



Republic of the Philippines
Department of Education
Region IV (A) – CALABARZON
City Schools Division Office of Antipolo
District I – A



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STUDENT'S ACTIVITY SHEET FOR COMPUTER PROGRAMMING (JAVA NCIII)

STUDENT'S ACTIVITY SHEET NUMBER 2

TITLE/LESSON: Overview of Computers and Programming Languages

- I. **OBJECTIVES:** At the end of the lesson you are expected to
- distinguish between types of programs needed to execute a high-level language program; and
 - identify the process needed to convert a high-level language program to an executable program.

A. Content Standard

The learners demonstrate an understanding of the principles and concepts in demonstrating knowledge of Java technology and Java programming language, and performing object-oriented analysis and design.

B. Performance Standard

The learners independently and effectively use object-oriented technologies and the use of software modeling, as applied to a software development process, and present one practical & complete object-oriented analysis and design (OOAD) roadmap based on TESDA Training Regulations.

C. Most Essential Learning Competency/ies

PERFORMING OBJECT-ORIENTED ANALYSIS AND DESIGN (POAD)
Apply basics of java language (**TLE ICTJAVA1 1-12POAD-IIIfi-29**)

II. LEARNING RESOURCES

A. Materials/IMs Needed:

Module 1 Apply Basics of Java Language

B. References

- Java Programming From Problem Analysis to Program Design by: D.S. Malik
- Java Programming From Problem Analysis to Program Design Lab Manual by: Blayne Mayfield

C. Additional Materials and Learning Resources

III. TIME FRAME: 100 minutes or 1 day (30 minutes allotted for lecture)

IV. INTRODUCTION/RATIONALE

What is the language of a computer?

The only language that the computer understand is **machine language**, that is series of 0s and 1s. Early computers are programmed in machine language. To represent each instruction the programmer had to recall machine language codes for several operation.

Then, **Assembly language** were created to make programmer's job easier. Assembly language uses an easy-to-remember codes called mnemonics. A program called assembler translate the assembly language instruction into machine language, so that the computer may be able to understand.

The next step to make the programmer's job more easier is the development of **high-level programming language**, that uses English-like grammars like Java programming language. High-level programming codes needs to be translated into an intermediate language called *bytecode* and then interpreted into a machine language.

What I Need To Know

This activity sheet was created to help you gain knowledge about the language of the computer. This will help you appreciate how computer programs are created and processed in the computer system.

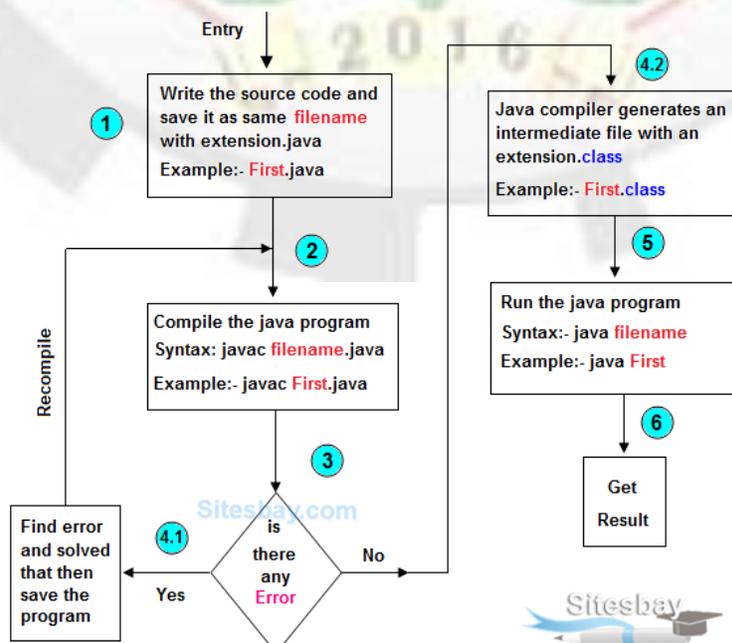
After going through this activity sheet, you are expected to:

- distinguish between types of programs needed to execute a high-level language program; and
- identify the process needed to convert a high-level language program to an executable program.

What I Know

Activity 2.1 Follow the arrow.

Directions: Below is an illustration of how Java program is executed. Based on the illustration create a narrative description of the flow for a Java program.



Java Program Execution Flowchart

What's In

Activity 2.2 Identifying software function.

Directions: Below is the list of program that are used in Java program execution. Identify their functions by matching the programs on Column A, with their function on Column B. Write letters only on your lecture notebook.

