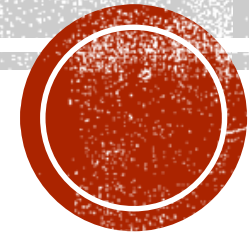




COMPUTER PROGRAMMING CONCEPTS

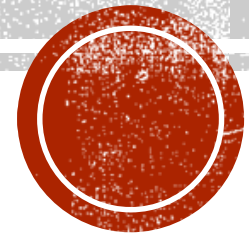


CS&IT 1101

Instructor: Shakar H. Salih

E-mail: shakar.salih@uhd.edu.iq

LAB 2:HOW TO INSTALL AND GET STARTED WITH JAVA PROGRAMMING



OUTLINES

1. IDE
2. Source Code Editor
3. NetBeans
4. Start First Project

INTEGRATED DEVELOPMENT ENVIRONMENT (IDE)

- An integrated development environment (IDE) is a software application that provides comprehensive facilities to computer programmers for software development.
- An IDE normally comprises of a source code editor, compiler, linker, interpreter, debugger & GUI builder ; termed as components.
- Some of the IDEs are NetBeans IDE, Eclipse IDE ,Microsoft Visual Studio ,Turbo C / C++ Builder etc.

WHAT YOU NEED FROM A JAVA IDE

- At a minimum, you would hope that your IDE supports Java 8
- You'd also want it to support the major application servers and the most popular web frameworks
- you would hope that your Java IDE lets you edit, build, debug, and test your systems with ease

SOURCE CODE EDITOR

- A source code editor is a text editor program designed specifically for editing source code of computer programs by programmers.

THE TOP FREE IDE FOR JAVA CODING, DEVELOPMENT & PROGRAMMING

1. NetBeans.
2. Eclipse. Eclipse is another free **Java IDE** for developers and programmers. ...
3. IntelliJ IDEA Community Edition. ...
4. Android Studio. ...
5. Enide Studio
6. BlueJ. ...
7. jEdit. ...
8. jGRASP.

WHY NETBEANS?

- NetBeans is an open-source integrated development environment (IDE) for developing with Java, PHP, C++, HTML5 and other programming languages.
- NetBeans is also referred to as a platform of modular components used for developing Java desktop applications.
- NetBeans is coded in Java and runs on most operating systems with a Java Virtual Machine (JVM), including Solaris, Mac OS, and Linux.

WHAT IS JDK.....?

- JDK stand for java development kit
- It is used to build and develop the java program
- It internally contains JRE
- It contains the compiler and debugger
- It contains all the related set of libraries and files to build and compile the java program.
- Without JDK we can't build any java program

WHAT IS JRE.....?

- JRE stands for Java Runtime environment
- JRE is the responsible unit to run the java program
- Without JRE we can't run java program (JDK is used to build java program, where as JRE is used to run java program).
- JRE contains JVM
- JRE contains all the inbuilt packages and library files (lang , io , util etc all packages are present in JRE)

TOOLS WE WILL NEED

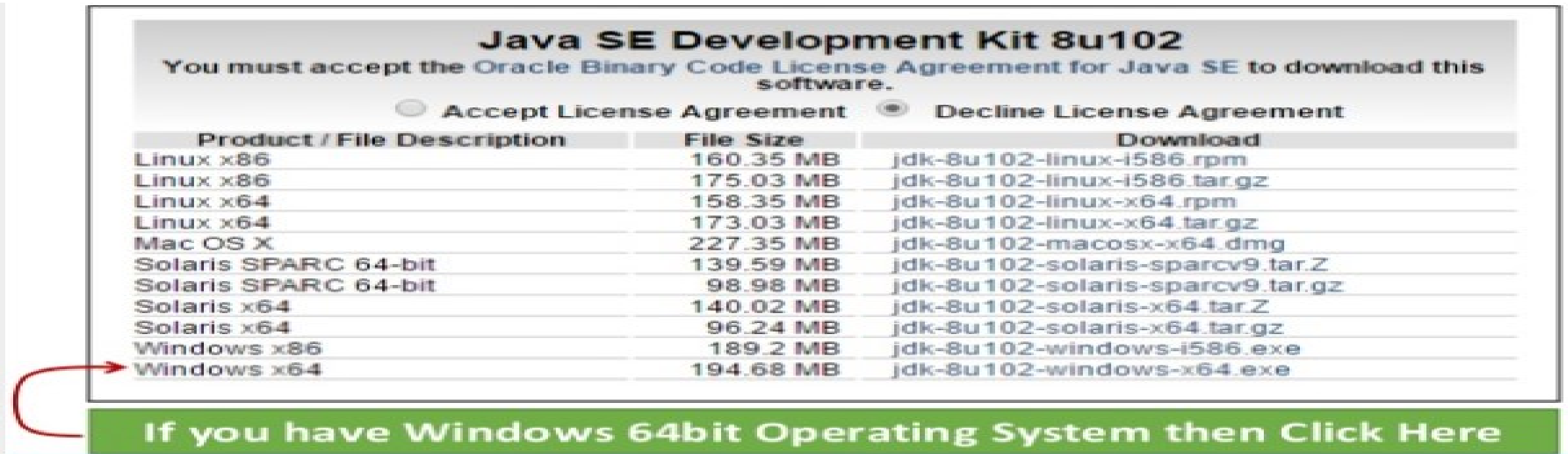
- For this course we will need the following software's:
- Windows xp/7/8/10 operating system
- Java jdk 8
- NetBeans 8.1 or 8.2

