

III Python Documentation for Students III

Easier coding III

Introduction

Welcome to Python programming! This guide is designed to introduce you to the basics of Python, a powerful and versatile programming language. We'll cover fundamental concepts and provide example codes to help you get started.



Getting Started with Python

Python is an easy-to-learn language that is widely used in many fields, including web development, data analysis, artificial intelligence, scientific computing, and more. Before you begin coding, ensure you have Python installed on your computer. You can download it from the official Python website.

Hello World Example

The first program that most beginners write is the "Hello, World!" program. It simply prints "Hello, World!" to the screen. Here's how you do it in Python:

```
print("Hello, World!")
```

Basic Python Syntax

Variables and Data Types

Variables are used to store information in a program. Python supports several data types, including integers, floats, strings, and booleans.

```
# Integer
age = 20
```

```
# Float
height = 5.9
```

```
# String
name = "Alice"
```

```
# Boolean
is_student = True
```

Lists

Lists are used to store multiple items in a single variable. You can store different data types in a list.

```
# Creating a list
fruits = ["apple", "banana", "cherry"]
```

```
# Accessing list items
print(fruits[0]) # Output: apple
```

```
# Modifying list items
fruits[1] = "blueberry"
```

Dictionaries

Dictionaries store data in key-value pairs. This is useful for storing related information.

```
# Creating a dictionary
student = {
    "name": "John",
    "age": 21,
    "courses": ["Math", "Science"]
}
```

```
# Accessing values
print(student["name"]) # Output: John
```

```
# Adding a new key-value pair
student["grade"] = "A"
```

Control Structures

Conditional Statements

Conditional statements allow you to execute code based on certain conditions.

```
# If-else statement
if age < 18:
    print("You are a minor.")
else:
    print("You are an adult.")
```

Loops

Loops are used for iterating over a sequence (like a list, tuple, dictionary, or string).

For Loop

```
# For loop
for fruit in fruits:
    print(fruit)
```

While Loop

```
# While loop
count = 0
while count < 5:
    print(count)
    count += 1
```

Functions

Functions are blocks of code that perform a specific task. They help make your code reusable.

```
# Defining a function
def greet(name):
    return f"Hello, {name}!"

# Calling a function
print(greet("Alice")) # Output: Hello, Alice!
```

Conclusion

This guide introduced you to the basics of Python programming. As you continue to learn, you'll discover more advanced features and libraries that make Python a powerful tool for solving a wide range of problems. Happy coding!

