PROGRAMMING PYTHON

An overview and introduction

LECTURE ONE – PLAN

Here's what we'll be doing in **lecture 1** today:

1. A brief overview of the course, again!
2. Module One Syllabus details
3. What is Python and what is it like programming in Python?
4. Necessary Accounts Creation
5. **Checking your Knowledge (3rd Party Tool, free access!)**
6. Our First Program:
    - Replit Environment
    - Hello World!
    - Python Syntax
    - Output
    - Input
    - **YOUR FIRST TASK**

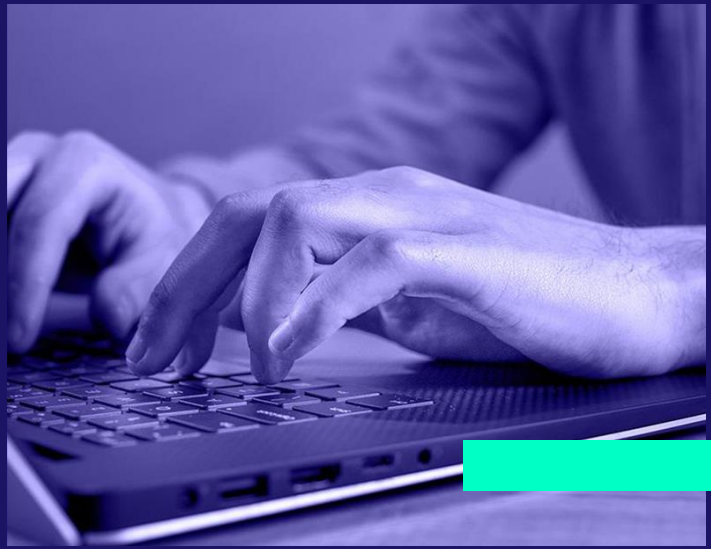
TABLE OF CONTENTS

01

COURSE OVERVIEW

About this Course

- Python stands tall among the world's top programming languages due to its simplicity, versatility, and extensive community support.
- When it comes to Data Science, python simply becomes number one choice.
- It is currently world 2nd most popular language in terms of usage
- Graduates will be well-versed in Python and capable of leveraging it for data analysis, machine learning, and artificial intelligence applications, making them valuable assets in data-driven industries.

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["Dream" , "Code" , "Build"]
“Python has been an important part of Google since the beginning, and remains so as the system grows and evolves.”
–Peter Norvig

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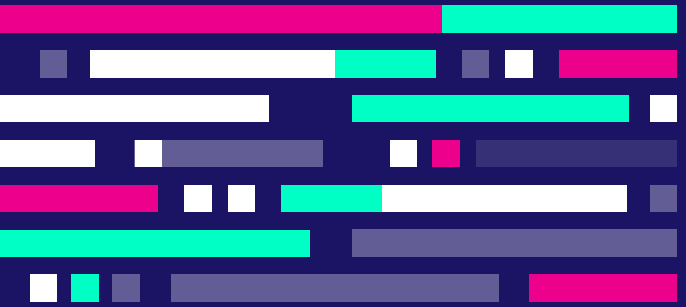


WE'VE IT ALL

Python is a general purpose language and we have made sure that we do not remain confined to the Data Science module only. So, you will also be exploring Web related features, Game Developments, UI and other features along the way.

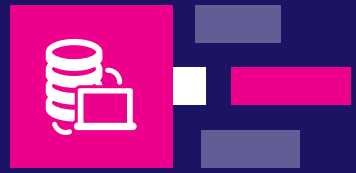
MODULE WISE PLAN

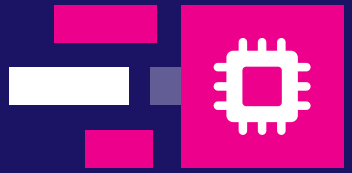
Programming

Here we will learn main Python Programming Language

Data Science

In this module, we will learn libraries Pandas, Numpy, Matplotlib etc.



