Data Analytics with Python

Assignment 1: Introduction to Python Programming

Objective:

By the end of this assignment, you will have a basic understanding of Python syntax, data types, variables, control structures, and how to work with lists and dictionaries.

Task 1: Writing Basic Syntaxes and Language Constructs

Instructions:

- Write a Python program that prints "Welcome to Data Analytics with Python" to the console.
- Add a comment in your code explaining what the print statement does.
- Define a variable course_name with the value "Data Analytics with Python" and print it.

Expected Output:

- Welcome message printed.
- Course name displayed.

Task 2: Understanding Python Data Types, Variables, and Operators

Instructions:

- Create variables a, b, and c with values 10, 15.5, and True respectively.
- Print the data type of each variable using the type() function.
- Perform the following operations and print the results:
    - a + b
    - a * c
    - b / a

Expected Output:

- Data types of a, b, and c displayed.
- Results of the operations displayed.

Task 3: Using Control Structures and Loops

Instructions:

- Write a program that checks if the variable a (from Task 2) is greater than 10. If it is, print "a is greater than 10". Otherwise, print "a is not greater than 10".
- Create a list numbers = [1, 2, 3, 4, 5].
- Write a for loop that prints each number in the list.
- Write a while loop that prints the numbers from 5 to 1.

Expected Output:

- Conditional check result displayed.
- Numbers from the list displayed.
- Countdown from 5 to 1 displayed.

Task 4: Working with Lists, Tuples, Sets, and Dictionaries

Instructions:

- Create a list services = ["Voice", "Data", "SMS"]. Add "MMS" to the list. Print the updated list.
- Convert the list to a tuple and print it.
- Create a set employees = {"John", "Jane", "Doe"}. Add "Smith" to the set. Print the updated set.
- Create a dictionary employee_info = {"John": "Manager", "Jane": "Engineer", "Doe": "Analyst"}. Add another entry for "Smith" as "Technician". Print the dictionary.

Expected Output:

- Updated list displayed.
- Tuple displayed.
- Updated set displayed.
- Dictionary with the new entry displayed.

Task 5: Examples of Working with Strings

Instructions:

- Create a string welcome_message = "Welcome to Data Analytics with Python".
- Print the length of the string.
- Convert the string to uppercase and print it.
- Extract and print the substring "Data Analytics".

Expected Output:

- Length of the string displayed.
- Uppercase string displayed.
- Substring "Data Analytics" displayed.

Task 6: Reading and Writing Data Files in Python

Instructions:

- Write the string welcome_message to a file named welcome.txt.
- Read the content of the file and print it.

Expected Output:

- Content of the file displayed after reading.

Task 7: Creating and Using Functions

Instructions:

- Create a function calculate_sum(a, b) that returns the sum of two numbers.
- Call the function with the values a = 10 and b = 5 and print the result.

Expected Output:

- Sum of a and b displayed.