UNIVERSITY OF CALOOCAN CITY
COMPUTER ENGINEERING DEPARTMENT

Data Structure and Algorithm

Laboratory Activity No. 1

Object-oriented Programming

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I. Objectives

This laboratory activity aims to implement the principles and techniques in object-oriented programming specifically through:

- Identifying object-orientation design goals
- Identifying the relevance of design pattern to software development

II. Methods

- Software Development
  - The design steps in object-oriented programming
  - Coding style and implementation using Python
  - Testing and Debugging
  - Reinforcement of below exercises

A. Suppose you are on the design team for a new e-book reader. What are the primary classes and methods that the Python software for your reader will need? You should include an inheritance diagram for this code, but you do not need to write any actual code. Your software architecture should at least include ways for customers to buy new books, view their list of purchased books, and read their purchased books.

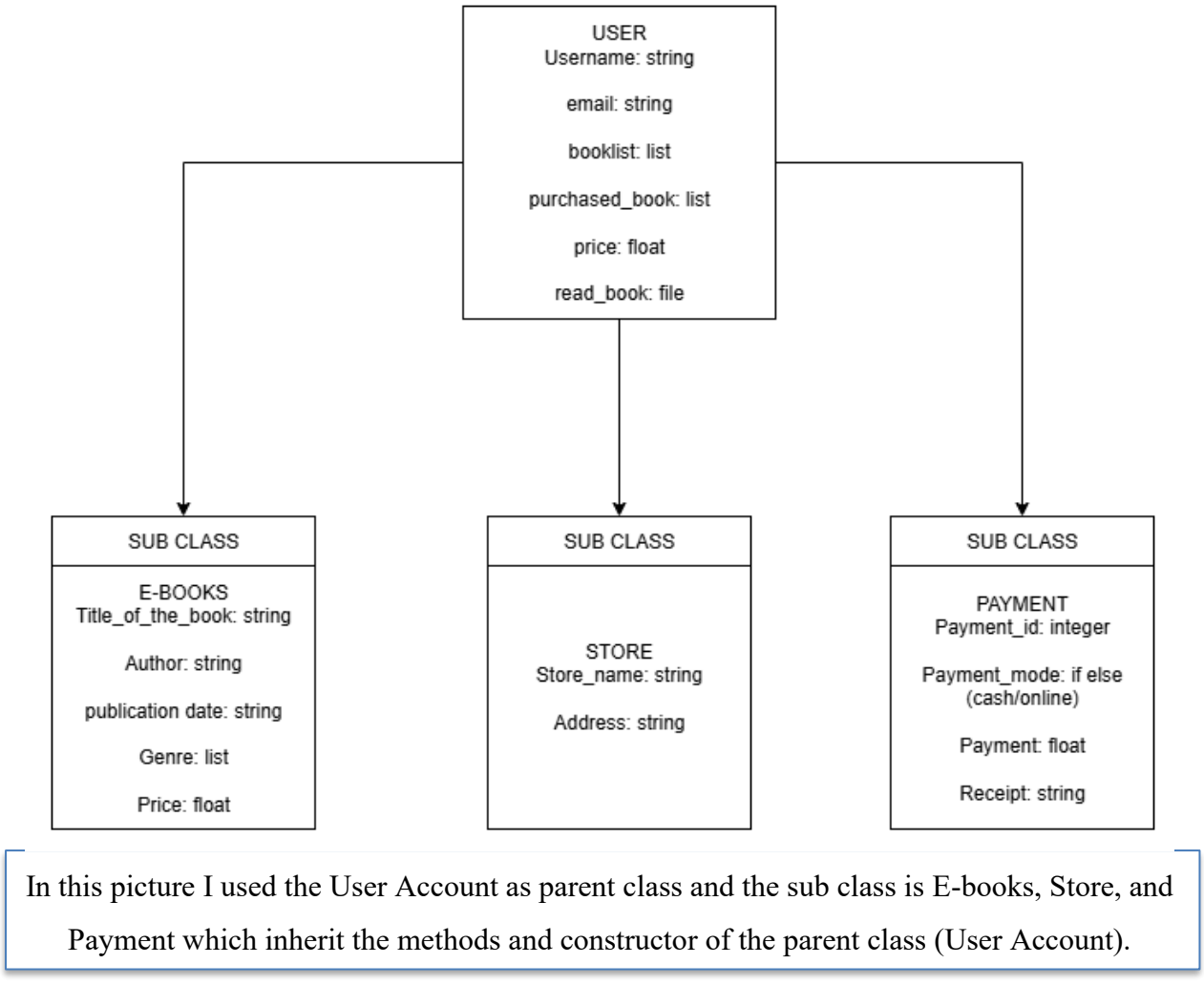
B. Write a Python class, Polygons that has three instance variables of type str, int, and float, that respectively represent the name of the polygon, its number of sides, and its area. Your class must include a constructor method that initializes each variable to an appropriate value, and your class should include methods for setting the value of each type and retrieving the value of each type.

III. Results

Present the visualized procedures done. Also present the results with corresponding data visualizations such as graphs, charts, tables, or image . Please provide insights, commentaries, or explanations regarding the data. If an explanation requires the support of literature such as academic journals, books, magazines, reports, or web articles please cite and reference them using the IEEE format.

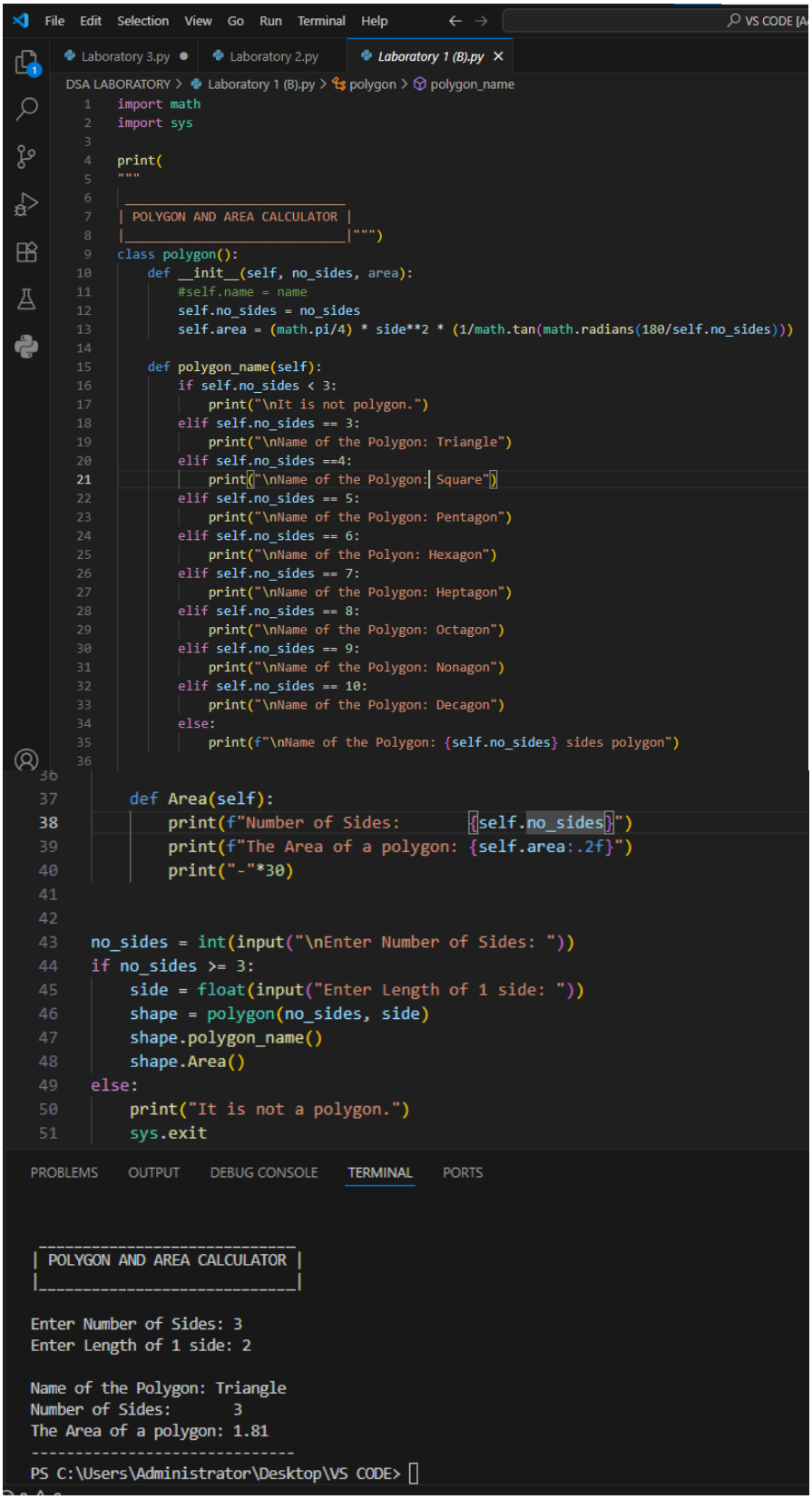
Please take note of the styles on the style ribbon as these would serve as the style format of this laboratory report. The body style is Times New Roman size 12, line spacing: 1.5. Body

text should be in Justified alignment, while captions should be center-aligned. Images should be readable and include captions. Please refer to the sample below:



In this picture I used the User Account as parent class and the sub class is E-books, Store, and Payment which inherit the methods and constructor of the parent class (User Account).

Figure 1 Screenshot of program



In this image, I create a python program using class and allow user to input the number of sides to determine what type of polygon are the user want to solve.

If an image is taken from another literature or intellectual property, please cite them accordingly in the caption. Always keep in mind the Honor Code [1] of our course to prevent failure due to academic dishonesty.

IV. Conclusion

In conclusion, I created algorithms using class creating the organization of a data. The inheritance made the program to be organized and easy to maintain. For task A, I designed to algorithms that showcase the class and subclass emphasizing the structure of a data. It also shows the multiple inheritance of class. In task B, I built a program that shows the class and function to determine the different types of regular polygon. I also used the if else statement so that the program will be accurate.

References

[1] Co Arthur O.. “University of Caloocan City Computer Engineering Department Honor Code,” UCC-CpE Departmental Policies, 2020.