Final Assignment

TCP2201 Object Oriented Analysis and Design

Total Marks: 40%

Due Date: 20 April 2022, 5pm (a firm due date; no extension)

Instructions:

1. This is an individual work. The project should be done solely by you!

2. **Warning:** Plagiarism will be given zero (0) mark without prior notice.

3. You will be given zero(0) marks if you do not submit on time. You are given ample time to submit earlier.

3. Submit only one zip folder with the file names as StudentID-StudentName.zip. The zip folder should contain all the source code, UML use case diagram, UML class diagram, and UML sequence diagrams.

4. You will need to attend an online interview session between 21 – 22 April 2022 (pls reserve your calendar) where the instructor will ask questions about the work you have done. Information about the interview session time slot booking will be informed later by your lecturer. If you don't have a mic. Please get a mic ready!

5. **Read the marking rubrics so that you know how to score your marks!**

6**. The project is to be done using Java Swing only.**

7. For the interview, prepare yourself in the flow of the rubric given below.

Question:

Client Requirements:

I need a standalone Graphical User Interface (GUI) application that can keep track of my restaurant sales. Customers will typically order foods and drinks. We then will issue a bill listing all the ordered items with a sum to pay. Occasionally my restaurant will run promotions and customers need to present us discount coupons either for a 10% or a 20% discount (if any). This discount will be applicable to the total purchase. The application needs to show price before discount, the discount amount, and the net payable after discount (if any). We normally don't offer any other discount amounts besides the 10% and the 20% discounts. But in future we may offer discount specific to either food items or drink items or even bundled (food and drinks bundled) packages. The application needs to be easy to extend if I want those features later.

Questions:

The questions below are based on the client requirements above. If you made any assumptions, please state your assumptions clearly. Justify your assumptions (if any).

1. Draw UML diagrams such as **use case diagram, a complete class diagram, and sequence diagrams** for the requirement above. Make sure you use correct UML symbols.

2. Apply **one design pattern** in your design. Reflect it in the complete class diagram (as done in question 1). Pick one design pattern from the following: Composite, Adapter, Bridge, Façade, Iterator, Observer, Builder, Prototype, Singleton. You must justify why you picked the design pattern.

3. Implement a **Java Swing GUI program** for the design as per question 1 and 2. You need to have event handling and interactions. **Also make sure the UML diagram design and the coding are coherent.**

Marking Rubrics:

Criteria	Score and Descriptors					Weight (%)	Marks
	Good (10)	**Above Average (8)**	**Average (6)**	**Below Average (4)**	**Poor (2)**		
Program compilation	Program compiles without errors and warnings	Program compiles without errors but has got warnings	Program compiles with a single error	Program compiles with few errors (2 5)	Program compiles with many errors (more than 5)	10	

Feature fulfillment	**Features required:**
	    1. **Able to add drinks from a list of drinks to the bill**
	    2. **Able to add food from a list of food menu to the bill**
	    3. **Able to apply discount coupons (if any)**
	    4. **Show total amount, discounts, and net payable**
	
	If fulfilled all 4 features → 20 marks
	If fulfilled 3 features → 15 marks
	If fulfilled 2 features → 10 marks
	If fulfilled 1 feature → 5 marks
	If none fulfilled → 0 mark
						20	

UML Diagram fulfillment	**If the UML use case is correct → 5 marks** **If the UML class diagram is correct → 5 marks** **If the UML sequence diagrams correct → 5 marks** **** partial marks 2.5 can be awarded if needed.**					15	
Design Pattern usage	**If design pattern used correctly --> 10 marks** **If design pattern usage has missing parts --> 5 marks** **No design pattern used/or wrong usage --> 0 mark**					10	

If the application future proof?	**if the UML class diagram design shows evidence of using correct Object-Oriented concepts/ design pattern to make it future proof → 15 marks** **If the solution presented has got minor issues --> 10 marks** **If the solution presented has got major issues → 5 marks** **No solution provided/ wrong solution --> 0 mark**					**15**	
Able to answer interviewer random question #1	**The answer is correct, complete, and elaborated with correct terms used**	**The answer is correct, complete, but very briefly answered.**	**The is correct in general but with some mistakes in the explanation.**	**The answer is very vague.**	**The answer is wrong**	**10**	
Able to answer interviewer random question #2	**The answer is correct, complete, and elaborated with correct terms used**	**The answer is correct, complete, but very briefly answered.**	**The is correct in general but with some mistakes in the explanation.**	**The answer is very vague.**	**The answer is wrong**	**10**	
Able to answer interviewer random question #3	**The answer is correct, complete, and elaborated with correct terms used**	**The answer is correct, complete, but very briefly answered.**	**The is correct in general but with some mistakes in the explanation.**	**The answer is very vague.**	**The answer is wrong**	**10**	
					TOTAL	**100**	