LAB REPORT 02

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SECTION : B

COURSE TITLE: ARTIFACIAL INTEELLIGENCE LAB

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TASK 01

Count the number of strings where the string length is 2 or more and the first and last character are same from a given list of strings. Sample List: [‘abc’, ‘xyz’, ‘aba’, ‘1221’, ‘xyzzyx’, ‘aa’, ’122’] Expected Result: 4 .

INPUT:

Untitled-1.py

C: > Users > User > Untitled-1.py > ...

```python
def count_matching_strings(strings):
    count = 0
    for s in strings:
        if len(s) >= 2 and s[0] == s[-1]:
            count += 1
    return count

sample_list = ['abc', 'xyz', 'aba', '1221', 'xyzzyx', 'aa', '122']

result = count_matching_strings(sample_list)
print("Number of Strings with the same first and last character", result)  # Output: 4

```

OUTPUT:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
4
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
4
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
Number of Strings with the same first and last character 4
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
Number of Strings with the same first and last character 4
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
Number of Strings with the same first and last character 4
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
```

TASK 02

Find the sum and product of numbers in a tuple. Sample List: (1,2, 4, 2, 6), Sum is: 15, Product is: 96.

INPUT:

Untitled-1.py

C: > Users > User > Untitled-1.py > ...

```python
def calculate_sum_product(numbers):
    total_sum = sum(numbers)
    product = 1
    for num in numbers:
        product *= num
    return total_sum, product

sample_tuple = (1, 2, 4, 2, 6)
sum_val, prod_val = calculate_sum_product(sample_tuple)
print(f"Sum is: {sum_val}"), # Output: Sum is: 15,
print(f"Product is: {prod_val}") # Product is: 96
```

OUTPUT:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

  File "c:\Users\User\Untitled-1.py", line 13
    print(f"Sum is: {sum_val}, # Output: Sum is: 15,
          ^
SyntaxError: unterminated f-string literal (detected at line 13)
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
Sum is: 15
Product is: 96
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
Sum is: 15
Product is: 96
```

TASK 03

Write a program to print largest number in a List Sample List:

(1, 2, 4, 2, 6).

INPUT:

Untitled-1.py

C: > Users > User > Untitled-1.py > ...

```python
# Program to input 5 numbers and print the largest one
numbers = []
for i in range(5):
    num = int(input(f"Enter number {i+1}: "))
    numbers.append(num)
largest = max(numbers)
print(f"The largest number in the list {numbers} is: {largest}")

```

OUTPUT:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
Enter number 1: 3
Enter number 2: 6
Enter number 3: 8
Enter number 4: 4
Enter number 2: 6
Enter number 3: 8
Enter number 4: 4
Enter number 3: 8
Enter number 4: 4
Enter number 4: 4
Enter number 5: 6
The largest number in the list [3, 6, 8, 4, 6] is: 8
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
Enter number 1: 2
Enter number 2: 6
Enter number 3: 9
Enter number 4: 5
Enter number 5: 7
The largest number in the list [2, 6, 9, 5, 7] is: 9
```


TASK 04

Write a Python program to remove an empty tuple(s) from a list of tuples. Sample L = [(), (), ('',), ('a', 'b'), (), ('a', 'b', 'c'), (), ('d')], Result = [('',), ('a', 'b'), ('a', 'b', 'c'), ('d')]

INPUT:

```
L = [(), (), ('',), ('a', 'b'), (), ('a', 'b', 'c'), (), ('d',)]

# Remove empty tuples using list comprehension
result = [t for t in L if t]

print("Result =", result)
```

OUTPUT:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
Module PSReadLine'.

PS C:\Users\HP> & C:/Users/HP/AppData/Local/Programs/Python/
Result = [('',), ('a', 'b'), ('a', 'b', 'c'), ('d',)]
PS C:\Users\HP>
```

TASK 05

Write a Python script to generate and print a dictionary that contains a number (between 1 and n) in the form (‘x’, x*x). Sample: Input a number 4 Output: {‘1’: 1, ‘2’: 4, ‘3’: 9, ‘4’: 16}.