DOWNLOAD JAVA DEVELOPMENT KIT

- Download Java SE Development Kit 8 According to your Operating System architecture (32bit or 64bit).
- <https://www.oracle.com/technetwork/java/javase/downloads/index.html>
- We can also download JDK from any site with latest version probably version 8 is latest.

DOWNLOAD JAVA DEVELOPMENT KIT

- When you go JDK official site link is given in previous slide then you can see this type of webpage. Now download JDK According to your Operating System type



Java SE Development Kit 8u102

You must accept the Oracle Binary Code License Agreement for Java SE to download this software.

☐ Accept License Agreement ☒ Decline License Agreement

Product / File Description	File Size	Download
Linux x86	160.35 MB	jdk-8u102-linux-i586.rpm
Linux x86	175.03 MB	jdk-8u102-linux-i586.tar.gz
Linux x64	158.35 MB	jdk-8u102-linux-x64.rpm
Linux x64	173.03 MB	jdk-8u102-linux-x64.tar.gz
Mac OS X	227.35 MB	jdk-8u102-macosx-x64.dmg
Solaris SPARC 64-bit	139.59 MB	jdk-8u102-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	98.98 MB	jdk-8u102-solaris-sparcv9.tar.gz
Solaris x64	140.02 MB	jdk-8u102-solaris-x64.tar.Z
Solaris x64	96.24 MB	jdk-8u102-solaris-x64.tar.gz
Windows x86	189.2 MB	jdk-8u102-windows-i586.exe
Windows x64	194.68 MB	jdk-8u102-windows-x64.exe

