Python Operators

Operators

Operators are special symbol or keywrords that perform operation on operands

- Arithmetic Operators
- Relational Operators
- Logical Operators
- Bitwise Operators
- Assignment Operators
- Membership Operators

Arithmetic Operators

In [27]:
```
print(5+6,5-6,5*6,5/2,5//2,5%2,5**2,sep='\n')
#  // integer division
#  % modulo division
# ** power of operta
```

```
11
-1
30
2.5
2
1
25
```

Relational Operators

In [29]:
```
print(4>5,4<5,4<=5,4>=5,4==4,4!=4,sep='\n')
```

```
False
True
True
False
True
False
```

Logical Operators

In [33]:
```
print(1 and 0,1 or 0, not 1,sep='\n')
```

```
0
1
False
```

Bitwise Operators

In [40]:
```
print(2&3,2|3,2^3,~3,4>>2,5<<2,sep='\n')
# & - and , | - or ,^ - xor ,~ -  not,>> - right shift,<< - left shift
```

```
2
3
1
-4
1
20
```

Assignment Operators

In [43]:
```
a=3
a+=1
a-=2
a%=3
a*=23
print(a)
```

```
46
```

Membership Operators

In [50]:
```
print('D' in "Delhi")
print('d' in "Delhi")
print(3 in [1,2,3,4,5,65])
```

```
True
False
True
```

Program -

Program to find sum of 3 digit number entered by user

In [56]:
```
number=int(input("enter a 3 digit number"))
first_digit=number%10
number//=10
second_digit=number%10
number//=10
third_digit=number%10
print(f"sum of digits of {number} is {first_digit+second_digit+third_digit}")
```

```
sum of digits of 2 is 9
```

Python If-Else

Used to handle branching in a program.

Example of if-else

In [68]:
```
# email - abhi.keshri0313@gmail.com
# password - 12345
email=input("enter your email")
password=input("enter your password")
if email=="abhi.keshri0313@gmail.com" and password=="12345":
```

```
    print("Login Successfully")
elif email=="abhi.keshri0313@gmail.com" and password!="12345":
    print("Incorrect password")
    password=input("enter your password again")
    if password=="12345":
        print("Login Successfully")
    else:
        print("You can not login for next 2 hour")
else:
    print("Email is not correct")
```

```
Email is not correct
```

Program -

Find min of 3 number

In [73]:
```
a=int(input("enter first number"))
b=int(input("enter second number"))
c=int(input("enter third number"))
if a<b and a<c:
    print(f"smallest is {a}")
elif b<c:
    print(f"smallest is {b}")
else:
    print(f"smallest is {c}")
```

```
smallest is 2
```

Menu driven calculator

In [76]:
```
menu = input("""
Hi! how can I help you.
1. Enter 1 for pin change
2. Enter 2 for balance check
3. Enter 3 for withdrawl
4. Enter 4 for exit
""")
```

```
if menu == '1':
  print('pin change')
elif menu == '2':
  print('balance')
else:
  print('exit')
```

```
pin change
```

Python Modules

- math
- keywords
- random
- datetime

In [83]:
```
# math module
import math
print(math.sqrt(5))
print(math.floor(34.35),math.ceil(646.35))
```

```
2.23606797749979
34 647
```

In [89]:
```
# keyword module
import keyword
print(keyword.kwlist)
```

```
['False', 'None', 'True', 'and', 'as', 'assert', 'async', 'await', 'break', 'class', 'continue', 'def', 'del', 'elif', 'else',
'except', 'finally', 'for', 'from', 'global', 'if', 'import', 'in', 'is', 'lambda', 'nonlocal', 'not', 'or', 'pass', 'raise',
'return', 'try', 'while', 'with', 'yield']
```

In [93]:
```
# random module
import random
print(random.randint(1,235))
```

```
93
```

In [111…
```
# datetime module
import datetime
print(datetime.datetime.now())
```

```
2024-10-10 08:41:57.157607
```

In [121…
```
# help
help('print')
```

```
Help on built-in function print in module builtins:

print(*args, sep=' ', end='\n', file=None, flush=False)
    Prints the values to a stream, or to sys.stdout by default.

    sep
      string inserted between values, default a space.
    end
      string appended after the last value, default a newline.
    file
      a file-like object (stream); defaults to the current sys.stdout.
    flush
      whether to forcibly flush the stream.
```

