Operators are special symbols or keywords used to perform operations on operands (variables and values).

a + b = c

+ = are the operators

a b are the operands

1) Arithmetic operators

perform mathematical operations such as addition, subtraction, multiplication, division

a=5 b=3

+	Addition	a+b	8	
-	Subtraction	a-b	2	
*	Multiplication	a*b	15	
/	Division	a/b	1.6	
%	Modulus	a%b	2	(returns remainder)
//	Floor division	a//b	1	
**	Exponentiation	a**b	125	

2) Relational operators

is used to compare two values and return a Boolean result (True or False)

a=34 b=87

==	equal	a==b	False
!=	Not equal	a!=b	True
>	Greater than	a>b	False
<	Less than	a<b	True
>=	Greater than or equal to	a>=b	False
<=	less than or equal to	a<=b	True

3) logical operators

are used to combine conditional statements.

and	Returns True if both statements are true
or	Returns True if one of the statements is true
not	Reverse the result, returns False if result is true

a	b	and	or	nor	xor	xnor	nand
0	0	0	0	1	0	1	1
1	0	0	1	0	1	0	1
0	1	0	1	0	1	0	1
1	1	1	1	0	0	1	0

4) Bitwise operators

used to perform operations on values and variables.

&	AND	- Returns 1 if both bits are 1 else 0
|	OR	- Returns 1 if either of the bits is 1 else 0
^	XOR	- Returns 1 if one of bits is 1 else return 0
~	NOT	- Inverts all the bits
<<	Zerofill leftshift	
>>	signed right shift	

Bitwise Right shift (>>) shifts the bits of the number to the right and fills 0 on void left (fills 1 in the case of a negative numbers) as a result.

eg. a = 10 Binary - 0000 1010
a >> 1 0000 0101 = 5.

Bitwise left shift (<<) shifts the bits of the number to the left and fills 0 on void right
eg a = 5 Binary 0000 0101
a << 1 0000 1010 = 10.

5. Membership operators are used to compare the memory locations of two objects, not just equal but if they are same objects.

It checks whether a given value is a member of a sequence (such as strings, lists and tuples) or not.

in	Membership	Returns true if a sequence with the specified value is present in object	a in b
not in		Returns true if sequence with specified value is not present	a not in b

eg. grp = [1, 2, 3, 5, 8, 7]   9 not in grp
9 in grp   True.
False

6. identity operators.

is	Returns True if both variables are same object	a is b
is not	Returns False if both variables are not same object.	a is not b

eg a = 5 b = 9 a is b False
a = 5 b = 5 a is b True

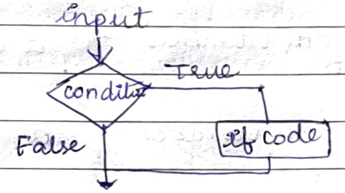
conditional statements allows you to execute code based on condition evaluates to True or False

Types of Conditional statements:
1. if
2. if-else
3. if-elif-else
4. Nested ifelse
5. if else if ladder / continous if else

1. if statement used to test a condition and execute a block of code only if the condition is true

Syntax: if condition):
statements

(# Indentation - whitespace at the beginning of a line) if statement flow diagram.

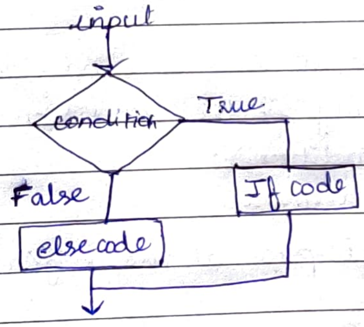


eg.
```
age = 26
if age >19:
    print ("You are an adult")
```

ii) 'if-else' statement. provides an alternative block of code to execute if the condition is false

Syntax:
```
if (condition):
    statement of if
else :
    statements of else.
```

Note: We cannot write conditions in else.



iii) if - elif - else conditional statement

Syntax:
```
if (condition 1):
    # code to execute if condition 1 is true
elif (condition 2):
    # code to execute if condition 2 is true
else
    # code to execute if none are true
```

eg.
```
score = 85
if score >= 90:
    print ("Grade - A")
elif score >= 80:
    print ("Grade - B")
elif score >= 70:
    print ("Grade - C")
else :
    print ("Grade - D")
```

iv) Nested 'if-else' conditional Statement:
placing an if-else statement inside another if-else statement.

Syntax:

```
   if condition1:
              # code block for condition 1 being True
       if condition 2:
               # code block for condition 2 being True
       else:
               # code block for condition 2 being False
   else:
            # code block for condition1 being False
```

eg.

```
   if number >0 :
          if number % 2 == 0:
               print ("The number is positive and even")
          else:
               print ("The no is positive and odd.")
   else:
         if number == 0:
               print ("The number is zero.")
         else:
               print ("The number is negative.")
```