02A Lesson Proper for Week 4

What is Java Programming Language as Application development Program?

I. INTRODUCTION:

We begin this module by developing a motivation for learning about what Java programming language is and how to build this program. According to Oracle.com. Java is the #1 programming language and development platform. It reduces costs, shortens development timeframes, drives innovation and improves application service. With millions of developers running more than 51 billion Java Virtual Machines worldwide, Java continues to be the development platform of choice for enterprises and developers.

II. OBJECTIVES:

At the end of this module, you should be able to:

1. Identify the benefits of learning Java Programming language.

2. Understand the difference between Procedural and Object-Oriented programming language.

3. Know the beauty of Java as Object-Oriented Programming language.

IV. LESSON PROPER

The two popular methods of Developing programs and their difference.

1. Procedural programming - a program is divided into portions called functions. Procedural programming commands the computer step by step via a list of instructions. It relies on subroutines or routines. A routine can have a series of computational steps. Procedural programming is sometimes referred to as imperative

programming. In procedural programming, the focus is placed on the functions and sequence of actions to be performed and not on data. C and Cobol are good examples of procedural programing.

2. Object-Oriented Programming - the program is divided into portions called objects. It follows the "bottom-up" approach. Object-oriented programming, as its name implies, relies on objects. Objects are components of a program that know how to execute certain tasks and interact with the other elements of the program. Because objects are more versatile, object-oriented programming can be used to develop complex programs with less code. The use of objects also facilitates code reuse. In object-oriented programming, however, the focus is placed on the data and not the procedures or functions. Java, Python and Perl are object-oriented programming.

The main purpose or aim of the two programming methods is to make programming more efficient. They make the process of writing complicated programs simpler, modifiable, expandable, easily understandable and bug-free.

The Beauty of Java Programming Language

In a recent study, researchers found that Java is still the most popular programming language on the planet. This study also found that job openings for programmers who have experience with Java far outweighed openings for jobs related to Python or even PHP programmers. Since its inception, this open source programming language has provided professionals in the industry with the tools they need to bring their apps and software to life. If you are new to the world of programming, you need to get familiar with Java and all it is capable of. The following the benefits that come of learning Java programming language.

1. Take Advantage of the Java Resources on the Market

Since Java has been around for decades, there are naturally more resources available to people who want to learn this programming language. Numerous websites have been built to offer new programmers the chance to interface with and perfect the usage of the Java programming language. Also, only Java technology is both a programming language and a platform. The Java programming language is a high-level object-oriented language that has a particular syntax and style. A Java platform is a particular environment in which Java programming language applications run.

There are four platforms of the Java programming language:

- Java Platform. Standard Edition (Java SE) contains the JVM and the Core Java APIs. This is a required download, as all other editions of Java will not work unless you have this installed.
- Java Platform. Enterprise Edition (Java EE) adds various APIs that can be used for server-side and enterprise application development. It contains web-based technologies such as Java Server Faces (JSF), Java Server Pages (JSP), Servlets, and Enterprise Java Beans (EJB)
- Java Platform. Micro Edition (Java ME) contains APIs used for mobile device development. It may also contain alternative versions of the Java SE that are suited for mobile devices, and mobile specific APIs. The Android, however, is not using Java ME; it uses the standard Java SE with Android SDK extensions.
- JavaFX. s a platform for creating rich internet applications using a lightweight user-interface API. JavaFX applications use hardware-accelerated graphics and media engines to take advantage of higher-performance clients and a modern look-and-feel as well as high-level APIs for connecting to networked data sources. JavaFX applications may be clients of Java EE platform services.

2. The Benefits of an Object-Oriented Programming Language

For years, experts have argued that the object-oriented nature of the Java programming language makes it far more flexible and extensible. The object-oriented design principle is at the core of Java. This principle is basically constructed to allow programmers to interact with various objects when attempting to solve an app development or software building problem. If you want to use the object-oriented design principles, the main thing you need to do is plan out your code in detail before writing and implementing it.

