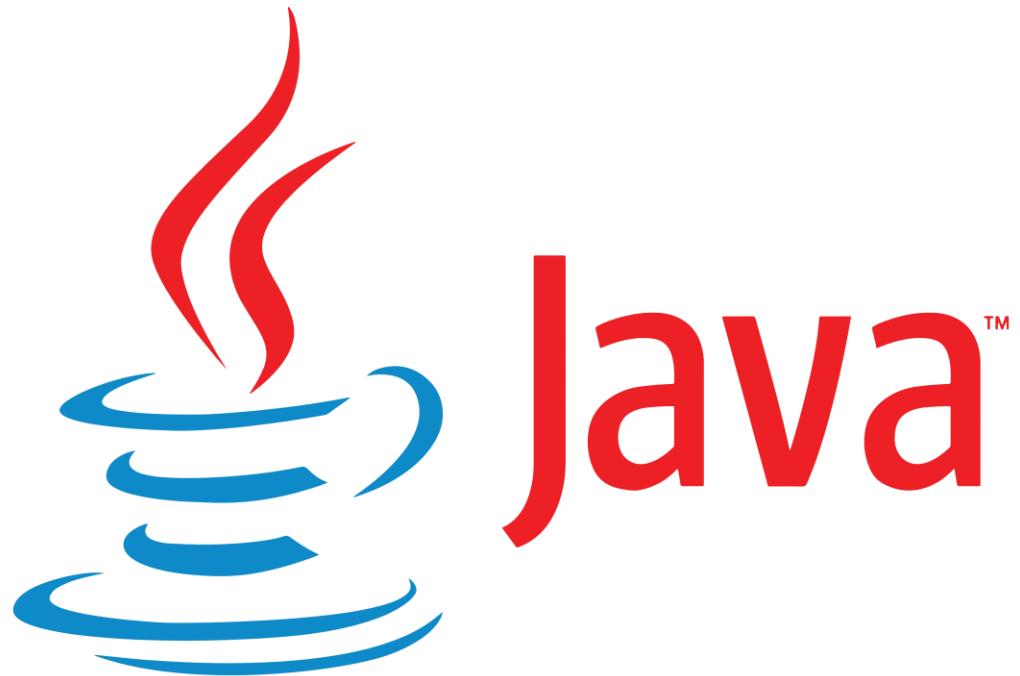


Java Programming: Features and installation of software



Welcome to the world of Java programming again! In this presentation, we'll understand some important features of Java, Installation of some important software, testing them, and running a simple program



NŘ ĪMÀNÞÓMD GÌMÀNMÔ



Road Map for Today

- 1. Some Features Of Java**
- 2. Installation Of JDK**
- 3. Installation Of Editors For Java**
- 4. TEST The Software**
- 5. Run A Simple Program And Print Hello Word**



by Saifullah Haidari

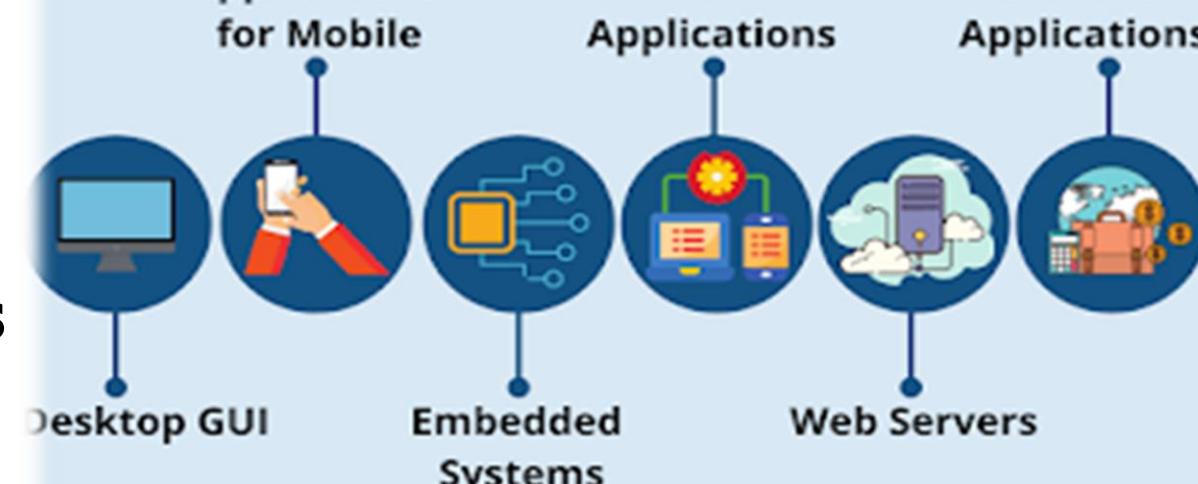
Where can we use java ?

- ❖ **Mobile applications (specially Android apps)**
- ❖ **Desktop applications**
- ❖ **Web applications**
- ❖ **Web servers and application servers**
- ❖ **Games**
- ❖ **Database connection**
- ❖ **And much, much more!**

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APPLICATIONS OF JAVA



The diagram illustrates the applications of Java through five categories, each represented by a blue circle icon:

- Applications for Mobile:** Shows a smartphone icon.
- Desktop GUI:** Shows a computer monitor icon.
- Embedded Systems:** Shows a circuit board icon.
- Web Applications:** Shows a server and database icon.
- Business Applications:** Shows a globe and financial icons.

Below the icons, the labels are: Desktop GUI, Embedded Systems, and Web Servers.

Now enrolling in **Core Java and Advanced Java programming** courses

Be **JOB READY** in just **10 weeks!**



Why Use Java?

- ❖ Java works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.)
- ❖ It is one of the most popular programming languages in the world
- ❖ It has a large demand in the current job market
- ❖ It is easy to learn and simple to use
- ❖ It is open-source and free
- ❖ It is secure, fast and powerful



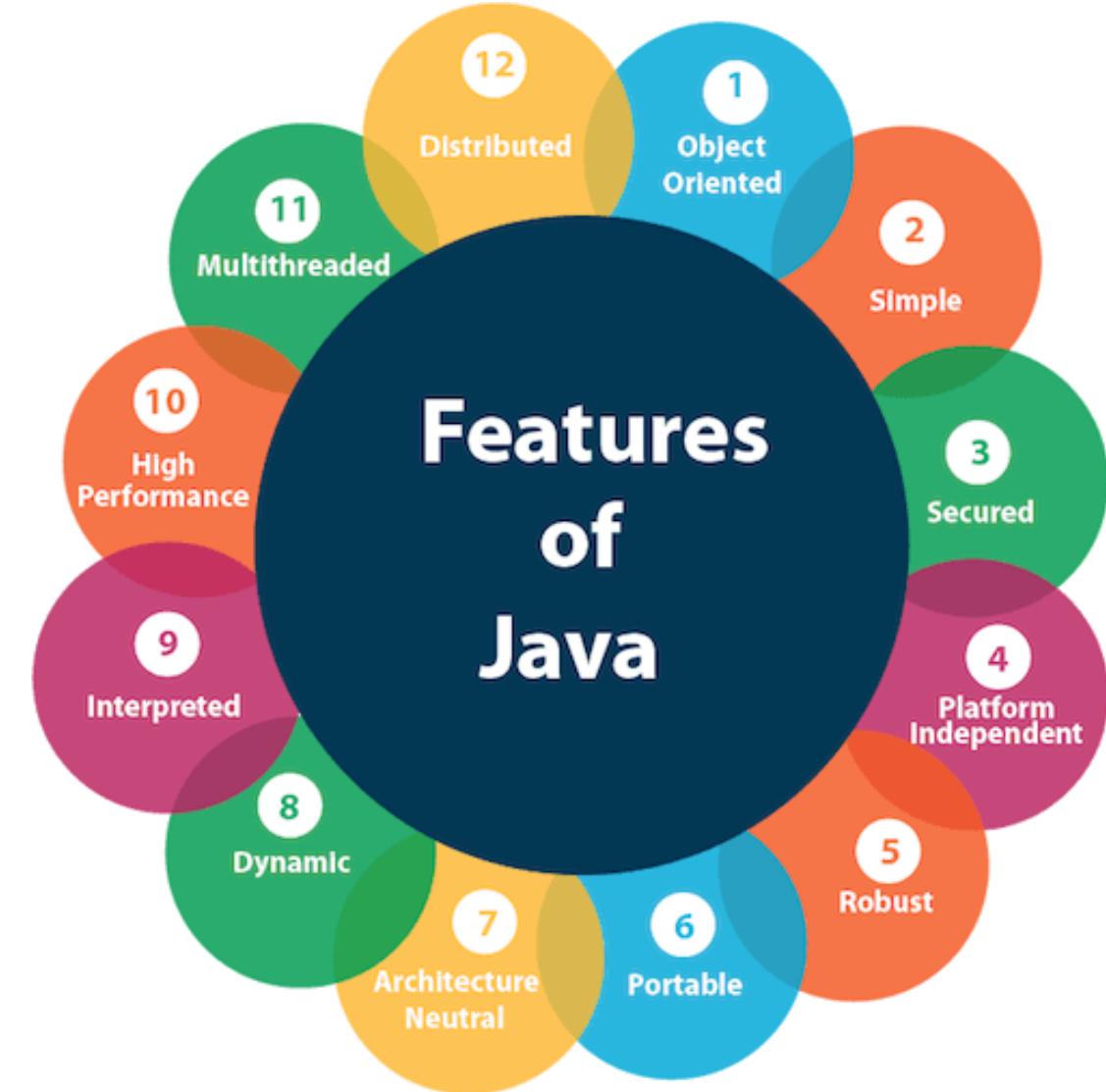
Why Use Java?

- ❖ **It has huge community support (tens of millions of developers)**
- ❖ **Java is an object oriented language which gives a clear structure to programs and allows code to be reused, lowering development costs**
- ❖ **As Java is close to C++ and C#, it makes it easy for programmers to switch to Java or vice versa**



by Saifullah Haidari

Features of Java

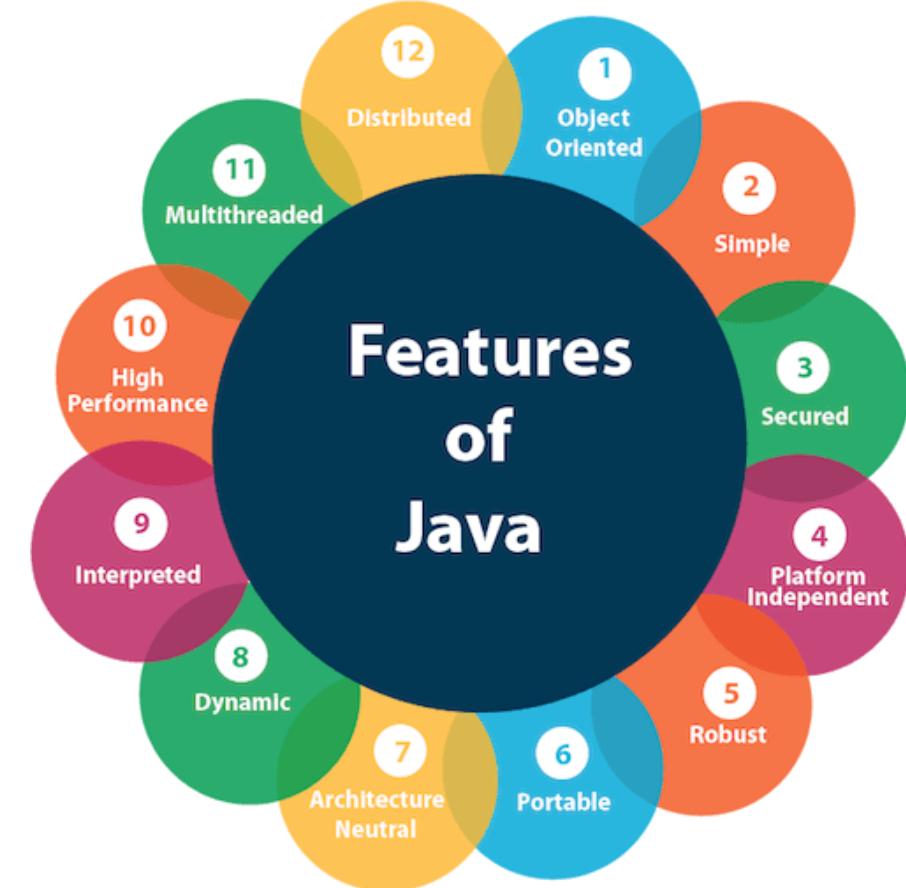


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Features of Java

Simple

Java is very easy to learn, and its syntax is simple, clean and easy to understand. According to Sun Microsystem, Java language is a simple programming language



Features of Java

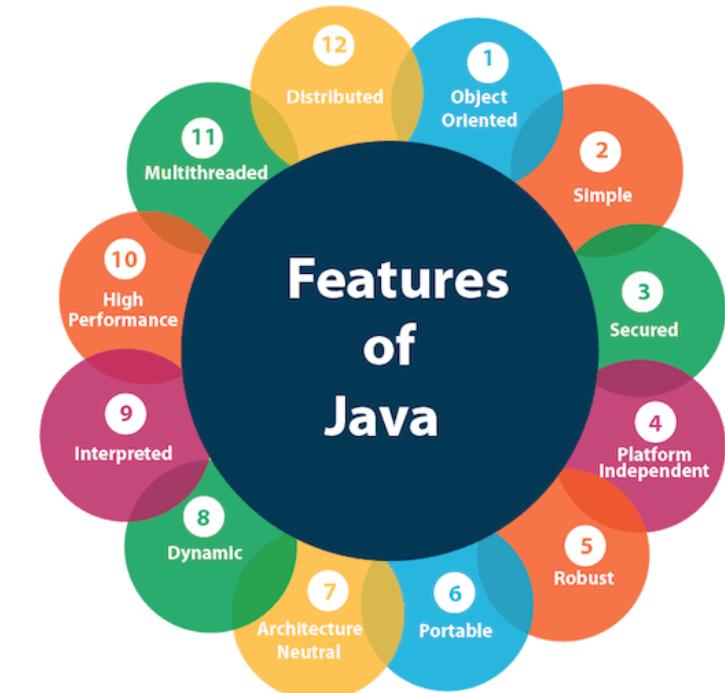
Object-oriented

Java is an object-oriented programming language. Everything in Java is an object. Object-oriented means we organize our software as a combination of different types of objects that incorporate both data and behavior.

Object-oriented programming (OOPs) is a methodology that simplifies software development and maintenance by providing some rules.

