**🔧 Class - 01 Topics**

| **SL** | **Topics** |
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| 01 | Orientation Class |
| 02 | Install Python in Laptop/Desktop |

**📤 Class Notes**

🤗 Question [Orientation Class]:

1. Why did you choose this course?
2. Tell me about yourself
3. What Are Your Career Goals?
4. Where do you see yourself in 5 years time?

🤗 About Me:

Self:

I am Hasan Mahmud Rhidoy. Working as a "Software Engineer" in "BRAC IT Services" at "Dhaka, Bangladesh".

Furthermore, I am directly working with BRAC Bank Software Development Team as an Augmented Resource from BRAC IT. I'm collaborating with different stakeholders at the Software development lifecycle to perform the job for BRAC Bank Limited. My core responsibility is to work on Integration Management Application, Payment System Application of BRAC Bank Limited.

I have 3 Years of experience in Python, Core Java, JPA, Hibernate, Spring Boot, Design Pattern, Apache Tomcat, JUnit, Message Broker like RabbitMQ, Cache Management like Redis, etc.

This is what I would do.

**Introduction On Programming Lanaguea and Python\_**

**What is a Programming Language?**

As we know, to communicate with a person, we need a specific language, similarly to communicate with computers, programmers also need a language is called Programming language.

A programming language is a computer language that is used by programmers (developers) to communicate with computers. It is a set of instructions written in any specific language ( C, C++, Java, Python) to perform a specific task.

Types of programming language

**Low-level programming language**

Low-level language is machine-dependent (0s and 1s) programming language. The processor runs low- level programs directly without the need of a compiler or interpreter, so the programs written in low-level language can be run very fast.

**Low-level language is further divided into two parts -**

1. Machine Language: Machine language is a type of low-level programming language. The advantage of machine language is that it helps the programmer to execute the programs faster than the high-level programming language.
2. Assembly Language: Assembly language (ASM) is also a type of low-level programming language that is designed for specific processors. It represents the set of instructions in a symbolic and human-understandable form. It uses an assembler to convert the assembly language to machine language. The advantage of assembly language is that it requires less memory and less execution time to execute a program.

**High-level programming language**

High-level programming language (HLL) is designed for developing user-friendly software programs and websites. This programming language requires a compiler or interpreter to translate the program into machine language (execute the program). The main advantage of a high-level language is that it is easy to read, write, and maintain. High-level programming language includes Python, Java, JavaScript, PHP, C#, C++, Objective C, Cobol, Perl, Pascal, LISP, FORTRAN, and Swift programming language.

**A high-level language is further divided into three parts -**

1. Procedural Oriented programming language [C, Fortran, VB, and Pascal.]
2. Object-Oriented Programming language [Python, Javas, etc.]
3. Natural language

**Difference between object-oriented programming and procedural programming?**

Think of all programming as managing the relationship between two fundamental concepts: state and behavior. State is the data of your program. Behavior is the logic.

Procedural Programming is based on implementing these two concepts separately. State is held in data structures. Behavior is held in functions (also known as procedures or subroutines). A procedural application therefore passes data structures into functions to produce some output.

Object-Oriented Programming is based on implementing these two concepts together. State and Behavior are combined into one new concept: an Object. An OO application can therefore produce some output by calling an Object, without needing to pass data structures.

Advantages of OO include the potential for information hiding: if a caller needn't pass any data structure, then the caller needn't be aware of any data structure, and can therefore be completely decoupled from the data format.

One fundamental difference between the logic of procedures and the logic of objects is in the way selection is handled. Procedures handle selection using branching logic: the familiar if/else syntax. Objects prefer to handle selection using polymorphism.

There are similarities between Procedural and OO as well. Both represent an imperative style of programming, meaning they operate by mutating their state (whether inside a data structure or an object) and providing step-by-step instructions on how to compute output. Imperative programming is like writing a recipe.

Finally note that these are idealistic or "pure" definitions. In the real world, paradigms merge. You will rarely, if ever, see a pure OO application. Features from multiple paradigms will be combined, for better or worse.

**Most commonly used Programming Language [Python]**

1. Python is one of the most widely used user-friendly programming languages.
2. It is an open-source and easy to learn programming language developed in the 1990s.
3. It is mostly used in Machine learning, Artificial intelligence, Big Data, GUI based desktop applications, and Robotics.

**Advantages**

1. Python is easy to read, easy to understand, and easy to write.
2. Python executes code line-by-line, so it is easy for the programmer to find the error that occurred in the code.
3. Python is platform-independent means you can write code once and run it anywhere.

**Disadvantages**

1. Python works with the interpreter. That's why it is slower than other programming languages like C and C++.

**Python 2 vs. Python 3**

1. Python 2 uses print as a statement and used as print "something" to print some string on the console. On the other hand, Python 3 uses print as a function and used as print("something") to print something on the console.
2. Python 2 uses the function raw\_input() to accept the user's input. Python 3 uses input() function which automatically interpreted the type of input entered by the user.

**Java vs Python Program**

⚙ Java Program

public class HelloWorld {

public static void main(String[] args){

System.out.println("Hello World");

}

}

# Hello World

⚙ Python Program

print("Hello World")

**Why learn Python?**

1. Easy to use and Learn
2. Object-Oriented Language
3. Open Source Language
4. Learn Standard Library
5. Wide Range of Libraries and Frameworks

\*\*Where is Python used?\*\*

1. Data Science
2. Date Mining
3. Desktop Applications
4. Mobile Applications
5. Software Development
6. Artificial Intelligence
7. Web Applications
8. Machine Learning
9. Computer Vision or Image Processing Applications.
10. Speech Recognitions

**Python Popular Frameworks and Libraries** `

1. Web development (Server-side) - Django Flask, Pyramid, CherryPy
2. GUIs based applications - Tk, PyGTK, PyQt, PyJs, etc.
3. Machine Learning - TensorFlow, PyTorch, Scikit-learn, Matplotlib, Scipy, etc.
4. Mathematics - Numpy, Pandas, etc.