1.) Create a tuple with 5 numbers and print the first and last elements.

```
tup = (10, 20, 30, 40, 50)

print("First:", tup[0])

print("Last:", tup[-1])
```

O/p :

First: 10

Last: 50

2.) Write a Python program to check if an element exists in a tuple.

```
tup = (1, 2, 3, 4)

print(3 in tup)
```

O/p : True

3.) How can you find the length of a tuple?

```
tup = (5, 6, 7)

print(len(tup))
```

O/p : 3

4.) Write a program to convert a tuple into a list.

```
tup = (1, 2, 3)

my_list = list(tup)

print(my_list)
```

O/p : [1, 2, 3]

5.) Write a Python code to repeat a tuple 3 times.

```
tup = (1, 2)

print(tup * 3)
```

O/p : (1, 2, 1, 2, 1, 2)

6.) What happens if you try to change an element of a tuple? Explain with example.

Tuples are immutable, so we can't change their elements.

Example :

```
tup = (1, 2, 3)

# tup[0] = 10  # This will raise TypeError: 'tuple' object does not support item assignment
```

7.) Write a Python program to concatenate two tuples.

```
a = (1, 2)

b = (3, 4)

c = a + b

print(c)
```

O/p : (1, 2, 3, 4)

8.) How can you slice a tuple to get its first three elements?

```
tup = (10, 20, 30, 40, 50)

print(tup[:3])
```

O/p : (10, 20, 30)

9.) Create a set with strings and print all elements.

```
my_set = {"apple", "banana", "mango", "grapes"}

for i in my_set:

    print(i)
```

O/p :

apple

banana

grapes

mango

10.) Write a program to add multiple elements to a set using `update()`.

```
my_set = {1, 2}

my_set.update([3, 4, 5])

print(my_set)
```

O/p : {1, 2, 3, 4, 5}

11.) Write a program to check if an element is present in a set.

```
my_set = {1, 2, 3}

print(2 in my_set)
```

O/p : True

12.) Write a Python code to find the difference between two sets `{1, 2, 3, 4}` and `{3, 4, 5}`.

```
a = {1, 2, 3, 4}

b = {3, 4, 5}

print(a - b)
```

O/p : {1, 2}

13.) What is the symmetric difference of two sets? Write a program for it.

```
a = {1, 2, 3}

b = {3, 4, 5}

print(a.symmetric_difference(b))
```

O/p : {1, 2, 4, 5}

14.) Can a set contain duplicate elements? Explain with example.

O/p : Sets don't allow duplicates.

Example :

```
my_set = {1, 2, 2, 3}

print(my_set)
```

o/p: {1, 2, 3}

15.) How do you clear all elements from a set?

```
my_set = {1, 2, 3}

my_set.clear()

print(my_set)
```

O/p : set()

16.) Write a program to copy a set to another set.

```
a = {1, 2, 3}

b = a.copy()

print(b)
```

O/p : {1, 2, 3}

17.) Write a program to compare two integers and print if they are equal or not.

```
a = 5

b = 7

if a == b:

        print("Equal")

else:

   print("Not equal")
```

O/p : Not Equal

18.) What is the output of `10 != 5`?

O/p : True

19.) How do you check if a number is less than or equal to another number?

```
a = 3

b = 5

print(a <= b)
```

O/p : True

20.) Write a program to compare two strings entered by the user using `==`.

```
s1 = input()
s2 = input()
if s1 == s2:
    print("Equal ")
else:
   print("Not  Equal")
```

O/p :

hello

hi

Not Equal

21.) What is the difference between `>` and `>=` operators?

> means strictly greater

>= means greater or equal.

