Date: 15/12/2025

NATIONAL SKILL TRAINING INSTITUTE (WOMEN), INDORE

ARTIFICIAL INTELLIGENCE PROGRAMMING ASSISTANT
(MODULE 2 - INTERNAL PRACTICAL)
2025-26

Set 5

TIME: 3 Hrs **MARKS: 50**

Note: Attempt any 2

1. Classify a list of integers into even and odd using list comprehensions. Write a Python program that takes a list of integers from the user and separates them into two lists: one containing all even numbers and another containing all odd numbers. Use list comprehensions to build the even_numbers and odd_numbers lists from the original list. Then display the original list, followed by the even and odd lists.

Sample Input

```
Enter integers separated by spaces: 12 5 7 8 10 3
```

Sample Output

```
Original list: [12, 5, 7, 8, 10, 3]
Even numbers: [12, 8, 10]
Odd numbers: [5, 7, 3]
```

2. Generate word frequency count from a paragraph. Write a Python program that reads a paragraph of text from the user and calculates how many times each distinct word appears. Convert the text to lowercase to make counting case-insensitive, split the paragraph into words (you may strip basic punctuation), and then use a dictionary where keys are words and values are their frequencies. Finally, display each word along with its count.

Sample Input

```
Enter a paragraph:
Data science is fun. Data analysis is important, and data is
everywhere.
```

Sample Output

```
Word frequencies:
data : 3
science : 1
is : 3
fun : 1
analysis : 1
important : 1
and : 1
everywhere : 1
```

3. Find the longest word in a sentence and its length. Write a Python program that takes a single sentence as input and finds the longest word in that sentence along with its length. Split the sentence into words (using spaces, and optionally strip punctuation). Traverse the list of words and keep track of the word with the maximum length, or use a suitable built-in like max(..., key=len). If multiple words share the maximum length, you may display the first one encountered. Print both the longest word and its length.

Sample Input

```
Enter a sentence:
Machine learning applications are transforming industries
worldwide.
```

Sample Output

```
Longest word: "applications"
Length of longest word: 12
```