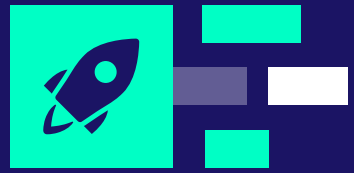


Machine Learning

Neptune is the farthest planet from the Sun

Projects

Kaggle profile creation, notebooks, real world data, etc.



TOOLS WE WILL LEARN

These are just main topics, the list is very long tbh...

USECASES

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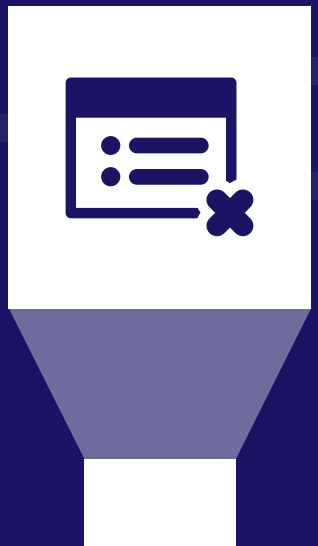
Engineering

Obviously AI is unlocking new opportunities

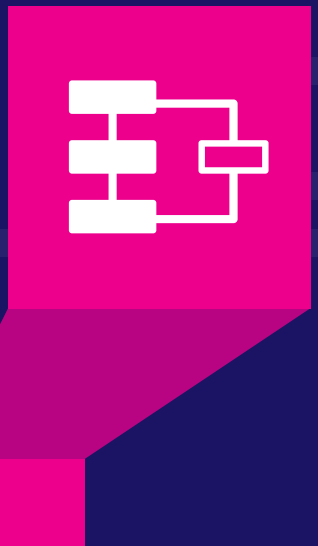
Medical

Diagnostics, treatment, Doctor Bots



Commerce

Forecasting, predictions, trading, analysis



COURSE USE CASES

ENGINEERING

AI is revolutionizing engineering

Predictive Maintenance

Machine learning to predict equipment failures and optimize maintenance schedules in manufacturing plants

Robotics & CV

Machine learning to develop intelligent robots capable of autonomous decision-making and adaptation.

IoT

Analyze data from Internet of Things (IoT) devices to improve system efficiency and reliability.

Structural Health

Monitor the structural integrity of buildings and infrastructure through sensor data analysis.

COURSE USE CASES

MEDICAL

AI is revolutionizing medical.

Disease Prediction

Predictive models to identify early signs of diseases, such as diabetes or cancer, based on patient data

Medical Imaging

Deep learning for image analysis in medical imaging, including tumor detection in MRI or X-ray scans

Drug Discovery

Machine learning to analyze molecular structures and predict potential drug candidates.

Health Monitoring (EHR)

wearable devices that track and analyze vital signs for real-time health monitoring. Analyze EHR data to identify trends, improve patient care, and reduce costs.

COURSE USE CASES

COMMERCE

AI is revolutionizing medical.

Customer Segmentation

Use clustering algorithms to segment customers based on behavior and preferences for targeted marketing.

Price Optimization

Employ predictive analytics to optimize pricing strategies and maximize revenue.

Fraud Detection

Build fraud detection models to identify suspicious transactions and protect against financial fraud.

Market Analysis

Analyze market trends, consumer sentiment, and competitor data to make data-driven business decisions.

02

UNDERSTANDING PYTHON


PYTHON IS A GENERAL PURPOSE PROGRAMMING LANGUAGE
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Intro…

- It was created by Guido van Rossum, and released in 1991.
- Python can be used to handle big data and perform complex mathematics.
- Python can be used for rapid prototyping, or for production-ready software development.
- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- The most recent major version of Python is Python 3
- Python has a simple syntax similar to the English language.

