Python Programming Language

Language

Lecture 1: Introduction to Python

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Today’s Learning Objectives

- ❑ What is Programming?
- ❑ Types of Programming Languages
- ❑ Why python
- ❑ Python Career Opportunities
- ❑ Different IDE Tools for Python
- ❑ Environment Set Up
- ❑ Our First Python Program
- ❑ Python indentation
- ❑ Python Comment
- ❑ Input and Output (print function)
- ❑ Fun and Interactive Coding Exercises
- ❑ Where to Learn More About Python

What is Programming?

1

Problem Solving

Programming is the art of breaking down complex problems into smaller, manageable steps and then writing instructions for the computer to follow to solve those problems.

2

Creativity and Automatic Tasking

Programming allows you to bring your ideas to life and create something unique. It is a way to express your creativity and solve various difficult amazing problems automatically.

3

Logic and Thinking

Programming requires logical thinking and the ability to break down problems into their components. It helps develop critical thinking skills.

Types of Programming Languages

1 **Low-Level Languages:**

- **Machine Language:** Binary code directly executed by the computer.
- **Assembly Language:** Uses symbolic code and is closer to machine language.

2 **High-Level Languages:**

- **Object-Oriented Languages:** Python, Java, C++ (Based on objects and classes).
- **Scripting Languages:** Python, JavaScript, PHP (Automate tasks, often interpreted).
- **Markup Languages:** HTML, XML (Web development)
- **Concurrency-Oriented Languages:** GO, Rust (to handle parallel computations)

Why Python?

- Easy to Learn
- Interpreted Language
- Object-Oriented Language
- Works on Different Platforms (Windows, Mac, Linux etc.)
- Extensive Standard Library
- High-Level Language
- Open Source
- Large Community
- Developer Community

Python

- It was created by Guido van Rossum, and released in 1991.
- Python is a versatile and beginner-friendly programming language that can help you create amazing things, from websites to video games.
- Python 3 has a simple syntax that is simple to understand and read, making it a good choice for beginners.
- It is a high-level language that has a large standard library and many third-party libraries available, making it a versatile language that can be used for a wide variety of applications.
- Python 3 has good support for data analysis and scientific computing, with libraries such as NumPy and Pandas.

Python Career Opportunities

Web Development

Backend Developer, Full Stack Developer

Data Science

Data Scientist, Data Analyst, Machine Learning Engineer

Game Development

Game Developer, Game Scripter

Automation

Automation Engineer, DevOps Engineer.

Python Career Opportunities (Cont..)

Software Development

Software Engineer, Python Developer

Cybersecurity

Security Analyst, Penetration Tester, Ethical Hacker

Artificial Intelligence (AI) and Machine Learning (ML):

AI Engineer, ML Engineer, Research Scientist

Education and Training

Instructor, Curriculum Developer

Let’s Start Coding

Different IDE Tools for Python

1. PyCharm

3. Jupyter Notebook

2. Visual Studio Code (VS Code)

4. Spyder

5. Others: Sublime Text, Atom, Notepad++ etc.

Setting Up the Development Environment

1

Install Python

The first step is to download and install the latest version of Python on your computer.
https://www.python.org/downloads/ , https://www.jetbrains.com/pycharm/download ,
https://www.anaconda.com/download

2

Choose an IDE

An Integrated Development Environment (IDE) is a software application that provides a comprehensive set of tools for writing, testing, and debugging code.

3

Start Coding

With Python and your chosen IDE installed, you're ready to start coding and exploring the exciting world of programming!

