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DATA SCIENCE COHORT 7

CREATE A POWERPOINT PRESENTATION THAT EXPLAINS THE DIFFERENCES BETWEEN PYTHON AND JAVA, INCLUDING THEIR CHARACTERISTICS, USE CASES, AND ADVANTAGES.



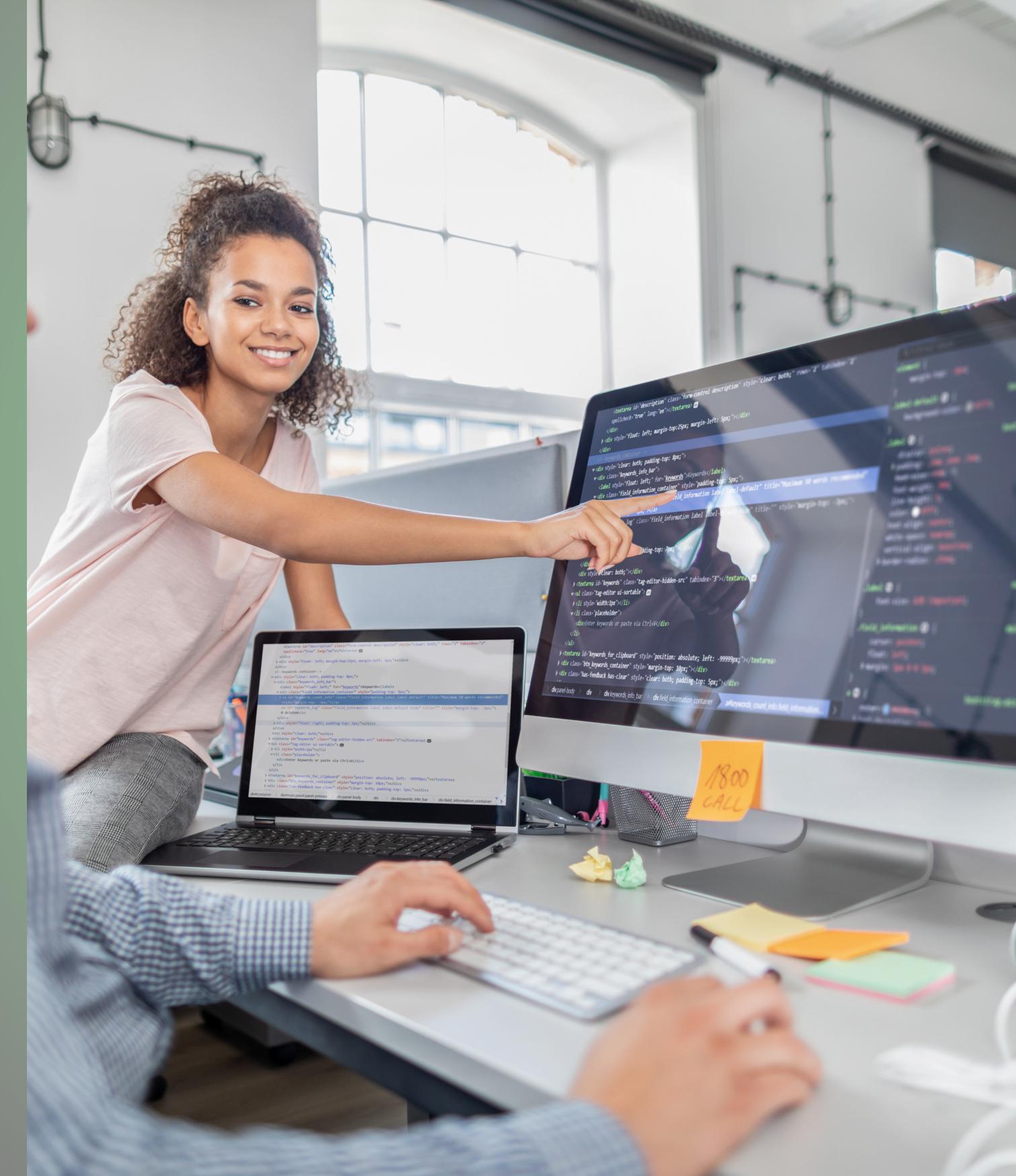
Java & Python: Defination

Java:

Java is an extremely transferable programming language used across platforms and different types of devices, from smartphones to smart TVs.

Python:

Python is a computer programming language often used to build websites and software, automate tasks, and conduct data analysis.





