

Lecture 1: Introduction to Python

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Disclaimer: *These notes aggregate content from several texts and have not been subjected to the usual scrutiny deserved by formal publications. If you find errors, please bring to the notice of the Instructor.*

1.1 What is Python?

Python is a high-level, interpreted programming language that emphasizes readability and simplicity. It supports multiple programming paradigms, such as:

- Procedural Programming
- Object-Oriented Programming (OOP)
- Functional Programming

Python is widely used in various fields like:

- Web Development
- Data Science and Machine Learning
- Cybersecurity and Automation
- Scripting and System Administration

1.2 Brief History of Python

- Python was developed by **Guido van Rossum** in the late 1980s and released in 1991.
- It was influenced by the ABC language and aimed to provide code readability with a clean syntax.
- The name "Python" comes from the British comedy series *Monty Python's Flying Circus*.

Major Versions:

- Python 2.x — Introduced in 2000, now deprecated
- Python 3.x — Released in 2008, improved Unicode support and clean syntax

1.3 Installing Python IDLE on Windows

Step-by-Step Guide

1. Open your web browser and go to the official Python website at <https://www.python.org/>.
2. Click on the “**Downloads**” tab located in the navigation bar.
3. Scroll down to the Python releases section and locate the version you want to download.
4. Select the version appropriate for your operating system (Windows, macOS, or Linux).
5. After selecting your operating system, you’ll see a list of files available for download.
6. Look for the installer that matches your system architecture (32-bit or 64-bit) and click on the link to start the download.
7. Once the download is complete, locate the downloaded file and run the installer.
8. Follow the installation wizard’s instructions to install Python on your system.
 - Make sure to check the box that says “**Install IDLE**” or “**Add Python to PATH**” during installation.
9. After the installation is complete, you can launch IDLE by searching for “IDLE” in your computer’s search bar or by locating it in the Python installation directory.

That’s it! You should now have IDLE installed on your computer, which provides an integrated environment for writing, testing, and running Python code.

1.3.1 On macOS

Use Homebrew:

```
brew install python
```

1.3.2 On Linux (Ubuntu/Debian)

```
sudo apt update
sudo apt install python3
```

1.4 Check Python Version

Open Command Prompt:

Press Win + R, type cmd, and hit Enter.

Type the following command:

```
python --version
python3 --version
```

1.5 Basic Python Code Examples

1. Printing a Message

Try running the following code to print a message:

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

2. Simple Arithmetic Operations

You can perform basic arithmetic operations in Python:

```
# Addition
print(5 + 3)

# Subtraction
print(10 - 4)

# Multiplication
print(6 * 7)

# Division
print(8 / 2)
```

3. Working with Variables

Try creating and using variables in Python:

```
# Variable assignment
x = 10
y = 20

# Print the sum
print("Sum of x and y:", x + y)
```

4. Using Conditional Statements

Here's an example using if statements:

```
x = 5
if x > 3:
    print("x is greater than 3")
else:
    print("x is not greater than 3")
```

5. A Simple Loop

You can use loops in Python:

```
for i in range(5):  
    print("Iteration:", i)
```