Basic concepts of OOPs are:

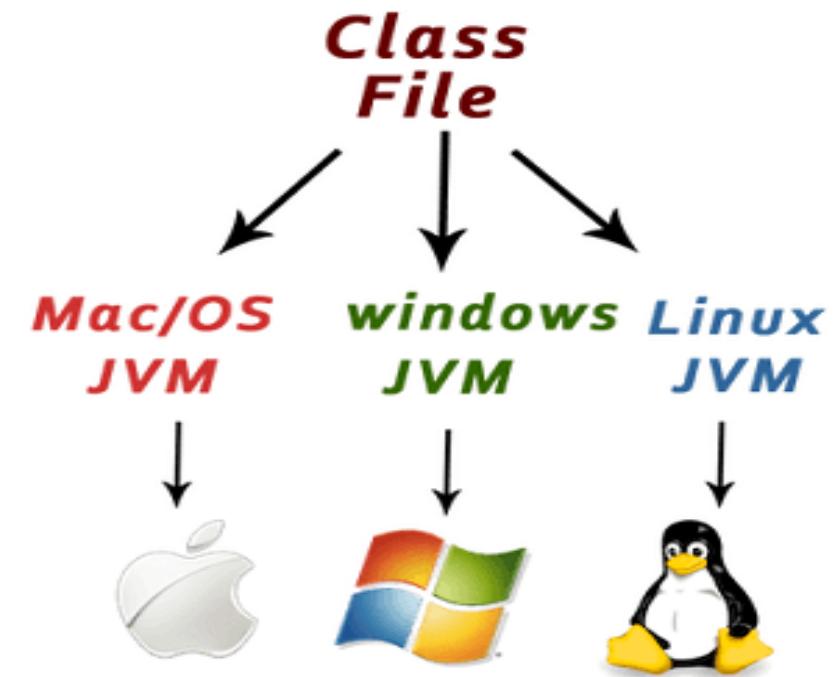
1. Object
2. Class
3. Inheritance
4. Polymorphism
5. Abstraction
6. Encapsulation



Features of Java

Platform

Independent Java is platform independent because it is different from other languages like C, C++, etc. which are compiled into platform specific machines while Java is a write once, run anywhere language. A platform is the hardware or software environment in which a program runs

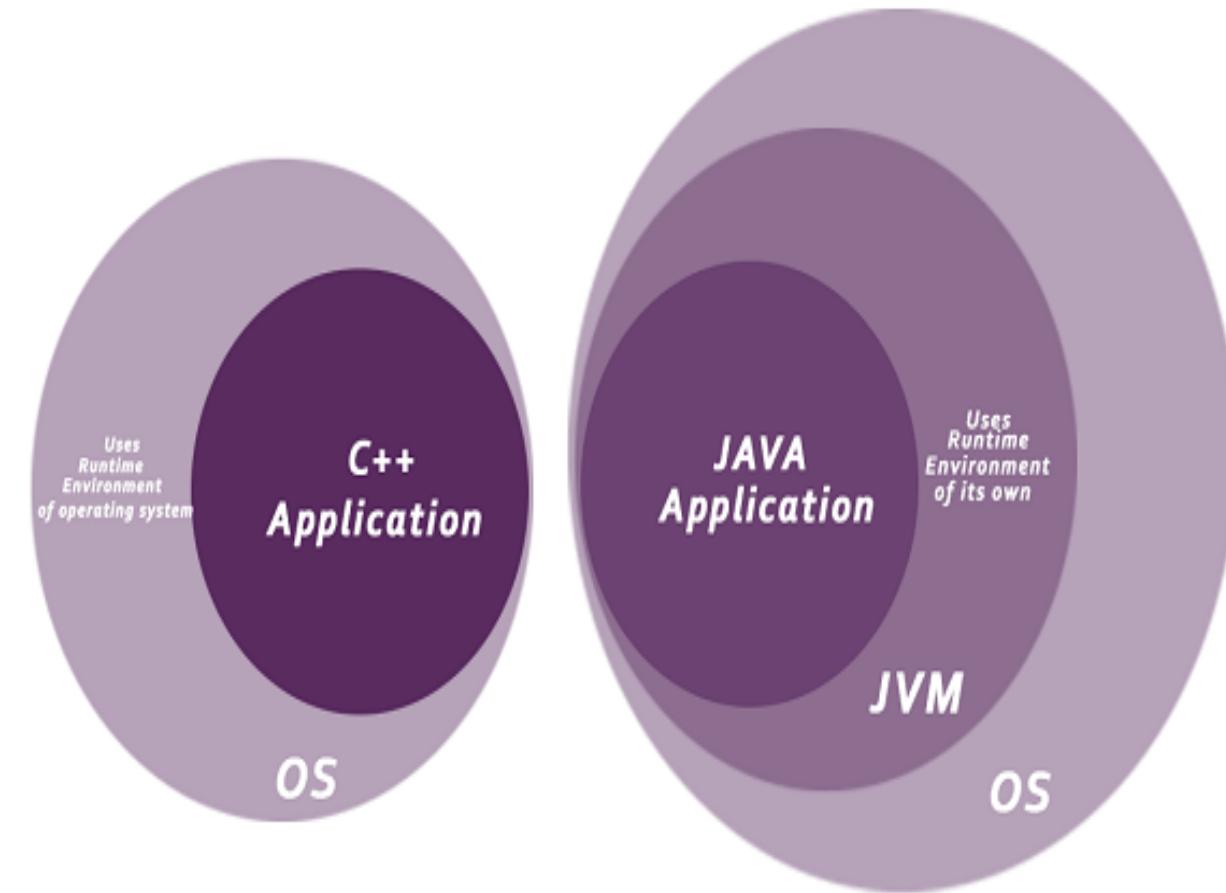


Features of Java

Secured

Java is best known for its security. With Java, we can develop virus-free systems.

Java is secured





Features of Java

Robust

The English meaning of Robust is strong. Java is robust because:

- ❖ It uses strong memory management.
- ❖ There is a lack of pointers that avoids security problems.
- ❖ Java provides automatic garbage collection which runs on the Java Virtual Machine to get rid of objects which are not being used by a Java application anymore.
- ❖ There are exception handling and the type checking mechanism in Java.
- ❖ All these points make Java robust.



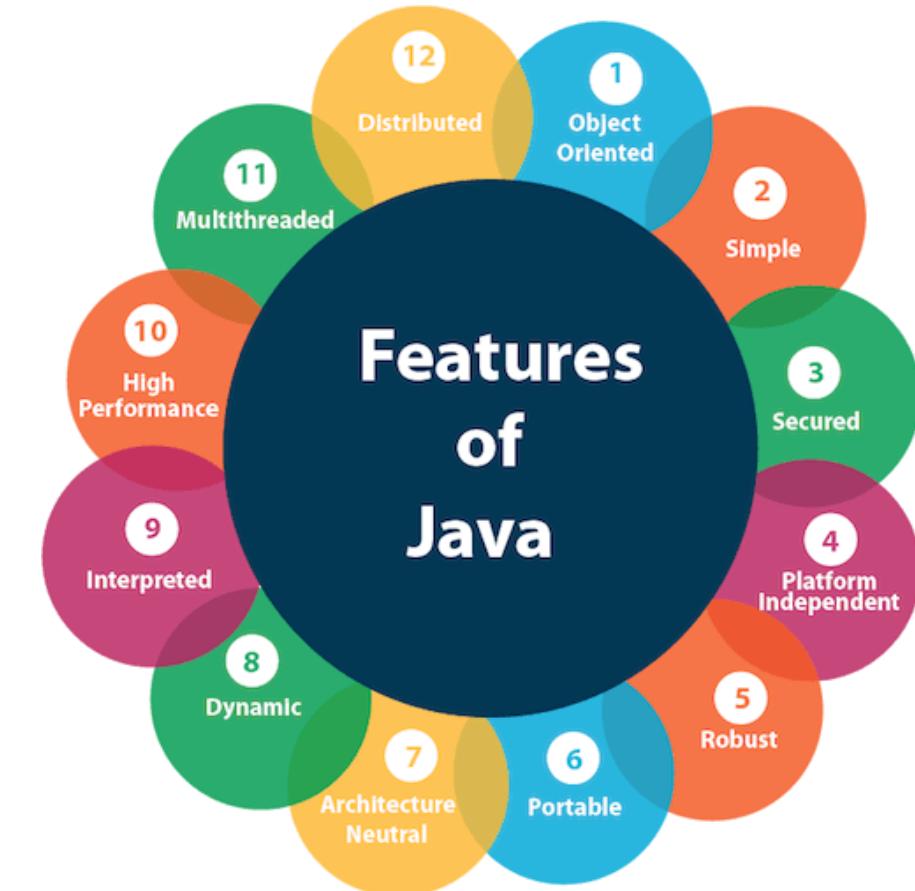
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Features of Java

Architecture-neutral

Java is architecture neutral because there are no implementation dependent features, for example, the size of primitive types is fixed.

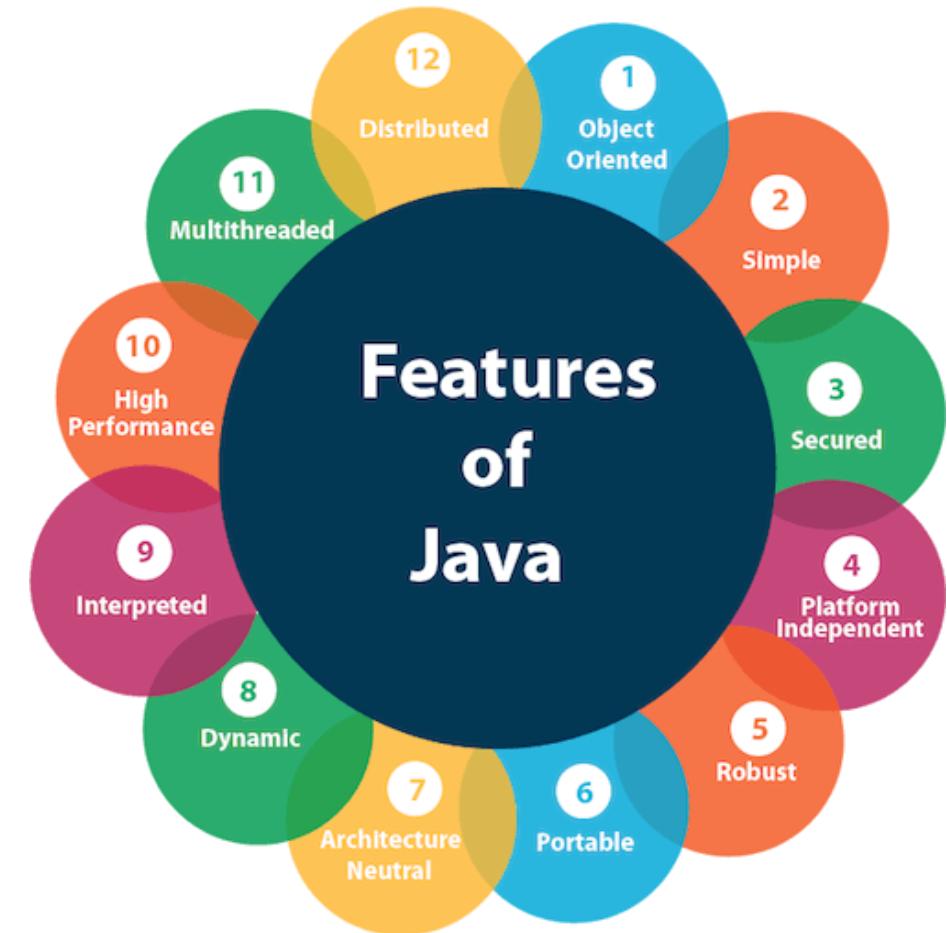
In C programming, int data type occupies 2 bytes of memory for 32-bit architecture and 4 bytes of memory for 64-bit architecture. However, it occupies 4 bytes of memory for both 32 and 64-bit architectures in Java.



Features of Java

Portable

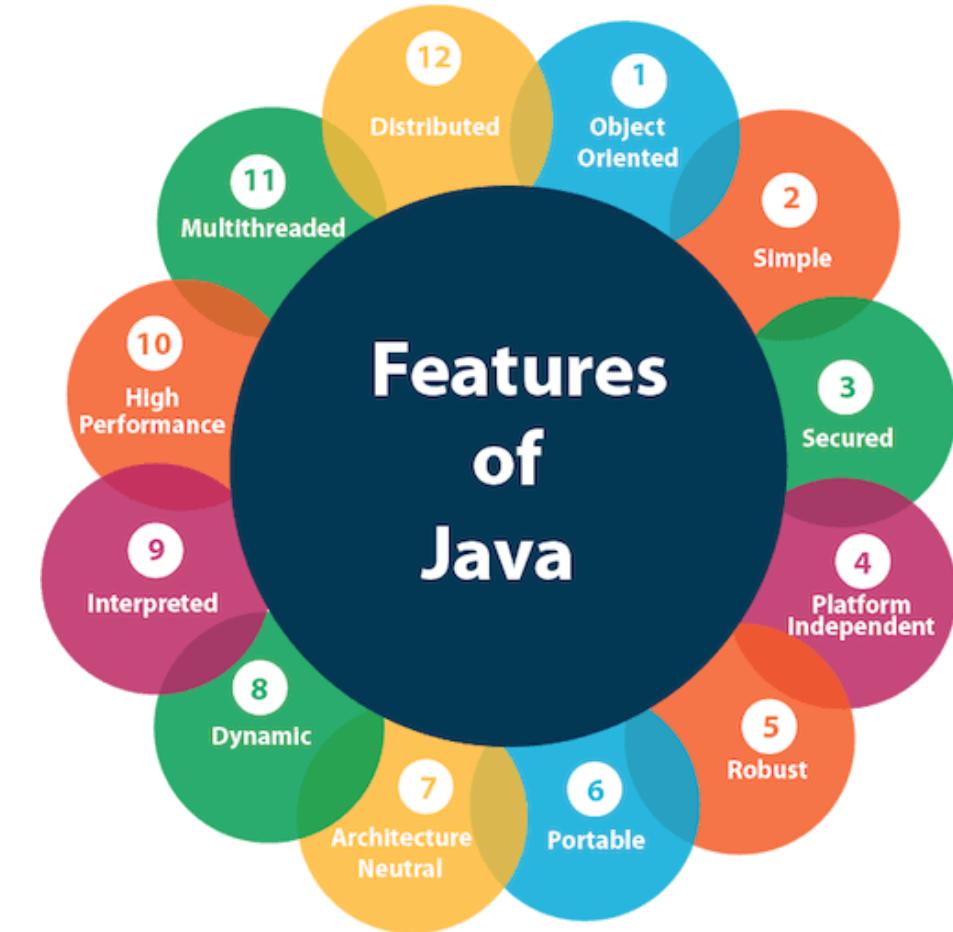
Java is portable because it facilitates you to carry the Java bytecode to any platform. It doesn't require any implementation.



Features of Java

High-performance

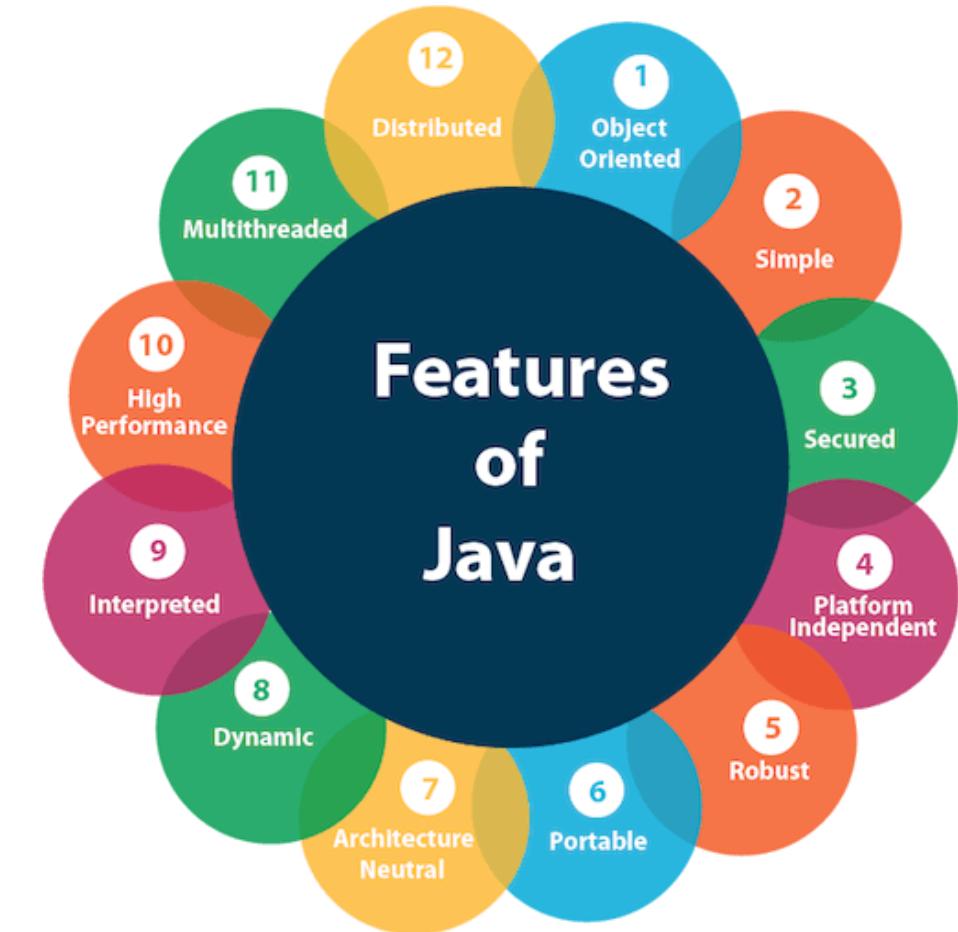
Java is faster than other traditional interpreted programming languages because Java bytecode is "close" to native code. It is still a little bit slower than a compiled language (e.g., C++). Java is an interpreted language that is why it is slower than compiled languages, e.g., C, C++, etc



