Hyperiondev

TASK

Capstone Project I — Object-Oriented Programming

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Introduction

Welcome to the Object-Oriented Programming Project!

Welcome to the first Capstone Project for this level! This Capstone is a milestone in your learning so far. In this project, you will be using object-oriented programming to create a solution for a real-world problem. You will be extending this Capstone Project in later Capstone projects. Remember, it is worth putting some extra time and effort into this project. It will eventually become part of your developer portfolio.

Get in touch

Connect for support

Remember that with our courses, you're not alone! You can contact your mentor to get support on any aspect of your course.

The best way to get help is to login to **www.hyperiondev.com/portal** to start a chat with your mentor. You can also schedule a call or get support via email.

Your mentor is happy to offer you support that is tailored to your individual career or education needs. Do not hesitate to ask a question or for additional support!

DEVELOPER PORTFOLIO

Developers who have the edge are those who find ways to apply their newfound skills from the get-go. A developer portfolio (a collection of online creations that you have made) allows you to demonstrate your skills rather than just telling people about them. It's a way of bringing your CV to life and introducing yourself to the world. As you learn more skills and put these into practice, each project that you complete will become more efficient and eye-catching.

Object-oriented programming is one of the most important programming paradigms today! Prospective employers will want evidence that a software engineer is comfortable using object-oriented programming. This application series offers you the means to an object-oriented program to add to your developer portfolio.

THE TASK AT HAND

You are asked to create a project management system for a small structural engineering firm called "Poised". Poised does the engineering needed to ensure the structural integrity of various buildings. They want you to create a Java program that they can use to keep track of the many projects on which they work.

Poised stores the following information for each project that they work on:

- Project number.
- Project name.
- What type of building is being designed? E.g. House, apartment block or store, etc.
- The physical address for the project.
- ERF number.
- The total fee being charged for the project.
- The total amount paid to date.
- Deadline for the project.
- The name, telephone number, email address and physical address of the architect for the project.
- The name, telephone number, email address and physical address of the contractor for the project.
- The name, telephone number, email address and physical address of the customer for the project.

Poised wants to be able to use your program to do the following:

- Capture information about new projects. If a project name is not provided when the information is captured, name the project using the surname of the customer. For example, a house being built by Mike Tyson would be

called “House Tyson.” An apartment block owned by Jared Goldman would be called “Apartment Goldman.”

- Update information about existing projects. Information may need to be adjusted at different stages throughout the lifecycle of a project. For example, the deadline might change after a meeting with various stakeholders.
- Finalise existing projects. When a project is finalised, the following should happen:
    - An invoice should be generated for the client. This invoice should contain the customer’s contact details and the total amount that the customer must still pay. This amount is calculated by subtracting the total amount paid to date from the total fee for the project. If the customer has already paid the full fee, an invoice should not be generated.
    - The project should be marked as “finalised” and the completion date should be added. All the information about the project should be added to a text file called “Completed project”.
- See a list of projects that still need to be completed.
- See a list of projects that are past the due date.
- Find and select a project by entering either the project number or project name.

Before you begin

A key focus of this project will be ensuring that your code is correct, well-formatted and readable. In this regard, make sure that you do the following before submitting your work:

1. Make sure that you have identified and removed all syntax, runtime and logical errors from your code.

2. Make sure that your code is readable. To ensure this, add comments to your code, use descriptive variable names and make good use of whitespace and indentation. See this style guide to see how classes and methods should be named and how your program should be formatted.

3. Make sure that your code is as efficient as possible. How you choose to write code to create the solution to the specified problem is up to you. However, make sure that you write your code as efficiently as possible.

