

The background is a vibrant blue gradient. On the left, a hand reaches towards a cluster of glowing blue gears. The gears are of various sizes and are interconnected by a network of white lines and dots, resembling a molecular or digital structure. The overall theme is technology and innovation.

Introduction To Java

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Content

- General Overview Of Java.
- How Java Works ? and Java terminology?
- Installing IDE(Default IDE Netbeans)
 - Run Java program through CLI
 - Run Java program through GUI
- Question and Answer.

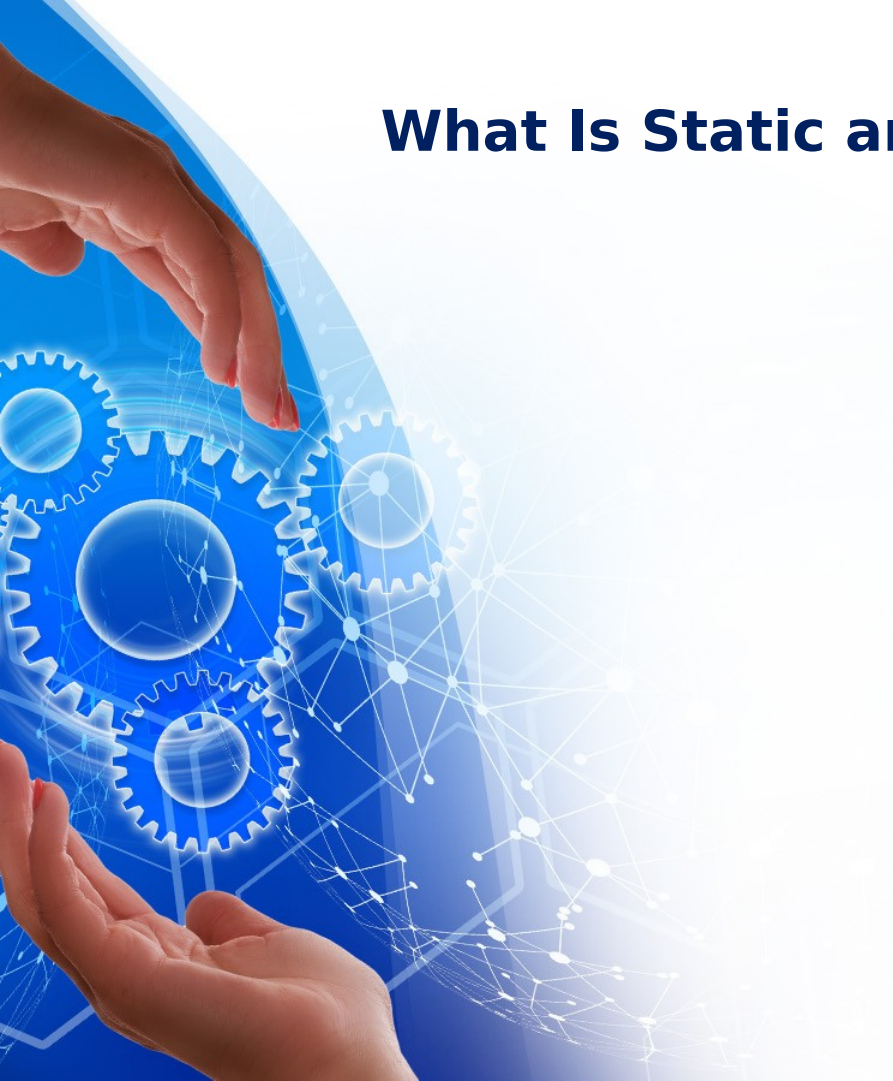
A hand is shown interacting with a blue sphere. Inside the sphere, there are several interlocking gears of different sizes. A network of white lines and dots is also visible, suggesting a digital or technological theme. The background is a gradient of blue and white.