Features of Java

Distributed

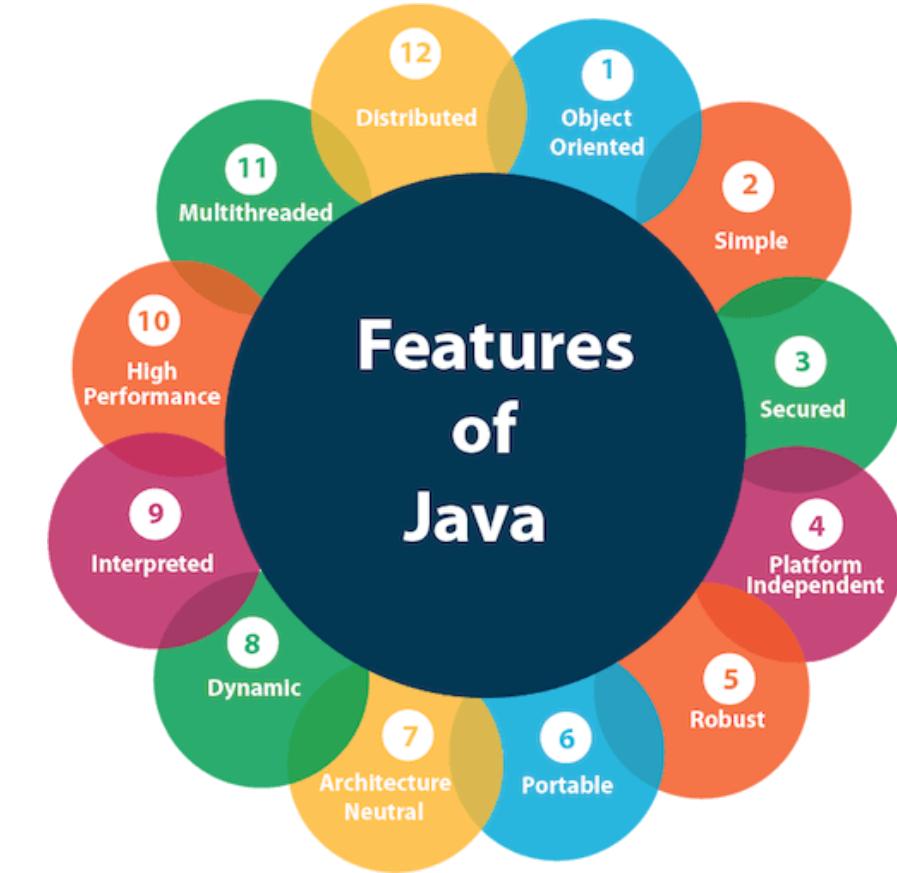
Java is distributed because it facilitates users to create distributed applications in Java. RMI and EJB are used for creating distributed applications. This feature of Java makes us able to access files by calling the methods from any machine on the internet.



Features of Java

Multi-threaded

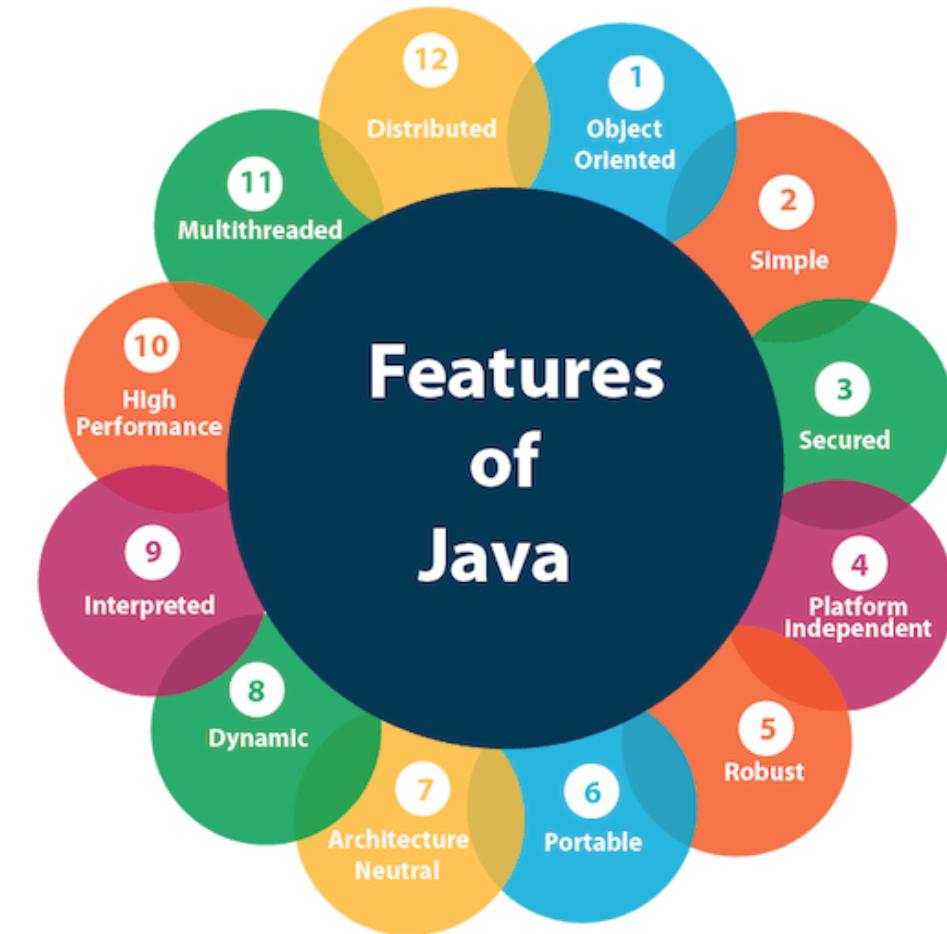
A thread is like a separate program, executing concurrently. We can write Java programs that deal with many tasks at once by defining multiple threads. The main advantage of multi-threading is that it doesn't occupy memory for each thread. It shares a common memory area. Threads are important for multi-media, Web applications, etc.



Features of Java

Dynamic

Java is a dynamic language. It supports the dynamic loading of classes. It means classes are loaded on demand. It also supports functions from its native languages, i.e., C and C++



JDK JRE JVM IDE

1. JDK (Java Development Kit)

- **Definition:** A software development kit used to develop Java applications.
- **Components:** Includes the JRE, development tools (like the Java compiler `javac`), and libraries.
- **Purpose:** Provides everything you need to write, compile, and run Java applications.
- **Use Case:** Used by developers for creating Java applications



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JDK JRE JVM IDE

2. JRE (Java Runtime Environment)

- **Definition:** A runtime environment that allows you to run Java applications.
- **Components:** Contains the JVM and standard libraries required to run Java programs.
- **Purpose:** Provides the necessary environment for executing Java applications but does not include development tools.
- **Use Case:** Used by end-users to run Java applications without needing the full development kit.



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JDK JRE JVM IDE

3. JVM (Java Virtual Machine)

- **Definition:** An abstract computing machine that enables a computer to run Java programs.
- **Functionality:** Converts Java bytecode into machine code that can be executed by the host operating system.
- **Purpose:** Provides platform independence, allowing Java programs to run on any device with a JVM.
- **Use Case:** Runs the compiled Java bytecode, making it possible for Java applications to be platform-independent

JDK JRE JVM IDE

4. IDE (Integrated Development Environment)

- **Definition:** A software application that provides comprehensive facilities to programmers for software development.
- **Features:** Typically includes a code editor, debugger, build automation tools, and other features to streamline coding.
- **Purpose:** Enhances productivity by providing tools to write, test, and debug code in one place.
- **Use Case:** Used by developers to create Java applications more efficiently; popular IDEs include Eclipse, IntelliJ IDEA, and NetBeans





Installation of Java JDK and Editor

1

Download Java JDK

Visit the Oracle JDK website and download the appropriate version for your operating system [Java Downloads | Oracle](#).

2

Install Java JDK

Follow the provided instructions to install the JDK on your computer.

3

Choose an Editor

Popular options include IntelliJ IDEA, Eclipse, and NetBeans
[en:download \[Java-Editor\] \(javaeditor.org\)](#).

4

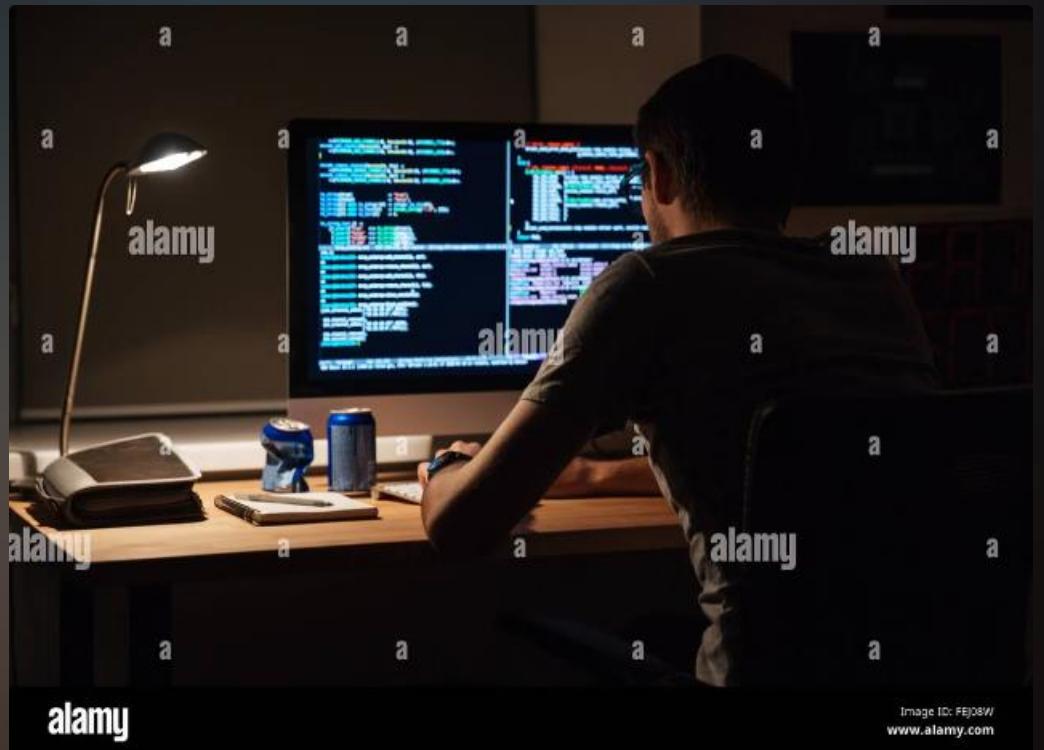
Install Editor

Download and install your chosen editor, following the setup instructions.



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Java IDE and JDK Tools



IDE (Integrated Development Environment)

Provides a comprehensive set of tools for coding, debugging, and testing Java applications.



JDK Tools

The Java Development Kit (JDK) includes essential tools like the Java compiler (`javac`), the Java application launcher (`java`), and the documentation generator (`javadoc`).

Java Installation



1

If Java is installed, you will see something like this (depending on version):

```
java version "11.0.1" 2018-10-16 LTS  
Java(TM) SE Runtime Environment  
18.9 (build 11.0.1+13-LTS)  
Java HotSpot(TM) 64-Bit Server VM  
18.9 (build 11.0.1+13-LTS, mixed mode)
```



2

If you installed before

If you do not have Java installed on your computer, you can download it for free at oracle.com.

Note: In this tutorial, we will write Java code in a text editor. However, it is possible to write Java in an Integrated Development Environment, such as IntelliJ IDEA, Netbeans or Eclipse, which are particularly useful when managing larger collections of Java files



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Java Installation

Write the following in the command line (cmd.exe):

C:\Users\Your Name>java -version

**If Java was successfully installed, you will see something like this
(depending on version):**

java version "11.0.1" 2018-10-16 LTS

Java(TM) SE Runtime Environment 18.9 (build 11.0.1+13-LTS)

Java HotSpot(TM) 64-Bit Server VM 18.9 (build 11.0.1+13-LTS, mixed mode)



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Java SE Downloads

Java Platform, Standard Edition

LearningLab

Java SE 14

Java SE 14.0.1 is the latest release for the Java SE Platform

- Documentation
- Installation Instructions
- Release Notes
- Oracle License
 - Binary License
 - Documentation License

Oracle JDK

- [JDK Download](#)
- Documentation Download



Java SE Development Kit 14

This software is licensed under the Oracle Technology Network License Agreement for Oracle Java SE

Product / File Description	File Size	Download
Linux Debian Package	157.92 MB	 jdk-14.0.1_linux-x64_bin.deb
Linux RPM Package	165.04 MB	 jdk-14.0.1_linux-x64_bin.rpm
Linux Compressed Archive	182.04 MB	 jdk-14.0.1_linux-x64_bin.tar.gz
macOS Installer	175.77 MB	 jdk-14.0.1_osx-x64_bin.dmg
macOS Compressed Archive	176.19 MB	 jdk-14.0.1_osx-x64_bin.tar.gz
Windows x64 Installer	162.07 MB	 jdk-14.0.1_windows-x64_bin.exe
Windows x64 Compressed Archive	181.53 MB	 jdk-14.0.1_windows-x64_bin.zip

