Math library / Module

In [11]:
```
 import math as m
dir(m)
```

Out[11]:
```
['__doc__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'acos',
 'acosh',
 'asin',
 'asinh',
 'atan',
 'atan2',
 'atanh',
 'ceil',
 'comb',
 'copysign',
 'cos',
 'cosh',
 'degrees',
 'dist',
 'e',
 'erf',
 'erfc',
 'exp',
 'expm1',
 'fabs',
 'factorial',
 'floor',
 'fmod',
 'frexp',
 'fsum',
 'gamma',
 'gcd',
 'hypot',
 'inf',
 'isclose',
 'isfinite',
 'isinf',
 'isnan',
 'isqrt',
 'ldexp',
 'lgamma',
 'log',
 'log10',
 'log1p',
 'log2',
 'modf',
 'nan',
 'perm',
 'pi',
 'pow',
 'prod',
 'radians',
 'remainder',
 'sin',
 'sinh',
 'sqrt',
 'tan',
```

```
 'tanh',
 'tau',
 'trunc']
```

In [13]:
```
print(m.pi)
print(m.sqrt(50))
print(math.factorial(10))
```

```
3.141592653589793
7.0710678118654755
3628800
```

In [14]:
```
from math import *
print(sqrt(50))
```

```
7.0710678118654755
```

In [15]:
```
import math
```

math.(then on pressing tab we can select all the functions)

Q.Write a program to find the area of circle radius to be taken input from user

In [18]:
```
import math as m
x=int(input("Enter radius"))
area=m.pi*m.pow(x,2)
print(area)
```

```
Enter radius1
3.141592653589793
```

Cylinder

Area=2(pie)r*2 + 2(pie)r*h

Volume=(pie)r**2h

Q.Find area and volume of cylinder

In [24]:
```
import math as m
r=int(input("Enter radius:"))
h=int(input("Enter height:"))
Area=2*m.pi*r*(r+h)
Volume=m.pi*pow(r,2)*h
print("Area",Area)
print("Volume",Volume)
```

```
Enter radius:1
Enter height:1
Area 12.566370614359172
Volume 3.141592653589793
```

Convert farenheit to celcius

c=(f-32)*(5/9)

In [37]:
```
f=int(input("Enter temprature in farenheit:"))
c=(f-32)*(5/9)
print("Temperature in celius:",round(c,3))
```

```
Enter temprature in farenheit:1
Temperature in celius: -17.222
```

In [32]:
```
c=int(input("Enter temprature in celcius:"))
f=(9/5)*c+32
print("Temperature in farenheit:",round(f,5))
```

```
Enter temprature in celcius:1
Temperature in farenheit: 33.8
```

Unit 2:Conditional Execution and iteration

1.)Simple if

if condition:

    statement

In [39]:
```
name=input("Enter Name:")
if name=="Arman":
    print("Hello Arman")
print("How are you!")
```

```
Enter Name:Arman
Hello Arman
How are you!
```

2.)if-else

if condition:

    action-1

else:

    action-2

In [42]:
```
name=input("Enter Name:")
if name=="Arman":
    print("Hello Arman")
else:
    print("Hello",name)
print("Always printed")
```

```
Enter Name:Arman
Hello Arman
Always printed
```

3.) if-elif-else

if condition 1:

    action-1

elif conditon 2:

```
    action-2
```

elif condition 3:

```
    action-3
```

else:

```
    default action
```

In [45]:
```
n1=int(input("Enter num1:"))
n2=int(input("Enter num2:"))
n3=int(input("Enter num3:"))
if n1>n2 and n1>n3:
    print("Biggest num:",n1)
elif n2>n3 and n2>n1:
     print("Biggest num:",n2)
else:
     print("Biggest num:",n3)
```

```
Enter num1:1
Enter num2:1
Enter num3:1
Biggest num: 1
```

4.)Nested if

In [47]:
```
x=14
if x>10:
    print("Above 10")
    if x>20:
        print("Also above 20")
    else:
        print("but not above 20")
```

```
Above 10
but not above 20
```

Loops

1.)For

syntax: for x in sequence:

body

In [48]:
```
for i in range(5):
    print(i)
```

```
0
1
2
3
4
```

In [51]:
```
s="Arman"
for i in s:
```

```
    print(i)

len(s)
```

```
A
r
m
a
n
```