Overview Of Java

◆ Java Is

- ◆ **Object Oriented** – In Java, everything is an Object. Java can be easily extended since it is based on the Object model.
- ◆ **Platform Independent** – Unlike many other programming languages including C and C++, when Java is compiled, it is not compiled into platform specific machine, rather into platform independent byte code. This byte code is distributed over the web and interpreted by the Virtual Machine (JVM) on whichever platform it is being run on.
- ◆ **Simple** – Java is designed to be easy to learn. If you understand the basic concept of OOP Java, it would be easy to master.
- ◆ **Secure** – With Java's secure feature it enables to develop virus-free, tamper-free systems. Authentication techniques are based on public-key encryption.
- ◆ **Portable** – Being architecture-neutral and having no implementation dependent aspects of the specification makes Java portable. Compiler in Java is written in ANSI C with a clean portability boundary, which is a POSIX subset.

What Is Static and Dynamic Typing language



A hand is shown interacting with a blue sphere. Inside the sphere, there are several interlocking gears and a network diagram with nodes and connecting lines. The background is white.

Java Basic Structure

```
public class JavaTest {  
  
    /**  
     * @param args the command line arguments  
     */  
    public static void main(String[] args) {  
        // TODO code application logic here  
        System.out.println("Hello World");  
    }  
}
```



Java terminology

◆ **Java Virtual Machine (JVM)**

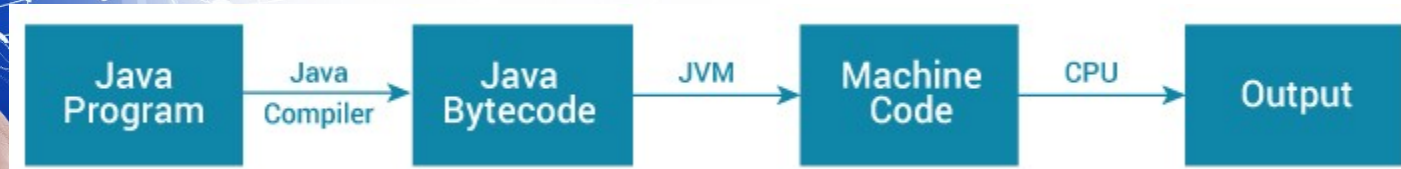
- ◆ This is generally referred as JVM. Before, we discuss about JVM let's see the phases of program execution. Phases are as follows: we write the program, then we compile the program and at last we run the program.
- ◆ 1) Writing of the program is of course done by java programmer like you and me.
- ◆ 2) Compilation of program is done by javac compiler, javac is the primary java compiler included in java development kit (JDK). It takes java program as input and generates java bytecode as output.
- ◆ 3) In third phase, JVM executes the bytecode generated by compiler. This is called program run phase.



Continue . . .

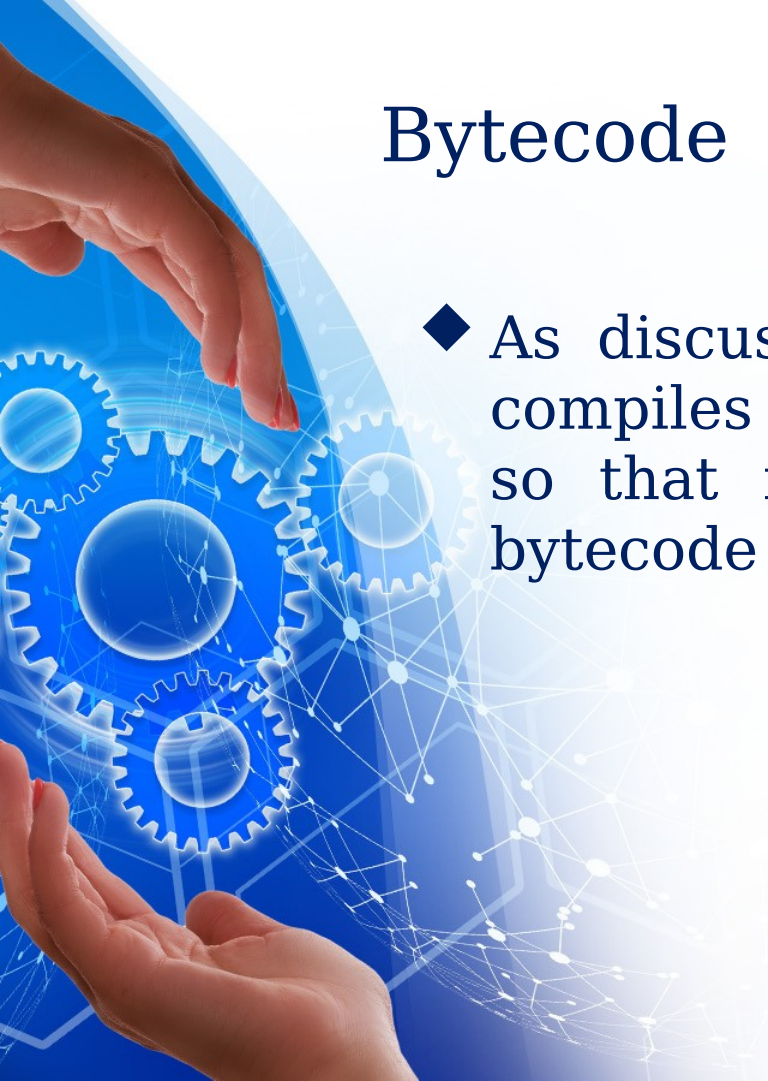
◆ Java Virtual Machine (JVM)