If you have Windows 64bit Operating System then Click Here

DOWNLOAD JAVA DEVELOPMENT KIT

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Java SE Development Kit 8u102
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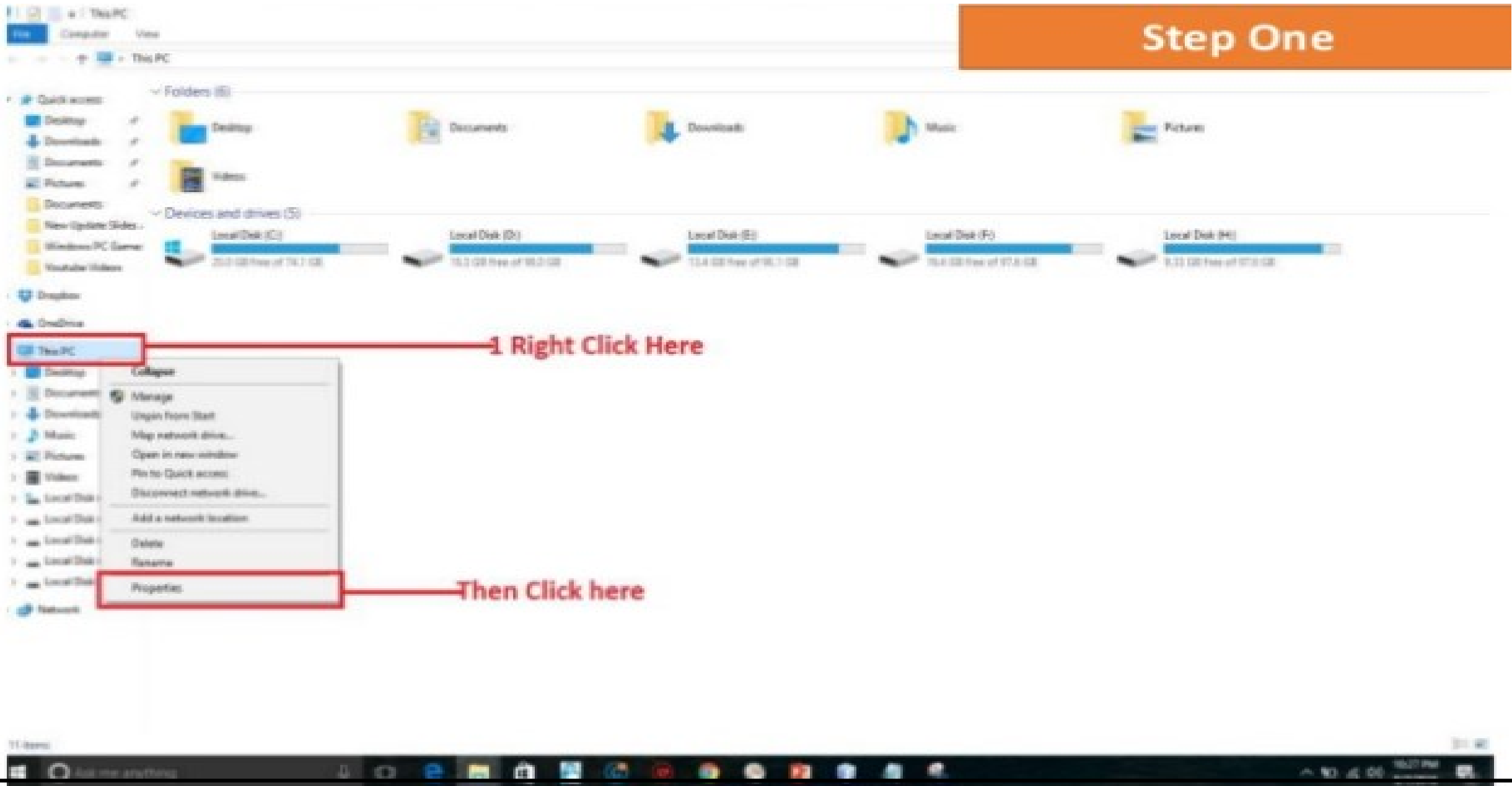
Product / File Description	File Size	Download
Linux x86	160.35 MB	jdk-8u102-linux-i586.rpm
Linux x86	175.03 MB	jdk-8u102-linux-i586.tar.gz
Linux x64	158.35 MB	jdk-8u102-linux-x64.rpm
Linux x64	173.03 MB	jdk-8u102-linux-x64.tar.gz
Mac OS X	227.35 MB	jdk-8u102-macosx-x64.dmg
Solaris SPARC 64-bit	139.59 MB	jdk-8u102-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	98.98 MB	jdk-8u102-solaris-sparcv9.tar.gz
Solaris x64	140.02 MB	jdk-8u102-solaris-x64.tar.Z
Solaris x64	96.24 MB	jdk-8u102-solaris-x64.tar.gz
Windows x86	189.2 MB	jdk-8u102-windows-i586.exe
Windows x64	194.68 MB	jdk-8u102-windows-x64.exe

