SOEN343:
SOFTWARE ARCHITECTURE AND DESIGN

“Delivery” service application
(Phase III)

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Contents

1 General Information

Date posted: September. 17, 2024

Date due: TBA

Weight: 5% of the overall grade.

Total: 100 marks

2 Introduction

This assignment targets:

1. Understanding the GOF design pattern.
2. Understanding the class diagram.
3. Implementation

3 Ground rules

You are allowed to work on a team of 4 students to 6 students at most (including yourself). Each team should designate a leader who will submit the assignment electronically. See Submission Notes for the details. ONLY one copy of the project is to be submitted by the team leader.

4 Project description

The core features of the "Delivery" service include:

1. Request for delivery (details of pick up and drop of)
2. Proposal of a quotation for the service
3. Communication about the service
4. Tracking the order
5. Payment.
6. Help assistance by using Chatbot

5 Your Project (phase III)

5.1 GOF design pattern

Design patterns provide solutions to common software design problems. In this part of the work, you should define at least four design patterns among the below possible ones. For each layer you need to provide a description and details about problem and solutions.

1) Adapter design pattern
2) Facade design pattern
3) Factory design pattern
4) Strategy design pattern
5) Composite design pattern
6) Singleton design pattern
7) Observer design pattern

The bellow figure shows an example of façade design pattern extracted from "Design pattern GOF" lecture in the Moodle.

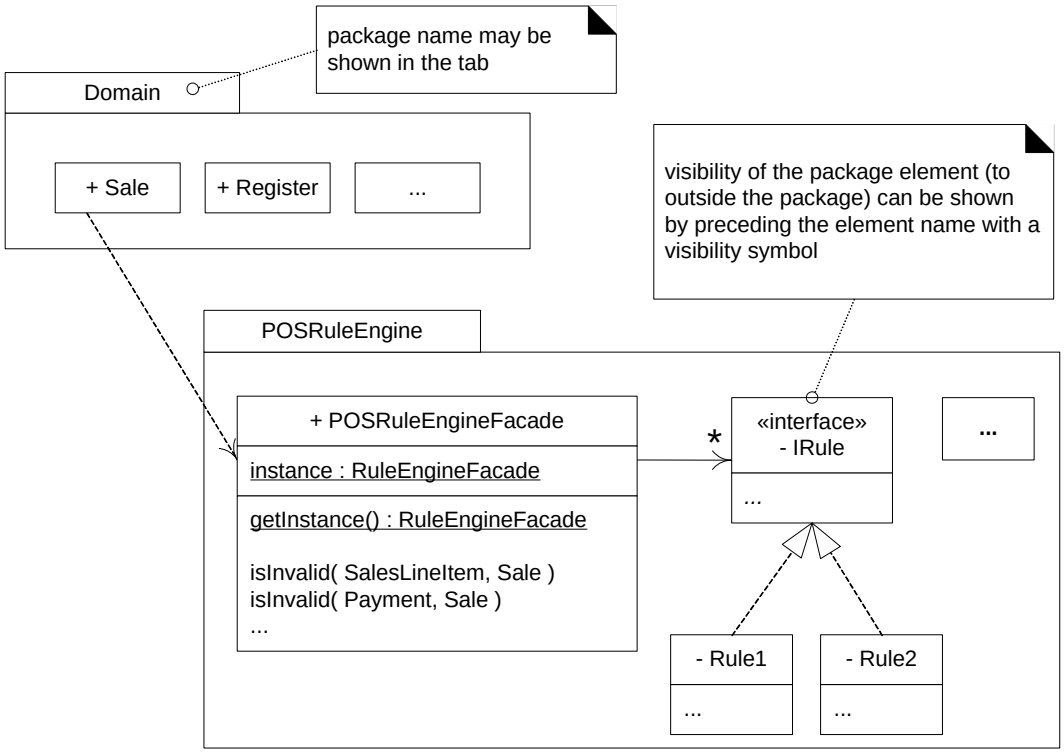

Figure 1. An example of the façade design pattern.

5.2 Class diagram

In this part you should define the class diagram of your project. The class diagram should include attribute and methods. A sample of a class diagram is defined as bellow.

