Assignment 5

Akash Duttachowdhury
21052386

1. Write a program to find the sum of all elements of a list.

In [ ]:
```
# Akash Duttachowdhury | 21052386
n = int(input("Enter the size of list: "))
lst = []
for i in range(n):
    lst.append(int(input("Enter element: ")))
print(f"The entered list is {lst}")
print(f"Sum of the elements in list is: {sum(lst)}")
```

```
The entered list is [1, 2, 3, 4, 5]
Sum of the elements in list is: 15
```

2. Write a program to find the maximum and minimum element of a list.

In [ ]:
```
# Akash Duttachowdhury | 21052386
n = int(input("Enter the size of list: "))
lst = []
for i in range(n):
    lst.append(int(input("Enter element: ")))
print(f"The entered list is {lst}")
print(f"Maximum element is {max(lst)}")
print(f"Minimum element is {min(lst)}")
```

```
The entered list is [5, 12, 34, 6, 2]
Maximum element is 34
Minimum element is 2
```

3. Write a program to find the position of maximum and minimum element's position in a list.

In [ ]:
```
# Akash Duttachowdhury | 21052386
n = int(input("Enter the size of list: "))
lst = []
for i in range(n):
    lst.append(int(input("Enter element: ")))
print(f"The entered list is {lst}")
print(f"Maximum element is {max(lst)}, at index {lst.index(max(lst))}")
print(f"Minimum element is {min(lst)}, at index {lst.index(min(lst))}")
```

```
The entered list is [7, 1, 0, 3, 19]
Maximum element is 19, at index 4
Minimum element is 0, at index 2
```

4. Write a program to print all the element in a list that are greater than a given value.

In [ ]:
```python
# Akash Duttachowdhury | 21052386
n = int(input("Enter the size of list: "))
lst = []
for i in range(n):
    lst.append(int(input("Enter element: ")))
print(f"The entered list is {lst}")
limit = int(input("Value for larger list elements: "))
greater=[]
for num in lst:
    if num>limit:
        greater.append(num)
print(f"The no.s greater than {limit} are: {greater}")
```

```
The entered list is [1, 2, 3, 4, 5]
The no.s greater than 2 are: [3, 4, 5]
```

5. Write a program to print all the common elements of 2 list.

In [ ]:
```python
# Akash Duttachowdhury | 21052386
def create_list(size):
    newList = []
    for i in range(size):
        newList.append(int(input(f"Enter element {i+1}: ")))
    return newList

def common(a, b):
    return list(set(a) & set(b))

m = int(input("Enter the size of 1st list: "))
l1 = create_list(m)
n = int(input("Enter the size of the 2nd list: "))
l2 = create_list(n)
print(f"The common elements of the lists are: {common(l1, l2)}")
```

```
The common elements of the lists are: [1]
```

6. Write a program to reverse a list.

In [ ]:
```python
# Akash Duttachowdhury | 21052386
def reversedList(l):
    newList = []
    for i in range(-1, -len(l)-1, -1):
        newList.append(l[i])
    return newList
```

```
n = int(input("Enter the size of list: "))
lst = []
for i in range(n):
    lst.append(int(input("Enter element: ")))
print(f"The entered list is {lst}")
print(f"The reversed list is {reversedList(lst)}")
```

```
The entered list is [6, 6, 42, 2, 23]
The reversed list is [23, 2, 42, 6, 6]
```

7. Write a program to find the second largest and second smallest value from a list.

In [ ]:
```
# Akash Duttachowdhury | 21052386
n = int(input("Enter the size of list: "))
arr = []
for i in range(n):
    arr.append(int(input(f"Enter element {i+1}: ")))
arr.sort()
print(f"2nd smallest: {arr[1]}\n2nd largest: {arr[-2]}")
```

```
2nd smallest: 2
2nd largest: 9
```

8. Write a program to find the average of all elements in a list.

In [ ]:
```
# Akash Duttachowdhury | 21052386
n = int(input("Enter the size of list: "))
arr = []
sum = 0
for i in range(n):
    arr.append(int(input(f"Enter element {i+1}: ")))
for number in arr:
    sum += number
print(f"The average of the elements is {sum/n}")
```

```
The average of the elements is 3.0
```

9. Write a program to to generate random numbers within a given range and store it in a list.

In [ ]:
```
# Akash Duttachowdhury | 21052386
import random
m = int(input("Enter lower bound of range: "))
n = int(input("Enter upper bound of range: "))
size = int(input("Enter the size of the list: "))
numbers = []
for i in range(size):
    numbers.append(random.randint(m,n))
print("The list:", numbers)
```

```
The list: [620, 747, 722, 578, 602, 982, 805, 182, 12, 504, 723, 242, 921,
189, 89, 741, 204, 898, 449, 624, 197, 298, 363, 340, 279, 197, 483, 602,
38, 346, 133, 200, 875, 911, 355, 318, 155, 748, 684, 567, 159, 987, 178,
603, 666, 314, 501, 321, 342, 619, 179, 451, 402, 903, 327, 735, 866, 467,
6, 37, 309, 528, 219, 692, 260, 198, 643, 884, 148, 490, 201, 69, 12, 628,
513, 172, 905, 748, 16, 75, 348, 73, 951, 682, 834, 10, 526, 654, 565, 53
9, 768, 212, 687, 199, 316, 272, 814, 226, 575, 401]
```