PYTHON FEATURES

	Syntax	Speed	Diversity
C++	Hard	Fastest	3.5/5
Java	Medium	Fast	4/5
Python	Easy	Fast	4.5/5

MORE ON PYTHON

	Python	Java	C++	Ruby
Readability	High	Medium	Low	High
Performance	Medium	High	High	Low
Community	Large	Large	Large	Medium
Ease of learning	High	Medium	Low	High

PYTHON USES (SOME)

It's a full stack data sciene language. Can you DA, AI, ML, DL all.

Data Science

Python can be used to build hardware integrated systems, like in robotics, camera detection, etc.

Integration

Use # 1 | Use # 2 | Use # 3 | Use # 4

Education

Is widely used to teach programming concepts because its very easy

Scipting

Being a GPL, it can do almost anything. Used extensively in automation scripts, like testing, web scrapping

SYLLABUS - MODULE ONE

Basics

Syntax, Installation, variables, input, output, indentation

Operators

Arithmetical, Assignment, Comparison, Logical

Conditions

If, else, elif, short hand conditions, nested if, pass statement

Loops

For, while, break & continue, range

Strings

Looping, slicing, length, check, modifying, concatenation, formatting, etc.

Data Struc.

List, Tuples, Sets, Dictionaries, Arrays

SYLLABUS - MODULE ONE

Functions

Also Lambda functions, scope of functions

OOP

Objects, classes, inheritance, iterators, polymorphusm

Modules

Maths, Random, Date & Time

Packages

PIP

Errors

Try, except, error handling techniques.

Install

Python, IDE, Jupyter, etc.

03

ACCOUNTS SETUP

Join Discord

https://discord.gg/CRuFvEnH

Replit

https://replit.com/

Join Auditorium

https://auditorium.ai/

04

FIRST PYTHO PROGRAM

Lets Practice

```
# This is a comment in Python

# Input: We'll prompt the user for
their name
name = input("Enter your name: ")

# Output: We'll print a greeting
message with the entered name
print("Hello, " + name + "!")
```

SOME CONCEPTS …

Comments

Comments adds readability
in our codes

Input/Output

To take some value (input)
To display some value
(output - print)

Variables

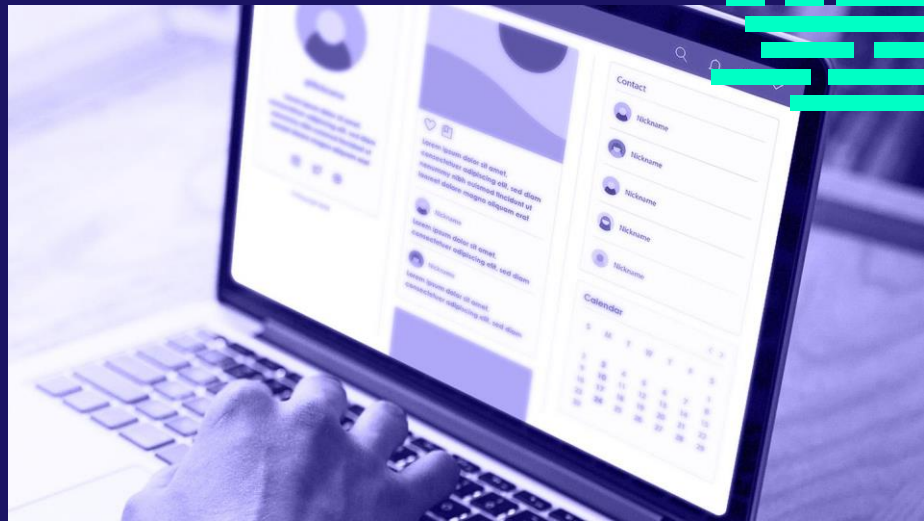
Are used to store data.

Syntax

Indentation, case
sensitivity?

ASSIGNMENT

Do assign of Day 1 on Auditorium.



THANKS !

We are all set for now
We will learn almost 25% python in next class ...
STAY SHARP!

CREDITS: This presentation template was created by Slidesgo, incluiding icons by Flaticon, and infographics & images by Freepik.

I will post some practice problems in the discord server, don't forget to check in!