HI Friends,

In this video we will see how java program is executed.

Before going to how java program is executed. We should know about the programming language levels.there are three levels of programming language.

High level

Low level or machine level

Assembly level

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The most of the computer program written by a human is called as high level programming language. high level programing language is the language that programmers can easily understand. It contains normal English words which human can understand easily.

For example Java , Python are called as high level programming language.

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On the other hand the computer can not understand these high level language, and computers can only understand 1s and 0s. As high level language is written in basic English, Computers can not understand.

The language which computer understands is low level language which contains 0 and 1s.

Now you are clear what is high level and low level.

There is one more level called as Assembly level. This assemble language is like more than low level and less than high level.

Assemble language can use symbols , numbers etc.

Now what ever we write in java is High level language. And computer cannot understand this high level language so we need to convert that to computer understandable low level or machine language.

For converting this high level to low level we use compilers and interpreters.

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Compiler and interpreter are software programs that convert a high-level language into a machine language (0's and 1's binary form) that a computer can understand and perform tasks as per the program's instructions.

Here we are saying both compiler and interpreter can convert high level to low level , so what is the difference.

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Compiler:

A [compiler](https://www.javatpoint.com/compiler-tutorial) is a software program that follows the syntax rule of programming language to convert a source code to machine code.

A compiler **converts complete source code** into machine code at once.

For example in C program, C languale is a high level language and it is converted to machine level language by using compiler.

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Interpreter:

An [interpreter](https://www.javatpoint.com/interpreter-pattern) is also a software program that translates a source code into a machine language. However, an interpreter converts high-level programming language into machine language **line-by-line** while interpreting and running the program.

We have Javascript programming language and by using interpreter this javascript is converted to low level language. Java script is executed line by line.

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other that low level Compiler can also convert highlevel code to intermediate level.

# Java

Now we will see how this compiler and interpreter is used in java for executing the java code.

As we discussed that High level code will be converted into low level code. Java is not an one step conversion it means it will not directly convert from high level to low level.

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Java has a two step execution process.

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In Java first the source code is converted to byte code and we also call it as class files. And in second step these byte code is converted into machine code.

Byte code is like intermediate code. It is same like assembly language but not assembly language.

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Now we will see how this compiler and interpreter is used in java.

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Compiler:

In java the source code is passed through compiler and compiler will covert this source code to byte code. The whole code present in java file is converted to .class file.

Ex Room. Java is converted into Room.class file

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Interpreter:

Interpreter will convert the byte code into machine code. So .class file is the input for interpreter.

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Step by step execution of java program.

explanation

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platform-independent:

Platform independent means running the code on any platform or operating systems. It means when we write code in one operating system the same code should be executed on different platforms or operationg systems with out any issues.

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Java is platform independent and why is it platorm independent?

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What happens is Java is, First compiler will compile the code and next interpreter will execute the code. These are two level process.

In java First compiler will generate the class files and these class can be transferred to any other platforms and can be executed in other platforms.

It means we can compile java code on Windows system and generate .class files in it and can carry those files to Linux Os and can execute those class files.

And the only condition to execute these .class files is the OS which we are trying to execute the class files should have the Java installed.

This is for todays video. Will meet in next video.