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| **Programming 1 (PRG1)**  Diploma in IT / DS / CSF / IM / CICTP  Year 1 (2023/24) Semester 1 | Week **1** |
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| **Activities : Problem Solving using Computers** | |

**OBJECTIVES**

At the end of this exercise, students should be able to:

* Work out a solution to a problem
* Express algorithms using pseudocodes
* Understand the concepts of variables, data types, operators and expressions

**IMPORTANT**

* Create a folder, **Week01**, on your hard disk.
* Save this word document as **Week01-YourName.docx** in the **Week01** folder created above.
* For each question, type your answer into the box provided below the question.
* For the questions that require you to write Python program, create the Python program with the given file name in the **Week01** folder created above, then copy and paste the programs into the box below the respective question
* Do add the description, your name and student ID as comments at the beginning of each program.
* At the end of the session, save this word document and submit it in POLITEMall.

**PART 1**

Activity 1

State the input, process and output needed to solve the following problem:

- Calculate the annual income for an executive employee.

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| --- | --- |
| Input |  |
| Process |  |
| Output |  |

Activity 2

Write the pseudocode for the problem:

- Calculate the annual income for an executive employee.

Pseudocode:

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**PART 2**

Activity 1

What is the data type of each of the following expressions (within the type function)?

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| Program Text |  | Output |
| >>> print(type(7)) |  |  |
| >>> print(type("Welcome")) |  |  |
| >>> print(type(False)) |  |  |
| >>> print(type(7.5)) |  |  |
| >>> print(type(12/17)) |  |  |
| >>> print(type(2.0/1)) |  |  |
| >>> print(type(11 \*\* 3)) |  |  |
| >>> print(type(2 == "2")) |  |  |
| >>> a = str((-4 + 3 / 2 \*\* 3) + 321 - ((64 / 16) % 4) \*\* 2)  >>> print(type(a)) |  |  |

Activity 2

Write a program (Hip.py) to display "Hip Hip Hurray" 2 times followed by "Welcome to ICT" 3 times, on individual lines.

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| Sample output |  |

Python Code:

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Activity 3

Given that the price of an item is $250 and the gst is 8%, calculate and display the total cost of the item.

* State the input, processing and output needed to solve the problem.
* Develop pseudocode to calculate and display the total cost of the item.
* Write a Python program (TotalCost.py) to solve this problem based on the pseudocode developed.

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| Input |  |
| Process |  |
| Output |  |

Pseudocode:

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Python Code:

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Activity 4

The final mark for PRG1 module is calculated based on 30% of common test, 30% of assignment and 40% of continuous assessment.

* State the input, processing and output needed to solve the problem
* Develop a pseudocode to calculate and display the final mark of the module. You may assign continuous assessment 75, assignment 80 and common test 60
* Write a Python program (MarkCalculator.py) to solve this problem based on the pseudocode developed.

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| Input |  |
| Process |  |
| Output |  |

Pseudocode:

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Python Code:

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