Data Structure and Algorithm

Laboratory Activity No. 1

Object-oriented Programming

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# 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

# Methods

* Software Development
  + The design steps in object-oriented programming
  + Coding style and implementation using Python
  + Testing and Debugging
  + Reinforcement of below exercises
  1. 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.
  2. 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.

# Results **A.**

A diagram of a library

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 Using object-oriented programming, I made a diagram in this exercise that illustrates the ladder of inheritance in the electronic book reader system. The foundation is the User class.  
overseeing activities like log-in and log-out. This guarantees users safe access. The true heart  
resides in the Book class of the system. Making the book the common parent class  
characteristics such as author and title. I've created a versatile base. This class's two inheritors are both the audiobook and e-book classes are introducing special capabilities, whether it's managing various e-book file types or audiobook listening formats.

Simple methods for adding, removing, and searching for books are provided by the library class. I held onto this. Distinct from the bookstore course, which emphasizes the commercial side of perusing and purchasing. This makes it simpler to manage the system since, should we need to modify how the functionality of the library won't be impacted by purchases made later. In compliance with the Payment System handles transactions, following the notion that each class should have a single responsibility. on their own. Its modular architecture may allow us to substitute the payment method. processor without having an impact on other parts of the system.

**B.  
A screenshot of a computer program

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In the second task, I developed source code under the Polygons class's supervision.   
A full integer representing the number of sides, the polygon's name, and the decimal number is used to store area. When a new polygon is created, it will automatically set the default settings. (a 0.0-area, three-sided polygon) if you don't define them,  
It makes using it more convenient. By maintaining the data's organization and accessibility, the  
The lesson is using sound programming techniques. When a polygon item is printed, a unique  
The data is beautifully formatted using the string approach.

# Conclusion

In conclusion, the programs help me to refresh my knowledge and get some new learning information in my previous subject object-oriented programming. The only problem I faced is I didn’t really know the meaning of inheritance and some other concepts in object-oriented programming because we focused on some other topics in our previous class, but I learned some things in this activity that will help me in this data structure subject.

**References**

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