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 diagram of a book

AI-generated content may be incorrect.  
  
Figure 1 Inheritance diagram

Customer: Represents the user of the e-book system and it contains user name of the user and email and list of books the customer will buy the book in book store that’s why the arrow connect to book store contains the list of books and the customer will purchase book from the book store and The arrow connect to books the books contain the title of book and etc. The book has 2 types of E-books and an Audio Book.

A screenshot of a computer program

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Figure 2 Polygon

The Python code defines a class called Polygons, which is used to store and manage information about a polygon. A polygon is a shape with straight sides, like a triangle or pentagon. The class has three pieces of information: the name of the polygon like Pentagon, the number of sides it has like 5, and its area like 72.0. When a polygon object is created, these details are given through the constructor method. The class also includes methods to update each piece of information and to get or show the current values. In the example, a polygon called Pentagonis created with 5 sides and an area of 72. The program then prints out this information. This class makes it easy to create and work with different polygons in a clear and organized way.

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:

Image

Figure 1 Inheritance diagram

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.

# Conclusion

The conclusion expresses the summary of the whole laboratory report as perceived by the authors of the report.

I learn to make a inheritance diagram and I understand properly and make a code about polygon and it has three instance variables of type str, int, and float

**References**

Python Software Foundation. (2023). *Python Language Reference, version 3.11*. https://docs.python.org/3/reference/index.html