If you have Windows 32bit Operating System then Click Here

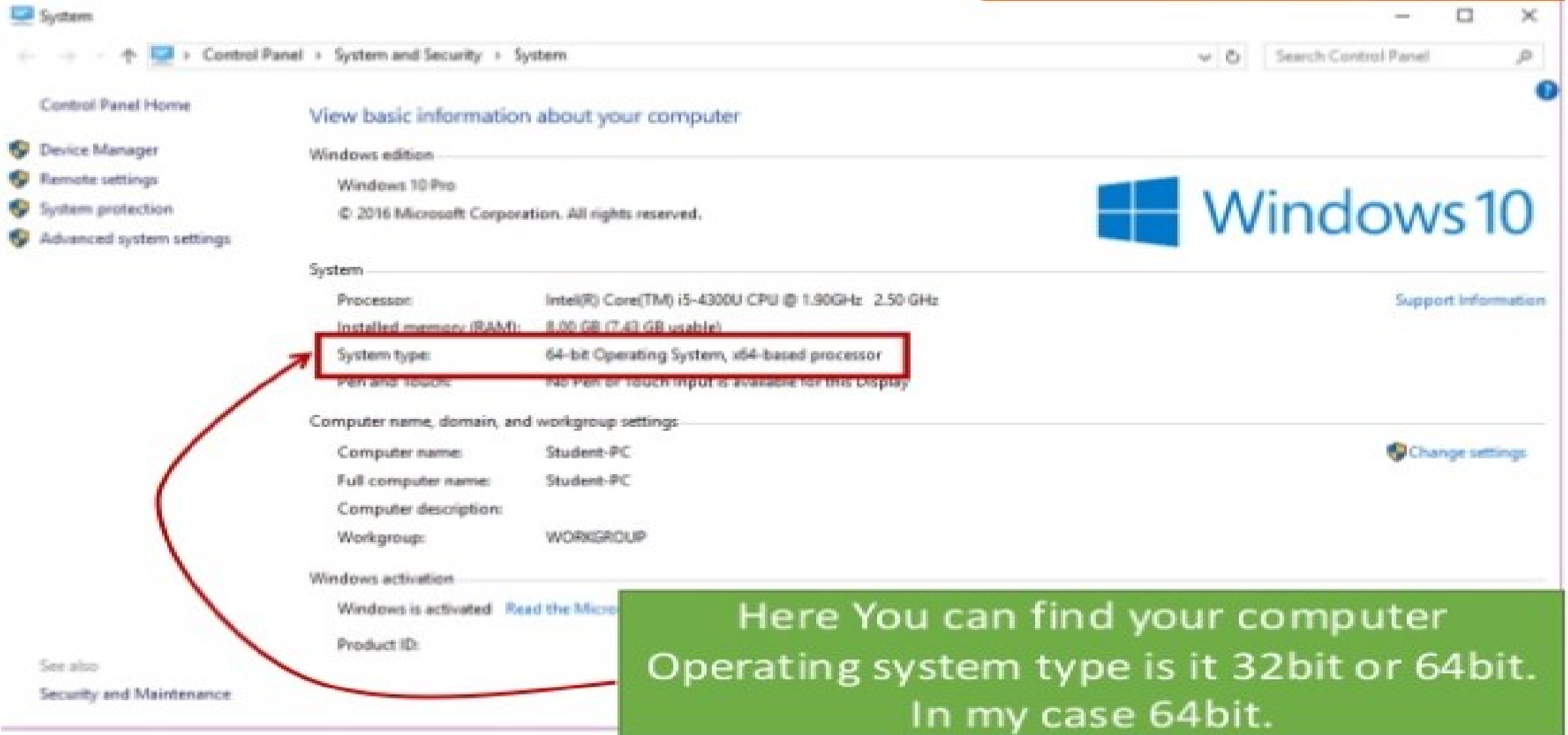
PLEASE NOTE

- If you don't know about your Operating System Architecture is it 32bit or 64bit so follow me to find this
- Go on my computer icon and right click, after that click on properties option

Step One



Step Two



The screenshot shows the Windows 10 'System' page in the Control Panel. The breadcrumb trail at the top reads: 'Control Panel > System and Security > System'. On the left sidebar, there are links to 'Device Manager', 'Remote settings', 'System protection', and 'Advanced system settings'. The main content area is titled 'View basic information about your computer'. It displays the 'Windows edition' as 'Windows 10 Pro' with copyright information '© 2016 Microsoft Corporation. All rights reserved.' and the 'Windows 10' logo. Below this, the 'System' section lists hardware and software details: 'Processor: Intel(R) Core(TM) i5-4300U CPU @ 1.90GHz 2.50 GHz', 'Installed memory (RAM): 8.00 GB (7.43 GB usable)', and 'System type: 64-bit Operating System, x64-based processor'. The 'System type' entry is highlighted with a red rectangle, and a red arrow points from a green text box at the bottom right to it. Other entries include 'Pen and touch: Ink Pen or touch input is available for this Display'. The 'Computer name, domain, and workgroup settings' section shows 'Computer name: Student-PC', 'Full computer name: Student-PC', 'Computer description:', and 'Workgroup: WORKGROUP'. The 'Windows activation' section shows 'Windows is activated' and 'Product ID:'. A green text box at the bottom right contains the text: 'Here You can find your computer Operating system type is it 32bit or 64bit. In my case 64bit.'