22.) Write a program to check if `a` is not equal to `b`.

```
a = 10
b = 20
print(a != b)
```

O/p : True

23.) Write a program to compare the lengths of two input strings.

```
a = input("First string: ")
b = input("Second string: ")
print("Same length" if len(a) == len(b) else "Different lengths")
```

O/p :

First string: hello

Second string: hi

Different lengths

24.) Write a program to check if the first number is greater than the second and print an appropriate message.

```
a = int(input("Enter first number: "))
b = int(input("Enter second number: "))
if a > b:
    print("First is greater")
else:
    print("First is not greater")
```

O/p :

Enter first number: 100

Enter second number: 50

First is greater

25.) What will be the output of `True or False`?

O/p : True

26.) Write a Python condition using `and` that checks if a number is positive and less than 100.

```
x = int(input("Enter a number: "))
if x > 0 and x < 100:
    print("Positive number")
```

O/p :

Enter a number: 50

Positive number

27.) Write a program to check if a character entered by the user is a vowel or consonant using logical operators.

```
ch = input("Enter a character: ").lower()
if ch in 'aeiou':
   print("Vowel")
else:
   print("Consonant")
```

O/p :

Enter a character: o

Vowel

28.) How does the `not` operator work? Write an example.

NOT changes True to False and False to True.

Example :

```
x = False
print(not x)
```

O/p : Output: True

29.) Write a Python code using `or` to check if a number is divisible by 3 or 5.

```
x = int(input("Enter a number: "))
if x % 3 == 0 or x % 5 == 0:
   print("Divisible by 3 or 5")
else:
   print("Not Divisible by 3 or 5")
```

O/p : (i) Enter a number: 15

Divisible by 3 or 5

(ii) Enter a number: 4

Not Divisible by 3 or 5

30.) Write a Python program to check if a number is between 50 and 100 (inclusive) using logical operators.

```
x = int(input("Enter a number: "))
if x >= 50 and x <= 100:
   print("Number is in range")
```

O/p :

Enter a number: 75

Number is in range

31.) Explain how `and`, `or`, `not` can be used in a single condition.

```
x = 25
if not (x < 50 or x > 100) and x % 5 == 0:
   print("Valid and divisible by 5")
```

O/p : True

32.) Write a program using `not` to check if a string is not empty.

```
s = input("Enter a string: ")
if not (s == ""):
   print("String is not empty")
```

O/p :

Enter a string: hello

String is not empty

33.) Write a program to take a number from the user and print its square.

```
x = int(input("Enter number: "))

print("Square:", x**2)
```

O/p :

```
Enter number: 2

Square: 4
```

34.) How do you take a floating-point number as input and print it?

```
f = float(input("Enter a float number: "))

print("You entered:", f)
```

O/p :

```
Enter a float number:  2.2

You entered: 2.2
```

35.) Write a program to take a space-separated list of integers from the user and print the maximum number.

```
nums = list(map(int, input("Enter numbers: ").split()))

print("Max:", max(nums))
```

O/p :

```
Enter numbers: 2 3 4

Max: 4
```

36.) Write a Python program to read a string from the user and print its length.

```
s = input("Enter a string: ")

print("Length:", len(s))
```

O/p :

```
Enter a string: hello

Length: 5
```

37.) Write a program to input two numbers and print their product.

```
a = int(input("Enter first: "))
b = int(input("Enter second: "))
print("Product:", a * b)
```

O/p :

```
Enter first: 2
Enter second: 2
Product: 4
```

38.) Write a program to input a number and check if it is positive, negative, or zero.

```
x = int(input("Enter number: "))
if x > 0:
    print("Positive")
elif x < 0:
    print("Negative")
else:
    print("Zero")
```

O/p :

```
Enter number: 5
Positive
```

39.) Write a program to take the user's full name as input and display it in uppercase.

```
name = input("Enter full name: ")
print(name.upper())
```

O/p :

```
Enter full name: raksha g a
RAKSHA G A
```

40.) Write a program to take a sentence from the user and count the number of words.

```
sentence = input("Enter a sentence: ")

words = sentence.split()

print("Word count:", len(words))
```

O/p :

```
Enter a sentence: today is wednesday

Word count: 3
```