10. Write a program to split the even and odd elements into 2 different lists.

In [ ]:
```
# Akash Duttachowdhury | 21052386
n = int(input("Enter the size of list: "))
arr = []
for i in range(n):
    arr.append(int(input(f"Enter element {i+1}: ")))
even = []
odd = []
for number in arr:
    if number%2==0:
        even.append(number)
    else:
        odd.append(number)
print("Even No.s:", even, "\nOdd No.s:", odd)
```

```
Even No.s: [2, 4]
Odd No.s: [1, 3, 5]
```

11. Write a Python program to create a tuple

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
create_tuple = tuple(elements.split(','))
print("The tuple created:", create_tuple)
```

```
The tuple created: ('akash', ' 12', ' 67', ' dutta')
```

12. Write a Python program to create a tuple with different data types.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
create_tuple = tuple(elements.split(','))
print("The tuple created:", create_tuple)
```

```
The tuple created: ('akash', '12', '8.999')
```

13. Write a Python program to unpack a tuple in several variables.

In [ ]:
```
# Akash Duttachowdhury | 21052386
tup = ('Akash', 21052386, 'CSE-15')
a, b, c = tup
```

```
print(f"a = {a}\nb = {b}\nc = {c}")
```

```
a = Akash
b = 21052386
c = CSE-15
```

14. Write a Python program to add an item in a tuple.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
extra = input("Enter element to add to the tuple: ")
my_tuple += (extra, )
print("Modified tuple is:", my_tuple)
```

```
The tuple created: ('akash', ' 12', ' dutta')
Modified tuple is: ('akash', ' 12', ' dutta', 'cse15')
```

15. Write a Python program to convert a tuple to a string.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
str_tuple = str(my_tuple)
print("Converting tuple to string:", str_tuple)
```

```
The tuple created: ('akash', ' dutta', ' 12')
Converting tuple to string: ('akash', ' dutta', ' 12')
```

16. Write a Python program to get the 4th element and 4th element from last of a tuple.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
print(f"4th element: {my_tuple[3]}\n4th element from last: {my_tuple[-4]}
```

```
The tuple created: ('1', '2', '3', '4', '5', '6', '7', '8', '9', '10', '9
9')
4th element: 4
4th element from last: 8
```

17. Write a Python program to find the repeated items of a tuple.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
```

```
print("The tuple created:", my_tuple)
repeated = set()
unique = set()
for element in my_tuple:
    if element in unique:
        repeated.add(element)
    else:
        unique.add(element)
print("The repeated elements of the tuple are", repeated)
```

```
The tuple created: ('1', '1', '1', '2', '2', '3', '3', '4', '5', '4')
The repeated elements of the tuple are {'3', '2', '4', '1'}
```

18. Write a Python program to check whether an element exists within a tuple.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
key = input("Enter element to search for: ")
if key in my_tuple:
    print("Element exists in tuple")
else:
    print("Element does not exist in tuple")
```

```
The tuple created: ('1', '2', '3', '4', '5', '6', '7', '8', '9', '10')
Element exists in tuple
Element exists in tuple
```

19. Write a Python program to slice a tuple.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
start = int(input("Enter start index: "))
end = int(input("Enter end index: "))
sliced_tuple = my_tuple[start:end]
print("The sliced tuple is", sliced_tuple)
```

```
The tuple created: ('1', '2', '3', '4', '5', '6', '7', '8', 'ijiuv')
The sliced tuple is ('4', '5', '6', '7')
```

20. Write a Python program to find the index of an item of a tuple.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
key = input("Enter element to look for index: ")
if key in my_tuple:
```

```
    print("Index =", my_tuple.index(key))
else:
    print("Element not in tuple")
```

```
The tuple created: ('1', '2', '3', '4', '5')
Index = 2
```

21. Write a Python program to find the length of a tuple.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
print("Length of the tuple is", len(my_tuple))
```

```
The tuple created: ('1', '2', '3', '4', '5')
Length of the tuple is 5
```

22. Write a Python program to convert a tuple to a dictionary.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
if len(my_tuple)%2!=0:
    print("The tuple must contain even elements for key-value pairs")
else:
    my_dict = dict(zip(my_tuple[0::2], my_tuple[1::2]))
print("The dictionary is", my_dict)
```