- ◆ So, now that we understood that the **primary function of JVM is to execute the bytecode produced by compiler.** Each operating system has different JVM, however the output they produce after execution of bytecode is same across all operating systems. **That is why we call java as platform independent language.**



Bytecode

- ◆ As discussed above, javac compiler of JDK compiles the java source code into bytecode so that it can be executed by JVM. The bytecode is saved in a .class file by compiler.



Java Development Kit(JDK)

- ◆ While explaining JVM and bytecode, I have used the term JDK. Let's discuss about it. As the name suggests this is complete java development kit that **includes JRE (Java Runtime Environment), compilers and various tools like JavaDoc, Java debugger etc.**
- ◆ **In order to create, compile and run Java program you would need JDK installed on your computer.**

JDK

JRE

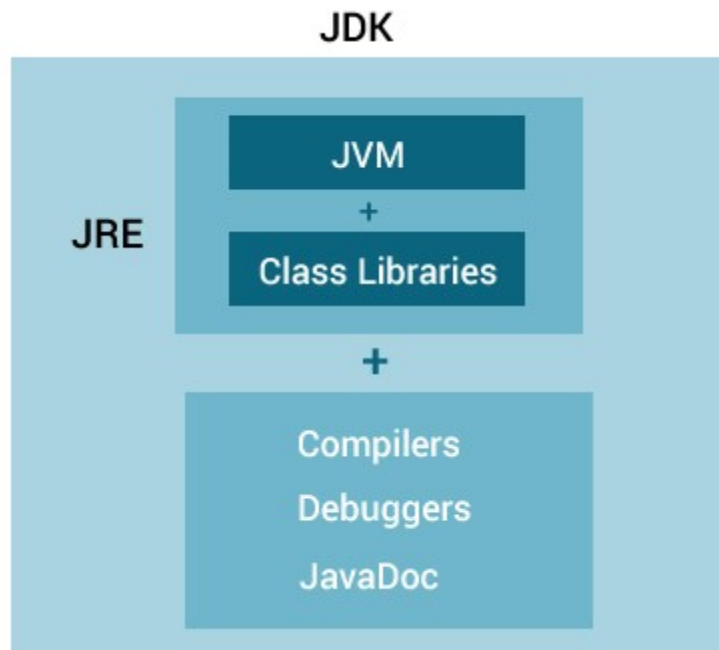
+ Compilers + Debuggers ...

Java Run time Environment (JRe)

- ◆ JRE is a part of JDK which means that JDK includes JRE. **When you have JRE installed on your system, you can run a java program however you won't be able to compile it.** JRE includes JVM, browser plugins and applets support. When you only need to run a java program on your computer, you would only need JRE.



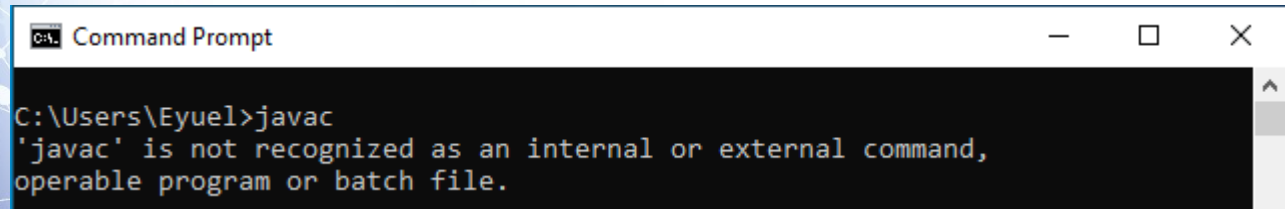
General Overview



Java Environment Variable Setup(Only For Windows User)