 Search downloads

April 14, 2020



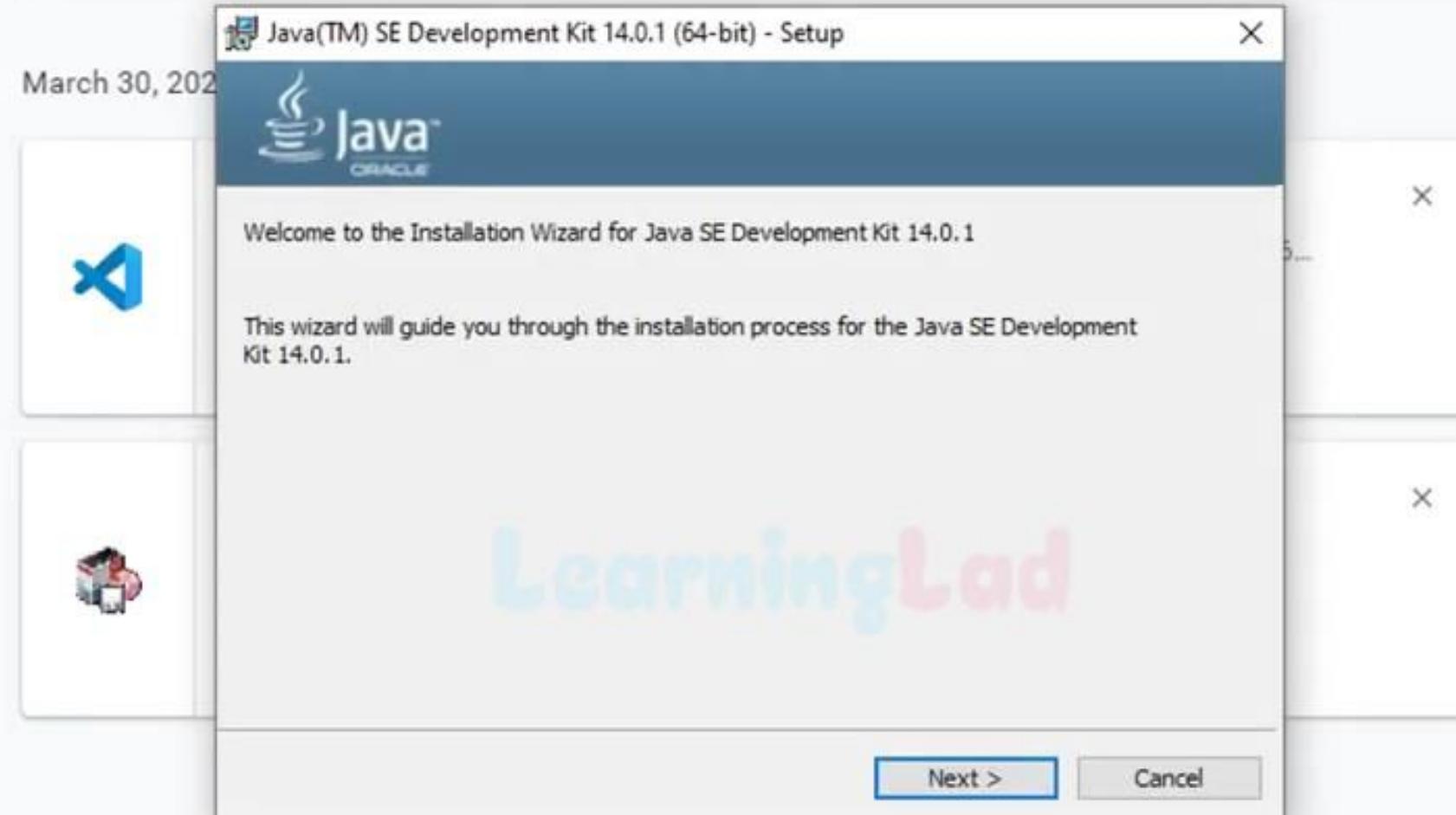
March 30, 2020





Show in folder

March 30, 202

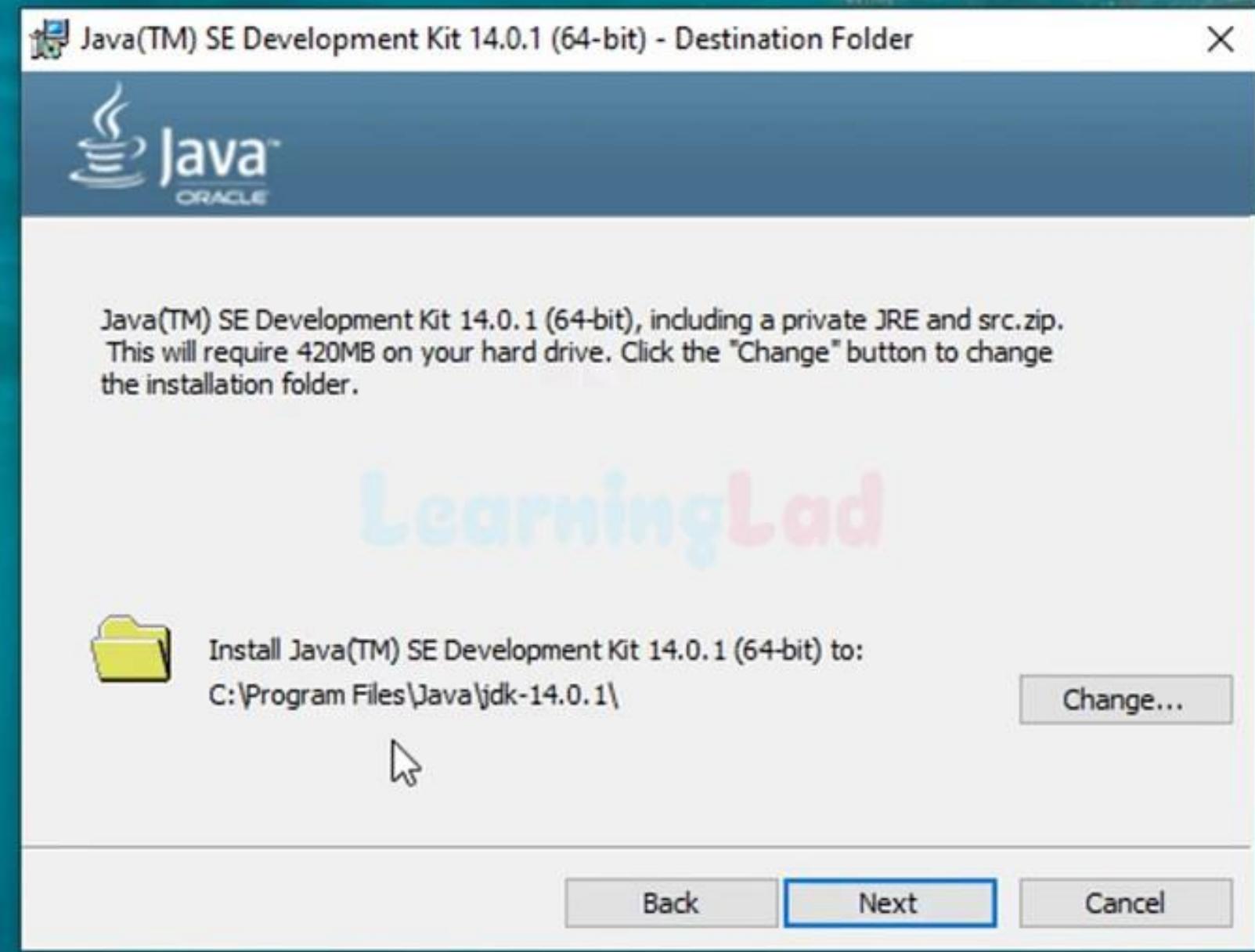


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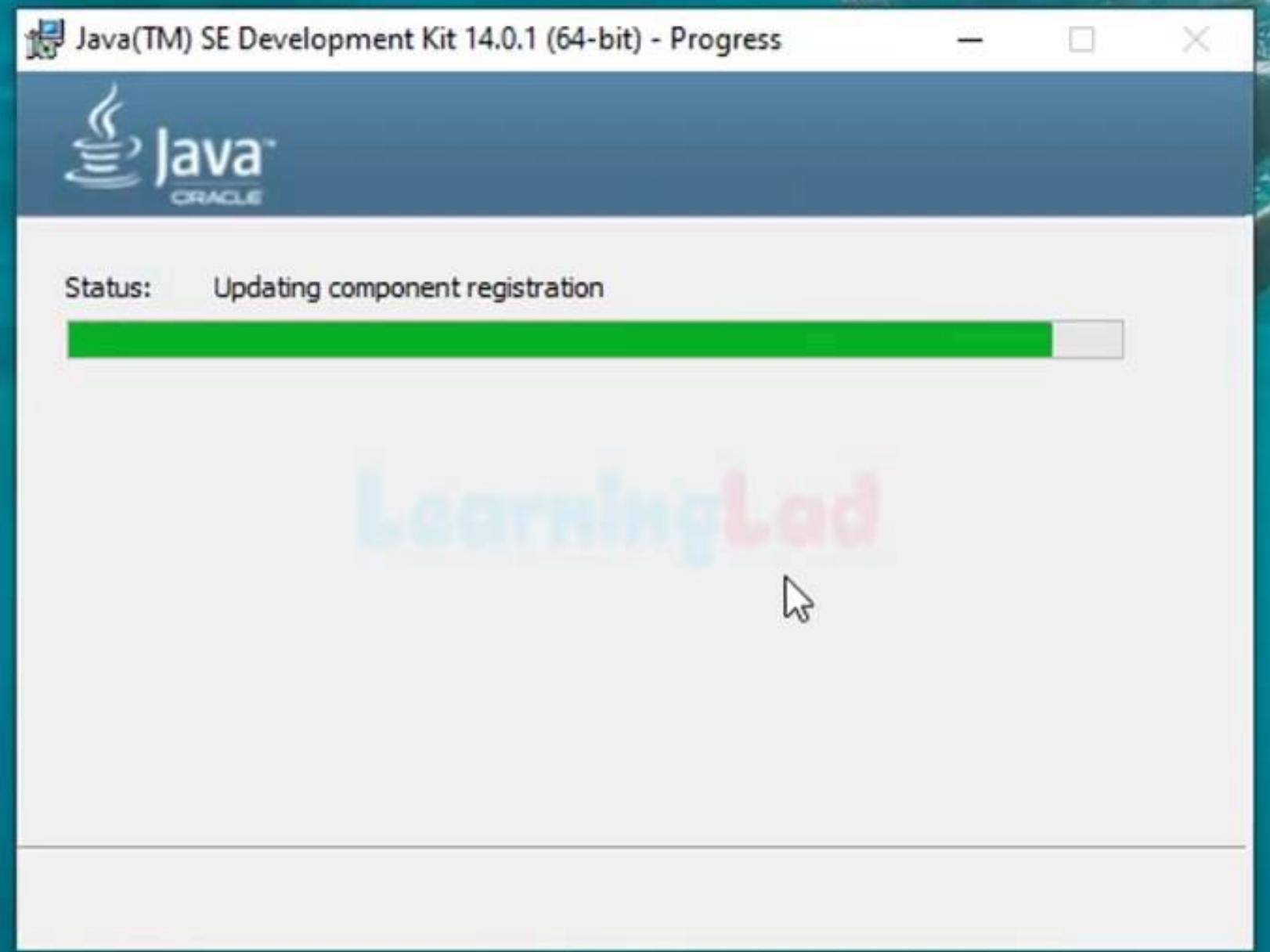




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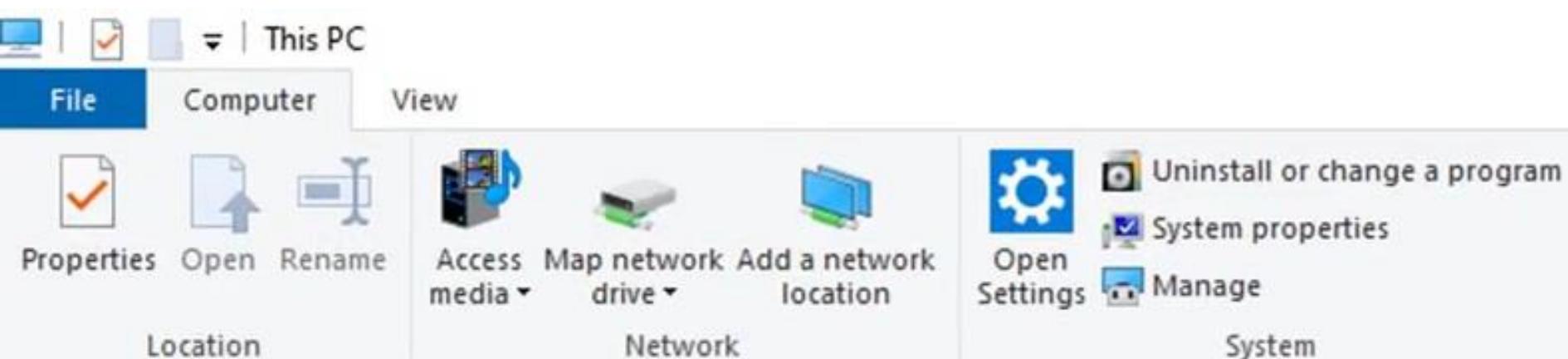
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← → ⏪ ⏩ This PC ⏩

Quick access

This PC

3D Objects

Desktop

Documents

Downloads

Music

Pictures

Videos

Local Disk (C:)

ChicBud (E:)

Folders (7)



3D Objects



Videos



Desktop



Documents



Devices and drives (4)



Local Disk (C:)

12.3 GB free of 47.6 GB



DVD RW Drive (D:)



ChicBud (E:)



4.39 GB free of 43.9 GB



← → ⏪ ⏩ This PC > Local Disk (C:) >

Name	Date modified	Type	Size
Drivers	14-03-2020 13:21	File folder	
Intel	14-03-2020 13:15	File folder	
MinGW	30-03-2020 10:31	File folder	
PerfLogs	18-03-2019 21:52	File folder	
Program Files	14-04-2020 19:46	File folder	
Program Files (x86)	30-03-2020 05:17	File folder	
ProgramData	14-04-2020 20:46	File folder	
Users	16-03-2020 23:16	File folder	
Windows	30-03-2020 04:41	File folder	

Quick access

This PC

3D Objects

Desktop

Documents

Downloads

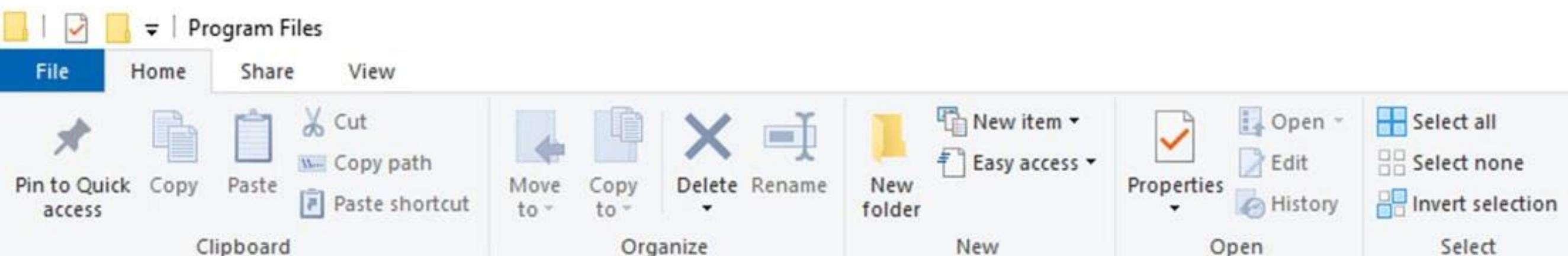
Music

Pictures

Videos

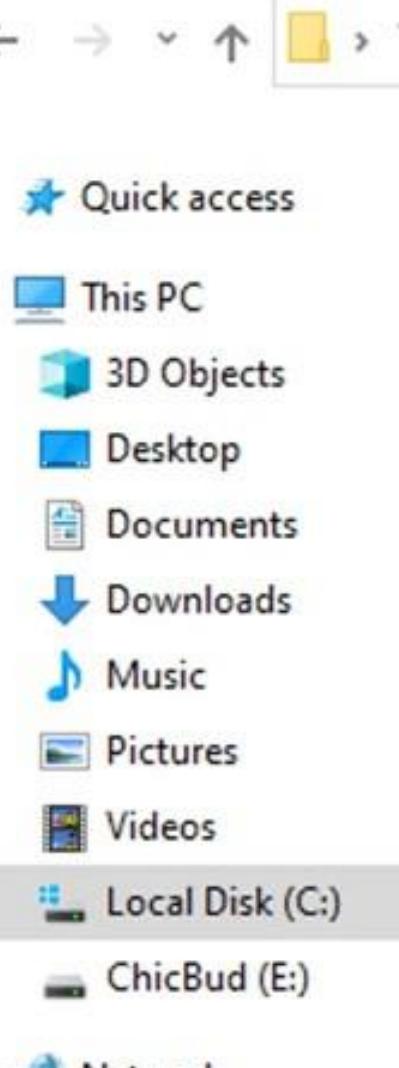
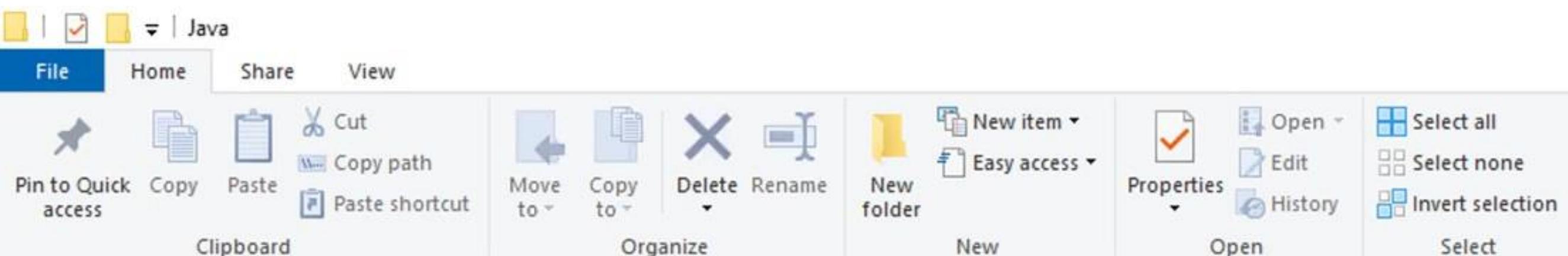
Local Disk (C:)

ChicBud (E:)



