Week 1: Assignment

A set of exercises is given below. These exercises may be done in pairs or individually. The solutions to these exercises are included at the end of this section.

Exercise 1

1. Write a sequence of actions that results in the following output:
   a. a list of numbers from 1 to 10
   b. a string

   Solutions:
   a. `for i in range(1, 11):
      print(i)
   b. `print("Hello, world!")`

Exercise 2

2. Describe the output of the following functions:
   a. `def square(x):
      return x ** 2
   print(square(4))`
   b. `def add_numbers(a, b):
      return a + b
   print(add_numbers(5, 3))`

   Solutions:
   a. 16
   b. 8

Exercise 3

3. Write a program that does the following:
   a. takes two numbers as input
   b. performs addition and division
   c. prints the result

   Solution:
   ```python
   a = int(input("Enter first number: "))
   b = int(input("Enter second number: "))
   print("Result: ", a + b / a)
   ```

Exercise 4

4. Write a program that does the following:
   a. takes a list of numbers as input
   b. finds the maximum and minimum values
   c. prints the results

   Solution:
   ```python
   numbers = [3, 5, 2, 8, 1]
   max_number = max(numbers)
   min_number = min(numbers)
   print("Max: ", max_number, " Min: ", min_number)
   ```

Exercise 5

5. Write a program that does the following:
   a. takes a string as input
   b. reverses the string
   c. prints the reversed string

   Solution:
   ```python
   string = "Hello, world!"
   reversed_string = string[::-1]
   print("Reversed: ", reversed_string)
   ```

Exercise 6

6. Write a program that does the following:
   a. takes a list of integers as input
   b. finds the sum of all elements
   c. prints the sum

   Solution:
   ```python
   numbers = [1, 2, 3, 4, 5]
   sum = sum(numbers)
   print("Sum: ", sum)
   ```

Exercise 7

7. Write a program that does the following:
   a. takes a string as input
   b. counts the number of vowels
   c. prints the count

   Solution:
   ```python
   string = "Hello, world!"
   vowel_count = 0
   vowels = "aeiouAEIOU"
   for char in string:
       if char in vowels:
           vowel_count += 1
   print("Vowel count: ", vowel_count)
   ```

Exercise 8

8. Write a program that does the following:
   a. takes a string as input
   b. checks if it is a palindrome
   c. prints yes if it is a palindrome, no otherwise

   Solution:
   ```python
   string = "racecar"
   if string == string[::-1]:
       print("yes")
   else:
       print("no")
   ```