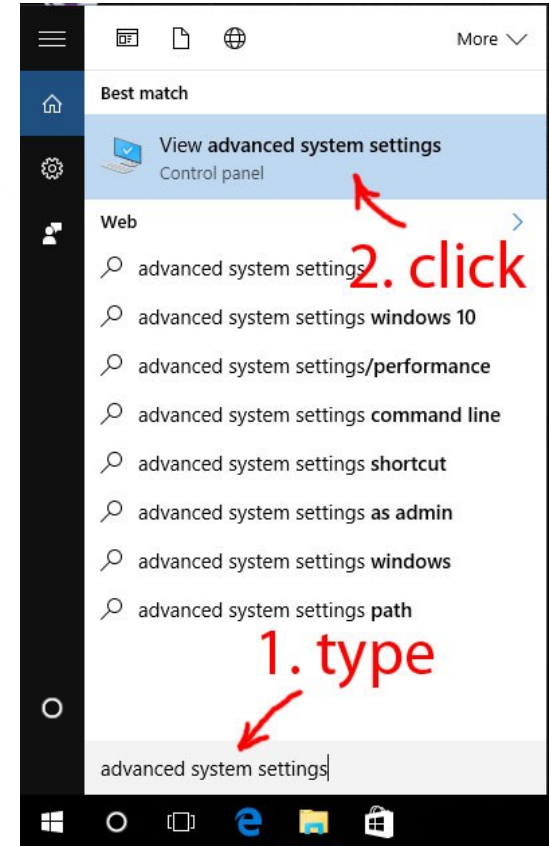
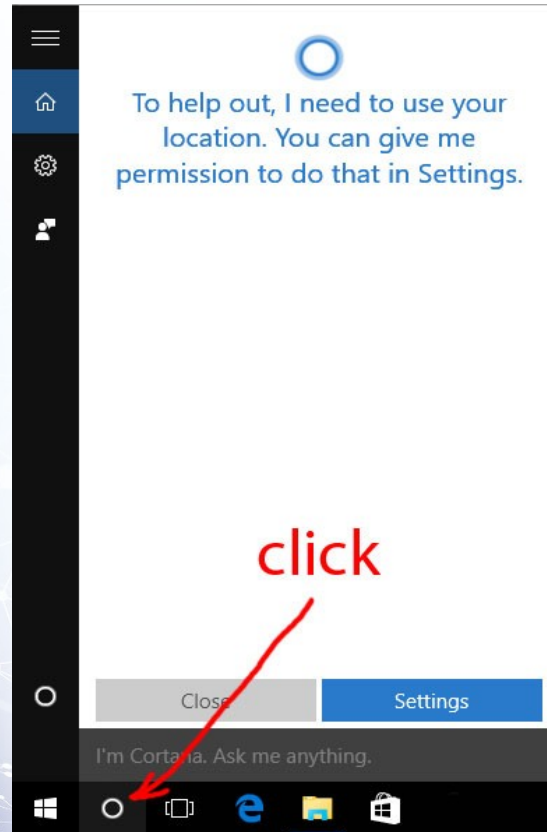
In order to run Java program from CLI or Command Line Interface, if the Environment Variable is not setup it will issue warning the command is not recognized.

- “Java -Version”
- “Javac”