Control Panel Home

Device Manager

Remote settings

System protection

Advanced system settings

View basic information about your computer

Windows edition

Windows 10 Pro

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Windows 10

Support information

System

Processor: Intel(R) Core(TM) i5-4300U CPU @ 1.90GHz 2.50 GHz

Installed memory (RAM): 8.00 GB (7.43 GB usable)

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

Pen and touch: Ink Pen or touch input is available for this Display

Computer name, domain, and workgroup settings

Computer name: Student-PC

Full computer name: Student-PC

Computer description:

Workgroup: WORKGROUP

Windows activation

Windows is activated Read the Microsoft activation blog

Product ID:

See also

Security and Maintenance

Here You can find your computer Operating system type is it 32bit or 64bit. In my case 64bit.

NOW DOWNLOAD NETBEANS 8.1 OR 8.2

- For Download NetBeans Go this Site
<http://netbeans.org/downloads/index.html>.
- When you go to NetBeans Official Site then you can see this type of webpage, Then you can simply download All Bundles Version. Follow me

NetBeans IDE Download Bundles

Supported technologies *	Java SE	Java EE	HTML5/JavaScript	PHP	C/C++	All
④ NetBeans Platform SDK	•	•				•
④ Java SE	•	•				•
④ Java FX	•	•				•
④ Java EE		•				•
④ Java ME						•
④ HTML5/JavaScript		•	•	•		•
④ PHP			•	•		•
④ C/C++					•	•
④ Groovy						•
④ Java Card™ 3 Connected						•
Bundled servers						
④ GlassFish Server Open Source Edition 4.1.1		•				•
④ Apache Tomcat 8.0.27		•				•
	Download	Download	Download x86 Download x64	Download x86 Download x64	Download x86 Download x64	Download
	Free, 95 MB	Free, 192 MB	Free, 104 - 107 MB	Free, 104 - 107 MB	Free, 106 - 110 MB	Free, 215 MB

Simply Click here for download. Don't Worry about 32bit and 64bit because this bundle contain both setup of 32bits and 64bits