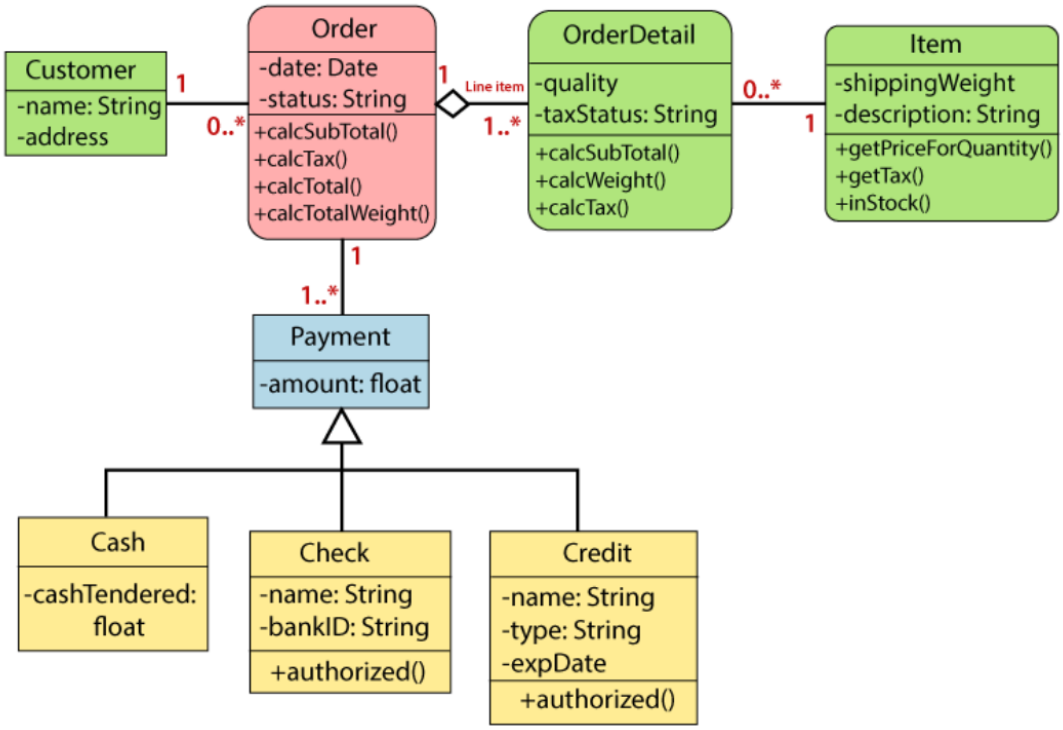

Figure 2. A class diagram describing the sales order system.

5.3 Implementation

Backend Programming:

- The **backend** refers to the part of the application that operates behind the scenes, handling the business logic, data interactions, data processing, and server-side operations.
- Backend programming typically deals with:
    - **Data storage and retrieval** (working with databases is not essential)
    - **Business logic** (rules that govern the app's functionality)
- Common backend technologies include **but are not limited to**:
    - **Node.js** (JavaScript)
    - **Django** (Python)
    - **Spring** (Java)

GUI Programming:

- The Graphical User Interface (GUI) is the front-end part of an application that users interact with visually, using elements like buttons, text fields, menus, windows, and icons.
- GUI programming involves creating these visual components and handling user input (e.g., clicks, text input, selections) to trigger appropriate actions.
- Popular GUI frameworks include but **are not limited to**:
    - Tkinter (Python)
    - Electron (JavaScript/HTML/CSS)
    - JavaFX (Java)
- **Example tasks in GUI programming:**
    - Designing user-friendly layouts
    - Handling user events (e.g., button clicks)
    - Displaying information to the user (e.g., charts, tables)

6 What to Submit

The whole assignment is submitted by the due date under the corresponding assignment link. It has to be completed by ALL members of the team and only one file in PDF or WORD format will be submitted.

6.1 Submission Notes

Clearly include the names and student IDs of all members of the team in the submission. Indicate the team leader.

