Roshni Sharma
Task 3
DATA STRUCTURES

```python
#1. Create a list of 10 elements of four different data types like int, string, complex and float.

list1 = [5, 3, "roshni", "sharma", 9.5, 4.11, 1+2j, 3-2j, "hello", 1]
print(list1)
```

```python
#2. Create a list of size 5 and execute the slicing structure

list1 = [5, 3, "roshni", "sharma", 9.5]
list1[::2]
```

```python
#3. Write a program to get the sum and multiply of all the items in a given list.

list2 = [1,3, 4, 6,5,9, 7, 2, 8]
sum, product = 0, 1
for i in list2:
  sum = sum +i
  product = product * i
print("sum of elements in a list:",sum)
print("product of elements in a list:",product)
```

```python
#4. Find the largest and smallest number from a given list.

list1 = [99,10, 20, 1, 45]
a = list1.sort()
print("smallest number is:",list1[:1])
print("largest number is:",list1[-1:])
```

```python
#alternative

list1 = [10, 20, 1, 45, 99]
print("Maximum element in the list is :", max(list1), "\nMinimum element in the list is :", min(list1))
```

```
#5. Create a new list which contains the specified numbers after removing the even numbers from a predefined list.

original = [1,3, 4, 6,5,9, 7, 2, 8]
new = []
for i in original:
  if i % 2 != 0:
    new.append(i)
print(new)



#alternative method using list comprehension

original = [1,3, 4, 6,5,9, 7, 2, 8]
new = [x for x in original if x%2!=0]
print(new)


# 6. Create a list of elements such that it contains the squares of the first and last 5 elements between 1 and 30 (both included).

lst = []
for i in range(1,31):
  lst.append(i**2)
print(lst[:5])
print(lst[-5:])


#7. Write a program to replace the last element in a list with another list.
#Sample input: [1,3,5,7,9,10], [2,4,6,8]
#Expected output: [1,3,5,7,9,2,4,6,8]

lst1 = [1,3,5,7,9,10]
lst2 = [2,4,6,8]

lst1[-1:] = lst2
print(lst1)


#8. Create a new dictionary by concatenating the following two dictionaries:
#Sample input: a = {1:10,2:20} b = {3:30,4:40}
```

```
#Expected output: {1:10,2:20,3:30,4:40}

a = {1:10,2:20}
b = {3:30,4:40}
c = {**a, **b}  #using kwargs
print(c)


#9. Create a dictionary that contain numbers in the form(x:x*x) where x takes all the values between 1 and n(both 1 and n included).

dict = {}
n = int(input("enter value of n"))
for x in range(1,n+1):
  dict[x] = x*x
print(dict)



#10. Write a program which accepts a sequence of comma-separated numbers from console and generates a list
# and a tuple which contains every number in the form of string.
#Sample input: 34,67,55,33,12,98
#Expected output: [‘34’,’67’,’55’,’33’,’12’,’98’] (‘34’,’67’,’55’,’33’,’12’,’98’)

inp = str(input("enter values sepated by , to feed into list:"))
lists = inp.split(",")
tup = tuple(lists)
print(lists)
print(tup)
```