

### Simple Python Built-In Functions

abs(x)	Returns the absolute value for x	abs(-2) is 2
max(x1, x2,...)	Returns the largest among x1, x2,...	max(1, 5, 2) is 5
min(x1, x2,...)	Returns the smallest among x1, x2,...	min(1, 5, 2) is 1
pow(a, b)	Same as a ** b	pow(2, 3) is 8
round(x)	Returns an integer nearest to x. If x is equally close to two integers, the even one is returned	round(5.5) is 6
round(x, n)	Returns the float value rounded to n digits after the decimal point	round(5.466, 2) is 5.47

### Mathematical Functions in Python

fabs(x)  
Returns the absolute value for x as a float

ceil(x)  
Round up x

floor(x)  
Round down x

exp(x)  
exponential function  $x(e^x)$

log(x)  
Natural logarithms

log(x)  
Natural logarithms

log(x, base)  
Logarithms of x for the specified base

sqrt(x)  
Square root of x

sin(x), cos(x), tan(x)  
sin, cos, tan of x angle in radians

### Mathematical Functions in Python (cont)

asin(x), acos(x)  
Inverse of sin, cos of an angle

degrees(x)  
convert radians to degrees

radians(x)  
convert degrees to radians

### Strings and Characters

ASCII Code  
American Standard Code for Information Interchange. Uses numbers 0 - 127. Can be accessed using alt key

Unicode Code  
Unicode consortium, starts with \u and hexadecimal numbers

### Escape Sequences for Special Characters

Character	Escape Sequence	Name
\b		Backspace
\t		Tab
\n		Linefeed
\r		Carriage Return
\\		Backslash
\'		Single Quote
\"		Double Quote

### Printing without the Newline

```
print("AAA", end = ' ')
print( " BBB ", end = '')
print( " CCC ", end = '*')
print( " DDD ", end = '*')

displays
AAA BBCCCC DDD
```



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### Invoke the print function with the end argument

```
n = 3
id(n)
type(n)
s = salalah
sl = s.lower()
print (s)
---
su = s.upper()
print(s)
s = "\t Salalah \n"
print(s)
s = s.strip()
print(s)
```

### Convert numbers to a string

```
num1 = str(3.4)
print (num1)
num2 = str(5)
print (num2)
```

### Read strings from the keyboard

```
firstname = input("firstname is: ")
secondname =input ("s econd name is: ")
name = firstname + secondname
print (name)
print( fir stname + " " + second name)
```

### To use the + operator to concatenate strings

```
firstname = " Mohammad"
secondname = "Ali"
name = firstname + secondname
print (name)
Firstname + = secondname
print( fir stname)
use " " space
```

### Format Strings and Numbers

```
a = 3
b = .123
c = a / b
print(c)
---
print (round (c,2))
---
print (forma t(c ,"1 0.2f"))
print (forma t(c ,"1 0.2e"))
print (forma t(c ,"1 0.%"))
---
(for int only)
print( for mat (a, "b")) #binary
print( for mat (a, "o")) #octal
print( for mat (a, "x")) #hexad ecimal
```

### Format Strings and Numbers cont...

```
print (format(c,"10.2f"))
print (forma t(c ,"< 10.2 f"))
print (forma t(c ,"> 10.2f"))
---
print( for mat (a, "b"))
print( for mat (a, "<b"))
print( for mat (a, ">b"))
---
s = "I love Python "
print(s)
print( for mat (s, " 20s "))
print( for mat (s, " <20 s"))
print( for mat (s, " >20 s"))
```



### Draw Various Shapes

```
import turtle
turtle.penup()
turtle.penup()
turtle.goto(x,y) (-200,-50)
turtle.pendown()
turtle.circle(40, steps = 3) #triangle
turtle.done()
```

### Draw graphics with colors and fonts

```
import turtle
turtle.penup()
turtle.penup()
turtle.goto(x,y)
turtle.pendown()
turtle.begin_fill()
turtle.color("color")
turtle.circle(40, steps = 3)
turtle.end_fill()
turtle.done()
```



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