Column A	Column B
1. Compiler	A. A program that is used to create the source code/program.
2. Linker	B. A program that is used to checked the source codes with syntax errors, and translates the source code into a bytecode.
3. Text Editor	C. A software development kit (SDK) that is used to connect the bytecode with the library used by the program.

What's New

Activity 2.3. Is It a Fact or a Bluff?

Directions: Mark the following statements as either a Fact or a Bluff.

1. The loader transfers the bytecode of a program into the main memory.
2. A program called a linker translates each bytecode instruction into the machine language of your computer and then executes it.
3. A program written in a high-level programming language is called a source program.
4. Assemblers are programs that translate a program written in assembly language into machine language.
5. Machine language is the only language that the computer understands.

What Is It

Computer programs or simply programs are written instructions on how a computer will function. Programming language is use to create programs. Java is one of many programming languages that is use to develop programs. How do you think java programs are running in the computer? How does java programs execute?

Java is one of the many programming languages that is a high level language, which makes it closer to a natural language than machine language and assembly language. To run on a computer, Java instructions first need to be translated into an intermediate language called *bytecode* and then interpreted into a particular machine language. A program called a *compiler* translates instructions written in Java into byte code, Java programs and their bytecode translations are machine independent, meaning that they can run on many different types of computer platforms.

There are two types of Java programs – application and applets. **Application** are also known as desktop application or window-based applications. This traditional software installed on every machine. Examples are Media players, antivirus, etc. **Applets or web application** that runs on a server side and creates a dynamic pages.

There are four steps necessary to execute a program written in Java.

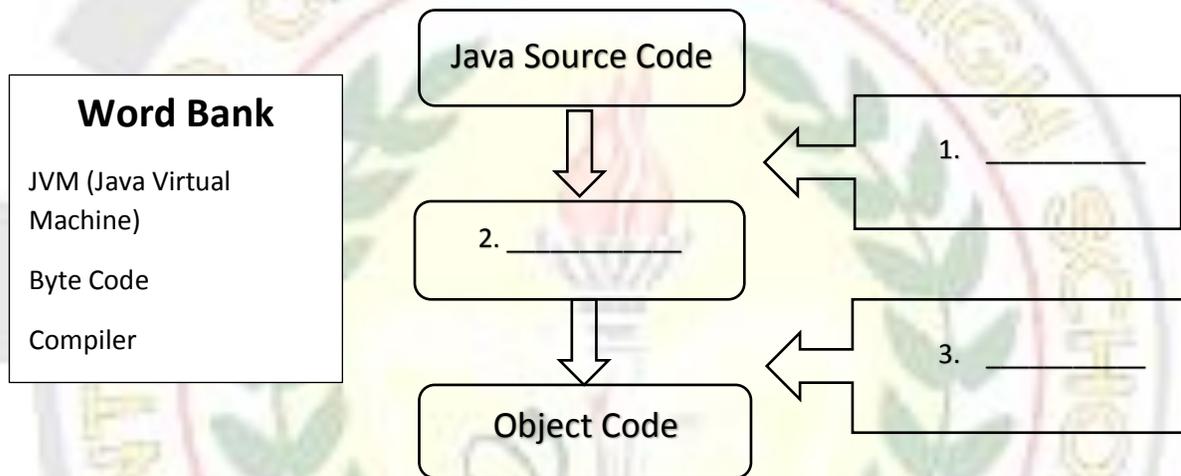
1. You use a text editor to create a program that is called the source program. The program must be saved in a text file named className.java, where className is the name of the Java class contained in the file.
2. The program is checked for syntax error by another program called a compiler. When the program is syntactically correct, the compiler translate the program into a bytecode, and saves it in a file with the .class extensions.

- To run a Java application, the .class file must be loaded using a web browser or applet viewer. Java programs generally are written with the aid of a software development kit (SDK), which is suite of programs and libraries that support program development execution. The Java library included in the SDK is a set of packages, where each package contains a collection of prewritten, related classes that have been tested thoroughly. An SDK program called a *linker* connects the bytecode of your program with that of the library classes used by your program.
- To execute the Java program, the linked code needs to be loaded in the main memory. A program called a loader accomplishes this. Finally, a program called an *interpreter* translate each bytecode instruction in the machine language of your computer, and then executes it.

What's More

Activity 2.4 Complete Me!

Directions: Below is a diagram of Java Compilation process. Complete the process by determining what is missing in the process. Select your answer in the Word Bank.



What Have I Learned

Activity 2.5. Test My Knowledge

Directions: Read the questions below. Answer the questions with a minimum of three sentences.

