

Practical 4

Aim: Tuple, List and Dictionaries

- 1) Write a program to find min and max value from list of tuples.

Code:

```
print("By 22IT460")
data = [(3, 5), (1, 9), (8, 2), (4, 7)]
flat_list = [item for tup in data for item in tup]
min_val = min(flat_list)
max_val = max(flat_list)
print("Minimum value:", min_val)
print("Maximum value:", max_val)
```

Output:

```
/usr/bin/python3.12 /home/neel/College/22IT460/Practical4/minMaxTupleList.py
By 22IT460
Minimum value: 1
Maximum value: 9

Process finished with exit code 0
```

- 2) Write a program to convert Celsius to Fahrenheit and vice versa using tuples for unit conversions.

Code:

```
print("By 22IT460")
value = float(input("Enter temperature: "))
unit = input("Enter unit: ")
temp = (value, unit)
val, unit = temp
if unit == "C":
    converted = value * 1.8 + 32
    res = (converted, 'F')
elif unit == "F":
    converted = (value - 32) * (5/9)
    res = (converted, 'C')
else:
    res = ("Invalid unit", None)
print("Converted Temperature: ", res)
```

Output:

```
/usr/bin/python3.12 /home/neel/College/22IT460/Practical4/temperatureTuples.py
By 22IT460
Enter temperature: -40
Enter unit: F
Converted Temperature: (-40.0, 'C')

Process finished with exit code 0
```

3) Write a program to sum all the items in a list.**Code:**

```
print("By 22IT460")
numbers = [5, 10, 15, 20]
print("Sum of numbers(with builtin):", sum(numbers))
total = 0
for i in numbers:
    total += i
print("Sum of numbers:", total)
```

Output:

```
/usr/bin/python3.12 /home/neel/College/22IT460/Practical4/sumListElements.py
By 22IT460
Sum of numbers(with builtin): 50
Sum of numbers: 50

Process finished with exit code 0
```

4) Write a program to Find the Union of Two Lists.**Code:**

```
print("By 22IT460")
l1 = [1,2,3,4,5]
l2 = [2,4,6]
l3 = list(set(l1)|set(l2))
print(f"The union of {l1} and {l2} is {l3}")
```

Output:

```
/usr/bin/python3.12 /home/neel/College/22IT460/Practical4/union2Lists.py
By 22IT460
The union of [1, 2, 3, 4, 5] and [2, 4, 6] is [1, 2, 3, 4, 5, 6]

Process finished with exit code 0
```

5) Write a program to transpose a matrix using nested lists.

Code:

```
print("By 22IT460")
rows = int(input("Enter the rows: "))
cols = int(input("Enter the columns: "))
matrix = []
for i in range(rows):
    row = list()
    for j in range(cols):
        temp = int(input())
        row.append(temp)
    matrix.append(row)
transpose_matrix = [[matrix[j][i] for j in range(cols)] for i in range(rows)]
print(f"The transpose matrix of {matrix} is {transpose_matrix}")
```

Output:

```
/usr/bin/python3.12 /home/neel/College/22IT460/Practical4/union2Lists.py
By 22IT460
The union of [1, 2, 3, 4, 5] and [2, 4, 6] is [1, 2, 3, 4, 5, 6]

Process finished with exit code 0
```

6) Write a program to combine two dictionary adding value of a common key.

Code:

```
print("By 22IT460")
dict1 = {'a':10,'b':20}
dict2 = {'a':5,'c':20}
combine = dict1.copy()
for key in dict2:
    if key in combine:
        combine[key] = combine[key] + dict2[key]
    else:
        combine[key] = dict2[key]
print(f"Combined dictionary of {dict1} and {dict2} is {combine}")
```

Output:

```
/usr/bin/python3.12 /home/neel/College/22IT460/Practical4/combine2Dictionary.py
By 22IT460
Combined dictionary of {'a': 10, 'b': 20} and {'a': 5, 'c': 20} is {'a': 15, 'b': 20, 'c': 20}

Process finished with exit code 0
```

7) Write a program to Multiply All the Items in a Dictionary.**Code:**

```
print("By 22IT460")
dict1 = {'a':10,'b':20}
prod = 1
for key,value in dict1.items():
    prod *= value
print(f"The product of elements in {dict1} is: {prod}")
```

Output:

```
/usr/bin/python3.12 /home/neel/College/22IT460/Practical4/multiplyDictElements.py
By 22IT460
The product of elements in {'a': 10, 'b': 20} is: 200

Process finished with exit code 0
```

8) Write a program to find the factorial of a number using recursion and store result with a dictionary.**Code:**

```
print("By 22IT460")
def factorial(n):
    if n == 1:
        return 1
    else:
        return n * factorial(n - 1)
num = int(input("Enter a number: "))
dict1 = dict()
dict1[num] = factorial(num)
print(f"The factorial of {num} is {dict1[num]}")
print(f"Stored dictionary: {dict1}")
```

Output:

```
/usr/bin/python3.12 /home/neel/College/22IT460/Practical4/factorialRecursion.py
By 22IT460
Enter a number: 5
The factorial of 5 is 120
Stored dictionary: {5: 120}

Process finished with exit code 0
```