Java vs Python

Java is statically typed, while Python is dynamically typed, leading to different programming styles and applications.

Java vs Python Difference

01 **Syntax and code readability differences**

Java has more verbose syntax.

02 **Performance and execution speed comparison**

Java generally performs better than Python.

03 **Usage in industry applications and fields**

Python is widely used in AI.

Java vs Python



Java

Java is a statically typed language, making it **strictly enforced** for type checking.

Python

Python is a dynamically typed language, allowing for **more flexibility** in coding.

Programming

Syntax Differences

Java uses strict syntax rules.

Usage Scenarios

Java is popular for large applications.

Performance Comparison

Python may run slower than Java.

Community Support

Python has a supportive developer community.

OBJECTIVES

Syntax Differences

Java is popular among programmers interested in web development, big data, cloud development, and Android app development.

Usage Scenarios

Java is often used for enterprise applications, mobile development (Android), and performance-critical systems.

Performance Comparison

Python excels in data science, machine learning, scripting, and rapid prototyping.

Community Support

Python is favored by those working in back-end development, app development, data science, and machine learning.

Key Differences Characteristic Between Java and Python

Python is favored by those working in back-end development, app development, data science, and machine learning.

- Free and Open Source. ...
- Easy to code. ...
- Easy to Read. ...
- Object-Oriented Language. ...
- GUI Programming Support. ...
- High-Level Language. ...
- Large Community Support. ...
- Easy to Debug.

Java's static-typing and object-oriented features make it ideal for large scale applications.

Java's Java avoids the complexities of features like pointers, go-to statements, and multiple inheritance, promoting clean and understandable code.

which means the same variable can have many different kinds of values.

use Cases between Java VS Python

**usage scenarios of Python
Machine Learning and API interactions**

**Python is excellent for scientific
and numeric computing.**

**Is developing websites and software, task
automation, data analysis, and data visualization**

**adopted by many non-programmers such as
accountants and scientists, for a variety of
everyday tasks, like organizing finances.**

**Usage Scenarios of Java
Machine Learning and API interactions**

**Often used for enterprise grade applications
Usage Scenarios.**

**Java is known for its security, scalability, and
efficient memory management, making it a great
choice for handling complex web-based tasks**

**Java is often used for enterprise applications,
mobile development (Android), and
performance-critical systems.**

Advantage

JAVA

Java is the faster language

PYTHON

Python is simpler and easier to learn.

Java is better equipped to handle complex tasks.

Python's simplicity allows developers to focus on solving problems, rather than spending time on syntax