← → ⏪ ⏩ ⏹ This PC > Local Disk (C:) > Program Files >

	Name	Date modified	Type	Size
Quick access	Common Files	14-03-2020 13:19	File folder	
This PC	DIFX	14-03-2020 13:21	File folder	
3D Objects	Internet Explorer	06-10-2019 20:00	File folder	
Desktop	Java	14-04-2020 19:46	File folder	
Documents	Lenovo	14-03-2020 13:21	File folder	
Downloads	ModifiableWindowsApps	18-03-2019 21:52	File folder	
Music	Tablet	14-03-2020 06:38	File folder	
Pictures	TechSmith	16-03-2020 23:10	File folder	
Videos	Uninstall Information	14-03-2020 08:06	File folder	
Local Disk (C:)	Windows Defender	18-03-2019 23:20	File folder	
ChicBud (E:)	Windows Defender Advanced Threat Prot...	06-10-2019 20:00	File folder	
	Windows Mail	18-03-2019 21:52	File folder	
	Windows Media Player	18-03-2019 23:23	File folder	



jdk-14.0.1

File Home Share View

Cut Copy Paste Delete Rename New item New folder Properties Select all

Copy path Move to Copy to New access Open Edit History Invert selection

Paste shortcut Paste shortcut

Clipboard Organize New Open Select

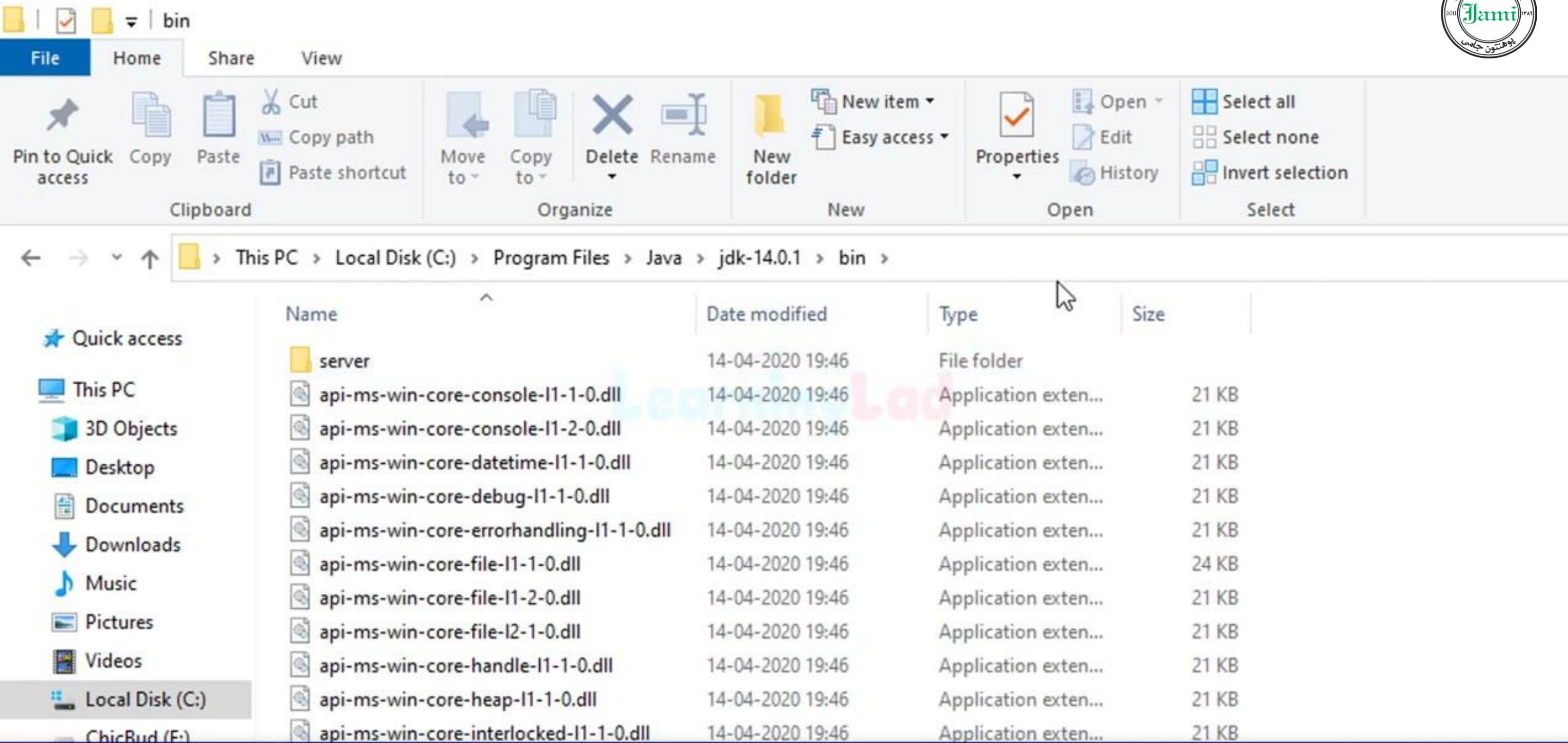
Pin to Quick access

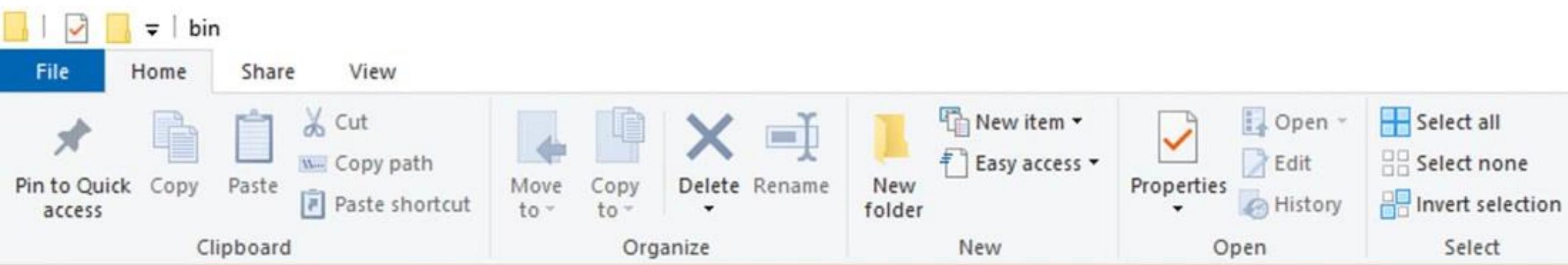
This PC > Local Disk (C:) > Program Files > Java > jdk-14.0.1 >

Name	Date modified	Type	Size
bin	14-04-2020 19:46	File folder	
conf	14-04-2020 19:46	File folder	
include		File folder	
jmods		File folder	
legal		File folder	
lib	14-04-2020 19:46	File folder	
COPYRIGHT	05-03-2020 09:47	File	4 KB
release	14-04-2020 19:46	File	2 KB

Quick access

- This PC
- 3D Objects
- Desktop
- Documents
- Downloads
- Music
- Pictures
- Videos
- Local Disk (C:)
- ChicRud (E:)





← → ⌂ ⌃ ⌄ C:\Program Files\Java\jdk-14.0.1\bin

Name	Type	Size
server	File folder	
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	24 KB
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	21 KB
api-ms-wi	Application exten...	21 KB
api-ms-win-core-interlocked-l1-1-0.dll	Application exten...	21 KB

Adjust your computer's settings

View by: Category ▾

**System and Security**

Review your computer's status

Save backup copies of your files with File History

Backup and Restore (Windows 7)

**Network and Internet**

Connect to the Internet

View network status and tasks

**Hardware and Sound**

View devices and printers

Add a device

Adjust commonly used mobility settings

**Programs**

Uninstall a program

**User Accounts**

Change account type

**Appearance and Personalization****Clock and Region**

Change date, time, or number formats

**Ease of Access**

Let Windows suggest settings

Optimize visual display



Control Panel Home

System and Security

Network and Internet

Hardware and Sound

Programs

User Accounts

Appearance and Personalization

Clock and Region

Ease of Access

**Security and Maintenance**

Review your computer's status and resolve issues | Change User Account Control settings

Troubleshoot common computer problems

**Windows Defender Firewall**

Check firewall status | Allow an app through Windows Firewall

**System**

View amount of RAM and processor speed | Allow remote access | Launch remote assistance

See the name of this computer

**Power Options**

Change battery settings | Change what the power buttons do | Change when the computer sleeps

**File History**

Save backup copies of your files with File History | Restore your files with File History

**Backup and Restore (Windows 7)**

Backup and Restore (Windows 7) | Restore files from backup

**BitLocker Drive Encryption**

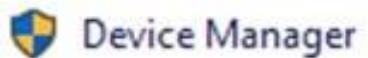
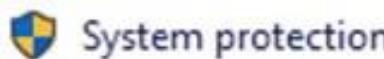
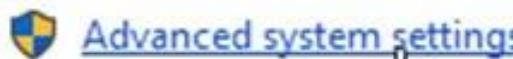
Manage BitLocker

**Storage Spaces**

Manage Storage Spaces

[Control Panel Home](#)

View basic information about your computer

[Device Manager](#)[Remote settings](#)[System protection](#)[Windows edition](#)

Windows 10 Pro

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System

Processor: Intel(R) Core(TM) i5-3210M CPU @ 2.50GHz 2.50 GHz

Installed memory (RAM): 8.00 GB (7.85 GB usable)

System type: 64-bit Operating System, x64-based processor

Pen and Touch: Pen Support

Computer name, domain, and workgroup settings

Computer name: DESKTOP-T8KL03M

Full computer name: DESKTOP-T8KL03M

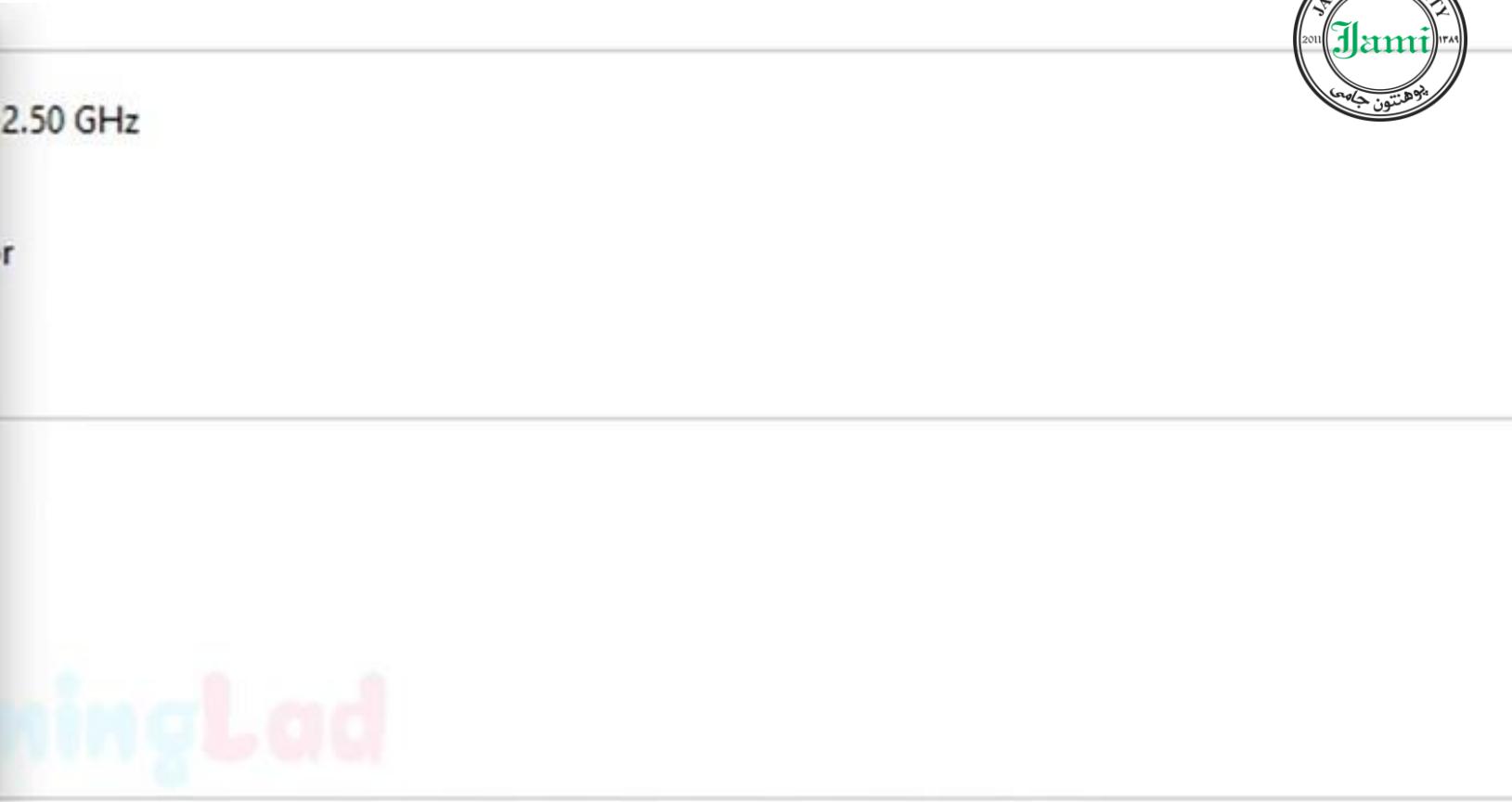
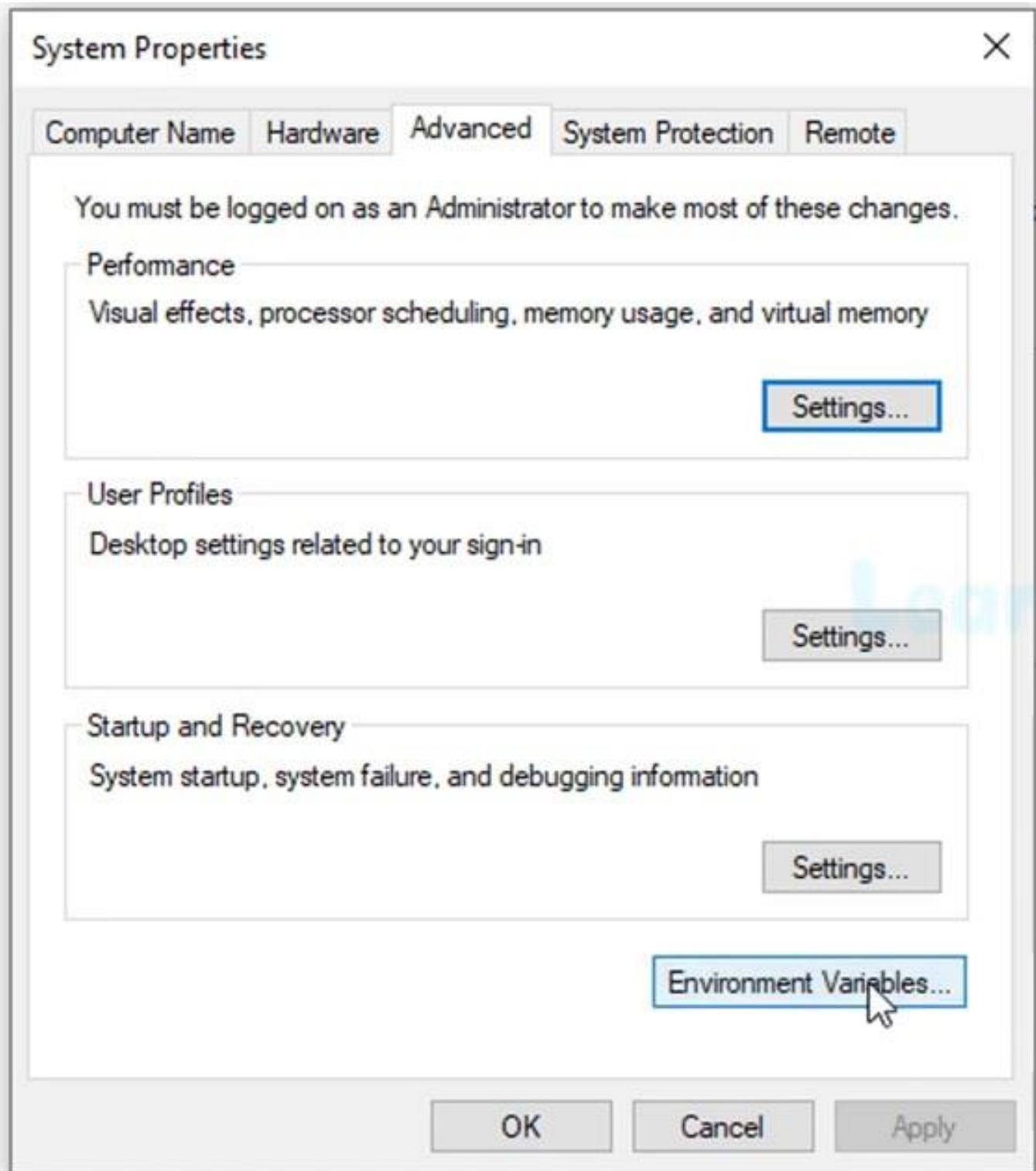
Computer description:

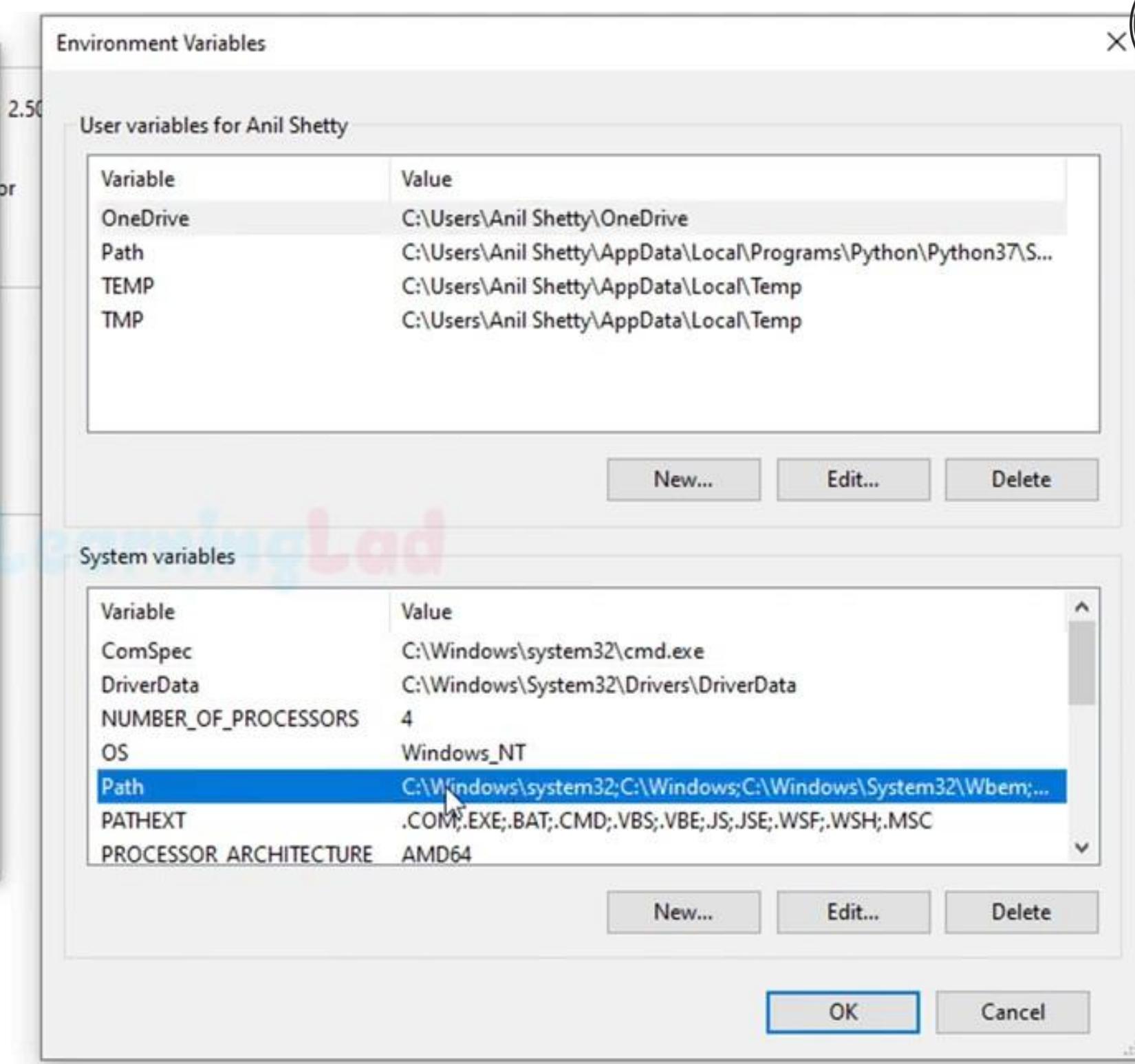
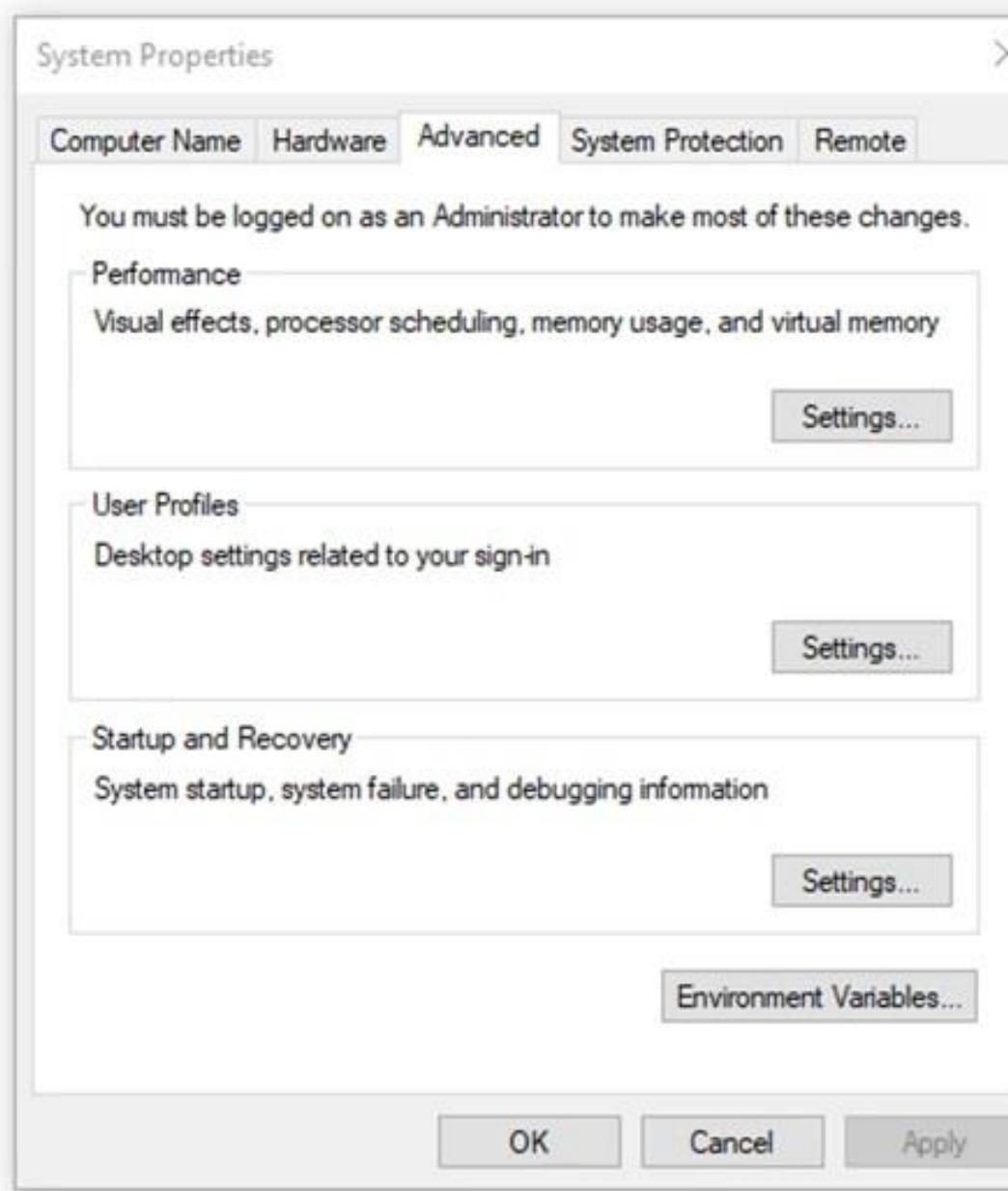
Workgroup: WORKGROUP