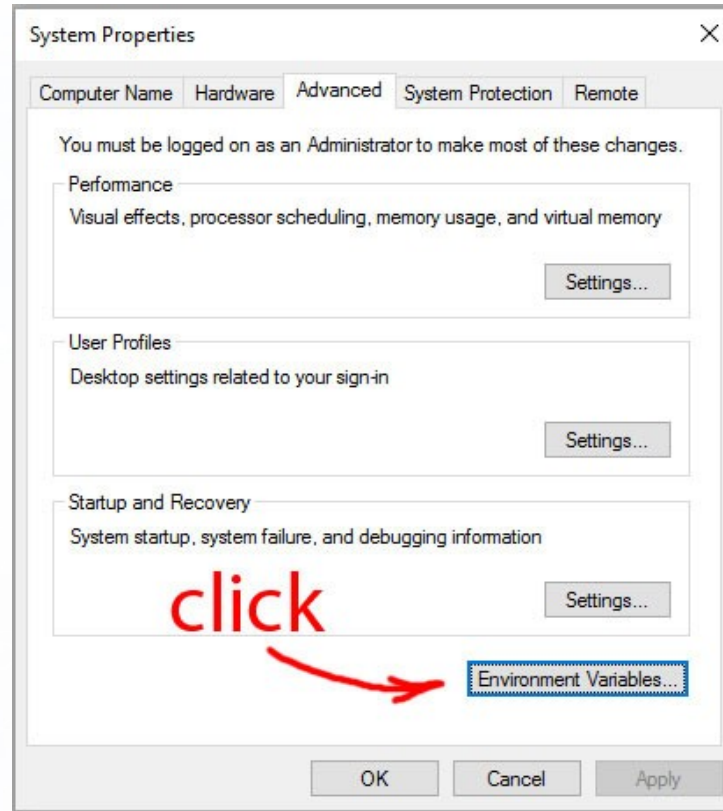


```
C:\_ Command Prompt
C:\Users\Eyuel>javac
'javac' is not recognized as an internal or external command,
operable program or batch file.
```

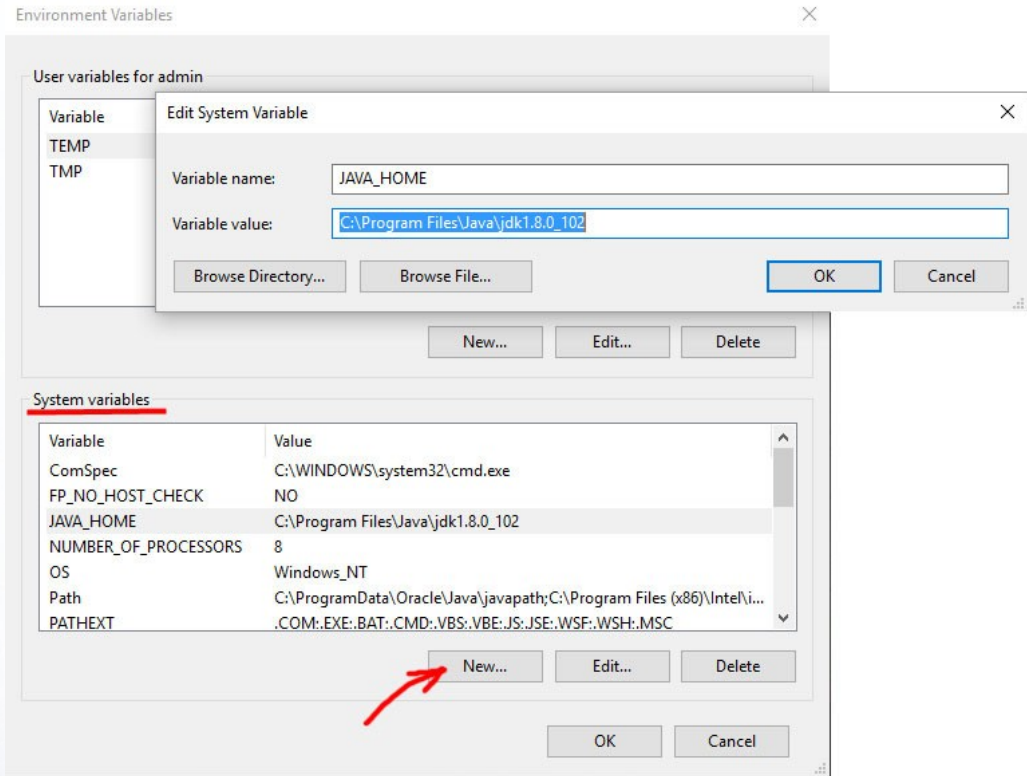
Java Environment Variable Setup(Only For Windows User)