Advantage of JAVA VS PYTHON

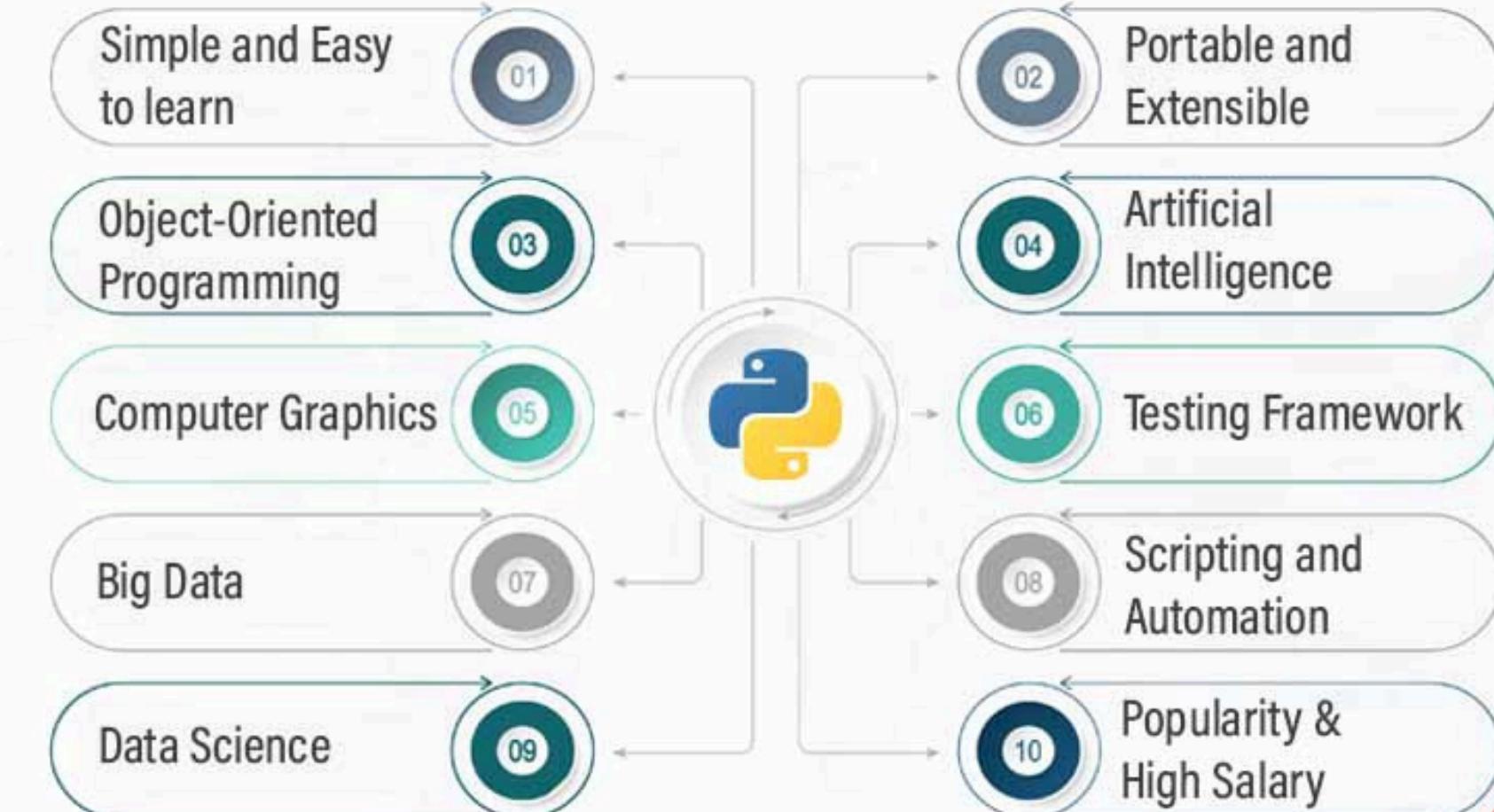
Features of Java

- Object-oriented programming model
- Supports portability
- Uses bytecode
- Code is comprehensive
- Is dynamic and flexible
- Similar in syntax to C++
- Runs in a sandbox to provide security



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Advantages of Python



UNDERSTANDING THE KEY DIFFERENCES BETWEEN JAVA AND PYTHON

Java and Python are both popular programming languages but they **differ significantly** in syntax and usage.

```
import java.nio.FloatBuffer;
import java.util.Arrays;

public class Matrix
{
    public static final int MATRIX_LENGTH = 16;
    public static final Matrix IDENTITY = new Matrix(1.0f, 0.0f, 0.0f, 0.0f,
                                                    0.0f, 1.0f, 0.0f, 0.0f,
                                                    0.0f, 0.0f, 1.0f, 0.0f,
                                                    0.0f, 0.0f, 0.0f, 1.0f);

    private static Matrix rotationBy(float x, float y, float z, Angle angle)
    {
        float len = (float) Math.sqrt(x*x + y*y + z*z);
        if (!MathHelper.isZero(len) && len != 1.0f) {
            x /= len;
            y /= len;
            z /= len;
        }

        float cos = angle.cos();
        float cos_1 = (1 - cos);
        float sin = angle.sin();
        return new Matrix(
            x*x*cos_1+cos, (x*y*cos_1)-z*sin, (x*z*cos_1)+y*sin, 0.0f,
            (y*x*cos_1)+z*sin, y*y*cos_1+cos, (y*z*cos_1)-x*sin, 0.0f,
            (z*x*cos_1)-y*sin, (z*y*cos_1)+x*sin, z*z*cos_1+cos, 0.0f,
            0.0f, 0.0f, 0.0f, 1.0f);
    }
}
```

SYNTAX COMPARISON

Java uses static typing, while Python employs dynamic typing for **easier coding** and flexibility.



PERFORMANCE ANALYSIS

Java typically offers **better performance** due to its compiled nature compared to Python's interpreted execution.



USE CASES

Java is widely used in enterprise environments, while Python excels in **data science** and web development.

Java vs Python CONCLUSION



PYTHON

Slower execution speed
Web development, data analysis, machine learning
Relatively gentle learning curve
Surging popularity in data science

JAVA

Fast execution speed
Enterprise development, Android app development
Steeper learning curve
Long-standing popularity in enterprise domains

THANK YOU

REFERENCE

GOMYCODE

CAVA

GOOGLE
