Python Programs for Conditional statements and Loops structures with examples

Python If statement programs

1.# If the number is positive, print an appropriate message

```
num = 3
if num > 0:
   print(num, "is a positive number.")
```

Output: 3 is a positive number.

2.# If the a is 10, print an appropriate message

```
a=10
if a==10:
    print("a is equal to 10")
```

Output: a is equal to 10

Python if else statement

3.#Python code: Biggest number of a given two numbers

```
a=input("Enter number a=  ")
b=input("Enter number b=  ")
if a>b:
    print("a is big number")
else:
    print("b is big number")
```

Output:
Enter number a= 8
Enter number b= 3
a is big number

4.#write a python code for the given number is even number or odd number?

```
n=int(input("Enter a number="))
if n%2==0:
   print("The given",n,"is Even Number")
else:
   print("The given",n,"is Odd Number")
```

Output:

Enter a number=10
The given 10 is Even Number

5.#python program for given year is leap year or not?

```
year=int(input("Enter a year="))
if year%4==0:
   print("Year is Leap")
else:
   print("Year is not Leap")
```

Output:

Case1.Enter a year=2004

Year is Leap

Case2.Enter a year=2006

Year is not Leap

Python if-elif-else (nested if)

6.# Write an example python program for if-else statement?

```
gpa =float(input('Enter your GPA='))
#gpa is not more than 10
#here you can use float instead of int
#float values like 9.5, 9.7....
if gpa >9:
   print("Welcome to RGUKT University!")
else:
   print("Your application is denied.")
```

Output:
Case1.Enter your GPA=9.7
Welcome to RGUKT University!
Case2. Enter your GPA=6
Your application is denied.

7.#check the given number is positive or negative or zero?.

```
num =int(input('Enter a number= '))
if num > 0:
   print("Positive number")
elif num == 0:
   print("Zero")
else:
```

```
    print("Negative number")
```

Output:

Enter a number= 6
Positive number

factorial: -The factorial of a number is the product of all the integers from 1 to that number. For example, the factorial of 6 (denoted as 6!) is 1*2*3*4*5*6 = 720. Factorial is not defined for negative numbers and the factorial of zero is one, 0! = 1.

8.Python program to find the factorial of a number?

```
num =int(input("Enter a number: "))
factorial = 1
# check if the number is negative, positive or zero
if num < 0:
   print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
   print("The factorial of 0 is 1")
else:
   for i in range(1,num + 1):
       factorial = factorial*i
   print("The factorial of",num,"is",factorial)
```

Output:
Enter a number: 6
The factorial of 6 is 720

9.#Python program for given two numbers are equal or big or small

```
a =int(input("Enter number a="))
b =int(input("Enter number b="))
if b > a:
  print("b is greater than a")
elif a == b:
  print("a and b are equal")
else:
  print("a is greater than b")
```

Output:
Enter number a=5
Enter number b=6
b is greater than a

10.#Python program for maximum number of given three numbers?

```
a =int(input("Enter number a="))
b =int(input("Enter number b="))
```

```
c =int(input("Enter number c="))
if a>b and a>c
  print("a is Maximum number")
elif b>a and b>c:
  print("b is Maximum number")
else:
  print("c is Maximum number")
```

Output:

Enter number a=4
Enter number b=3
Enter number c=6
c is Maximum number

Python loops(for, While, break, continue)

For loop:

11.Write python program to print the value(i) in a given range.

```
for i in range(1, 6):
  print(i)
```

Output:

1

2

3

4

5

12.Write python program to print the squared value of x in a given range.

```
for x in range(1, 6):
  print (x, "squared is", x * x):
```

output:

1 squared is 1
2 squared is 4
3 squared is 9
4 squared is 16
5 squared is 25

13.Write python program to print the i, i**2, i**3,i**4 value of i in a given range.

```
for i in range(1,7):
  print(i, i**2, i**3, i**4)
```

Output:

1 1 1 1
2 4 8 16
3 9 27 81
4 16 64 256
5 25 125 625
6 36 216 1296

14.#Print each fruit in a fruit list

```
fruits = ["apple", "banana", "cherry"]
for x in fruits:
  print(x)
```

Output:

apple
banana
cherry

15.#Print multiplication of a with a given number in range1-6.

```
num=int(input("Enter the number="))
for a in range (1,6):
  print  (num * a)
```

Output:

Enter the number=5
5
10
15
20
25

16.#Python Program to check if a number is a Perfect number.

```
n = int(input("Enter any number: "))
sum = 0
for i in range(1, n):
    if(n % i == 0):
        sum = sum + i
if (sum == n):
    print("The number is a Perfect number”)
else:
    print("The number is not a Perfect number")
```

output:
Enter any number: 6
The number is a Perfect number

Perfect number: a positive integer that is equal to the sum of its proper divisors. The smallest **perfect number** is 6, which is the sum of 1, 2, and 3. Other **perfect numbers** are 28, 496, and 8,128.

