



ACCA4020

Python – Input, output functions and Arithmetic operators

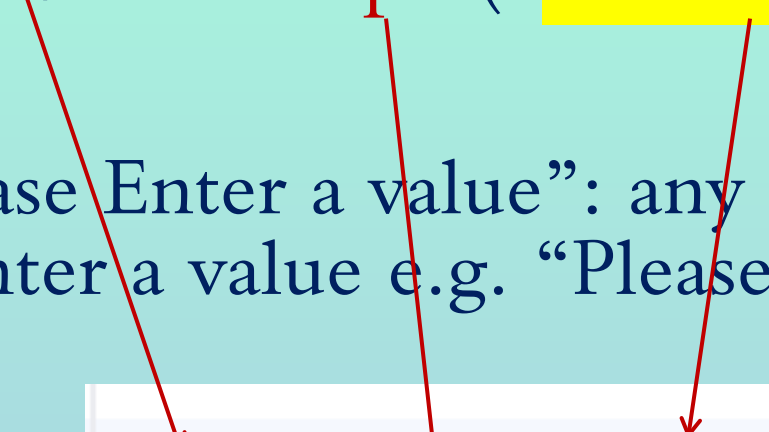
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input() function

- The **input()** function in Python is used to take input from the user during program execution.
- When the program encounters an input() statement, it pauses and waits for the user to enter a value.
- The data entered by the user is captured as a **string**.

input() function

- `inputValue = input("Please Enter a value:")`
- "Please Enter a value": any text message that prompts the user to enter a value e.g. "Please your name"



```
myName=input("Enter your name: ")  
print("My name is " + myName)
```

- Output

```
Enter your name: Ann  
My name is Ann
```

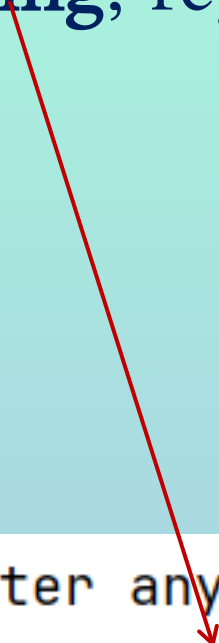
input() function

- Key point : by default, the input() function always returns a **string**, regardless of what the user types.

Example:

```
data=input("Enter any number : ")  
print(type(data))
```

```
Enter any nubmer : 600  
<class 'str'>
```



input() function

- Python requires explicit type conversion when working with numbers or logical values.
- *variablename* = **numbertype**(input(*“Enter value:”*))

Example: **integer** conversion

numbertype is int: Convert the entered text into an integer value

```
Age=int(input("Enter your age : "))  
print('Next Year your age will be', Age +1)
```

Enter your age : 30

Next Year your age will be 31

input() function

Example: integer conversion

```
number = int( input("Enter a number:") )
```

Hint: You can do this on two separate lines if it makes it clearer that we are reading the text entered by the user then converting it into the number.

```
variablename = input("Enter value:")  
variablename = numbertype(variablename)
```

```
number = input("Enter a number:") # Read user entered text  
number = int(number)              # Convert text to integer number
```

input() function

Example: Boolean conversion

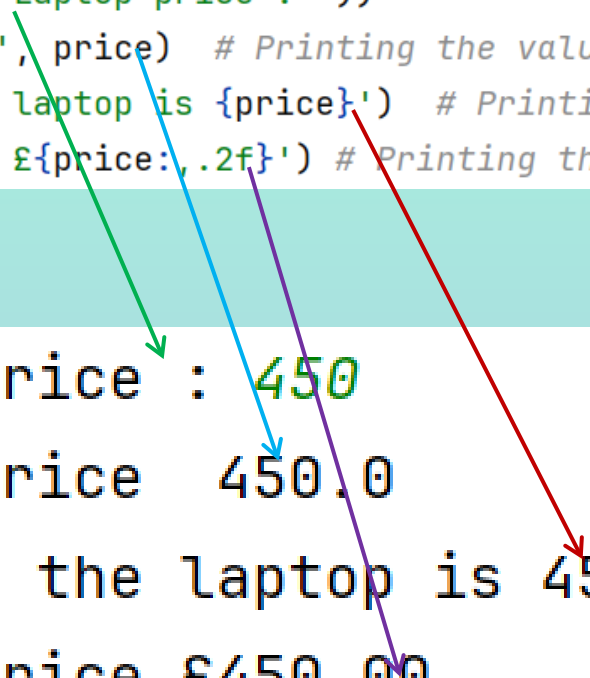
```
response = bool(input('Enter 1 for Yes or 0 for No : '))  
print('Response ', response)  
print(type(response))
```

```
Enter 1 for Yes or 0 for No : 1  
Response True  
<class 'bool'>
```

input() function

Example: Float conversion

```
price = float(input('Laptop price : '))  
print('Laptop price ', price) # Printing the value of price  
print(f'Price of the laptop is {price}') # Printing the value of price using f-string and {}  
print(f'Laptop Price £{price:,.2f}') # Printing the value of price using f-string and {} with format specifier.2f
```



```
Laptop price : 450  
Laptop price 450.0  
Price of the laptop is 450.0  
Laptop Price £450.00
```

print() function

The `print()` function is used to display information on the screen.

```
print("Hello World")
```