3. The Power of Open Source Software

You will be hard pressed to find a programmer that does not absolutely love open source software that is both comprehensive and free. One of the most popular open source programs out there for Java implementation is OpenJDK. Since Java is considered an open source programming language, it is able to cross various OS environments with ease. There are so many different resources available on the Java open source market it makes it easy for programmers to bring a sense of originality to their applications.

4. Java is Easy to Learn

For most new programmers, the decision to learn Java is influenced by how easy to use it is. When first attempting to write and debug code, other programming languages like C+ can pose a lot of problems for beginners. With the use of Java, a person will be able to compile and debug their code easily.

5. Take Advantage of Java Community Support

There are a variety of active forums that allow users to interact and help each other when it comes to using and debugging Java code. These forums are for Java programmers of all skill levels and can be extremely helpful. Forums such as Stack Overflow provide Java programmers with tons of free resources.

6. Java is Extremely Secure

For starters, this programming language does not use pointers, like C or C++ do. This means you will not have to worry about hackers gaining access to large memory blocks of your creation. Java uses an internal mechanism to help with memory management, which only provides data to a program if it has the proper authorization. The Java program also uses Bytecode every time it has to create a class file. Each time this happens, the Java Virtual Machine (JVM) will run a test. This test is to verify that the class file created does not have a virus or other malicious files contained within it.

Java - An Object-Oriented Programming Language

Java is an Object-Oriented Programming which was designed by James Gosling. It is a general-purpose programming language that is class-based and having concurrent programming features. It has multi-threading features too. It is static, safe and strongly typed programming language. It was developed and is maintained by Oracle Corporation (then Sun Corporation). Its' file extension names are .java or .class. It first appeared in the year 1995. It is intended to develop applications which can be Written Once and Run Anywhere. It is most popular for the client-server kind of applications. It is licensed under GNU General Public License and Java Community Process. The latest version of Java is 10 which is released in March 2018.

The concepts of Object-Oriented Programming Methodology or Paradigm:

1. Class: This is a blueprint of the object which defines the fields or attributes and methods where the real functionality lies within. These attributes and methods are called members and these members can be accessed based on the defined access modifiers during the declaration of members.

2. Object: An object is called as an instance of the Class which can be declared and instantiated by calling the Constructor of the Class. An object will have the state and the state will contain data which will be held by the attributes of the class.

3. Inheritance: This is the third step process in which the data will be inspected, cleaned, transformed and visualized by reducing useless information and transforming into important sets of information in order to obtain some valuable information out of the existing data.

4. Polymorphism: Polymorphism is defined as the process of performing a single task in different possible ways. In Java, Polymorphism can be achieved in two ways called method overloading and method overriding. Method overloading is also called Compile Time Polymorphism whereas Method Overriding is also called Run Time Polymorphism.

5. Encapsulation: This is the process of encapsulating which means hiding or binding or wrapping the code into a single unit or module which is defined as Class in Java. The encapsulation feature of object oriented programming can be achieved by using a class in Java. A plain old java object or a Java Bean is said to be encapsulated as the members of the class are private (access modifier) those which can be accessed only by using getters and setters methods in the class.

6. Abstraction: The object-oriented feature abstraction can be defined as the process of hiding the implementation of the functionalities by exposing only the required interfaces or accessing methods in order to invoke the methods of the Implementation class. The abstraction can be achieved in Java programming language by using Interface and Abstract Class.

The advantages of using Object Oriented Programming in Java

1. It helps in developing the different types of application and their maintenance easily without extra costs.

2. It helps in implementing the changes easily by making small changes to the design and thereby making the application more adaptable to the larger changes required by the customer.

3. The modularity in the code helps in easy troubleshooting process and maintenance by fixing the bugs easily. 4. Code reuse is the main

5. It provides greater flexibility towards frequent functionality changes.

Conclusion: There are different and multiples areas of applications in the field of Web world, Standalone and many other areas for the Object-Oriented Programming in Java concept. The average utilization or application of object-oriented programming in Java has been in the top 5 positions for most of the enterprise applications and has been in almost every enterprise as of now is the most sought-after technology. There are huge numbers of tools available such as IDEs to develop applications using object-oriented programming in Java and a lot of companies that ar using Java-based applications for their requirements because of the ease of development and maintenance. T

standalone apps developed in Java are mostly being used by many companies for their in-house tools and are developed based on Java Swing GUI toolkit and now called as Java FX in its recent version. The recent version of Java 8 provides great functional programming features and parallel processing capabilities with its Stream API.

