Functions

- Function is a block of reusable code that is used to perform a specific action or task.
- Advantages:
  - Reducing duplication of code
  - Decomposing complex problems into simpler pices
  - Reuse of code
  - improving the clarity of code
  - information hiding

- basically 2 types
  - builtin functions
  - user defined functions

In [1]:
```
import builtins
```

In [2]:
```
dir(builtins)
```

Out[2]:
```
['ArithmeticError',
 'AssertionError',
 'AttributeError',
 'BaseException',
 'BlockingIOError',
 'BrokenPipeError',
 'BufferError',
 'BytesWarning',
 'ChildProcessError',
 'ConnectionAbortedError',
 'ConnectionError',
 'ConnectionRefusedError',
 'ConnectionResetError',
 'DeprecationWarning',
 'EOFError',
 'Ellipsis',
 'EnvironmentError',
 'Exception',
 'False',
```

In [4]:
```
a = 10
b = 34
c = 45
sum((a,b,c))
```

Out[4]:
```
89
```

In [5]:
```
help(sum)
```

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

sum(iterable, start=0, /)
    Return the sum of a 'start' value (default: 0) plus an iterable of numbers

    When the iterable is empty, return the start value.
    This function is intended specifically for use with numeric values and may
    reject non-numeric types.
```

In [6]:
```
a = "apssdc"
max(a)
```

Out[6]:
```
's'
```

In [7]:
```
min(a)
```

Out[7]:
```
'a'
```

In [8]:
```
ord("a")
```

Out[8]:
```
97
```

In [9]:
```
chr(97)
```

Out[9]:
```
'a'
```

In [10]:
```
abs(-45)
```

Out[10]:
```
45
```

In [11]:
```
pow(4,5)
```

Out[11]: 1024

In [13]:
```
bin(13)
```

Out[13]: '0b1101'

In [14]:
```
hex(13)
```

Out[14]: '0xd'

In [15]:
```
oct(13)
```

Out[15]: '0o15'

- user defined function
- it can be created by using def as a keyword

In [19]:
```
def add():
    a = 4+6
    return a
```

In [17]:
```
add()
```

Out[17]: 10

In [25]:
```
# positional arguments- pass in an order

def student(marks,name,rollnumber,phone):

    print(marks,name,rollnumber,phone)

student(23,"apssdc","18x41a145",256890073)
```

23 apssdc 18x41a145 256890073

In [29]:
```
# keyword arguments

#key=value


def student(marks,name):
    print(marks,name)
```

In [27]:
```
student(name = "apssdc",marks = 90)
```

90 apssdc

In [31]:
```
# default arguments
def default(a,b = "apssdc"):
    return a,b
default(7,"alekhya")
```

Out[31]: (7, 'alekhya')

In [32]:
```
default("tpt")
```

Out[32]: ('tpt', 'apssdc')

In [39]:
```
# variable length arguments

def variable_length(*x):
    print(x)
variable_length(1,4,5,6,)
```

(1, 4, 5, 6)

In [40]:
```
# keyword length arguments

def person(name,**kwlen):
    print(name)
    print(kwlen)
person(name = "alekhya",age = 21,place = "tpt",ph=57890356789)
```

```
alekhya
{'age': 21, 'place': 'tpt', 'ph': 57890356789}
```

In [ ]:
```

```

In [52]:
```
# by using functions write a program wheather a  given number is even and odd number

def evenodd(a):
    if a%2==0:
        return True
    return False
evenodd(5)
```

Out[52]:
```
False
```

In [53]:
```
def evenrange(a,b):#a=1,b=100
    for i in range(a,b+1):
        if evenodd(i):
            print(i,end=" ")
evenrange(int(input("enter starting value")),int(input("enter ending value")))
```

```
enter starting value1
enter ending value100
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76
78 80 82 84 86 88 90 92 94 96 98 100
```

In [47]:
```
a = int(input("enter a value"))
type(a)
```

```
enter a value4
```

Out[47]:
```
int
```

In [55]:
```
for i in range(int(input("enter table number")),int(input("enter ending table number"))):
    print("\n\nMULTIPLICATION TABLE FOR %d\n" %(i))
    for j in range(int(input("enter starting range")),int(input("enter ending range"))):
        print("%-5d X %5d = %5d" % (i, j, i*j))
```

```
enter table number10
enter ending table number15


MULTIPLICATION TABLE FOR 10

enter starting range1
enter ending range10
10    X     1 =    10
10    X     2 =    20
10    X     3 =    30
10    X     4 =    40
10    X     5 =    50
10    X     6 =    60
10    X     7 =    70
10    X     8 =    80
10    X     9 =    90


MULTIPLICATION TABLE FOR 11

enter starting range1
enter ending range10
11    X     1 =    11
11    X     2 =    22
11    X     3 =    33
11    X     4 =    44
11    X     5 =    55
11    X     6 =    66
11    X     7 =    77
11    X     8 =    88
11    X     9 =    99


MULTIPLICATION TABLE FOR 12

enter starting range1
enter ending range10
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


MULTIPLICATION TABLE FOR 13

enter starting range1
enter ending range10
13    X     1 =    13
13    X     2 =    26
13    X     3 =    39
13    X     4 =    52
13    X     5 =    65
13    X     6 =    78
13    X     7 =    91
13    X     8 =   104
13    X     9 =   117


MULTIPLICATION TABLE FOR 14

enter starting range1
enter ending range10
14    X     1 =    14
14    X     2 =    28
14    X     3 =    42
14    X     4 =    56
14    X     5 =    70
14    X     6 =    84
14    X     7 =    98
14    X     8 =   112
14    X     9 =   126
```

In [57]:
```
# find the given number is prime or not

def isprime(a):#a=5
    c=0
    for i in range(1,a+1):
        if a%i==0:
            c+=1
    if c==2:
        return True
    return False
isprime(10)
```

Out[57]: False

In [ ]:
```
# find primes with in the range
```

In [63]:
```
def range_primes(a,b):
    for i in range(a,b+1):
        if isprime(i):
            print(i,end = " ")
```

In [64]:
```
range_primes(int(input("enter the starting value")),int(input("enter the ending value")))
```

```
enter the starting value1
enter the ending value100
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97
```

In [69]:
```
# convert decimal number to binary number
a = int(input("enter a number"))
x = bin(a)
print(x)
print(type(x))
```

```
enter a number23
0b10111
<class 'str'>
```

In [71]:
```
# convert binary number to decimal number
int(x,2)
```

Out[71]: 23

In [74]:
```
# find the index of a character "a"

a = "andhra pradesh"

for i in range(0,len(a)):
    if(a[i]=="a"):
        print("index number",i)
```

```
index number 0
index number 5
index number 9
```

In [73]:
```
a ="abc"
len(a)
a[1]
```

Out[73]: 'b'

In [ ]:
```
# print sum of the given numbers into single digit

#input : 123
#output : 6
#input: 12345
# output:15--->6
```

In [75]:
```
n=int(input("Enter a number:"))
tot=0
while(n>0):
    dig=n%10
    tot=tot+dig
    n=n//10
print("The total sum of digits is:",tot)
```

```
Enter a number:12345
The total sum of digits is: 15
```

In [ ]:
```

```