One copy of the assignment is to be submitted. You must make sure that you upload the project to the correct link on Moodle. No email submissions are accepted. Projects uploaded to the wrong system, wrong folder, or submitted via email will be discarded and no resubmission will be allowed. Make sure you can access Moodle prior to the submission deadline. ***The deadline will not be extended.***

Naming convention for uploaded file: Create a PDF or WORD file using the following naming convention. The file should be called a#_studids, where # is the number of the project phase, and studids is the student id of the team leader. For example, for the first project phase, student ID is 12345678 would submit a PDF file named a1_12345678.pdf. Submit your project electronically on Moodle based on the instruction given by your instructor as indicated above: https://moodle.concordia.ca

6.2 Submission template

The bellow shows the submission template for the project.

First page: Project name, Team Name, Team members, student IDs, document purpose (Phase 3: GOF design pattern and class diagram), Date.

Second Page: Table of content

Body of the report: The body of the report will be organized as follow.

I- Summary of the project
[small summary about the system to-be]

II- GOF design pattern
[details of the chosen design patterns with description; make sure you provide enough details about problem and solution. Amend the design pattern with explanation in text-based paragraph]

III- Class diagram
[Class diagrams with methods and attributes]

IV- Implementation
[Provide some figures that show the graphical interface of your project. Note, in this phase providing any codes (back-end and front-end) is essential. You are supposed to provide the menu and interface of your system.]

7 Grading Scheme

System summary	0~10 marks
GOF design pattern	0~40 marks
Class diagram	0~20 marks
Implementation	0~20 marks
Documentation and professionalism	0~20 marks
Total	**0-100 marks**

8 Rubric for Project, Phase III

	Basic (10-40pts)	Good (40-60pts)	Proficient (60-80pts)	Advanced (80-100pts)
COHERENCE This answer indicates critical thinking ability and is structured logically.	A limited number of components in this answer show basic understanding of the topic and/or the ability of critical thinking.	Most of the components in this answer show good understanding of the topic, or the ability of critical thinking.	Most of the components in this answer show a good coverage of the activities with explanation and the ability of critical thinking.	The answer demonstrates excellent critical thinking ability and insightful discussion of the topic.
ORIGINALITY This answer shows originality and creativity to some extent.	This answer is a repeat of other people's ready-made ideas and shows very little at original thought.	The answer shows an effort at originality and inventiveness on 1-2 points.	The answer shows some originality and creativity. The content and ideas are presented in an interesting way.	The answer shows substantial originality and creativity. The content and ideas are presented in an exceptional and interesting way.
COMPLETION This answer identifies needed activities and the level of completion of the diagram, and coding part.	This answer completes part of the needed activities. Diagrams indicate an effort of dependency.	This answer completes most of the needed activities. Most diagrams are generated with indication of dependency.	This answer indicates a completion of all needed activities. All diagrams are generated correctly with indication of dependency.	This answer indicates a completion of all needed activities. All diagrams are generated correctly with clear and extraordinary indication of dependency.
ANALYSIS The answer indicates the level of analysis skills according to the activity, and provide proper UI	A limited number of components in this answer show basic analysis skills and the answer is unclear and/or vague.	The answer indicates basic analysis skills, but the answer is unclear.	The answer is an analysis and understanding of the activity and most components of the answer are convincing.	The answer is an in-depth analysis of the activity and the explanations are convincing to a great extent.

Making Connections The assignment links in-class content and respects the guideline conditions of the course	The assignment reflects limited aspects of the course content and/or guidelines.	The assignment reflects some aspects of the course content and guidelines.	Most of the components in this assignment reflect the course content, readings, and guidelines.	All the components in this assignment reflect the in-class course content, readings, and guidelines.
PRECISION Terms, concepts, and principles are used correctly throughout the assignment.	Terms, concepts, and principles are used somewhat correctly but not always clearly throughout this assignment.	Terms, concepts, and principles are used correctly but not always clearly throughout this assignment.	This assignment demonstrates some precision in the use of correct and current concepts, terms, and principles.	This assignment demonstrates clear, correct, and current use of concepts, terms, and principles.
Documentation Content & Organization, Format & Style of technical writing are covered correctly throughout the assignment	content & organization, format & style of technical writing principles used somewhat correctly but not always clearly throughout this assignment.	content & organization, format & style of technical writing principles are covered, but not always clearly throughout this assignment.	This assignment demonstrates some precision content & organization, format & style of technical writing principles.	This assignment demonstrates excellent content & organization, format & style of technical writing principles.