```
The tuple created: ('1', '2', '3', '4', '5', '6')
The dictionary is {'1': '2', '3': '4', '5': '6'}
```

23. Write a Python program to unzip a list of tuples into individual lists.

In [ ]:
```
# Akash Duttachowdhury | 21052386
def unzip_tuples(tuple_list):
    unzipped_lists = list(zip(*tuple_list))
    return unzipped_lists

my_list_of_tuples = [(1, 'one', 'I'), (2, 'two', 'II'), (3, 'three', 'III
unzipped_result = unzip_tuples(my_list_of_tuples)
for i, lst in enumerate(unzipped_result, 1):
    print(f"List {i}: {lst}")
```

```
List 1: (1, 2, 3)
List 2: ('one', 'two', 'three')
List 3: ('I', 'II', 'III')
```

24. Write a Python program to reverse a tuple.

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
reversed_tuple  = my_tuple[::-1]
print("The reversed tuple is", reversed_tuple)
```

```
The tuple created: ('1', '2', '3', '4', '5')
The reversed tuple is ('5', '4', '3', '2', '1')
```

25. Write a Python program to convert a list of tuples into a dictionary.

In [ ]:
```
def list_of_tuples_to_dict(tuple_list):
    result_dict = dict(tuple_list)
    return result_dict

my_list_of_tuples = [(1, 'one'), (2, 'two'), (3, 'three')]

converted_dict = list_of_tuples_to_dict(my_list_of_tuples)

print("Converted dictionary:", converted_dict)
```

```
Converted dictionary: {1: 'one', 2: 'two', 3: 'three'}
```

26. Write a Python program to print a tuple with string formatting.
    Sample tuple : (100, 200, 300)
    Output : This is a tuple (100, 200, 300)

In [ ]:
```
# Akash Duttachowdhury | 21052386
elements = input("Enter the tuple elements (separated by ','): ")
my_tuple = tuple(elements.split(','))
print("The tuple created:", my_tuple)
```

```
The tuple created: ('12', '3', '4', '5', 'akash')
```

27. Write a Python program to replace last value of tuples in a list.
    Sample list: [(10, 20, 40), (40, 50, 60), (70, 80, 90)]
    Expected Output: [(10, 20, 100), (40, 50, 100), (70, 80, 100)]

In [ ]:
```
# Akash Duttachowdhury | 21052386
num_tuples = int(input("Enter the Number of Tuples : "))
for i in range(num_tuples):
    user_input = input(f"Enter Elements of Tuple {i + 1} separated by ','
elements = user_input.split(',')
my_tuple = tuple(map(eval, elements))
formatted_string = f"Tuple {i + 1} Elements : {', '.join(map(str, my_tupl
print(formatted_string)
```

```
Tuple 3 Elements : 5, 6, 7
```

28. Write a Python program to replace last value of tuples in a list.
    Sample data: [(), (), ('',), ('a', 'b'), ('a', 'b', 'c'), ('d')]
    Expected output: [('',), ('a', 'b'), ('a', 'b', 'c'), 'd']

In [ ]:
```
# Akash Duttachowdhury | 21052386
def replace_last_value(lst):
    result = []
    for tup in lst:
        if len(tup) == 0:
            result.append(('',))
        else:
            result.append(tup[:-1] + ('',) if tup[-1] != '' else tup)
    return result


input_data = input("Enter a list of tuples separated by commas: ")
user_data = eval(input_data)

if not isinstance(user_data, list):
    print("Invalid input. Please enter a list of tuples.")
else:
    output = replace_last_value(user_data)

    print("Original data:", user_data)
    print("Modified data:", output)
```

```
Original data: [(1, 2, 3), (4, 5, 6)]
Modified data: [(1, 2, ''), (4, 5, '')]
```

29. Write a Python program to sort a tuple by its float element.
    Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')]
    Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]

In [ ]:
```
# Akash Duttachowdhury | 21052386
def sort_tuple_by_float(tuple_list):
    return sorted(tuple_list, key=lambda x: float(x[1]), reverse=True)

input_data = input("Enter a list of tuples in the format [('item1', '12.2
user_data = eval(input_data)

if not isinstance(user_data, list):
    print("Invalid input. Please enter a list of tuples.")
else:
    output = sort_tuple_by_float(user_data)

    print("Original data:", user_data)
    print("Sorted data by float element:", output)
```

```
Original data: [(2, 3), (3, 4)]
Sorted data by float element: [(3, 4), (2, 3)]
```

30. Write a Python program to count the elements in a list until an element is a tuple.

In [ ]:
```
# Akash Duttachowdhury | 21052386
def count_elements_until_tuple(lst):
    count = 0
    for elem in lst:
        if isinstance(elem, tuple):
            break
        count += 1
    return count

input_data = input("Enter a list of elements separated by commas: ")
user_list = eval(input_data)
if not isinstance(user_list, list):
    print("Invalid input. Please enter a list of elements.")
else:
    count_result = count_elements_until_tuple(user_list)

    print("Number of elements until a tuple is encountered:", count_resul
```

```
Number of elements until a tuple is encountered: 3
```