INSTALLATION PROCESS

- After Download you must have these two Software's Setup



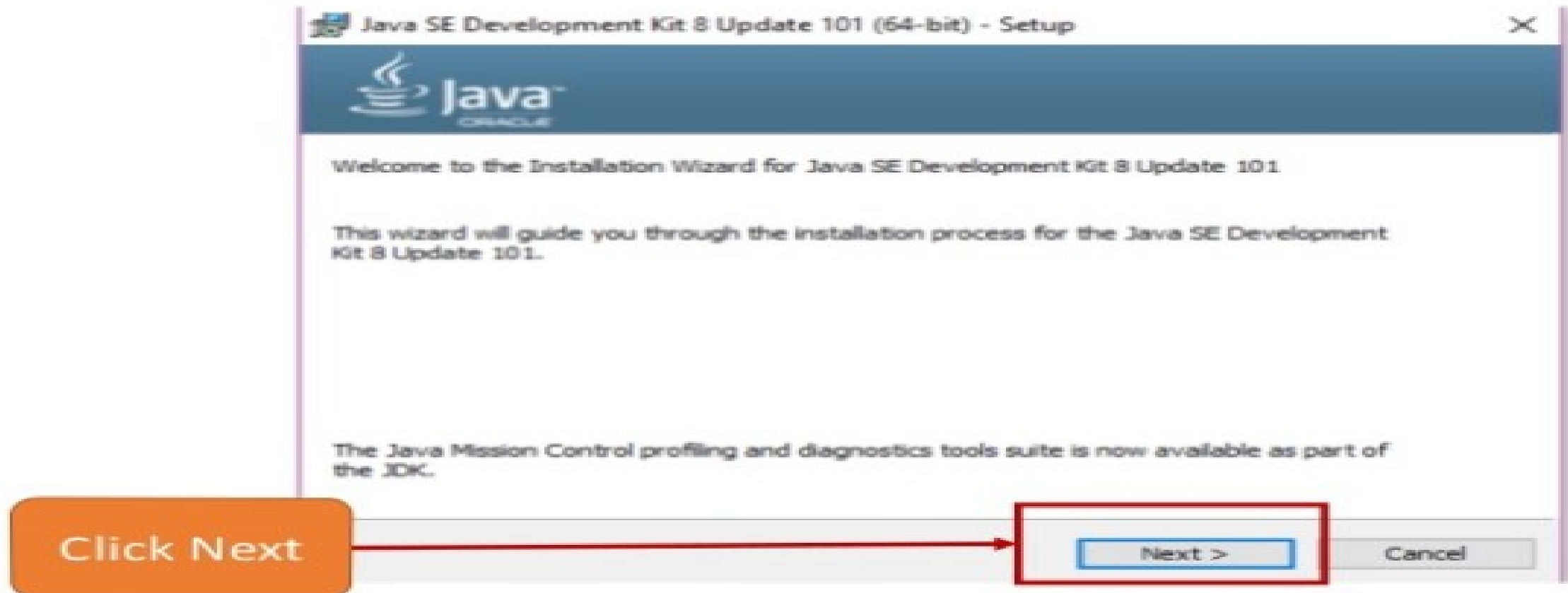
INSTALLATION OF JDK

- First install Java Development Kit (JDK)

