

Control Flow

Conditional statements

IF CONDITION

Syntax :

If(condition):
Statements

Example:

```
if(5==5):  
    print("Yes")
```

ALTERNATIVE CONDITIONS(IF-ELSE)

Syntax:

If(condition):
statement1

Else:

statement2

Example:

```
i=int(input("Enter a number"))  
if(i%2==0):  
    print("It's Even")  
else:  
    print("Its odd")
```

Chained and Nested Conditions

CHAINED CONDITION(EQUAL TO SWITCH)

Syntax:

```
if(condition1):  
    statement1  
elif(conditon2):  
    statement2  
else:  
    statement3
```

Example:

```
i=int(input("Enter value for i:"))  
j=int(input("Enter value for j:"))  
if(i==j):  
    print("Both are Equal")  
elif(i<j):  
    print("i less than j")  
else:  
    print("i greater than j")
```

NESTED CONDITION

Syntax:

```
if(condition1):  
    statement1  
  
else:  
  
    if(condition2):  
  
        statment2
```

Example:

```
a=int(input("Enter the value of a:"))  
b=int(input("Enter the value of b:"))  
if(a==b):  
    print("not equal")  
else:  
    if(a<b):  
        print("a is less than b")  
    else:  
        print("a is grater than b")
```

Practice...Practice

- The Greatest Number Among the Given Three Number
- Character Is Vowel or Consonant
- A Character Is an Alphabet or Not, Uppercase, Lowercase, Special Character, or Digit
- The Number Is Even or Odd
- Leap Year
- Gross Salary calculator (consider overtime)
- Voting Eligibility Checker
- Input week number and print weekday.
- Input month number and print number of days in that month.

- Find the maximum between two numbers.
- Check whether a number is negative, positive or zero.
- Check whether a number is divisible by 5 and 11 or not.
- Denomination for a given amount.
- Input angles of a triangle and check whether the triangle is valid or not.
- Input all sides of a triangle and check whether the triangle is valid or not.
- Check whether the triangle is an equilateral, isosceles or scalene triangle and calculate the area
- Find all roots of a quadratic equation.
- Calculate profit or loss.

Practice....Practice...

- Write a program to find the largest and smallest among three entered numbers and

also display whether the identified largest/smallest number is even or odd.

- Write a program to compute grade of students using if else ladder. The grades are assigned as followed:

Marks Grade

marks<50 F

50≤marks< 60 C

60≤marks<70 B

70≤marks<80 B+

80≤marks<90 A

90≤marks≤ 100 A+

- Write a Program to Check Whether a Number is Prime or not.
- Write a program to find the factorial of a number.
- Write a program to check number is Armstrong or not. (Hint: A number is Armstrong if the sum of cubes of individual digits of a number is equal to the number itself).
- Write a program to swap values of two variables with and without using third variable.

Iterative statements

WHILE LOOP

Syntax:

While(condition):
 statement if the condition is true

Example:

```
i=1
while(i<=10):
    print("i=",i)
    i=i+1
```

FOR LOOP

Syntax:

for each item in the sequence:
 statement if the condition is true

Example:

```
for i in range(1,11): #range() will consider 1-10 only
    print("i=",i)
```

Break, pass and continue

BREAK(EXIT LOOP)

Syntax:

```
while condition1:  
    statement1  
  
    if(condition2):  
        break
```

Example:

```
i=0  
while True:  
    print("Oh no!Engineering Drawing Class")  
    i=int(input("Enter 10 to break"))  
    if(i==10):  
        break  
    else:  
        print("not 10! Save me")  
print("Hooray!Its a break" )
```

PASS(NULL STATEMENT)

Syntax:

```
while condition1:  
    statement1  
  
    if(condition2):  
        pass
```

Example:

```
i=True  
while True:  
    print("i=",i)  
    i=int(input("Enter 5 to pass"))  
    if(i==5):  
        pass  
    else:  
        break  
print("end of program")
```

CONTINUE(KEEP GOING, DON'T BREAK)

Syntax:

```
While condition1:  
    statement1  
  
    if(condition2):  
        continue
```

Example:

```
i=0  
turns=0  
while(turns<5):  
    print("in While Loop")  
    i=int(input("Enter 4 to continue"))  
    if(i<=4):  
        print("I not printed")  
        print("turns=",turns)  
        continue # do not break from loop  
    print("i=",i)  
    turns=turns+1  
    print("turns=",turns)  
  
print("Sorry you ran out of turns")
```

Practice....Practice

While Loop

- Reverse A given Number
- Find Number Is Armstrong Or Not
- Calculate Sum of Natural Numbers
- Display Fibonacci Series
- Find LCM of two Numbers
- Check Whether a Number is A Palindrome or Not
- Count Number of Digits of an Integer
- Find A Generic Root Of Number
- Print A Calendar Taking Input From User Using Loop
- Denomination of an Amount

For Loop Questions

Write a program to count number of digits in a given integer.

Write a program to reverse a given integer.

3. Write a program to print number in reverse order with a difference of 2.

4. Write a program to print the sum of digits of a number using **for** loop.

5. Write a program to check whether a number is Palindrome or not.

6. Write a program to generate Fibonacci series.

7. If a four-digit number is input through the keyboard, write a program to obtain the sum of the first and last digit of this number.

8. Write a program to find GCD (greatest common divisor or HCF) and LCM (least common multiple) of two numbers.

9. Write programs to display each of the following patterns.

(i)

* * * * *

* * * *

* * *

* *

*

(ii)

1

2 2

3 3 3

4 4 4 4

5 5 5 5 5

(iii)

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

(iv)

* * * * * * * * *

* * * * * *

* * * * *

* * *

*

(v)

*

* *

* * *

* * * *

* * * * *

(v)

A

A B

A B C

A B C D

A B C D E

(vi)

*

* * *

* * * * *

* * * * * *

* * * * * * * *

(vii)

1

1 2 1

1 2 3 2 1

1 2 3 4 3 2 1

1 2 3 4 5 4 3 2 1

(viii)

A B C D E F

A B C D E

A B C D

A B C

A B

A

(ix)

1

1 2 3

1 2 3 4 5

1 2 3

1

(x)

* * * * *

* *

* *

* *

* * * * *

(xi)

* * * * * *

* * * * *

* * * *

* *

(xii)

* * * * * *

*

*

*

*

* * * * * *