

Built-In Functions in Python

In Python, built-in functions are predefined functions that are always available – you can use them without importing any library. While there are dozens of built-in functions, they can be categorized into different types based on what they do:

1. Input and Output Functions

Used for taking input and displaying output.

Examples:

- print() → Displays output
- input() → Takes input from the user

2. Type Conversion Functions

Used to convert data from one type to another.

Examples:

- int(), float(), str() → Convert to integer, float, or string
- list(), tuple(), set(), dict() → Convert between data structures

3. Mathematical and Numeric Functions

Perform mathematical operations.

Examples:

- abs() → Absolute value
- pow(x, y) → x raised to the power y
- round() → Rounds a number
- min(), max() → Minimum and maximum values
- sum() → Adds up items in a list or tuple

4. Sequence and Collection Functions

Work with sequences like lists, tuples, or strings.

Examples:

- len() → Returns length
- sorted() → Sorts items
- reversed() → Reverses a sequence
- enumerate() → Returns both index and value

5. Utility and Logical Functions

Used for checking conditions or performing general operations.

Examples:

- type() → Returns the data type
- id() → Returns the unique ID of an object
- all() → Returns True if all elements are True
- any() → Returns True if any element is True



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6. Object and Variable Handling Functions

Used for working with variables and objects.

Examples:

- dir() → Lists all attributes and methods of an object
- help() → Displays documentation
- isinstance() → Checks if a variable is of a specific type
- globals(), locals() → Access global and local symbol tables

Detailed explanation of the main built-in functions in Python:

1. print()

Use: Displays output on the screen.

```
print("Hello, Python!")
```

Output:

Hello, Python!

Explanation:

print() is used to show messages, variables, or results to the user.

2. input()

Use: Takes input from the user as a string.

```
name = input("Enter your name: ")  
print("Welcome,", name)
```

Output (example):

Enter your name: Mehul

Welcome, Mehul

Explanation:

Whatever you type in response to input() is stored as a string by default.

3. int(), float(), str()

Use: Convert between number and string types.

```
a = "10"
```

```
print(int(a) + 5) # Converts to integer
```

```
print(float(a) + 0.5) # Converts to float
```

```
print(str(20) + "25") # Converts number to string
```

Output:

15

10.5

2025

Explanation:

These functions change the type of a value – useful when taking input or working with mixed data.

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4. len()

Use: Returns the number of items in a list, string, tuple, etc.

```
word = "Python"  
print(len(word))
```

Output:

6

Explanation:

Counts how many characters (or elements) are present.

5. type()

Use: Returns the data type of a variable.

```
x = 10  
print(type(x))
```

Output:

<class 'int'>

Explanation:

It tells you whether the variable is an integer, float, string, list, etc.

6. abs()

Use: Returns the absolute (positive) value of a number.

```
print(abs(-15))
```

Output:

15

Explanation:

Negative numbers become positive – used often in math and distance calculations.

7. max() and min()

Use: Return the largest and smallest values in a sequence.

```
numbers = [3, 7, 2, 9, 5]  
print(max(numbers))  
print(min(numbers))
```

Output:

9

2

Explanation:

Useful for finding extremes in a dataset.

8. sum()

Use: Adds all items in a list or tuple.



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```
marks = [85, 90, 78]  
print(sum(marks))
```

Output:

253

Explanation:

Adds up all numeric elements.

9. round()

Use: Rounds a number to a specific number of decimal places.

```
print(round(3.456, 2))
```

Output:

3.46

Explanation:

Often used when formatting output or displaying prices.

10. range()

Use: Generates a sequence of numbers (used in loops).

```
for i in range(1, 6):  
    print(i)
```

Output:

1

2

3

4

5

Explanation:

Creates numbers starting from 1 up to (but not including) 6.

11. list(), tuple(), set()

Use: Convert data into list, tuple, or set.

```
data = "abc"
```

```
print(list(data)) # ['a', 'b', 'c']
```

```
print(tuple(data)) # ('a', 'b', 'c')
```

```
print(set(data)) # {'a', 'b', 'c'}
```

Explanation:

Used for changing between different data structures.

12. sorted()

Use: Returns a sorted list from any iterable (ascending by default).

```
nums = [4, 1, 7, 2]
```



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```
print(sorted(nums))
```

Output:

```
[1, 2, 4, 7]
```

Explanation:

Sorts lists alphabetically or numerically.

13. id()

Use: Returns the unique memory address of an object.

```
x = 10
```

```
print(id(x))
```

Output:

```
140704626222864 # (Example - changes every time)
```

Explanation:

Shows where the object is stored in memory.

14. help()

Use: Shows information about any function, module, or object.

```
help(print)
```

Explanation:

Opens a help page describing what print() does.

15. dir()

Use: Lists all methods and attributes available for an object.

```
print(dir(str))
```

Explanation:

Shows all functions that can be used with strings.

16. isinstance()

Use: Checks if an object belongs to a specific class/type.

```
x = 10
```

```
print(isinstance(x, int))
```

Output:

```
True
```

Explanation:

Returns True if x is an integer, False otherwise.



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Common Built-in Functions in Python

Function	Purpose	Example	Output
print()	Displays output	print("Hello")	Hello
len()	Returns the length of an object	len("Python")	6
type()	Returns the data type	type(10)	<class 'int'>
input()	Takes input from user	input("Enter name: ")	<i>(User types something)</i>
int()	Converts to integer	int("5")	5
float()	Converts to float	float("3.14")	3.14
str()	Converts to string	str(100)	"100"
sum()	Adds items in iterable	sum([1, 2, 3])	6
max()	Returns max value	max([4, 8, 1])	8
min()	Returns min value	min([4, 8, 1])	1
range()	Creates a range of numbers	list(range(3))	[0, 1, 2]
abs()	Returns absolute value	abs(-9)	9
sorted()	Returns sorted list	sorted([3, 1, 2])	[1, 2, 3]
round()	Rounds a number	round(3.14159, 2)	3.14
bool()	Converts to Boolean	bool(0)	False
list()	Converts to a list	list("abc")	['a', 'b', 'c']

Why do we use Built-in Functions in Python?

- Provide ready-made functionality – no need to write common code from scratch.
- Highly optimized and fast – written in C for better performance.
- Available by default – no imports or installations needed.
- Improve code readability – makes code cleaner and easier to understand.
- Well-tested and reliable – reduces chances of bugs.
- Save development time – speeds up coding by handling common tasks.
- Support many tasks – like math, input/output, type conversion, and more.
- Reusable and consistent – used the same way in all Python programs.

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Assignment

Q1. Write a Python program to take your name as input and print it using the print() and input() functions.

Q2. Write a Python program to input two numbers and print their sum after converting them to integers using int().

Q3. Create a list of five numbers and use the following functions:

- len() to find how many numbers are in the list
- max() to find the largest number
- min() to find the smallest number

Q4. Write a Python program to find the **absolute value** of a negative number using the abs() function.

Q5. Write a Python program to calculate the **sum** of numbers in a list using sum() and display the result.

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