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STD : MCA 'A'
Subject : Python Asssignment -1 (Report)

Github Repo Link : https://github.com/vrbeirer/python_assignment_1.git

Report for Assignment 1: Exercises on Operators, Strings, and Lists

Summary:

This assignment consists of 11 exercises that cover various aspects of Python programming, including operators, strings, and lists. The exercises are designed to test the student's understanding of these concepts and their ability to apply them in practical scenarios.

Explanations of Exercises:

Part 1: Operators

1. Exercise 1: Arithmetic Operators - This exercise requires the student to write a Python program that performs basic arithmetic operations such as addition, subtraction, multiplication, and division on two numbers input by the user. The program should also use the modulus operator to find the remainder of the division and the exponentiation operator to raise the first number to the power of the second number.

2. Exercise 2: Comparison Operators - This exercise requires the student to write a Python program that asks for two numbers and checks if the first number is greater than, equal to, or less than the second number.

3. Exercise 3: Logical Operators - This exercise requires the student to write a Python program that takes three boolean values as input and uses the and, or, and not operators to return the result of combining them.

Part 2: Strings

1. Exercise 4: String Manipulation - This exercise requires the student to write a Python program that takes a string input from the user and displays the length of the string, the first and last character, the string in reverse order, and the string in uppercase and lowercase.

2. Exercise 5: String Formatting - This exercise requires the student to write a program that asks for the user's name and age and displays the message in the format "Hello [Name], you are [Age] years old."

3.Exercise 6: Substring Search - This exercise requires the student to write a Python program that asks for a sentence input from the user and a word to search in the sentence. The program should output whether the word exists in the sentence and, if it does, at which position (index).

Part 3: Lists

1. Exercise 7: List Operations - This exercise requires the student to write a Python program that creates

a list of 5 numbers input by the user, displays the sum of all the numbers in the list, and finds the largest and smallest number in the list.

2. Exercise 8: List Manipulation - This exercise requires the student to create a list of 5 favorite fruits, add one more fruit to the list, remove the second fruit from the list, and print the updated list.

3. Exercise 9: Sorting a List - This exercise requires the student to write a Python program that asks the user to input a list of 5 numbers, sorts the list in ascending order, and displays it. The program should also sort the list in descending order and display it.

4. Exercise 10: List Slicing - This exercise requires the student to write a Python program that takes a list of numbers and prints the first 5 elements, the last 5 elements, and the elements from index 2 to index 7.

Bonus Challenge

Exercise 11: Nested List - This exercise requires the student to write a Python program that takes input of 3 students' names and their respective scores in 3 subjects, stores them in a nested list, and prints each student's name and their average score.

Approach:
To complete this assignment, I followed a structured approach. First, I read and understood the instructions and requirements of each exercise. Then, I wrote the Python code for each exercise, making sure to include comments to explain each step. I tested each program to ensure it worked correctly and produced the expected output. Finally, I prepared a report summarizing the assignment, including explanations of the exercises, my approach, and key learnings.

Key Learnings:
Through this assignment, I gained hands-on experience with various Python concepts, including operators, strings, and lists. I learned how to write Python programs that perform arithmetic operations, compare numbers, manipulate strings, and work with lists. I also learned how to use logical operators, format strings, and search for substrings. Additionally, I gained experience with list operations, including creating lists, adding and removing elements, sorting lists, and slicing lists. The bonus challenge helped me understand how to work with nested lists and calculate average scores.

Overall, this assignment helped me develop my problem-solving skills, critical thinking, and programming skills in Python. I am confident that the knowledge and experience gained from this assignment will be useful in future programming projects and assignments.