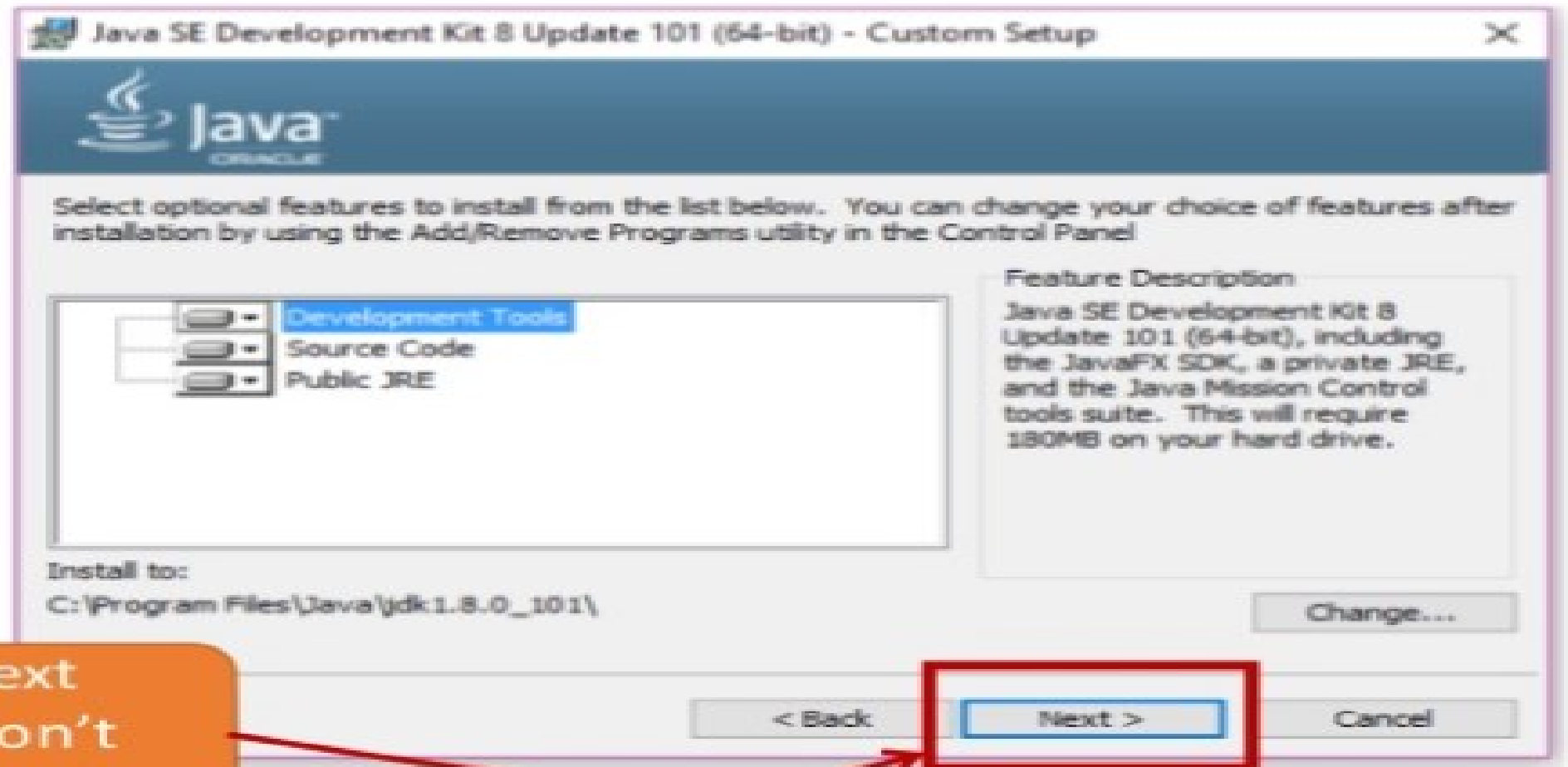


INSTALLATION OF JDK

- Then you can see this type of screen

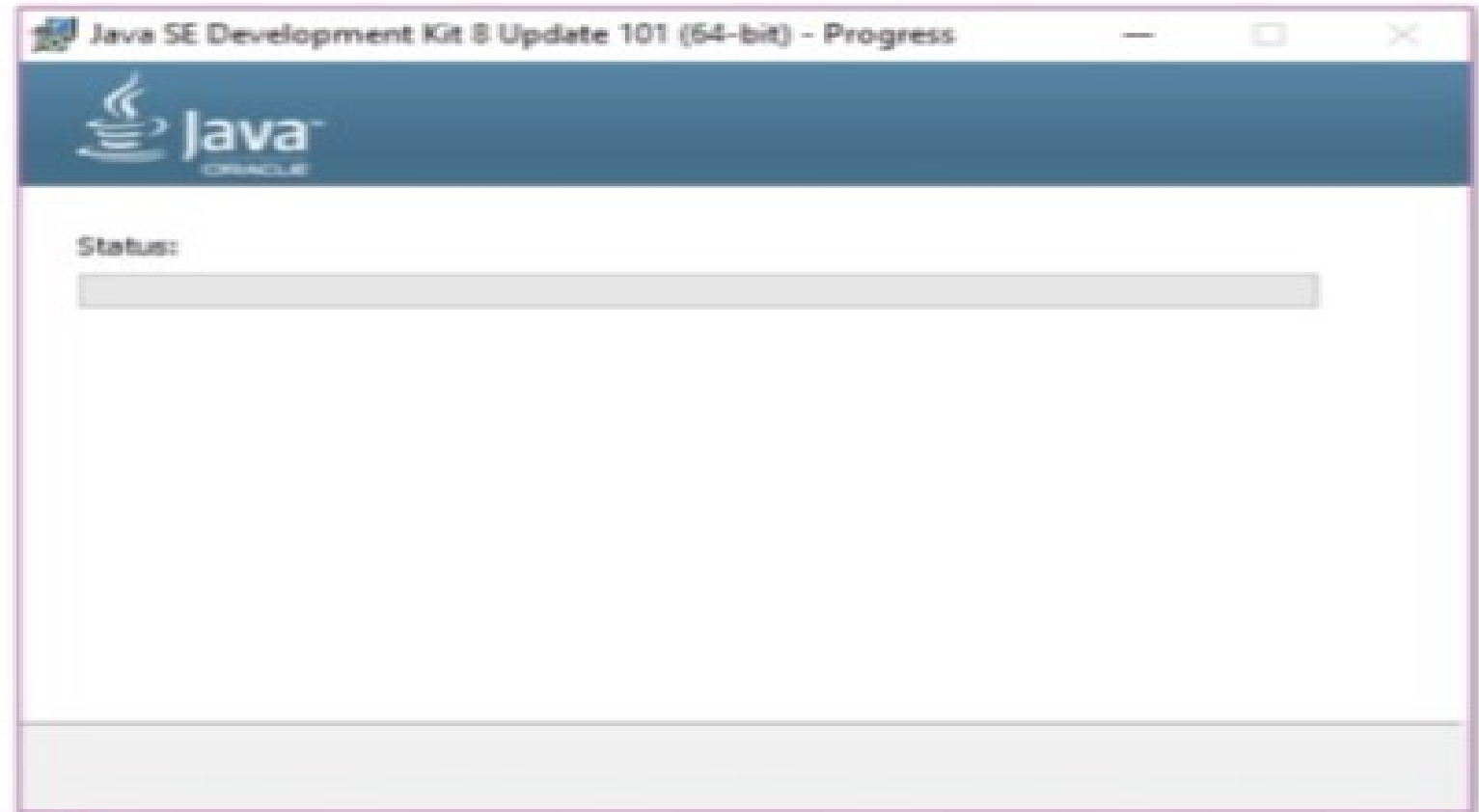


INSTALLATION OF JDK



Click Next
Please don't
Change Path