17.# Python Example to Find Sum of 10 Numbers

```
sum=0
for n in range(1,11):
  sum+=n
  print (sum)
```

output:
1
3
6
10
15
21
28
36
45
55

18.#Program to find the sum of all numbers stored in a list

```
# List of numbers represents in [ ] brackets

numbers = [6, 5, 3, 8, 4, 2, 5, 4, 11]

# variable to store the sum
sum = 0
# iterate over the list
for val in numbers:
sum = sum+val
print("The sum is", sum)
```

Output:

The sum is 6
The sum is 11
The sum is 14
The sum is 22
The sum is 26
The sum is 28
The sum is 33
The sum is 37
The sum is 48

19.#Python Program to generate all the divisors of an integer

```
n=int(input("Enter an integer:"))
```

```
for i in range(1,n+1):
  if(n%i==0):
    print("The divisors of the number are:",i)
```

Output:

Enter an integer:6
The divisors of the number are: 1
The divisors of the number are: 2
The divisors of the number are: 3
The divisors of the number are: 6

20.#Python Program to print all numbers in a range divisible by a given number

```
lower=int(input("Enter lower range limit:"))
upper=int(input("Enter upper range limit:"))
n=int(input("Enter the number to be divided by:"))
for i in range(lower,upper+1):
        if(i%n==0):
            print(i)
```

Output:

Case1:

Enter lower range limit:2
Enter upper range limit:8
Enter the number to be divided by:2
2
4
6
8

Case2:

Enter lower range limit:5
Enter upper range limit:10
Enter the number to be divided by:3
6
9

21.#Python program to find the multiplication table (from 1 to 10)

```
# To take input from the user
num = int(input("Display multiplication table of given number?= "))
# use for loop to iterate 10 times
for i in range(1, 11):
  print(num,'x',i,'=',num*i)
```

Output:

Display multiplication table of given number?= 10
10 x 1 = 10
10 x 2 = 20
10 x 3 = 30
10 x 4 = 40
10 x 5 = 50
10 x 6 = 60
10 x 7 = 70
10 x 8 = 80
10 x 9 = 90
10 x 10 = 100

To iterate 10 times, `for` loop along with the `range()` function is used. The arguments inside range function is (1, 11) meaning, greater than or equal to 1 and less than 11 (meaning

10).We have displayed the multiplication table of variable `num` . You can change the value of `num` in the above program to test out for other values.

Prime number : A **prime number** is a whole **number** greater than 1 whose only factors are 1 and itself. The first few**prime numbers** are 2, 3, 5, 7, 11, 13, 17, 19, 23 and 29.
Numbers that have more than two factors are called composite **numbers**.

22.#Python program to check the given input number is prime number or not?

```
num = int(input("Enter a number: "))
# prime numbers are greater than 1
if num > 1:
   # check for factors
   for i in range(2, num):
      if (num % i) == 0:
         print(num,"is not a prime number")
         break
   else:
      print(num,"is a prime number")
```

Output:
Case1:
Enter a number: 7
7 is a prime number
Case2:
Enter a number: 8
8 is not a prime number

While Loop

23.# write a python program to print “Hello world” while x=1?

```
x = 1
while x == 1:
print 'Hello world'
```

Output:
Hellow World

24.# write a python program to Exit the loop when i is 3:

```
i = 1
while i < 6:
  print(i)
  if i == 3:
    break
  i += 1
```

Output:
1
2
3

25.#Write a python code for Print i as long as i is less than 6

```
i = 1
while i < 6:
  print(i)
  i += 1
```

Output:

1
2
3
4
5

26.# Write an example for python While loop?

```
number = 1
while number < 200:
    print (number)
    number = number * 2
```

output:

1
2
4
8
16
32
64
128

27.# Write Program to sum of n natural numbers

```
# To take input from the user,
n =int(input("Enter a number="))
# initialize sum and counter
sum = 0
i = 1
while i <= n:
    sum = sum + i
    i = i+1    # update counter
# print the sum
print("The sum is", sum)
```

Output:

Enter a number=5

The sum is 15

28.#Python Program to exchange the values of two numbers

#Here is source code of the Python Program to exchange the values of two numbers without using a temporary variable. The program output is also shown below.

```
a=int(input("Enter value of first variable: "))
b=int(input("Enter value of second variable: "))
a=a+b
b=a-b
a=a-b
print("a is:",a," b is:",b)
```

Output:
Enter value of first variable: 10
Enter value of second variable: 20
a is: 20 b is: 10

29.#Python Program to find the sum of digits in a number

```
n=int(input("Enter a number:"))
tot=0
while(n>0):
    dig=n%10
    tot=tot+dig
    n=n//10
print("The total sum of digits is:",tot)
```

output:
case1:
Enter a number:30
The total sum of digits is: 3
Case2:
Enter a number:42
The total sum of digits is: 6

Python break and continue

30.#Python Break Example 1

```
for i in [1,2,3,4,5]:
   if i==3:
      print ("Element found",i)
      break
```

Output:
Element found 3

31.#Python Break Example 2

```
for letter in 'Python3':
   if letter == 'o':
      break
   print (letter)
```

output:

P

y

t

h

32.# Use of break statement inside loop

```
for val in "string":
   if val == "i":
      break
   print(val)

print("The end")
```

output:

s

t

r

The end

33.#Continue to the next iteration if i is 3:

```
i = 0
while i < 6:
  i += 1
  if i == 3:
    continue
  print(i)
```

output:

1

2

4

5

6

34.# Program to show the use of continue statement inside loops

```
for val in "string":
   if val == "i":
      continue
```

```
    print(val)

print("The end")
```

output:

s
t
r
n
g
The end

35.#Write a python program to swap two variables

```
# To take input from the user
 x = input('Enter value of x: ')
 y = input('Enter value of y: ')
# create a temporary variable and swap the values
temp = x
x = y
y = temp

print('The value of x after swapping:',x)
print('The value of y after swapping:',y)
```

output:

Enter value of x: 5
Enter value of y: 4
The value of x after swapping: 4
The value of y after swapping: 5

In this program, we use the temp variable to temporarily hold the value of x. We then put the value of y in x and later temp in y. In this way, the values get exchanged.

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