Out[51]: 5

In [58]:
```
l=[1,2,3,4,5]
for i in l:
    print(i)
len(l)
```

```
1
2
3
4
5
```

Out[58]: 5

In [56]:
```
for i in range(len(l)):
    print(l[i])
```

```
1
2
3
4
5
```

2.)while

syntax: while condition:

body

In [15]:
```
i=0
while i<5:
    print(i)
    i+=1
```

```
0
1
2
3
4
```

In [4]:
```
name=""
while name!="Arman":
    name=input("Enter name:")
print("Thanks for confirmation.")
```

```
Enter name:1
Enter name:Armaan
Enter name:Arman
Thanks for confirmation.
```

Nested loops

In [7]:
```
for i in range(3):
    for j in range(3):
        print(i,j)
```

```
0 0
0 1
0 2
1 0
1 1
1 2
2 0
2 1
2 2
```

Break statement

In [11]:
```
for i in range(10):
    if(i==7):
        print("Stop")
        break
    print(i)
```

```
0
1
2
3
4
5
6
Stop
```

Continue Statement

In [18]:
```
for i in range(10):
    if(i%2==0):
        continue
    print(i)
```

```
1
3
5
7
9
```

Pass statement

In [20]:
```
if True:
    pass
```

Q.Write a program to check given character is vowel or consonant

In [22]:
```
character=input("Enter a character:")
if(character=='a' or character=='A' or character=='e'or character=='E' or character=='i
  or character=='O' or character=='u' or character=='U'):
    print("Entered character is a vowel.")
else:
    print("Entered character is not a vowel")
```

```
Enter a character:k
Entered character is not a vowel
```

In [43]:
```
charact=input("Enter a character:")
l=['a','e','i','o','u','A','E','I','O','U']
```

```
if charact in l:
    print("vowel")
else:
    print("consonant")
```

```
Enter a character:g
consonant
```

Program for calculator

In [54]:

```
 a=int(input("Enter number 1:"))
s=input("Enter siymbol(+,-,*,/,//,%,**):")
b=int(input("Enter number 2:"))
if(s=='+'):
    ans=a+b
    print("Sum is:",ans)
elif(s=='-'):
    ans=a-b
    print("Difference is:",ans)
elif(s=='*'):
    ans=a*b
    print("Product is:",ans)
elif(s=='/'):
    ans=a/b
    print("Division is:",ans)
elif(s=='//'):
    ans=a//b
    print("Floor division is:",ans)
elif(s=='%'):
    ans=a%b
    print("Modulo is:",ans)
elif(s=='**'):
    ans=a**b
    print("Power is:",ans)
```

```
Enter number 1:10
Enter siymbol(+,-,*,/,//,%,**)**
Enter number 2:2
Power is: 100
```

Q.Electricity Bill

Unit . price

First 100 unit:No charge

next 100 unit:Rs 5 per unit

After 200 unit: Rs 10 per unit

eg.350 units

100 :free

100-200:500

200=350:1500

total=2000

In [77]:
```
unit=int(input("Enter units:"))
ans=0
if(unit<100):
    ans=0
elif(unit>100 and unit<200):
    ans=(unit-100)*(5)
elif(unit>200):
    ans=100*5
    ans+=(unit-200)*(10)
print("Bill :",ans)
```

```
Enter units:145
Bill : 225
```

Q.Write a program to check given year is leap year or not

In [86]:
```
a=int(input("Enter year:"))
if((a%4==0 and a%100!=0) or a%400==0):
    print("Entered year is leap year.")
else:
    print("Entered year is not leap year.")
```

```
Enter year:2023
Entered year is not leap year.
```

Q.check for the number which is divisible by 3

In [89]:
```
a=int (input("Enter a number"))
if a%3==0:
    print("Entered number's last digit is divisible by 3.")
else:
     print("Entered number's last digit is not divisible by 3.")
```

```
Enter a number122
Entered number's last digit is not divisible by 3.
```

Q.To check if the number is 3 digit and take input continuous if number has 3 digit then print middle digit

In [ ]:
```
a=int(input("Enter a number"))
if(len(str(num)))!=3:
    print("Number must be 3 digits")
else:
```