Python Programming - Notes for First Basic Class

1. What is Python?
- Python is a **high-level**, **interpreted**, **easy-to-read** programming language.
- Python is an object-oriented programming language.
- Python code is written in a simple English-like syntax.
- Python is used for web development, data science, automation, AI, and more.

2. Why Learn Python?
- Easy to learn and understand.
- Large community and lots of libraries.
- Used in many fields (web, data, AI, automation, games).

3. Python Basics

Variables
- Variables store data (like numbers, text, etc.)

```
name = "Alice"
age = 20
```

Data Types
- int – Integer numbers
- float – Decimal numbers
- str – Text (strings)
- bool – Boolean (True or False)

Comments
- Used to explain code (ignored by Python)

```
# This is a comment
```

Input & Output

```
# Input from user
name = input("Enter your name: ")

# Output
print("Hello", name)
```

A sample program to perform arithmetic operations on two nos.

```
a = 10
b = 5
print(a + b)  # Addition
print(a - b)  # Subtraction
print(a * b)  # Multiplication
print(a / b)  # Division
```

Basic Arithmetic Operation Programs in Python

◆ **1. Addition of Two Numbers**

```
a = 15
b = 10
sum = a + b
print("Sum:", sum)
```

Output:
Sum: 25

◆ **2. Subtraction of Two Numbers**

```
a = 25
b = 7
difference = a - b
print("Difference:", difference)
```

Output:
Difference: 18

◆ **3. Multiplication of Two Numbers**

```
a = 6
b = 4
product = a * b
print("Product:", product)
```

Output:
Product: 24

◆ **4. Division of Two Numbers**

```
a = 20
b = 5
quotient = a / b
print("Quotient:", quotient)
```

Output:
Quotient: 4.0

◆ **5. Floor Division**

```
a = 20
b = 3
result = a // b
print("Integer Division:", result)
```

Output:
Integer Division: 6

◆ **6. Modulus (Remainder)**

```
a = 20
b = 6
remainder = a % b
print("Remainder:", remainder)
```

Output:
Remainder: 2

◆ **7. Exponentiation (Power)**

```
a = 3
b = 4
power = a ** b
print("Power:", power)
```

Output:
Power: 81

◆ **8. Arithmetic operation with User Input**

```
a = float(input("Enter first number: "))
b = float(input("Enter second number: "))

print("Addition:", a + b)
print("Subtraction:", a - b)
print("Multiplication:", a * b)
print("Division:", a / b)
print("Modulus:", a % b)
```

Sample Input:
Enter first number: 12
Enter second number: 5

Output:
Addition: 17.0
Subtraction: 7.0
Multiplication: 60.0
Division: 2.4
Modulus: 2.0

What is a Program?

A **program** is a set of instructions written in a specific order that tells a computer what to do. It can perform a wide range of tasks—from simple math calculations to running complex websites, apps, or games.

- Example: A calculator app, a video game, or even the software on your phone.
- Think of it like a **recipe** that tells the computer exactly how to perform each step.

What is a Programming Language?

A **programming language** is a special language used to write programs. It's a way for humans to communicate instructions to a computer in a form it can understand and execute.

- Examples: **Python**, **Java**, **C++**, **JavaScript**, etc.
- Each language has its own **syntax** (rules for writing code), just like English or any other spoken language.

Relationship Between the Two

- You **write** a **program** using a **programming language**.
- The language you choose depends on what kind of program you want to make and where it will run (web, desktop, mobile, etc.).

Practice program:

- Program to accept principal, rate and time and compute SI. Print SI.
- Program to accept marks of 3 subjects and compute their sum and average. Print them.
- Program to accept the length and breadth of a rectangle and find its area and perimeter. Print them.
- Program to accept the radius of a circle and compute its area and circumference. Print them.

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