned in class | Previously learned concepts are correct with regards to syntax and usage. | Minor errors exist with syntax and usage of previously learned concepts. | Errors exist with syntax and usage of previously learned concepts. | Major errors exist with syntax and usage of previously learned concepts. |
| Minimum 3 Classes coded per student | More than 3 classes coded and/or code complexity involves Advanced Programming Concepts. | Minimum 3 classes coded, each performing distinct tasks, clearly showcasing inheritance and/or object-oriented concepts. | Only 2 classes coded, each performing distinct tasks, and/or project does not showcase inheritance and/or object-oriented concepts.. | Only one class is coded, and/or whole project written as a continuous program without use of multiple classes. |
| Quality of Code and Code Meeting Standards | * Program adheres to established requirements for documentation, form and style. * **For Example:** * Usage of meaningful Descriptive variables * Header Comments * In-line Comments | Program contains minor errors or omissions in documentation, form and/or style. | Program contains major errors or omissions in documentation, form and/or style. | Program reflects lack of adherence to established requirements regarding documentation, form and/or style. |
| Testing with Different Test Cases  & Execution without Errors | All project components work correctly, for example: having smooth transition between menu options.  **(Incorporate at least 2 JUnit tests)** | All project components work correctly, with minor errors. | Many of the project components do not work correctly. | Project does not work correctly. |
| Extra Effort and Extra Blitz | New concepts have been utilized effectively to develop the project and Extra Blitz (Advanced Concepts!) added to make the project Outstanding!  **(Going beyond the ask of project)** | New concepts have been utilized to develop the project and have been used correctly and effectively. | New concepts have been attempted or are improperly used to develop the project. | New concepts have not been attempted in developing the project. |

## **Important Dates:**

Final Project name finalized and uploaded Excel sheet on shared Google drive:

**Tuesday, December 1, End of Day**

Final Project Submission of all Deliverables, Due Date:

**Tuesday, December 15, End of Day**

**Good Luck!!!!!**