Our First Python Program

- Open your IDE or text editor
- Create a new file named hello.py
- Type the following code:

main.py

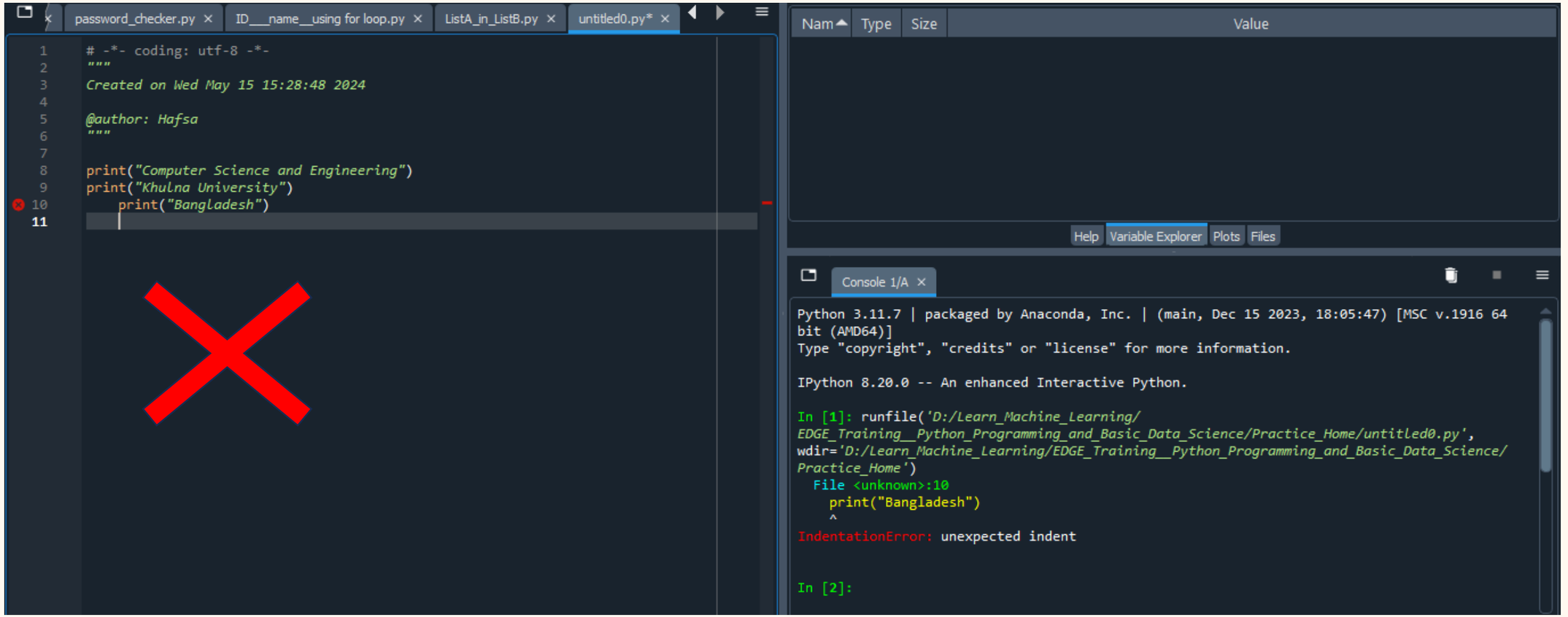
```
1  print("Hello, World!")
2
```

Output

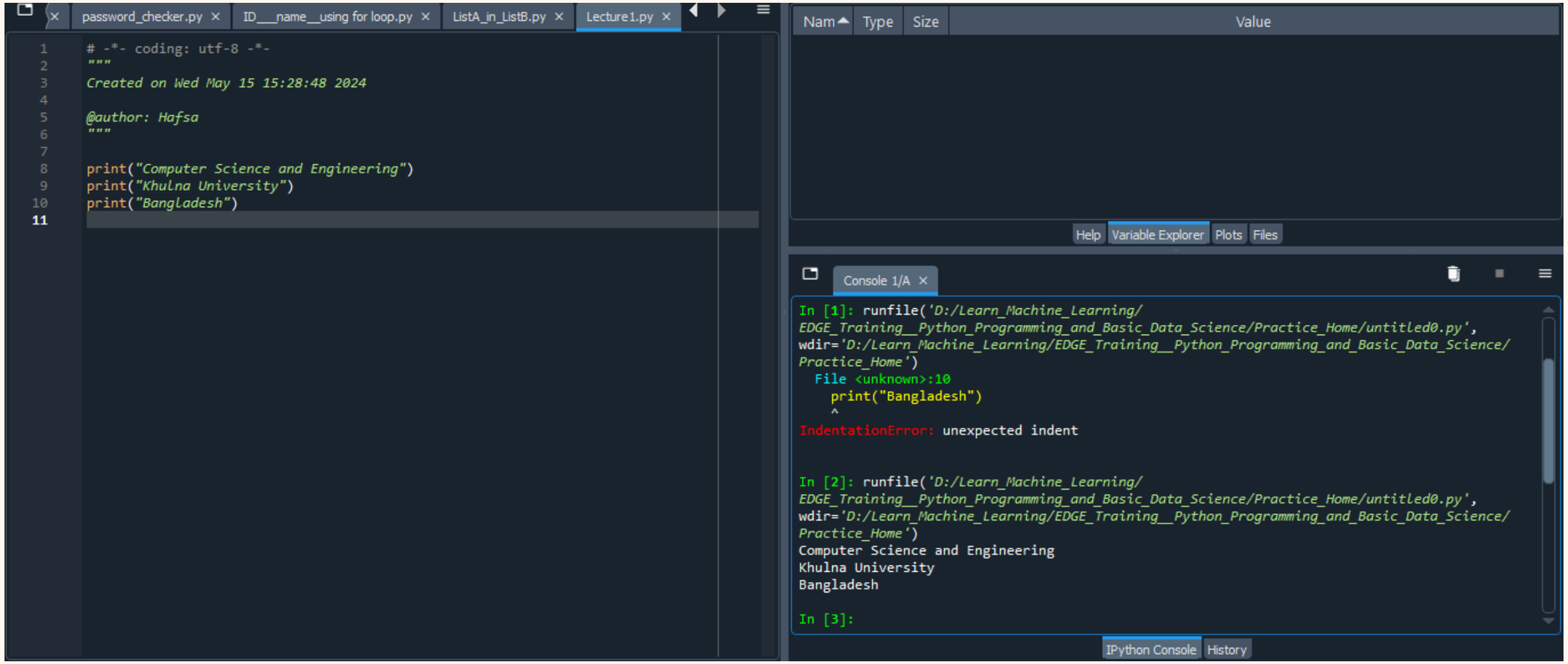
```
Hello, World!

=== Code Execution Successful ===
```

Python Indentation



Python Indentation



Python Comment

Example

```
print("Hello, World!") #This is a comment
```

Example

```
#This is a comment
#written in
#more than just one line
print("Hello, World!")
```

Example

```
"""
This is a comment
written in
more than just one line
"""
print("Hello, World!")
```

Input and Output (print function)

print()

The print() function is used to display output in the console or terminal.

input()

The input() function allows the user to provide data or instructions to the program.

Variables

Variables are used to store and manipulate data in your programs.

Strings

Strings are used to represent text in Python, and can be used with the print() and input() functions.

Fun and Interactive Coding Exercises

1 2 3

Greeting Message:

```
name = “Sajid”
print("Hello,", name, "!")
#output- Hello Sajid!
```

Sum of Two Numbers:

```
num1=5
num2=6
sum = num1 + num2
print("Sum:", sum)
#Output = Sum:11
```

Repeating a Message:

```
message = “Be Honest.”
repeat = 5
print(message * repeat)
#Output: Be Honest.Be Honest.Be Honest.Be Honest.Be Honest.
```

Practice… Practice… Practice…

Where to Learn More About Python

Online Tutorials	Websites like Python.org, w3schools, Codecademy, and Udemy offer interactive tutorials and courses for learning Python.
Books and Ebooks	There are many great books and ebooks available that provide in-depth coverage of the Python language and its applications.
Python Community	Joining online communities like Python subreddit or Python meetup groups can provide valuable support and resources.
Project-Based Learning	Building your own projects is one of the best ways to solidify your Python skills and learn new concepts.

Any Question??