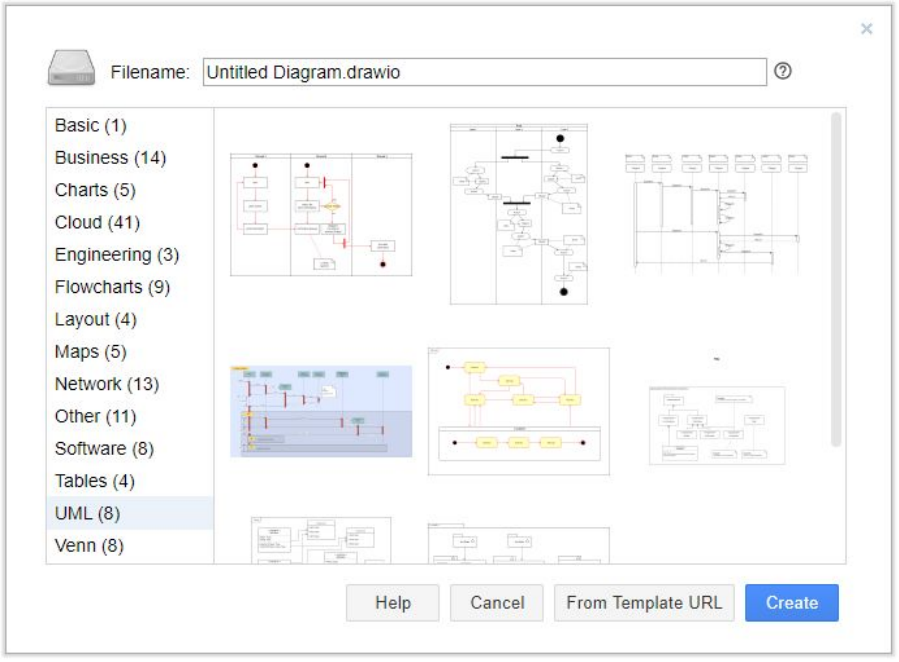
4. Make sure that all output that your program provides to the user is easy to read and understand. Labelling all data that you output (whether in text files or to the screen) is essential to make the data your program produces more user-friendly.

A note from our coding mentor
Jared

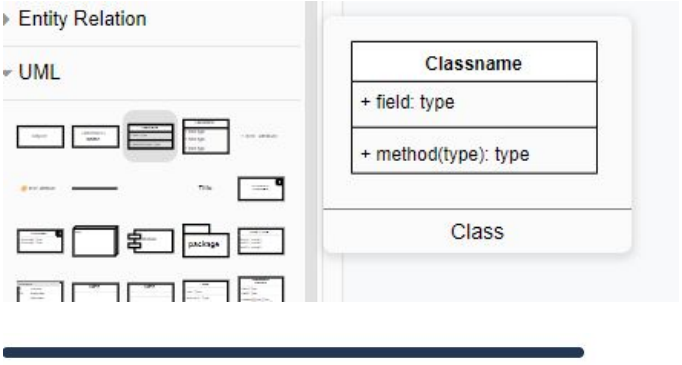
Various tools can be used to create UML diagrams. One such tool is found here. To use draw.io to create UML diagrams:

- *Open https://www.draw.io/*
- *When a blank, untitled diagram is opened, click on the "More Shapes" button at the bottom left-hand corner of the screen.*

- *From the dialog that appears, select "UML" and then press "Create".*



- *To add a class diagram, select the class diagram shape from the toolbox as shown in the image below:*



Compulsory Task 1

Follow these steps:

- Design your program to meet the specifications given by the client. Create a UML diagram that shows the details of all the classes that you will use for this program. Your class diagrams should show exactly what properties and methods you plan to create for each class. It should also show the relationships between classes.

Compulsory Task 2

Follow these steps:

- Code a Java program that will meet part of the client's specifications. You don't have to have to meet all the client specifications at this stage. This Capstone project will be your first deliverable for Poised. You will build upon this program in later Capstone projects. For this program, you should:
    - Create a class that will be used to create a project object.
    - Create a class that will be used to create person (e.g. architect, building contractor, etc.) objects.
    - Write a program that will allow a user to:
        - Capture the details that are used to create a new project object.
        - Change the due date of the project.
        - Change the total amount of the fee paid to date.
        - Update a contractor's contact details.
        - Finalise the project.

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