Assignment 01

Question 1: Code Along

Problem: Write a Python program that takes a string as input and prints out the following:

1. The string in reverse order.
2. The number of vowels in the string.

Instructions:

- Use basic string manipulation techniques such as loops, conditionals, and string methods.
- Ensure that the program counts both uppercase and lowercase vowels (a, e, i, o, u).

Example Input:

```
Enter a string: Hello World
```

Example Output:

```
Reversed string: dlroW olleH
Number of vowels: 3
```

Question 2: Hands-on Coding Project

Problem: Create a Python program that:

- Takes an input number from the user.
- Checks whether the number is even or odd.
- Prints the result.

Instructions:

- Write a Python script that accepts a number from the user, determines whether it is even or odd, and prints the result.
- Use conditionals to check if the number is even or odd.

Example Input:

```
Enter a number: 5
```

Example Output:

```
The number 5 is Odd.
```

Question 3: Virtual Environment Application

Problem: Create a Python program that:

1. Takes a list of integers as input.
2. Creates a new virtual environment called sortenv.
3. Installs a package (such as numpy) in the virtual environment.
4. Sorts the list using a numpy method (numpy.sort()).
5. Prints the sorted list.

Instructions:

- You will not be expected to actually run the environment creation commands but rather simulate what would happen by describing the steps in your code and then focusing on the sorting operation.
- Make sure that your program explains each step as comments and performs sorting using numpy.

Example Input:

```
Enter a list of numbers: [4, 2, 7, 1, 3]
```

Example Output:

```
Sorted list: [1, 2, 3, 4, 7]
```

Grading Criteria (Total: 30 Marks)

Criteria	Marks	Description
Correctness of Program (Logic)	15	The program solves the problem correctly by producing the expected output.
Code Quality (Readability)	5	Code is well-structured, follows Pythonic practices, and includes meaningful variable names.
Use of Concepts (Loops, Conditions, Virtual Environments)	5	Proper use of loops, conditionals, and virtual environments as demonstrated in the code.
Testing & Input Handling	5	The program handles user inputs correctly and includes basic validation for edge cases.