EXERCISE 1

A student unintentionally enters a wrong user-id causing temporary halt entering in the student information system. Is procedural approach in programming enough to solve this problem?

EXERCISE 2

Your school would like to create simple registration system to help students enrolled in the college. What are the simple instructions in C language that could be included in the simple registration system?

◀ Preliminary Activity for Week 4

Jump to...

Analysis, Application, and Exploration for Week 4 ▶

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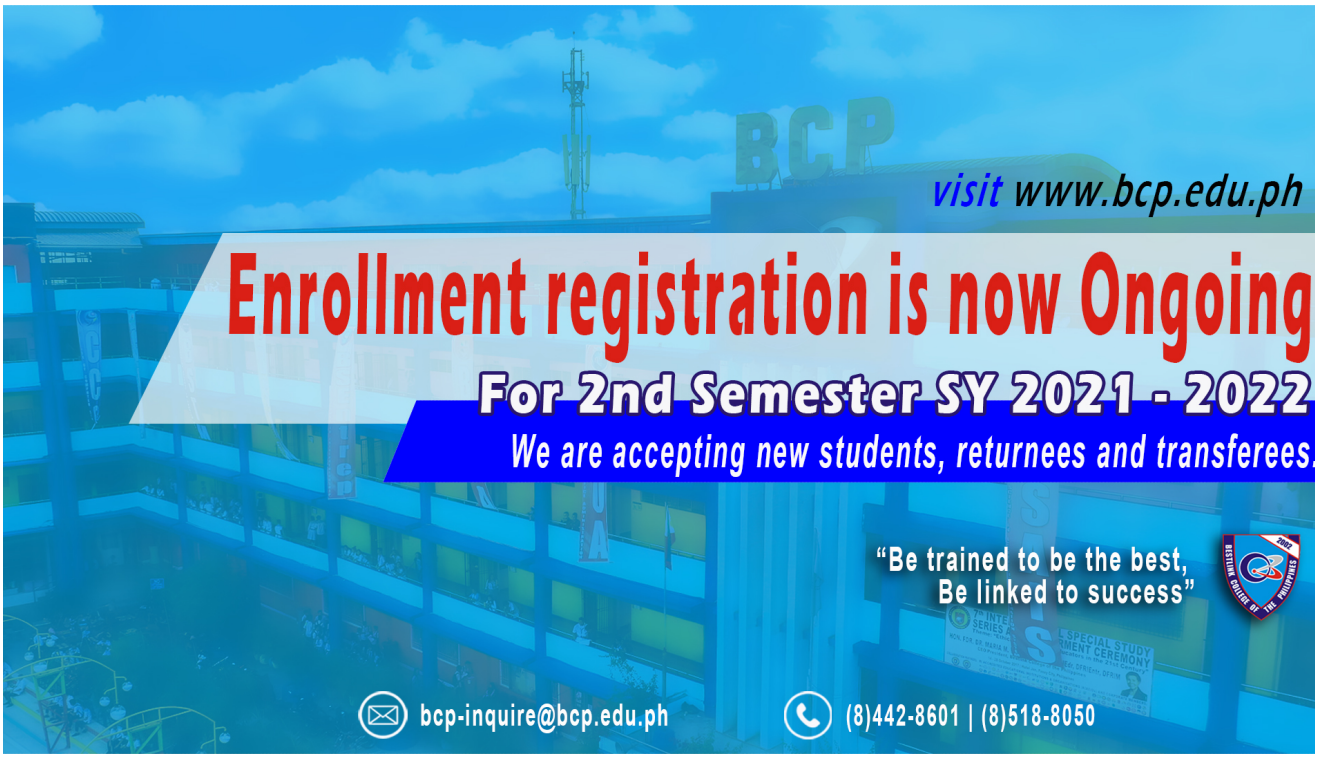
Fair Warning

account owner identification, and filing of cases for prosecution.

2nd Semester Enrollment



Activities

- Assignments
- Forums
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