Python Online Free Ramzan Course 2025
Taught by: Shaida Muhammad

Basic Operators

Day 4 - Python Basics

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Thursday, March 6, 2025

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Agenda

1. Arithmetic operators (+, -, *, /, %, **)
2. Comparison operators (==, !=, >, <, etc.)
3. Logical operators (and, or, not)
4. Hands-on: Write a simple calculator program

Arithmetic Operators

- **Purpose:** Perform mathematical operations.
- **Operators:**
  - + (Addition)
  - - (Subtraction)
  - * (Multiplication)
  - / (Division)
  - % (Modulus - remainder after division)
  - ** (Exponentiation - power of)
- **Examples:**

```
print(10 + 5)   # Output: 15
print(10 - 5)   # Output: 5
print(10 * 5)   # Output: 50
print(10 / 5)   # Output: 2.0
print(10 % 3)   # Output: 1 (remainder of 10 ÷ 3)
print(2 ** 3)   # Output: 8 (2 raised to the power of 3)
```

Comparison Operators

- **Purpose:** Compare two values and return `True` or `False`.
- **Operators:**
  - `==` (Equal to)
  - `!=` (Not equal to)
  - `>` (Greater than)
  - `<` (Less than)
  - `>=` (Greater than or equal to)
  - `<=` (Less than or equal to)
- **Examples:**

```
print(10 == 5)  # Output: False
print(10 != 5)  # Output: True
print(10 > 5)   # Output: True
print(10 < 5)   # Output: False
print(10 >= 10) # Output: True
print(10 <= 5)  # Output: False
```

Logical Operators

- **Purpose:** Combine multiple conditions and return `True` or `False`.
- **Operators:**
  - `and` (True if both conditions are True)
  - `or` (True if at least one condition is True)
  - `not` (Reverses the result, True becomes False and vice versa)
- **Examples:**

```
print(10 > 5 and 5 < 3)  # Output: False
print(10 > 5 or 5 < 3)   # Output: True
print(not(10 > 5))       # Output: False
```

Hands-On Practice

- **Task 1:** Perform arithmetic operations on two numbers.

```
num1 = 10
num2 = 5
print(num1 + num2)  # Output: 15
print(num1 - num2)  # Output: 5
print(num1 * num2)  # Output: 50
print(num1 / num2)  # Output: 2.0
print(num1 % num2)  # Output: 0
print(num1 ** num2) # Output: 100000
```

- **Task 2:** Compare two numbers using comparison operators.

```
num1 = 10
num2 = 5
print(num1 == num2)  # Output: False
print(num1 != num2)  # Output: True
print(num1 > num2)   # Output: True
print(num1 < num2)   # Output: False
```

- **Task 3:** Use logical operators to combine conditions.

```
print(10 > 5 and 5 < 3)  # Output: False
print(10 > 5 or 5 < 3)   # Output: True
print(not(10 > 5))       # Output: False
```

Simple Calculator Program

- **Goal:** Write a program to perform basic arithmetic operations based on user input.
- **Steps:**
  1. Take two numbers as input from the user.
  2. Take the operation (+, -, *, /) as input.
  3. Perform the operation and display the result.

Simple Calculator Program ...

- **Code:**

```
num1 = float(input("Enter first number: "))
num2 = float(input("Enter second number: "))
operation = input("Enter operation (+, -, *, /): ")

if operation == "+":
    print(f"Result: {num1 + num2}")
elif operation == "-":
    print(f"Result: {num1 - num2}")
elif operation == "*":
    print(f"Result: {num1 * num2}")
elif operation == "/":
    print(f"Result: {num1 / num2}")
else:
    print("Invalid operation!")
```

Recap

- Arithmetic operators (+, -, *, /, %, **).
- Comparison operators (==, !=, >, <, etc.).
- Logical operators (and, or, not).
- Hands-on: Simple calculator program.

Homework

1. Write a program to calculate the area of a circle using the formula `area = π * r^2`.
2. Write a program to check if a number is even or odd using comparison and logical operators.
3. Extend the calculator program to include modulus (%) and exponentiation (**).

Q&A

- **Do you have any questions?**
- **Share your thoughts or challenges.**

Closing

Next class: Conditional Statements