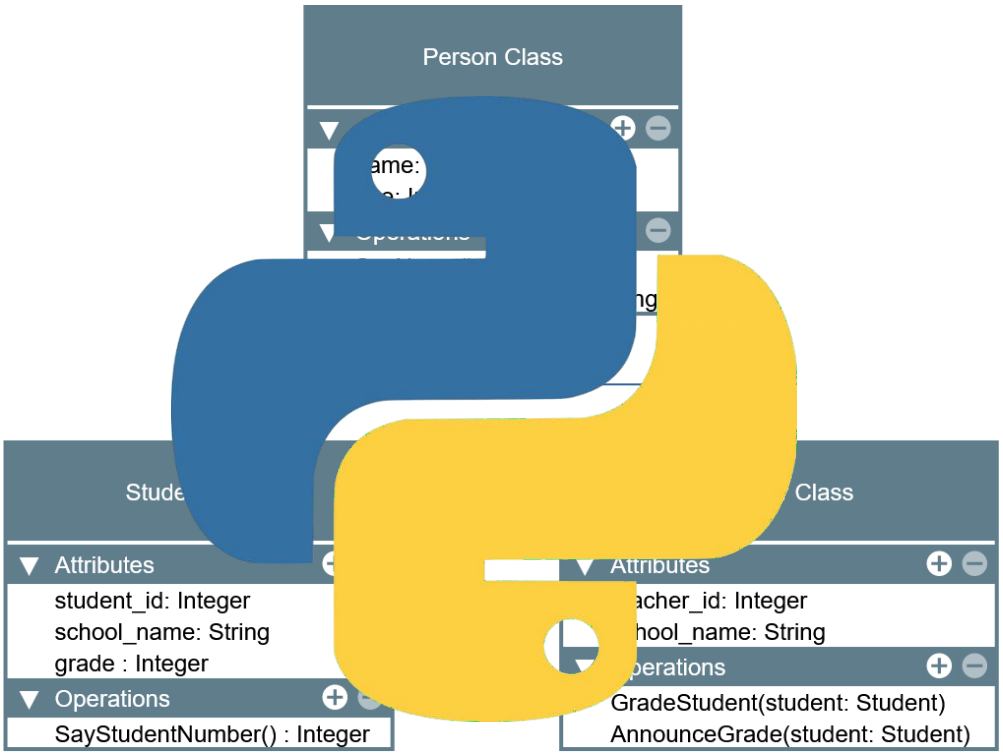
UNIVERSITY OF CALOOCAN CITY
Caloocan, 1400 Metro Manila, Philippines

COLLEGE OF ENGINEERING
Computer Engineering
2nd Semester, School Year 2024-2025



LABORATORYMANUAL

Object-Oriented Programming(CPE 103)

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Laboratory ActivityNo.2.2	
Literals,Operators,andVariables	
Course Code: CPE103	**Program:** BSCPE
Course Title : Object-OrientedProgramming	**Date Performed:**
Section:	**Date Submitted:**
Name:	**Instructor:**

1.Objective(s):

This activity aims to familiarize students in the various data types of Python, assign values to variables, and perform operations in a Python program.

2.Intended Learning Outcomes (ILOs):

The students should be able to:
2.1 Assign different values to variables in Python
2.2 Perform different operations available with variables inPython

3.Discussion:

The **Python** programming language is an interpreted language meaning the lines are evaluated line -by-line at runtime because there is no compile time at Python. This means that Python can dynamically allocate memory to variables as needed depending on the line of code that it interprets that is why Python isalso referred to as a Dynamically typed language.

Like other programming languages such as C/C++ and Java, Python can also assign values to specific blocks of memory through variables as well as perform operations such as but not limited to Addition, Subtraction, Multiplication, Division, and Modulo (remainder).This activity will focus on assigning values and performing operations in Python.

Recall that a **variable** is a name that points to a specific location in memory where the data is stored. A variable can be allocated memory based on the datatype it is assigned with which in Python can be: **Integer**, **Float**, **Complex Number**, **Boolean**, and **String**. In Python, **lists**, **tuples**, and **dictionaries**are also referred to as data types specifically sequences. More information can be found here (https://docs.python.org/3.8/reference/datamodel.html?highlight=data%20type#objects -values-and-types). These will be discussed further in lab activities.

VariablesinPythonareassignedinthefollowingmanner:

variable_name=value

Literals refers to the raw data given in a variable or constant. Literals can be some of the following: Numeric, Complex, String, Boolean, Special. Other literals are list, tuple, dict, set, and Unicode literals.

4.MaterialsandEquipment:

Desktop Computerwith Anaconda Python /Python Colab
Windows Operating System

5. Procedure:
Perform the activity using the Jupyter Notebook This activity can be done either locally on Anaconda's Jupyter Notebook or online through Google Collaboratory which offers a free Jupyter Notebook environment for Google Users. IPython Notebook files (.ipynb) that are saved in the Google Drive can be opened on Google Collaboratory. Additional guides are available on the IPython Notebook template file that is provided with this activity. If the template is not present, these are the valuable links for reference:

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https://jupyter-notebook.readthedocs.io/en/stable/examples/Notebook/Notebook%20Basics.htmlhttps://colab.research.google.com/notebooks/welcome.ipynbhttps://colab.research.google.com/notebooks/markdown_guide.ipynb

.TASKS:

1. A teacher wants to calculate the final grade in a CpE course and want to write it in a python program. The following are the requirements:
    1. PRELIM GRADE = 50% Prelim Exam + 50% Prelim Class Standing (CS)
    2. PRELIM CS = 50% Hands-on activity + 30% Quiz + 20% Assignment
    3. MIDTERM GRADE = 1/3 of PRELIM GRADE + 2/3 of (50% Midterm Exam + 50% Midterm Class Standing (CS))
    4. MIDTERM CS = 50% Hands-on activity + 30% Quiz + 20% Assignment
    5. FINAL GRADE = 1/3 of MIDTERM GRADE + 2/3 of (50% Final Exam + 50% Final Class Standing (CS))
    6. FINAL CS = 50% Hands-on activity + 30% Quiz + 20% Assignment
    7. HOAs, Quizzes and Assignments are inputted as average of all submissions and are out of 100%.
    8. Major exams are inputted out of 100%.
    9. Show the codes that successfully run the program.
10. Provide comments or documentation strings for your program.

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6. Supplementary Activity:

Tasks

1. Test 3 students from the program you created.
    2. The program should show the name of the student, the PRELIM, MIDTERM and FINAL grades.
    3. Convert the final grade into the UCCs numerical grade. Please refer to the grading system.
2. Document your lab activity properly using Markdown codes.
3. Answer all the supplementary activities (programs and questions).
4. Write your conclusion.

5. Convert your notebook into a PDF file and submit the PDF to the link.

Questions:

1. **What is the difference between using multiple if statement vs. if-elif-else?**
   if-elif-else is a chain that perform only one block which is the first one that evaluate to True, while multiple if statement is executed independently if their condition is True.

2. **What is the difference between a variable and a literal in Python?**
   literals in python is a fixed value in the codes, for example: 10 and “Hello World”. However, a variable is a name that stores a value.

7.Conclusion:
In conclusions, Python used an interpreter and not compiler which allows it to interpret the code line by line. Literals are the data given by the variables, while variables is the location where data is stored. Additionally, if else statement in python is used for decision-making to allow the program to perform different code of block based on conditions given. It also control the flow of execution by checking if the conditions are true or false. This is useful especially in handling various scenarios.
8.AssessmentRubric: