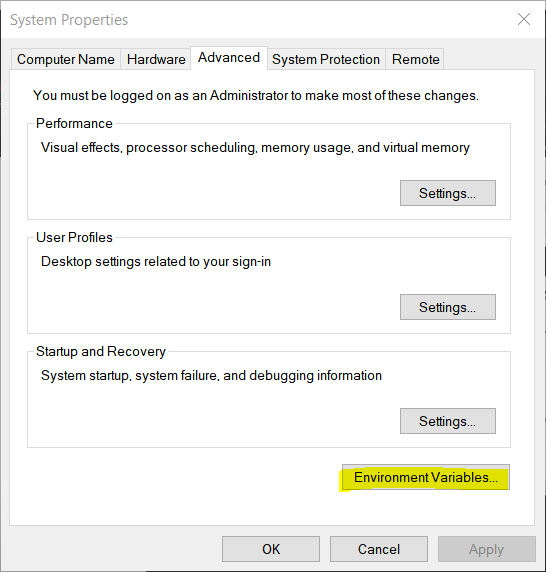
**Core Java**

* **Java:**
  + Java is made by Sun Microsystems in 1995 and later on bought by Oracle and currently Java trademark is held by Oracle. Java is updated every 6 months.
  + Java is mainly used for Mobile development, Web development as well as Enterprise applications. Kotlin, Scala, Groovy come under java technology. Java is the most readable language, we can read code line by line and it is easy to understand.
  + Java has multiple features such as **WORA (Write Once Run Anywhere), multiple thread, Collection API concept, Exception handling and many more**.
  + Java is an object oriented programming language, so it means everything should be in an object and to create an object we need to have a class.
* **Setup Java Environment:**
  + **IDE:** To write Java, we can use Notepad and WordPad for simple programming but to work with java professionally, we can use different **IDEs(Integrated Development Environment)** such as **VS Code(Light weight editor), Eclipse and IntelliJ,** where we can type the code, compile the code, run the code and debug the code.
    - **VS Code URL:** [**VS Code**](https://code.visualstudio.com/)
  + **Compiler:** To compile the java code, we need to install **JDK (Java Development Kit)** 
    - **JDK URL:** [**Oracle JDK v24**](https://www.oracle.com/java/technologies/downloads/%23java24)
  + Once we complete the installation of IDE and JDK, to verify it, we can run “**JAVA --VERSION**” command to “**CMD**” and it will give you version of Java and JDK installed to the system also by running “**JAVAC --VERSION**” to get the current version and confirmed that compiler installed correctly.

A screenshot of a computer program

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* + While we check the versions and if we get an error then it means that path for java environment has not set up very well.
  + To set up environment variables, follow the following steps:
    - Start > Search “**Edit System Environment Variables**”
      * It will open below window, click on “**Environment Variables**”.



* + - * Select “path” and click on “**Edit…**” button under “**System variables**”

A screenshot of a computer program

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* + - * Click on “**New**” and add “**C:\Program Files\Java\jdk1.8.0\_161\bin**” path or copy the path of **“…\Java\jdk1.8.0\_161\bin**” then click “**OK**”.

A screenshot of a computer program

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* + - * Click on “**New…**” under “**User variables for…**” then add below values, and click on “**OK**” and “OK” for main window:
        + **Variable Name:** JAVA
        + **Variable value:** “**C:\Program Files\Java\jdk1.8.0\_161\bin**” path or copy the path of **“…\Java\jdk1.8.0\_161\bin**”

A screenshot of a computer

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* **How Java Code Works on Backend:**
  + Java have JVM (Java Virtual Machine), using that we can run java application.
  + Under JVM there is OS (Operating System) comes and under that there is HW (Hardware).
  + Java is a platform independent, means when we write a Java code, it will run on any machine. Only this is required for it is that respective machine need to have JVM.
  + **JVM does not understand the Human readable code or instruction, but it accept only BYTE code. So, to convert this java code into Byte code it uses “Java Compiler”**
  + So, the basic flow is,
    - **Users create Java code > javac compiler compiled code to BYTE code > BYTE code goes on JVM > JMV look for “public static void main(String args[]” syntax to execute the code**.
  + In the real time scenario, there are 100s of files in the java project, so JVM starts with the first file/Main method file or file which contains main method file.
  + While running java code, it also requires some libraries and in java JRE (Java Runtime Environment) fulfill this request. Also, JVM is the part of JRE. JDK is only use by developers.
  + Main method contains one specific signature **“public static void main(String args[])”**

**(NOTE: In java there is only one Main method and only one file which have main method from where java code starts the execution.)**

**A diagram of a computer program

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* + As java follow WORA (Write Once-Run Anywhere), once developer develop application using JDK, and to use that application to other machine, we just have to install JRE and JVM (JDK does not required), and we can easily execute the code at any platform/OS.
* **Java Code Basic Code Structure:**
  + Java code file extension is **“.java”.**
  + Java code execution point is Main method of java where **“public static void main(String args[])”** main method comes.
  + To compile the code use **“javac FileName.java”** and it will create **“.class”** file.
  + Run code use **“java FileName”** command.
  + Java Basic Code Syntax:

**A screen shot of a computer program

AI-generated content may be incorrect.**

* **Java Variables:**
  + Variables are used to store values, which can be either provided by the user, predefined or assigned during runtime.