Python Loops

- Need for loops
- While Loop
- For Loop

While Loop

Program -

Sum of all digits of a given number

In [143…
```
number=int(input("enter a number"))
sum=0
while number:
    sum+=number%10
    number//=10
print(f"sum of digits of is {sum}")
```

```
sum of digits of is 15
```

Print table of a number

In [150…
```
n=int(input("enter a number"))
i=1
while i<=10:
    print(f"{n} x {i} = {n*i}")
    i+=1
```

```
12 x 1 = 12
12 x 2 = 24
12 x 3 = 36
12 x 4 = 48
12 x 5 = 60
12 x 6 = 72
12 x 7 = 84
12 x 8 = 96
12 x 9 = 108
12 x 10 = 120
```

While Loop with Else

In [154…
```
a=1
while a<4:
    print(a)
    a+=1
else:
    print("it will run only when while loop run completely")
```

```
1
2
3
it will run only when while loop run completely
```

Program -

Guessing game

In [177…
```python
import random
jackpot_number=random.randint(1,100)
guess=int(input("guess a number"))
counter=1
while guess!=jackpot_number:
    if guess<jackpot_number:
        print("guess higher")
    else:
        print("guess lower")
    guess=int(input("guess a number"))
    counter+=1
else:
    print(f"you guessed it in {counter} times")
```

```
guess higher
guess lower
guess higher
guess higher
guess higher
you guessed it in 6 times
```

For Loop

In [185…
```python
for i in [1,2,3,4,5,6]:
    print(i,end=' ')
```

```
1 2 3 4 5 6
```

Program -

The current population of a town is 10000. The population of the town is increasing at the rate of 10% per year. You have to write a program to find out the population at the end of each of the last 10 years.

In [195…
```
curr_pop=10000
for i in range(10,0,-1):
    print(f"Year : {i} , Population : {curr_pop}")
    curr_pop/=1.1
```

```
Year : 10 , Population : 10000
Year : 9 , Population : 9090.90909090909
Year : 8 , Population : 8264.462809917353
Year : 7 , Population : 7513.148009015775
Year : 6 , Population : 6830.134553650703
Year : 5 , Population : 6209.213230591548
Year : 4 , Population : 5644.739300537771
Year : 3 , Population : 5131.5811823070635
Year : 2 , Population : 4665.07380209733
Year : 1 , Population : 4240.976183724845
```

Program -

1/1! + 2/2! + 3/3! + ...

In [210…
```
n=int(input("enter a number"))
res=0
fact=1
for i in range(1,n+1):
    fact*=i
    res=res+(i/fact)
print(res)
```

```
2.0
```

Nested Loop

In [218…
```
for i in range(1,6):
    for j in range(1,6):
        print(f"({i},{j})",end=",")
```

```
(1,1),(1,2),(1,3),(1,4),(1,5),(2,1),(2,2),(2,3),(2,4),(2,5),(3,1),(3,2),(3,3),(3,4),(3,5),(4,1),(4,2),(4,3),(4,4),(4,5),(5,1),
(5,2),(5,3),(5,4),(5,5),
```

Program -

Program 1

```
*
***
```

In [237…

```
n=int(input("enter number of rows"))
for i in range(1,n+1):
    for j in range(1,i+1):
        print('*',end="")
    print()
```

```
*
**
***
****
*****
```

Program 2

```
1
121
12321
1234321
```

In [247…

```
n=int(input("enter number of rows"))
for i in range(1,n+1):
    for j in range(1,i+1):
        print(j,end="")
    for j in range(i-1,0,-1):
        print(j,end="")
    print()
```

```
1
121
12321
1234321
123454321
```

Loop Control Statement

- Break
- Continue
- Pass

In [254…
```python
# Break
for i in range(1,10):
    if i==5:
        break
    print(i,end="")
```

```
1234
```

In [260…
```python
# Continue
for i in range(1,10):
  if i == 5:
    continue
  print(i,end="")
```

```
12346789
```

In [262…
```python
# pass
for i in range(1,10):
  pass
```

END