INPUT:

Untitled-1.py

C: > Users > User > Untitled-1.py > ...

```
4   # Generate the dictionary
5   squares_dict = {str(i): i * i for i in range(1, n + 1)}
6   # Print the result
7   print(squares_dict)
8   # Sample Output for input 4: {'1': 1, '2': 4, '3': 9, '4': 16}
9
```

OUTPUT:

```
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
Input a number: 6
{'1': 1, '2': 4, '3': 9, '4': 16, '5': 25, '6': 36}
PS C:\Users\User> & C:/Users/User/AppData/Local/Programs/Python/Python312/python.exe c:/Users/User/Untitled-1.py
Input a number: 3
{'1': 1, '2': 4, '3': 9}
PS C:\Users\User>
```

TASK 06

Create a program using Dictionary that takes Numbers as input and print it in words form Sample: Input: 1234, Output: One Two Three Four.

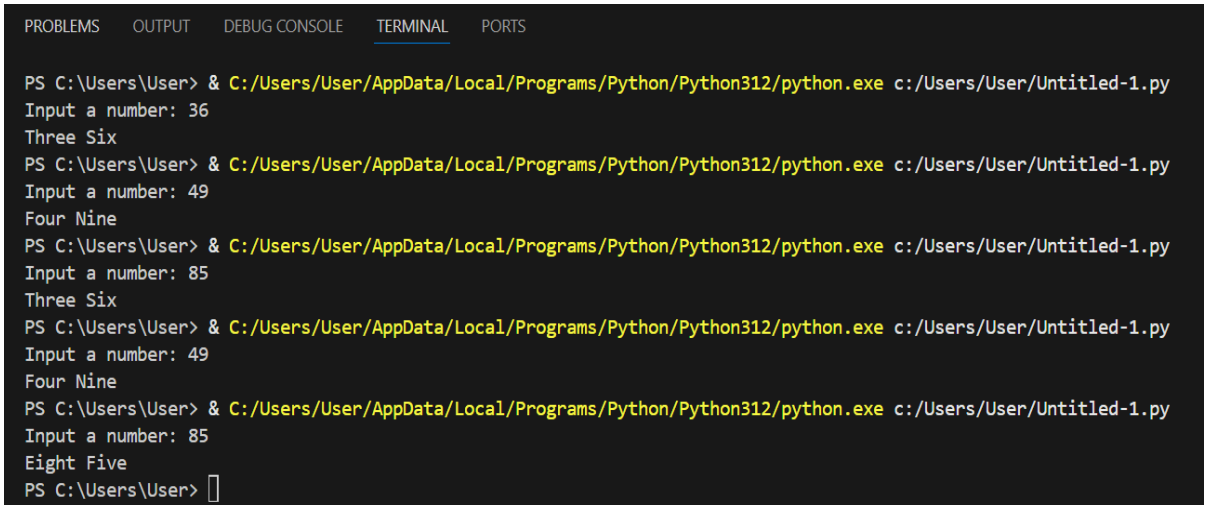
INPUT:

Untitled-1.py

C: > Users > User > Untitled-1.py > ...

```python
# Python program to convert a number's digits to words using a dictionary
digit_words = {
    '0': 'Zero',
    '1': 'One',
    '2': 'Two',
    '3': 'Three',
    '4': 'Four',
    '5': 'Five',
    '6': 'Six',
    '7': 'Seven',
    '8': 'Eight',
    '9': 'Nine'
}
num = int(input("Input a number: "))
num_str = str(num)
words = [digit_words[digit] for digit in num_str]
output = ' '.join(words)
print(output)
```

OUTPUT:



CONCLUSION:

In this lab, we have learned on how to work with lists, tuples, and dictionaries in Python programming language. We have learned how to perform pecific operations like removing empty tuples, calculating sum and product, finding the largest number, counting strings, converting numbers into various words as well as generating various square dictionaries.

We have been able to improve our basic understanding of if-else conditions, loops along with data structures like lists etc. This has resulted in improving the logical thinking and applying python concepts to solving real world problems.