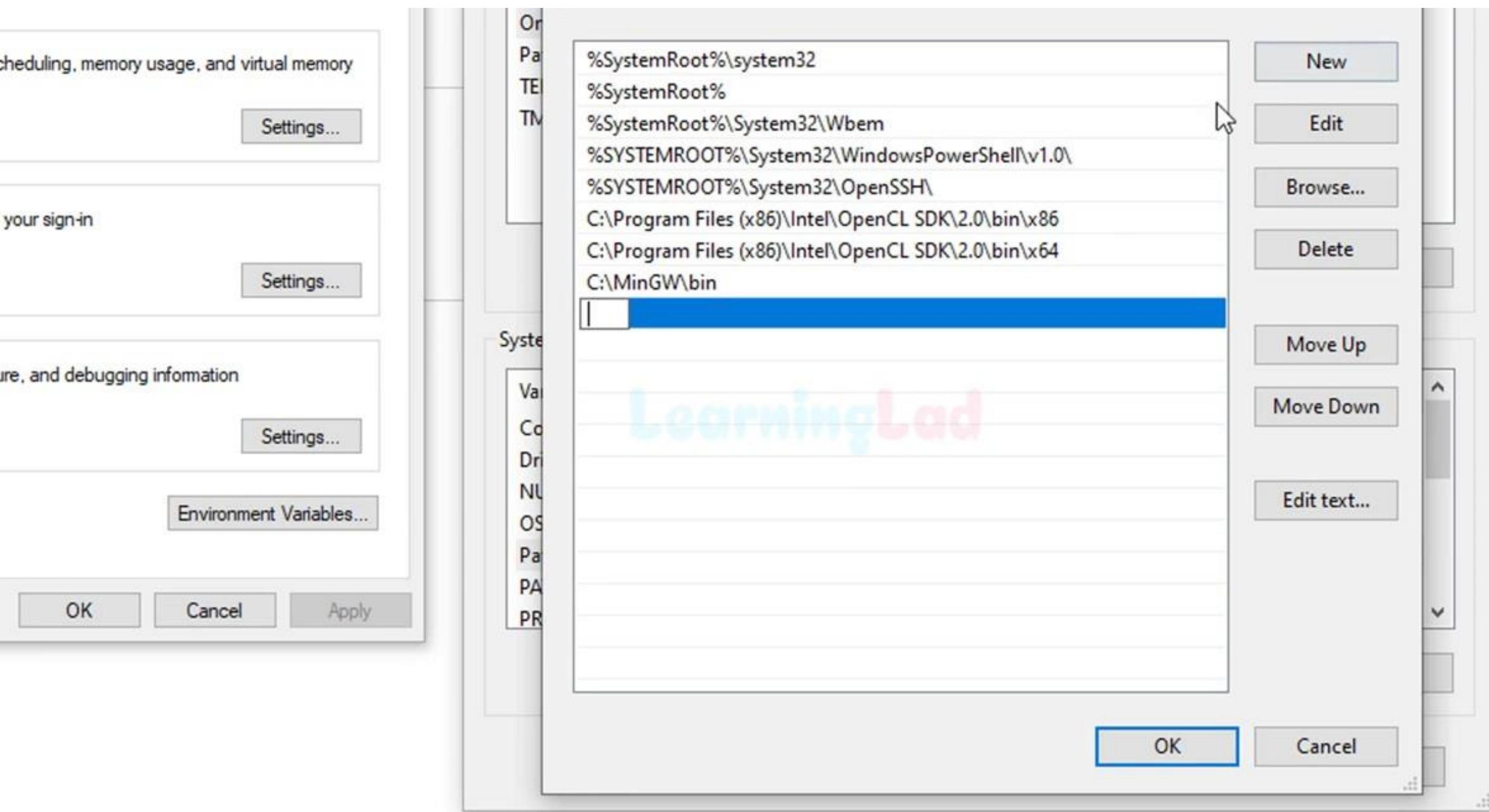
Windows activation

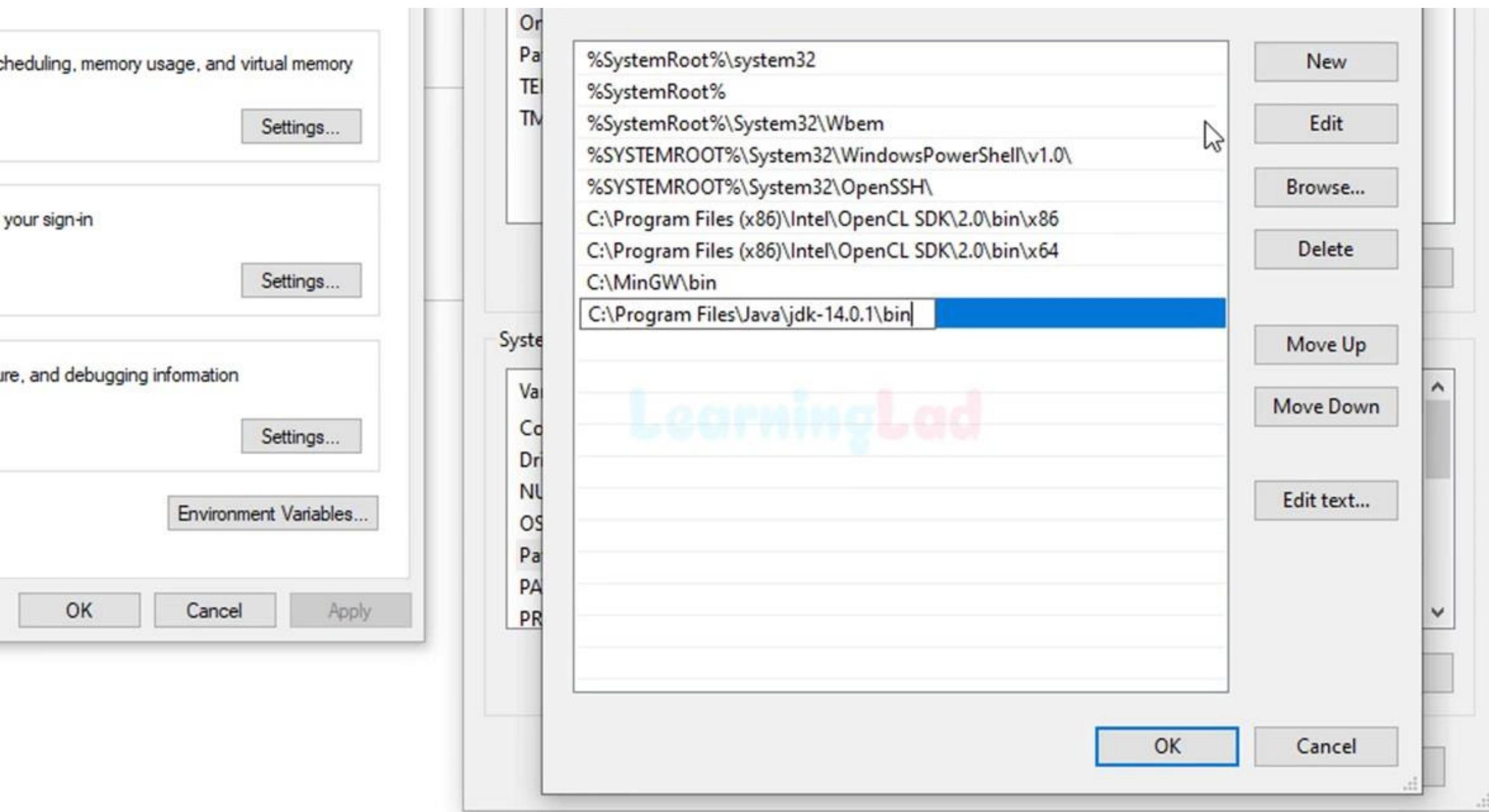


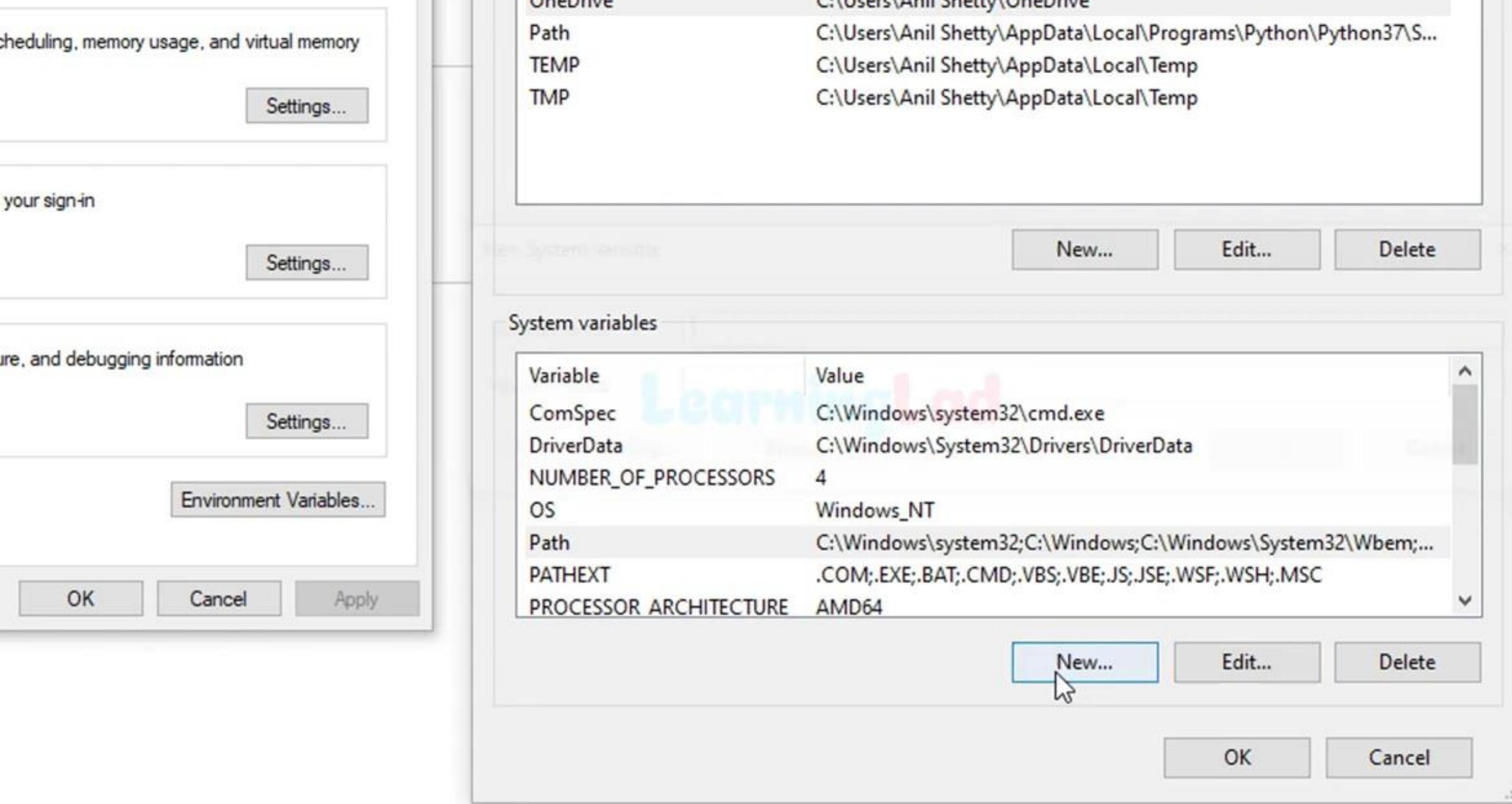
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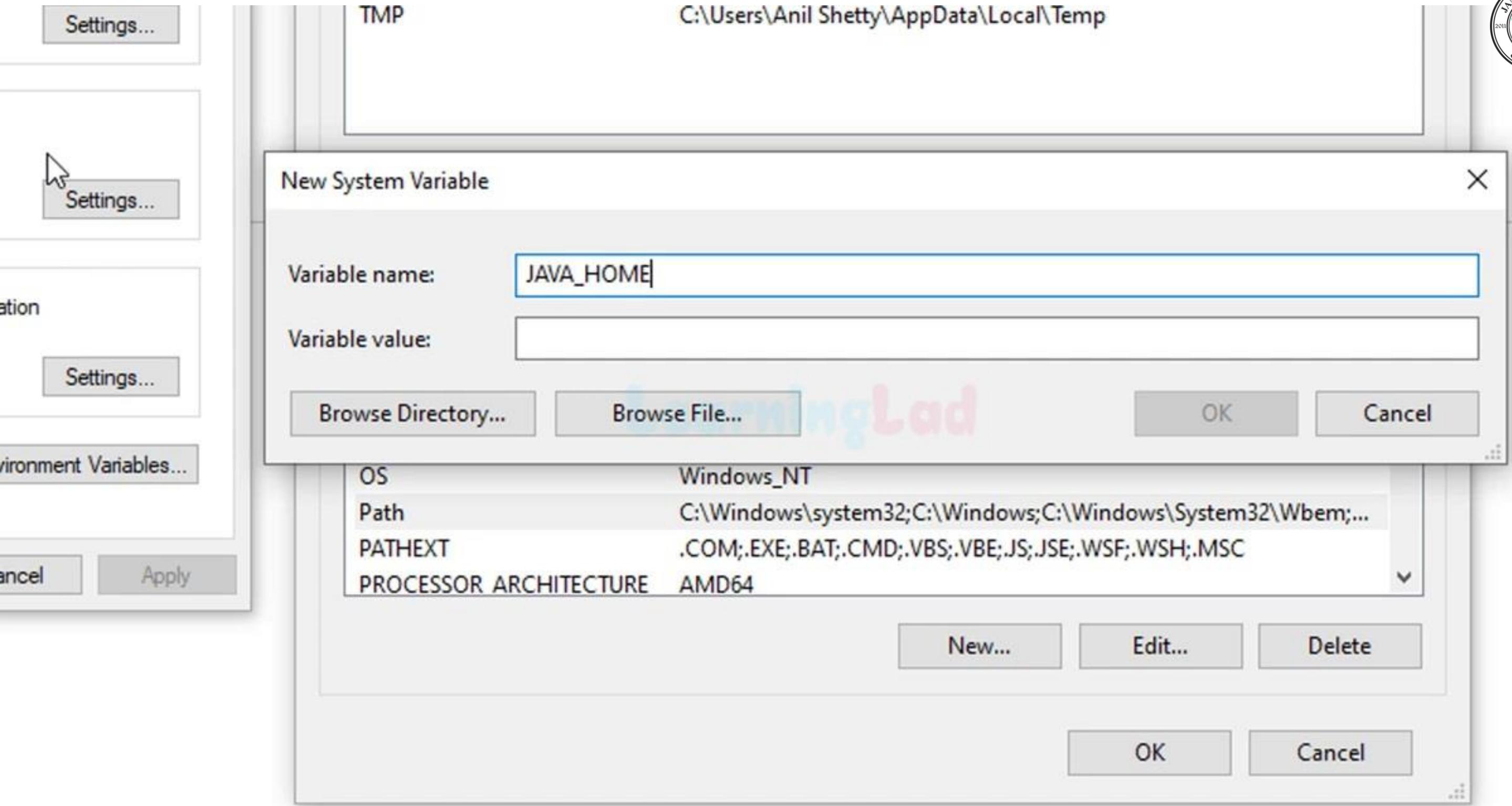


