1) **Create a tuple with different data types and print each element. Check if an element exists in a tuple.**

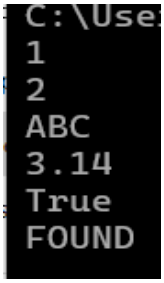
```
T1 = (1, 2, "ABC", 3.14, True)

for i in T1:
    print(i)

search_element = "ABC"

if search_element in T1:
    print("FOUND")
else:
    print("NOT FOUND")
```

OUTPUT:



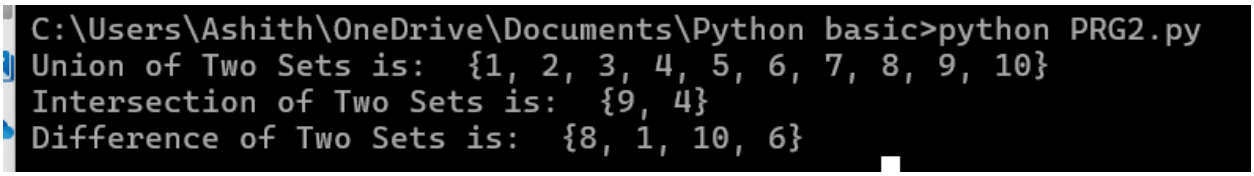
6) Perform union, intersection, and difference operations on two sets.

```
s1 = {1,8,6,4,9,10}
s2 = {5,4,9,2,7,3}
#UNION
U = s1 | s2
#INTERSECTION
I = s1 & s2


#DIFFERENCE
D = s1 - s2

print("Union of Two Sets is: ",U)
print("Intersection of Two Sets is: ",I)
print("Difference of Two Sets is: ",D)
```

OUTPUT:



8) Create a dictionary with few key-value pairs. Access and modify dictionary values.

```
student = {"Name": "Rahul", "ID": 101, "Course": "MSC"}

print(student)

# Accessing the Dictionary
access = student.get("Name")
print("Accessed Dictionary is : ", access)

# Modifying the Dictionary
student["Course"] = "MCA"
print(student)
```

OUTPUT:

```
C:\Users\Ashith\OneDrive\Documents\Python basic>python prg3.py
{'Name': 'Rahul', 'ID': 101, 'Course': 'MSC'}
Accessed Dictioner is he:  Rahul
{'Name': 'Rahul', 'ID': 101, 'Course': 'MCA'}
```

9.Find the mean, median, and standard deviation of an array.

```
import array as arr
# Create the array
a = arr.array('i', [1, 2, 8, 9, 4])
# ------------------ MEAN ------------------
total = 0
for i in a:
   total += i
mean = total / len(a)
print("The Mean:", mean)
print("----------------------------------------------------------------")
# ------------------ MEDIAN ------------------
# Sort the array (convert to list for easy sorting)
sorted_a = sorted(a)
n = len(sorted_a)
if n % 2 == 0:
   median = (sorted_a[n // 2 - 1] + sorted_a[n // 2]) / 2
else:
   median = sorted_a[n // 2]

print("The Median:", median)
print("----------------------------------------------------------------")
# ------------------ STANDARD DEVIATION ------------------
# Step 1: Calculate mean
mean = sum(sorted_a) / len(sorted_a)
# Step 2: Find squared differences from mean
squared_diff = [(x - mean) ** 2 for x in sorted_a]
# Step 3: Calculate variance (sample)
variance = sum(squared_diff) / (len(sorted_a) - 1)
# Step 4: Take square root for standard deviation
sd = variance ** 0.5
print("Standard Deviation:", sd)
```

10) Count the number of lines, words, and characters in a text file.

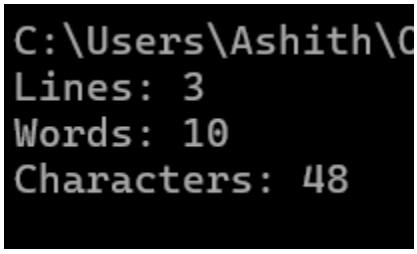
```
filename = 'sample.txt'


# Initialize counters
line_count = 0
word_count = 0
char_count = 0

# Open the file
with open(filename, 'r') as file:
    for line in file:
        line_count += 1
        word_count += len(line.split())
        char_count += len(line)

# Display results
print("Lines:", line_count)
print("Words:", word_count)
print("Characters:", char_count)
```

OUTPUT:



13. Create a Class named student with the following details

Regno, Name, Marks1, Marks2 and Marks3, include a method to display these details.

```
class student:
    def __init__(self, regno, name, m1, m2, m3):
        self.regno = regno
        self.name = name
        self.m1 = m1
        self.m2 = m2
        self.m3 = m3

    def display(self):
        print("STUDENT DETAILS")
        print("Name: ", self.name)
        print("Reg No: ", self.regno)
        print("Marks in 3 subjects: ", self.m1, self.m2, self.m3)

std = student(101, "Rahul", 45, 46, 52)
std.display()
```

OUTPUT: