

# PYTHON BASIC TWO

## Python Beginner Course – Part 2

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### Module 1: Operators & Expressions

#### Arithmetic Operators

```
a = 10
```

```
b = 3
```

```
print(a + b) # 13 (addition)
```

```
print(a - b) # 7 (subtraction)
```

```
print(a * b) # 30 (multiplication)
```

```
print(a / b) # 3.333... (division)
```

```
print(a // b) # 3 (floor division)
```

```
print(a % b) # 1 (modulus/remainder)
```

```
print(a ** b) # 1000 (power)
```

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#### Comparison Operators

```
x, y = 5, 10
```

```
print(x == y) # False
```

```
print(x != y) # True
```

```
print(x > y) # False
```

```
print(x < y) # True
```

```
print(x >= y) # False
print(x <= y) # True
```

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### ◆ Logical Operators

```
age = 20
print(age > 18 and age < 30) # True
print(age > 18 or age > 30) # True
print(not(age > 18)) # False
```

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### ◆ Assignment Operators

```
x = 5
x += 2 # x = x + 2
print(x) # 7
```

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### ◆ Expressions

✓ Expressions are **combinations of values, variables, and operators.**

```
result = (a + b) * 2
print(result) # (10 + 3) * 2 = 26
```

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## Module 2: Type Conversion

### ◆ Implicit Conversion (Python converts automatically)

```
num_int = 10
num_float = 3.5

result = num_int + num_float
print(result) # 13.5
```

```
print(type(result)) # float
```

### ◆ Explicit Conversion (Casting)

```
# int to float
```

```
a = float(10)
```

```
print(a) # 10.0
```

```
# float to int
```

```
b = int(3.9)
```

```
print(b) # 3
```

```
# string to int
```

```
c = int("25")
```

```
print(c + 5) # 30
```

```
# int to string
```

```
d = str(50)
```

```
print("Age: " + d) # Age: 50
```

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### Module 3: Conditionals (if/elif/else)

```
age = 18
```

```
if age < 13:
```

```
    print("Child")
```

```
elif age < 20:
```

```
    print("Teenager")
```

```
else:
```

```
print("Adult")
```

Mini Exercise:

👉 Write a program that checks if a number is **positive, negative, or zero**.

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## Module 4: Loops (for, while)

### ◆ for Loop

```
for i in range(5):
```

```
    print("Number:", i)
```

### ◆ while Loop

```
count = 0
```

```
while count < 5:
```

```
    print("Count:", count)
```

```
    count += 1
```

### ◆ Mini Exercises

1. Print numbers from 1 to 10 using a for loop.
  2. Print even numbers between 1 and 20.
  3. Write a program that sums numbers from 1 to 100.
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## Module 5: Functions

### ◆ Defining & Calling Functions

```
def greet():
```

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

```
greet()
```

### ◆ Parameters

```
def greet_user(name):
```

```
print(f"Hello, {name}!")
```

```
greet_user("Alice")
```

### ◆ Return Values

```
def add(a, b):
```

```
    return a + b
```

```
result = add(10, 5)
```

```
print(result) # 15
```

### ◆ Mini Exercises

1. Write a function that returns the square of a number.
  2. Write a function that checks if a number is even or odd.
  3. Write a function that takes a list and returns the sum of its elements.
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## Module 6: Data Structures with Functions

### ◆ Lists

```
def print_fruits(fruits):
```

```
    for fruit in fruits:
```

```
        print(fruit)
```

```
fruits = ["apple", "banana", "cherry"]
```

```
print_fruits(fruits)
```

### ◆ Tuples

```
def get_coordinates():
```

```
    return (10, 20)
```

```
point = get_coordinates()
print(point) # (10, 20)
```

### ◆ Dictionaries

```
def get_student():
    return {"name": "Alice", "age": 22}
```

```
student = get_student()
print(student["name"]) # Alice
```

### ◆ Sets

```
def unique_numbers(numbers):
    return set(numbers)
```

```
nums = [1,2,2,3,4,4,5]
print(unique_numbers(nums)) # {1,2,3,4,5}
```

## 🎓 Classwork Assignments

### Operators & Expressions (1–5)

1. Write a Python program to add, subtract, multiply, and divide two numbers.
2. Given two numbers, check if the first is greater than the second using comparison operators.
3. Write a program to demonstrate logical operators (and, or, not) with age checks.
4. Use assignment operators ( $+=$ ,  $-=$ ,  $*=$ ,  $/=$ ) on a variable and print results.
5. Write an expression to calculate the area of a rectangle (length  $\times$  width).

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### Type Conversion (6–8)

6. Convert a float number 3.75 to an integer and print it.
  7. Convert the string "45" to an integer and add 10.
  8. Take an integer 100 and convert it into a string. Concatenate it with " years".
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### Conditionals (9–12)

9. Write a program that checks if a number is positive, negative, or zero.
  10. Create a program that checks if someone is a child (<13), teenager (<20), or adult.
  11. Write a program to check if a number is even or odd.
  12. Ask the user to input a score and print grade: A ( $\geq 70$ ), B (60–69), C (50–59), F (<50).
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### Loops (13–16)

13. Print numbers from 1 to 20 using a for loop.
  14. Print the multiplication table of 5 using a for loop.
  15. Write a program using a while loop to count down from 10 to 1.
  16. Write a program that sums numbers from 1 to 100 using a loop.
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### Functions & Data Structures (17–20)

17. Write a function square(n) that returns the square of a number.
  18. Write a function that takes a name as parameter and prints "Hello, <name>!".
  19. Write a function that takes a list of numbers and returns their sum.
  20. Write a function that returns a dictionary with keys: "name", "age", "country".
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### Quiz

#### Part A: Multiple Choice (5 questions)

1. Which operator is used for exponentiation in Python?
  - a) ^

- b) \*\*
  - c) exp()
  - d) pow()
2. What is the result of int(3.9)?
- a) 4
  - b) 3.9
  - c) 3
  - d) Error
3. Which keyword is used for multiple conditions?
- a) else if
  - b) elif
  - c) elseif
  - d) ifelse
4. Which loop runs **until a condition becomes false**?
- a) for
  - b) repeat
  - c) while
  - d) loop
5. Which data structure uses {} and stores unique values?
- a) List
  - b) Set
  - c) Dictionary
  - d) Tuple
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**Part B: Short Answer (5 questions)**

6. What is the difference between / and // in Python?

7. Explain the difference between implicit and explicit type conversion.
  8. Write a condition to check if age is between 18 and 30.
  9. What is the difference between a for loop and a while loop?
  10. Write one advantage of using functions in Python.
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**Part C: Coding (5 questions)**

11. Write a program to find the maximum of two numbers using if-else.
12. Write a function that returns the factorial of a number using a for loop.
13. Write a program that prints all even numbers between 1 and 50.
14. Write a function that accepts a list of integers and returns the largest number.
15. Write a function that takes a dictionary of a student ({"name":"John","marks":85}) and prints the name and marks.