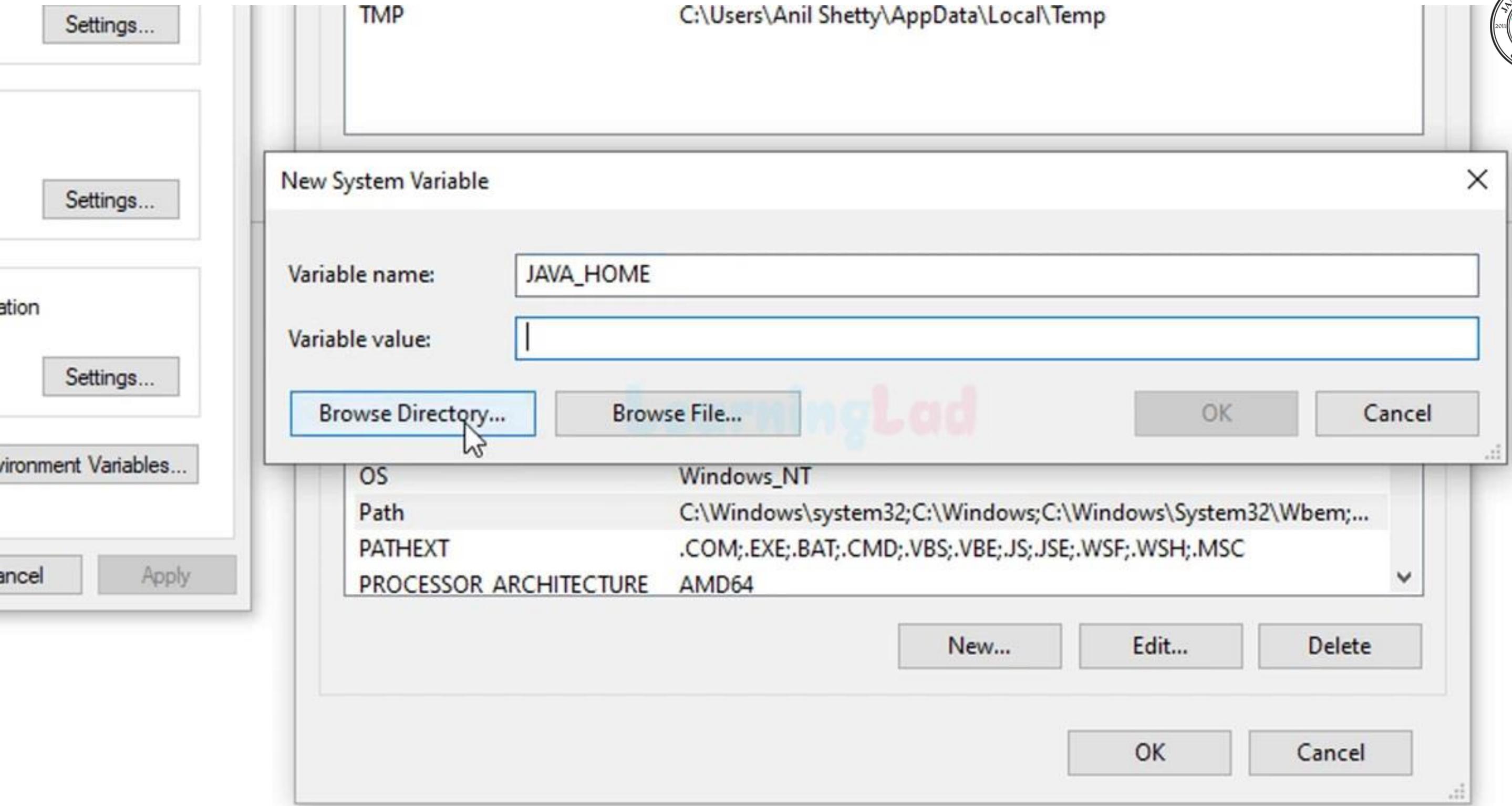


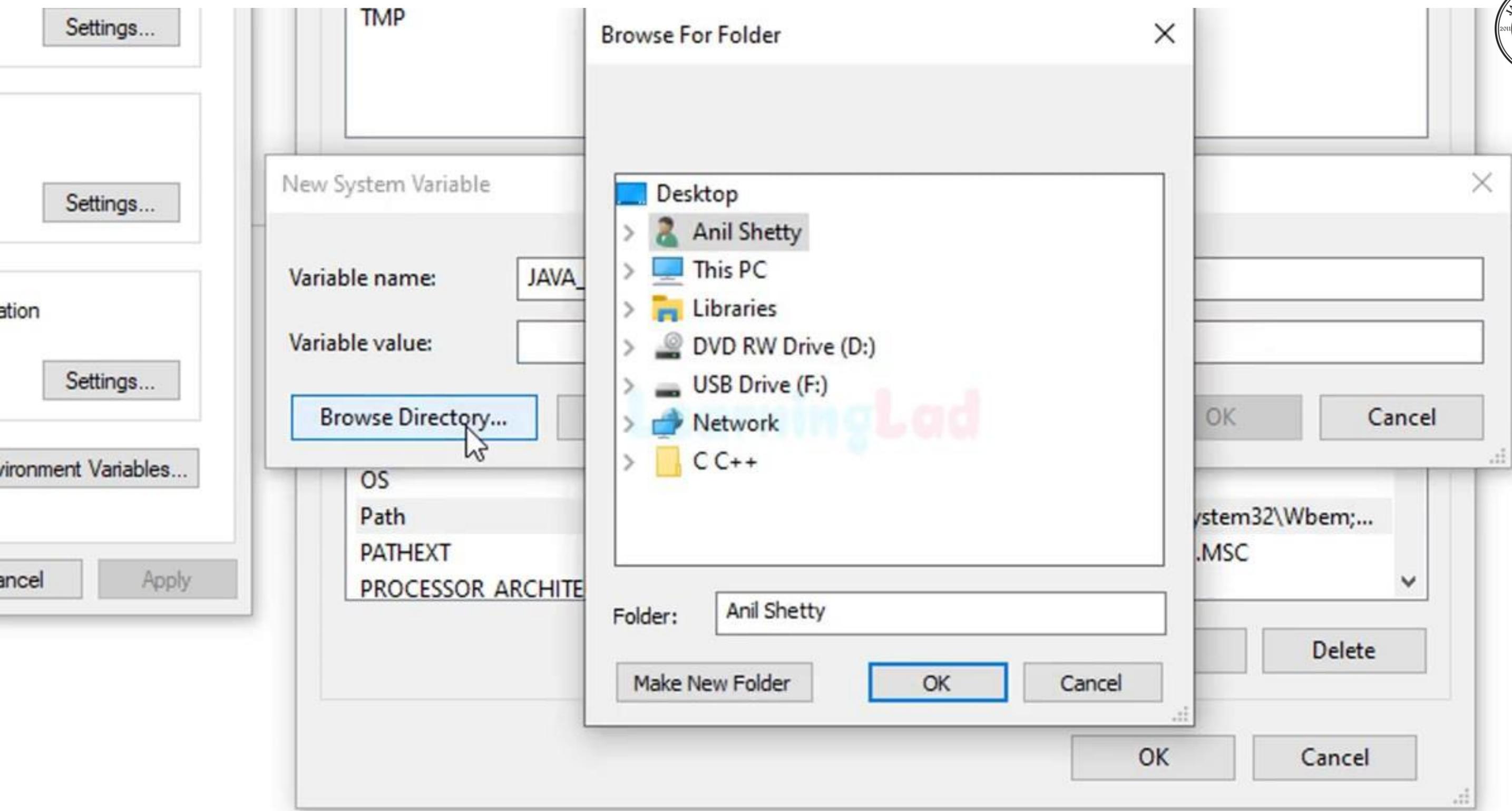


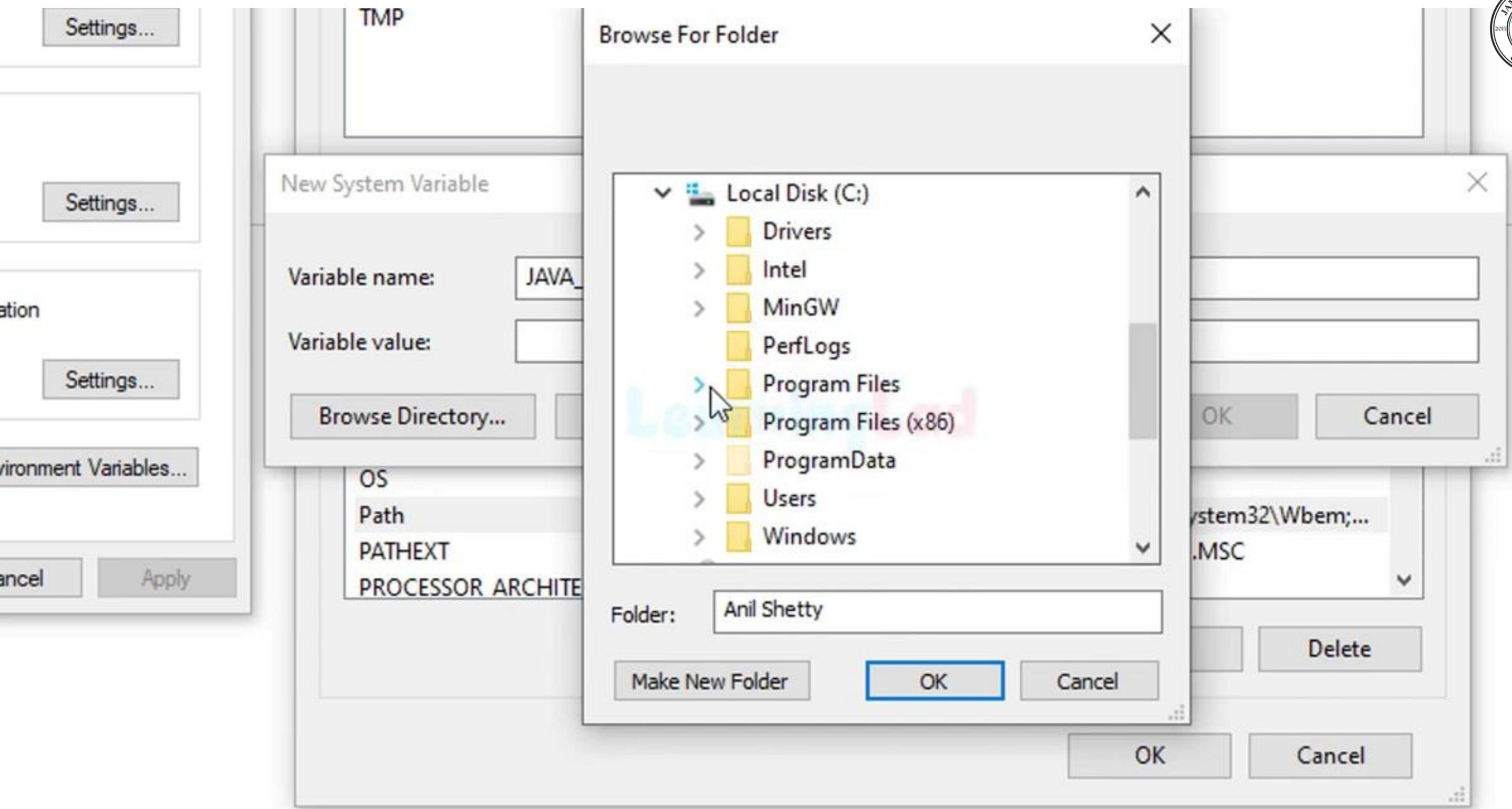














Settings...

Settings...

Settings...

ation

Environment Variables...

ancel

Apply

1 | TMP

New System Variable

Variable name: JAVA

Variable value:

[Browse Directory...](#)

OS

Path

PATHEXT

PROCESSOR ARCHIT

Browse For Folder

x

- > Drivers
- > Intel
- > MinGW
- > PerfLogs
- < Program Files
 - > Common Files
 - > DIFX
 - > Internet Explore
 - < Java

Folder:

Java

[Make New Folder](#)

OK

Cancel

OK

[Cancel](#)

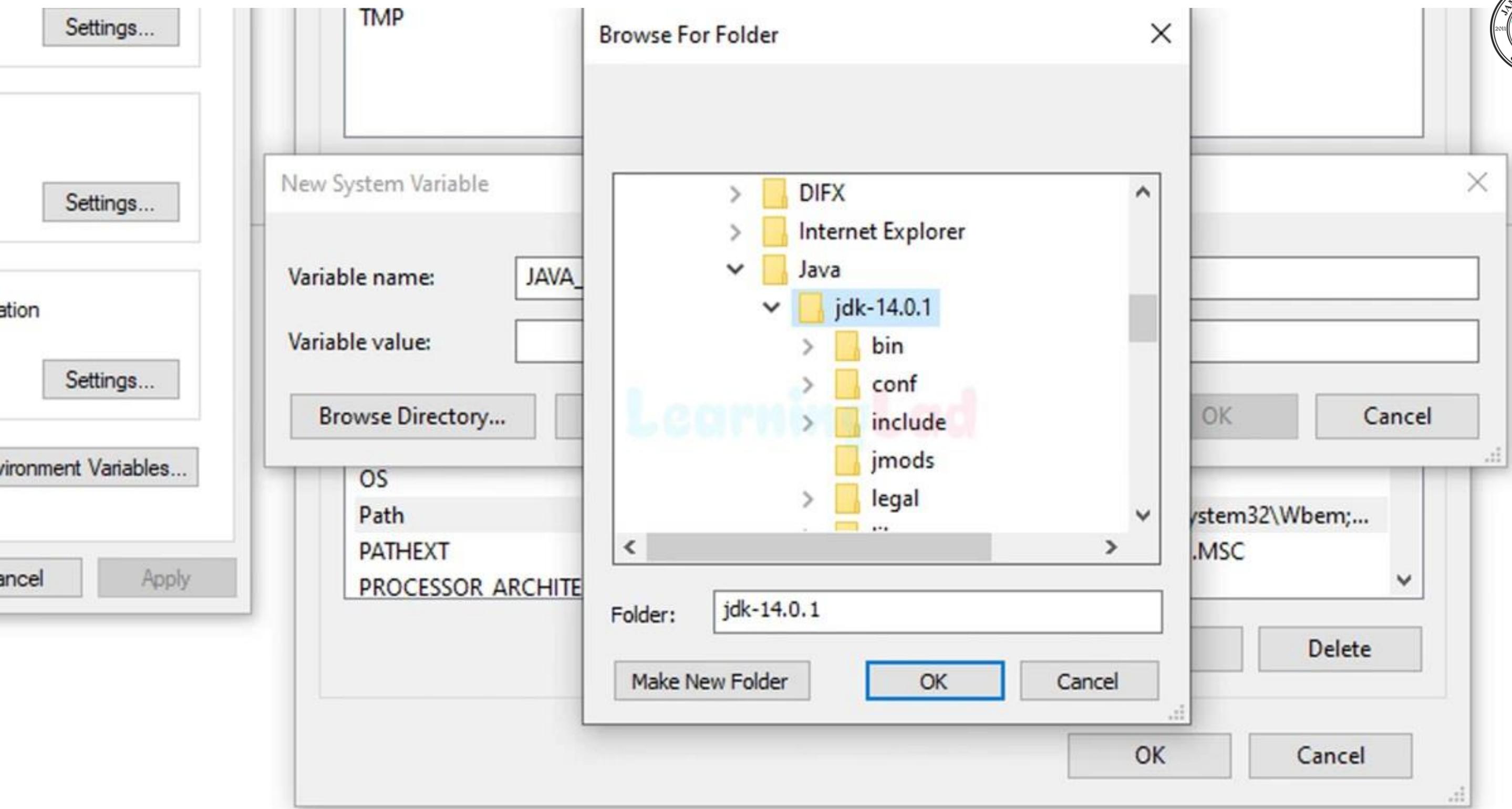
OK

[Cancel](#)

\System32\Whem...

.MSC

Delete





Settings...

1 | TMP

C:\Users\Anil Shetty\AppData\Local\Temp

Settings...

New System Variable

X

Variable name: JAVA_HOME

Variable value: C:\Program Files\Java\jdk-14.0.1

Settings...

[Browse Directory...](#)

Browse File..

OK

[Cancel](#)

Environment Variables...

cancel

Apply

05

Windows_NT

Path

C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;...

PATHEXT

.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC

PROCESSOR ARCHITECTURE AMD64

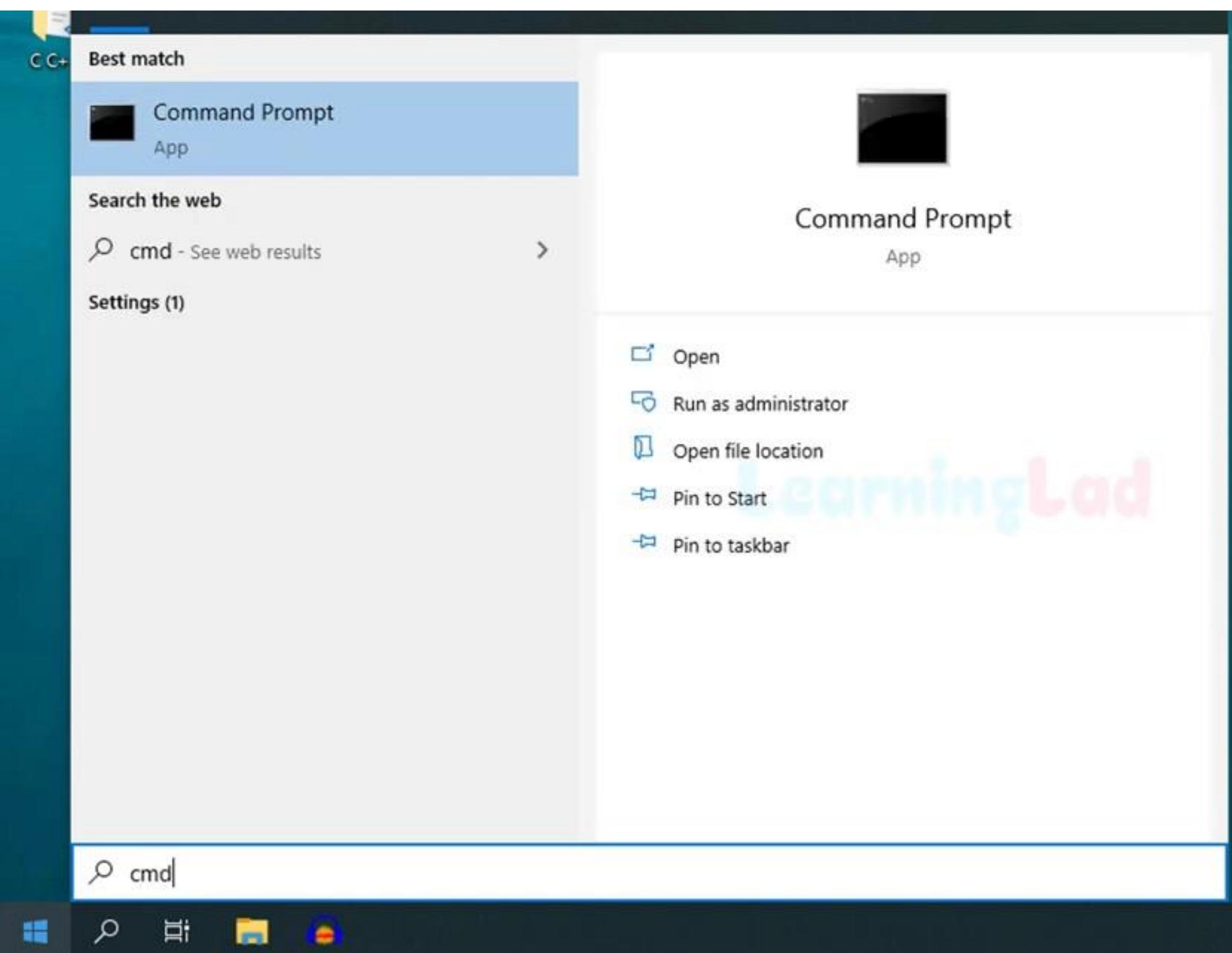
New...

Edit...

Delete

OK

[Cancel](#)



by Saifullah Haidari

Administrator: Command Prompt

Microsoft Windows [Version 10.0.18363.418]
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C:\Windows\system32>javac -version

LearningLab



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Sample code

Sodo code

```
public class Main {  
    public static void main(String[]  
args)  
    { System.out.println("Hello  
World"); } }
```



SPECIAL CHARACTERS

! @ # \$ % ^ & * () - = ` ~
[] { } \ | : ' " , . < > / ?

special characters



SPECIAL CHARACTERS

```
public class SpecialCharacters {  
    public static void main(String[] args) {  
        System.out.println("Hello,\n\tWelcome to Java Programming!");  
        System.out.println("To include a quote: \"Java is fun!\\"");  
        System.out.println("Backslash example: C:\\Program  
Files\\Java");  
        System.out.println("Unicode example: \u2602"); // Outputs '☔'  
    }  
}
```



Java Syntax

In the previous chapter, we created a Java file called Main.java, and we used the following code to print "Hello World" to the screen:

```
public class Main { public static void main(String[] args)
{
System.out.println("Hello World"); } }
```

Every line of code that runs in Java must be inside a `class`. In our example, we named the class `Main`. A class should always start with an uppercase first letter



Note

- **Java is case-sensitive:** "MyClass" and "myclass" has different meaning.
- **The name of the java file must match the class name. When saving the file, save it using the class name and add ".java" to the end of the filename.** To run the example above on your computer, make sure that Java is properly installed: Go to the [Get Started Chapter](#) for how to

```
String[] cars;
```



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Class operations

```
Static void main(String[] args) {
```

```
    int a=10;
```

```
    int b=5;
```

```
    int sum=a+b;
```

```
    int subtract=a-b;
```

```
    int
```

```
    multiplication=a*b;
```

```
    int division =a/b;
```

```
    System.out.println("The sum of " + a + " plus " + b + " equals " + sum);
```

```
    System.out.println("Subtraction of " + a + " minus " + b + " equals " + subtraction);
```

```
    System.out.println("The multiplication of " + a + " by " + b + " is equal to " +  
multiplication);
```

```
    System.out.println("The division of " + a + " by " + b + " is equal to " + division);
```





Example Java Code

```
// HelloWorld.java  
public class HelloWorld {  
    public static void main(String[] args) {  
        // Print a message to the console  
        System.out.println("Hello, World!");  
    }  
}
```



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```
var perc = 99.0, wmin = 1920, hmin = 1080, w, h, w1, h1, ratio;  
var FromDoc = open ( File ("D:\FromMacro.psd"));  
var IntoDoc = open ( File ("D:\IntoMacro.psd"));  
  
app.preferences.rulerUnits = Units.PIXELS;  
w = FromDoc.width.value;  
h = FromDoc.height.value;  
ratio = h/w;  
app.activeDocument = FromDoc;  
activeDocument.activeLayer = activeDocument.layers[0];  
  
var shapeRef =  
[ [ Math.floor ((w-1920)/2), Math.floor ((h-1080)/2) ],  
  [ Math.floor ((w-1920)/2)+1920, Math.floor ((h-1080)/2) ],  
  [ Math.floor ((w-1920)/2)+1920, Math.floor ((h-1080)/2)+1080 ],  
  [ Math.floor ((w-1920)/2), Math.floor ((h-1080)/2)+1080 ] ];  
  
app.activeDocument.selection.select ( shapeRef,SelectionType.REPLACE );  
app.activeDocument.selection.copy ();  
app.activeDocument = IntoDoc;  
activeDocument.activeLayer = activeDocument.layers[0];  
IntoDoc.paste ();  
  
while (1) {  
    if ( (w < wmin) || (h < hmin) ) break;  
    app.activeDocument = FromDoc;  
    activeDocument.activeLayer = activeDocument.layers[0];  
  
    app.activeDocument.activeLayer.copy ();  
    app.activeDocument = betweenDoc;  
    betweenDoc.paste ();  
    w1 = w;  
    h1 = h;  
    w = w * perc / 100;  
    h = h * ratio;  
}
```

Image ID: 2BGAXKE
www.alamy.com

As a conclusion of this lesson



- 1. Some Features Of Java**
- 2. Installation Of JDK**
- 3. Installation Of Editors For Java**
- 4. TEST The Software**
- 5. Run A Simple Program And Print Hello Word**



Thanks!

**Do you have any questions?
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Please keep this slide for your future

