

Day 1: Basics of Python

Topics Covered:

- Introduction to Python
- Setting up Python
- Python syntax
- Variables and Data Types
- Input and Output
- Basic Operators

1. Introduction to Python:

Python is a high-level, interpreted programming language known for its simplicity and versatility. It is widely used in fields such as web development, data science, automation, and artificial intelligence.

2. Setting up Python:

To start programming in Python, you need to install it on your machine. The Python interpreter can be downloaded from the official Python website (<https://www.python.org/downloads/>). After installation, you can check the installation by running 'python --version' in your terminal or command prompt.

3. Python Syntax:

Python's syntax is clean and easy to understand. A Python program consists of statements written in plain text. Python uses indentation to define blocks of code instead of curly braces, making it highly readable.

Example:

```
print("Hello, World!") # This is a basic Python print statement
```

4. Variables and Data Types:

In Python, variables are used to store data values. The data type of a variable determines the kind of data it can store. Some common data types in Python include:

- int: Integer values
- float: Floating point numbers
- str: Strings
- list: Ordered collection of items
- bool: Boolean (True/False)

Example:

```
x = 5 # int  
y = 3.14 # float
```

```
name = "Alice" # str
is_valid = True # bool
```

5. Input and Output:

Python provides built-in functions like `input()` and `print()` for taking input from the user and displaying output on the screen.

Example:

```
name = input("Enter your name: ")
print(f"Hello, {name}!")
```

6. Basic Operators:

Python supports various operators such as arithmetic, comparison, logical, and assignment operators.

Some common operators include:

- Arithmetic Operators: `+`, `-`, `*`, `/`, `%`, `**` (Exponentiation), `//` (Floor Division)
- Comparison Operators: `==`, `!=`, `>`, `<`, `>=`, `<=`
- Logical Operators: `and`, `or`, `not`
- Assignment Operators: `=`, `+=`, `-=`, `*=`, `/=`, `%=`, `//=`

Example:

```
a = 10
b = 20
sum = a + b # Arithmetic operator
is_equal = a == b # Comparison operator
is_valid = (a < b) and (b > 10) # Logical operator
```

Summary of Day 1:

Today, we learned about the basics of Python programming. We explored how to set up Python, the basic syntax of the language, variables, and data types. We also covered input/output functions and the most common operators used in Python.