CONTROL FLOW AND LOOP CONDITIONAL STATEMENT

if statement

```
age=18
if age<=18:
  print('you are eligible to vote')

you are eligible to vote
```

if else

```
num=int(input('enter a number'))
if num%2==0:
  print('number is even')
else:
  print('number is odd')

enter a number7
number is odd
```

if else statement

```
marks=int(input('enter your marks'))
if marks>=90:
  print('grade;A')
elif marks>75:
  print('grade;B')
elif marks>50:
  print('grade;c')
else:
  print('grade;F')

enter your marks89
grade;B
```

for loop

```
for i in range(5,10):
  print('iteration:',i)

iteration: 0
iteration: 1
iteration: 2
iteration: 3
iteration: 4

for i in range(5,50,10):
  print('iteration:',i)
```

```
iteration: 5
iteration: 15
iteration: 25
iteration: 35
iteration: 45
```

while loop

```python
count=0
while count<5:
    print('count:',count)
    count+=1

count: 0
count: 1
count: 2
count: 3
count: 4
```

Control flow Flow

```python
#break
for i in range(10):
    if i==5:
        break
    print(i)

0
1
2
3
4

#continue
for i in range(10):
    if i==5:
        continue
    print(i)

0
1
2
3
4
6
7
8
9
```

```python
#pass
for i in range(10):
  if i==5:
    pass
  print(i)

0
1
2
3
4
5
6
7
8
9
```

hands on practice (number given is odd or even)

```python
number=int(input('enter a number;'))
if number%2==0:
  print('the number is even')
else:
  print('the number is odd')

enter a number;77
the number is odd
```

sum of numbers in a given range

```python
start=int(input('enter a number;'))
end=int(input('enter a number;'))
sum=0
for i in range(start,end+1):
  sum+=i
print('the sum is:', sum)

enter a number;23
enter a number;41
the sum is: 608
```

program to find factorial number

```python
number=int(input('enter a number;'))
factorial=1
for i in range(1,number+1):
```

```
    factorial*=i
print('the factorial is:', factorial)

enter a number;5
the factorial is: 120
```

Fibonacci numbers

```
n=int(input('enter a number'))
a,b=0,1
for _ in range(n):
  print(a,end=' ')
  a,b=b,a+b

enter a number10
0 1 1 2 3 5 8 13 21 34
```

Simple calculator using if else

```
num1=float(input('enter a number;'))
num2=float(input('enter a number;'))
operation=input('enter operation(+,-,*,/,%,**)):')
if operation== '+':
  print('result;',num1+num2)
elif operation=='-':
  print('result;',num1-num2)
elif operation=='*':
  print('result;',num1*num2)
elif operation=='/':
  print('result;',num1/num2)
elif operation=='%':
  print('result;',num1%num2)
elif operation=='**':
  print('result;',num1**num2)
else:
  print('invalid operation')

enter a number;5.8
enter a number;9.6
enter operation(+,-,*,/,%,**)):%
result; 5.8
```

Check leap year

```
year=int(input('enter a year'))
if (year%4==0 and year%100!=0) or (year%400==0):
  print('leap year')
else:
  print('not a leap year')
```

```
enter a year2024
leap year
```

Find the largest of three numbers

```python
num1=float(input('enter a number'))
num2=float(input('enter a number'))
num3=float(input('enter a number'))
if num1>=num2 and num1>=num3:
  print('largest number is',num1)
elif num2>=num3:
  print('largest number is', num2)
else:
  print('largest number is',num3)

enter a number8
enter a number8
enter a number1
largest number is 8.0
```

Number is negative or positive

```python
num=int(input('enter a name'))
if num>=0:
  print('positive')
elif num<0:
  print('negative')
else:
  print('zero')

enter a name6
positive
```

Sum of all even numbersin a range

```python
start=int(input('enter a start number'))
last=int(input('enter a last number'))
even_sum=0
for num in range(start,last+1):
  if num%2==0:
    even_sum+=num
    print('sum of even numbers is ',even_sum)

enter a start number2
enter a last number10
sum of even numbers is  2
sum of even numbers is  6
sum of even numbers is  12
```

```
sum of even numbers is  20
sum of even numbers is  30
```

Num is divisible by both 2 and 3

```
num=int(input('enter a number'))
if num%2==0 and num%3==0:
  print('the number is divisible by both 2 and 3')
else:
   print('the number is not divisible by 3 and 4')

enter a number7
the number is not divisible by 3 and 4
```

write a python program to print "hello" if a number is greater that 10, otherwise print "good bye"

```
x=int(input('enter a number;'))
if x>10:
  print('hello')
else:
  print('good bye')

enter a number;12
hello
```

Write a python program to find out if a number is divisible by 5 but not by 10

```
num=int(input('enter a number'))
if num%5==0 and num%10!=0:
  print('the number is divisible by 5 but not by 10')
else:
  print('the number doest satiesfies the condition')

enter a number40
the number doest satiesfies the condition
```

Write the python program to find weather a number is between 100 and 200

```
num=int(input('enter a number;'))
if num<=100 or num>=200:
  print('the number is not in the range')
else:
  print('the numumber is in the range')

enter a number;101
the numumber is in the range
```

Check if the number is between 50 and 100

```python
number=float(input('enter a number'))
if number<100 and number>50:
  print('the number is in the range')
else:
  print('the number is not in the range')

enter a number101
the number is not in the range
```

calculate the sum of all numbers in a list using for

```python
nums=(1,2,3,4,5)
sum=0
for num in nums:
   sum+=num
print('the sum is:',sum)

the sum is: 15
```

Multiplication table

```python
num=int(input('enter a number'))
for i in range(1,11):
  print(num,'*' ,i,'=',num*i)

enter a number2
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
```

check the number is greater, equal or smaller

```python
x=int(input('enter a number'))
if x > 10:
    print("Greater")
elif x == 8:
    print("equal to 8")
else:
    print("Smaller")

enter a number20
Greater
```

Find minimum number in a list using for loop

```
num=(5,90,7,21)
min_num=nums[0]
for num in nums:
  if num>min_num:
    min_num=num
print('the minimum number is:',min_num)

the minimum number is: 5
```

To print all the even numbers from 1 to 20 using a while loop

```
number=1
while number<=20:
  if number%2==0:
    print(number,end=' - ')
  number+=1

2 - 4 - 6 - 8 - 10 - 12 - 14 - 16 - 18 - 20 -
```

sum of natural numbers

```
n = int(input("Enter a number: "))
sum_n = 0
i = 1
while i <= n:
    sum_n += i
    i += 1
print(f"The sum of natural numbers up to {n} is: {sum_n}")

Enter a number: 45
The sum of natural numbers up to 45 is: 1035
```

break statement

```
for num in range(1, 11):
    if num == 5:
        print("Breaking the loop at number 5")
        break
    print(num)

1
2
3
4
Breaking the loop at number 5
```