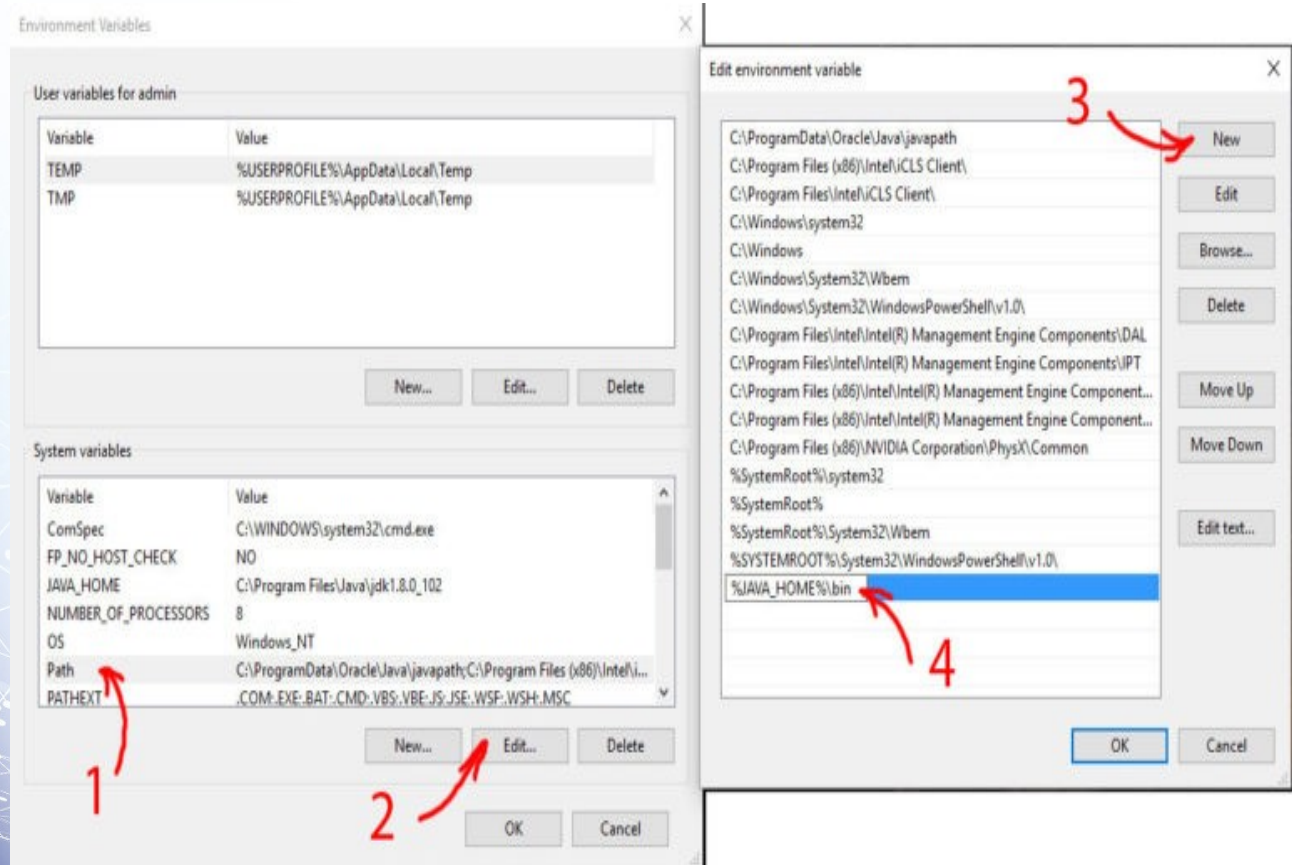
Java Environment Variable Setup(Only For Windows User)



Java Environment Variable Setup(Only For Windows User)



Java Environment Variable Setup(Only For Windows User)



Java Environment Variable Setup(Only For Windows User)



```
Command Prompt
Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\admin>echo %JAVA_HOME%
C:\Program Files\Java\jdk1.8.0_102

C:\Users\admin>javac -version
javac 1.8.0_102

C:\Users\admin>
```



Exercise:Command Line Argument

1. Accept any value from CLI and print the Result.
2. Write a java program, that accept two numbers from CLI and sum the result.
3. Write a java program ,that compare two numbers whether grater or less.
4. Write a java program , that reverse the number. (such as 231, the revers is 132)
5. Write a java program , that search specific text from the list.



Question and Answer