- Why do you need to translate a program written in a high level language into machine language?
- Why would you prefer to write a program in a high-level language rather than a machine language?

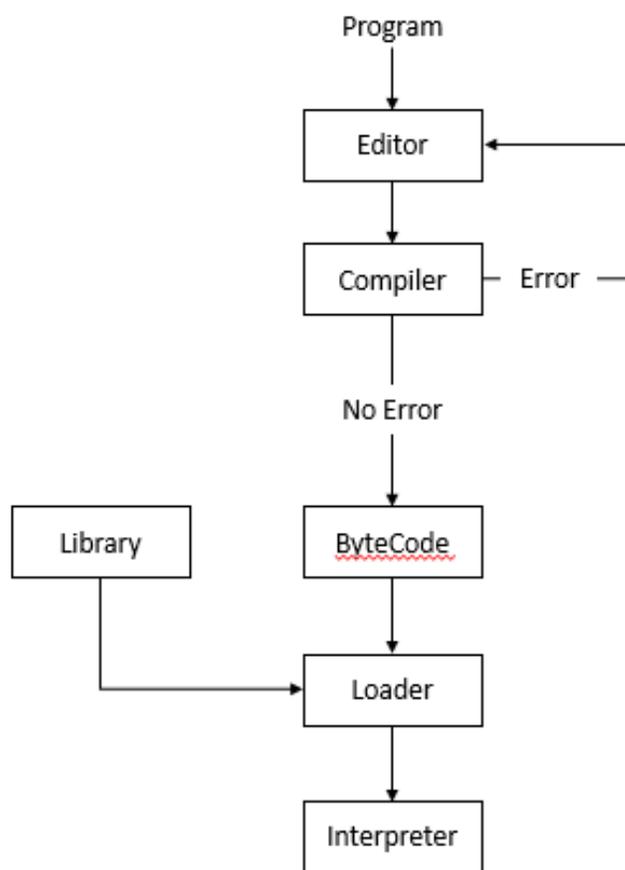
Category	5	4	3	2
Organization	Information is very organized with well-constructed sentences.	Information is organized with well-constructed sentences.	Information is organized but sentences are not well-constructed sentences.	The information appears to be disorganized
Amount of Information	The question is well addressed and answered with at least	The question is addressed and answered with at least two	The question is addressed and answered with one sentence.	The questions was not addressed.

	two sentences.	sentences.		
Quality of Information	The information clearly relates to the question, and supporting details was presented.	The information relates to the question, and 1 supporting detail was presented.	The information relates to the question, but no supporting details	The information was nothing to do with the topic.

What I Can Do

Activity 2.6. Interpret me!

Directions: Given the illustration below, create a narrative description about processing a Java program. Describe each process and determine the functions of each program.



V. GUIDE QUESTIONS

1. What technique/s did you use to do the task correctly?

2. How do the technique/s help you in accomplishing your task?

3. Were you able to distinguish between types of programs needed to execute a high-level language program?

4. Were you able to identify the process needed to convert a high-level language program to an executable program?

Assessment

Quiz #1

Directions: Match the following terms on Column A with the appropriate definitions on Column B. Write your answer on your lecture notes.

- | Column A | Column B |
|---|--|
| 1. Alternative names for compiling/linking sequence | a. The language in which the Java code is compiled. |
| 2. Application and applets | b. The program created using an editor that follows the rules or syntax of a high-level language |
| 3. Compiler | c. Two types of java program |
| 4. Bytecode | d. The program that checks for correctness of the syntax and translates a program into a bytecode |
| 5. Library | e. A set of program to help write a high-level program that produces a final executable program. |
| 6. Linker | f. A collection of prewritten code used as resource with the source code that has been successfully compiled |
| 7. Loader | g. A program that combines the bytecode with other programs provided by the SDK and used in program to create the executable code. |
| 8. Integrated development environment | h. A program that helps developers write and debug programs |
| 9. Software development kit (SDK) | i. A suite of tools that helps developers write and debug programs |
| 10. Source program | j. Build, rebuild, and make. |

Additional Activities

Activity 2.7 Give Me More!

Directions: Give at least five examples of high-level programming languages.

1. _____
2. _____
3. _____
4. _____
5. _____

VI. REFLECTION:

Based on the activities conducted, prepare a 3-2-1 Exit Card, write this on your lecture notes.

3 – write three (3) things/concepts that I have learned today;

2 – Write two (2) things that I want to learn more

1 – write one (1) question that I have formed in my mind about the topic

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