Placeholder {}

Curly braces `{}` are placeholders used to insert variables directly inside strings with `f` before the string.

```
name=input('Enter your Name ')
Age= int(input('Enter your Age '))
print(f'My name is {name} and I am {Age} Years old')
```

```
Enter your Name Ann
```

```
Enter your Age 24
```

```
My name is Ann and I am 24 Years old
```

The `f` before the string activates the format feature.

Variables or expressions inside `{}` are automatically evaluated.

Exercise 1

Write a Python program that:

- Task 1

- Asks the user for their name using `input()`.
- Displays a message saying, "Hello, [name]! Welcome to Python programming."

- Task 2

- Ask the user using `input()`, "What is your favourite hobby?"
- Print a message: "That's cool! I also like [hobby]."

- Task 3

- Ask the user to enter any number. *[use conversion to convert to int or float]*
- Print: "You chose the number [number]."

Arithmetic operations

In Python, arithmetic operations are used to perform basic mathematical computations.

These operators work on numeric data types like **integers** and **floating-point** numbers. Below is a summary of common arithmetic operators:

Addition (+)

Subtraction (-)

Multiplication (*)

Division (/) - Divides the first number by the second and returns a floating-point result.

Floor Division (//) - Divides and returns the integer part of the result, discarding the remainder.

Modulus (%) - Returns the remainder after division.

Exponentiation ()** Raises the first number to the power of the second.

Arithmetic operations

- You can add, subtract, multiply and divide variables and values using arithmetic operators:

Operator	Description	Example
+	Add values	result = number1 + number2
-	Subtract values	result = number1 - number2
*	Multiply values	result = number1 * number2
/	Divide values	result = number1 / number2
//	Floor division or integer division (returns the value without the remainder)	result = number1 // number2
%	Modulus (Returns the remainder after division)	result = number1 % number2
**	Raises the first number to the power of the second.	result = number1 ** number2

Arithmetic operations

```
x = 7
y = 5

print("Addition:", x + y)
print("Subtraction:", x - y)
print("Multiplication:", x * y)
print("Division:", x / y)
print("Floor Division:", x // y)
print("Modulus:", x % y)
print("Exponentiation:", x ** y)
```

Addition: 12

Subtraction: 2

Multiplication: 35

Division: 1.4

Floor Division: 1

Modulus: 2

Exponentiation: $7^5 = 16807$

Divides and returns the integer part of the result, discarding the remainder.

Returns the remainder after division.

Arithmetic operations

Important Notes:

Order of Operations: Python follows the standard order of operations (PEMDAS/BODMAS):

- Parentheses
- Exponents
- Multiplication and Division
- Addition and Subtraction

Type Handling:

Division (/) always returns a floating-point value, even if the result is an integer.

Integer operations remain integers unless division or explicit conversion occurs.

Exercise 2

Write a Python program that:

- Task 1
 - Input two numbers and displays the sum of these numbers
- Task 2
 - Input two numbers and displays the difference of these numbers.
- Task 3
 - Input two numbers and displays the product of these numbers.
- Task 4
 - Input two numbers and find the remainder when dividing the first number by the second number.
- Task 5
 - Input two numbers and perform floor division.
- Task 6
 - Input two numbers and raise the first number to the power of the second.

Exercise 3

Write a Python program that:

- Task 1
 - Input the length and width of a rectangle and calculate its area.
- Task 2
 - Input the price of an item and the quantity to calculate the total cost.
- Task 3
 - Input the temperature in Celsius and convert it to Fahrenheit.
- Task 4
 - Calculate the area and circumference of a circle.

Exercise 4 - Advanced

A theme park sells tickets for £15 each (can be varied). There is also a fast-track band that costs £7.50 (varied).

- A student buys 2 tickets and 1 fast-track band.
- They also receive a 20% student discount on the whole purchase.
- Write a Python program that:
 - Takes input values for the ticket price, fast-track price, and the quantities bought.
 - Uses arithmetic operators to calculate:
 - the subtotal
 - the discount
 - the final total after discount
 - Uses correct BODMAS order when calculating the final price.
 - Prints the final amount the student needs to pay.

Try the programme with different input values for ticket prices and quantities.

Exercise 5 - Advanced

Write a Python program that helps a student calculate their remaining monthly budget after expenses.

Your program must :

Ask the user to input the following values:

- Their total monthly allowance (e.g., “Enter your monthly allowance: ”)
- The amount spent on food (e.g., “Enter your food expenses: ”)
- The amount spent on travel
- The amount spent on entertainment

Calculate and print the total expenses and the balance money (Each formatted to 2 decimal places.)