INSTALLATION OF JDK



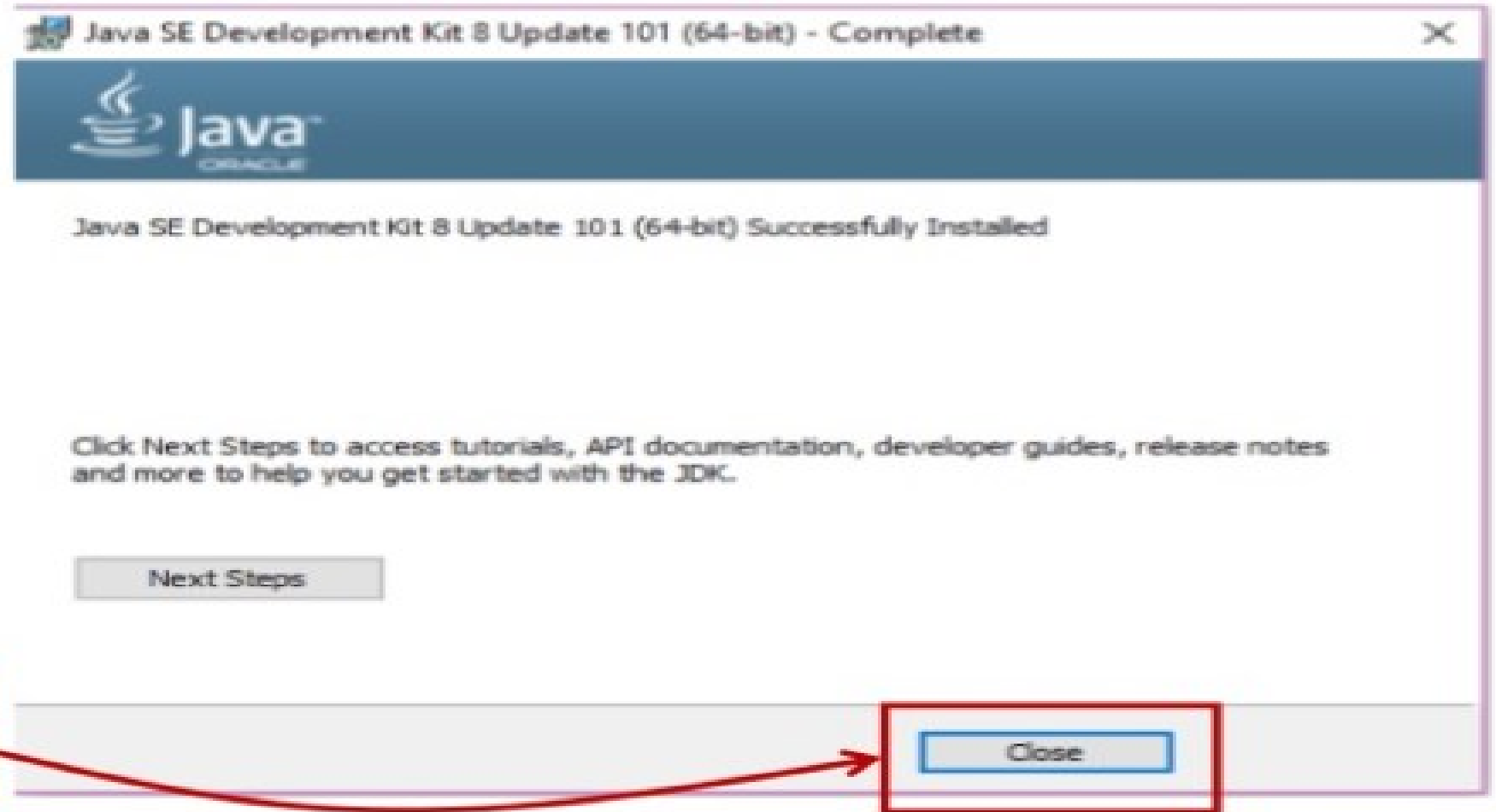
Wait For Installation

INSTALLATION OF JDK



Some More Wait

INSTALLATION OF JDK



INSTALLATION OF JDK

Java Development Kit Installation Completed.!

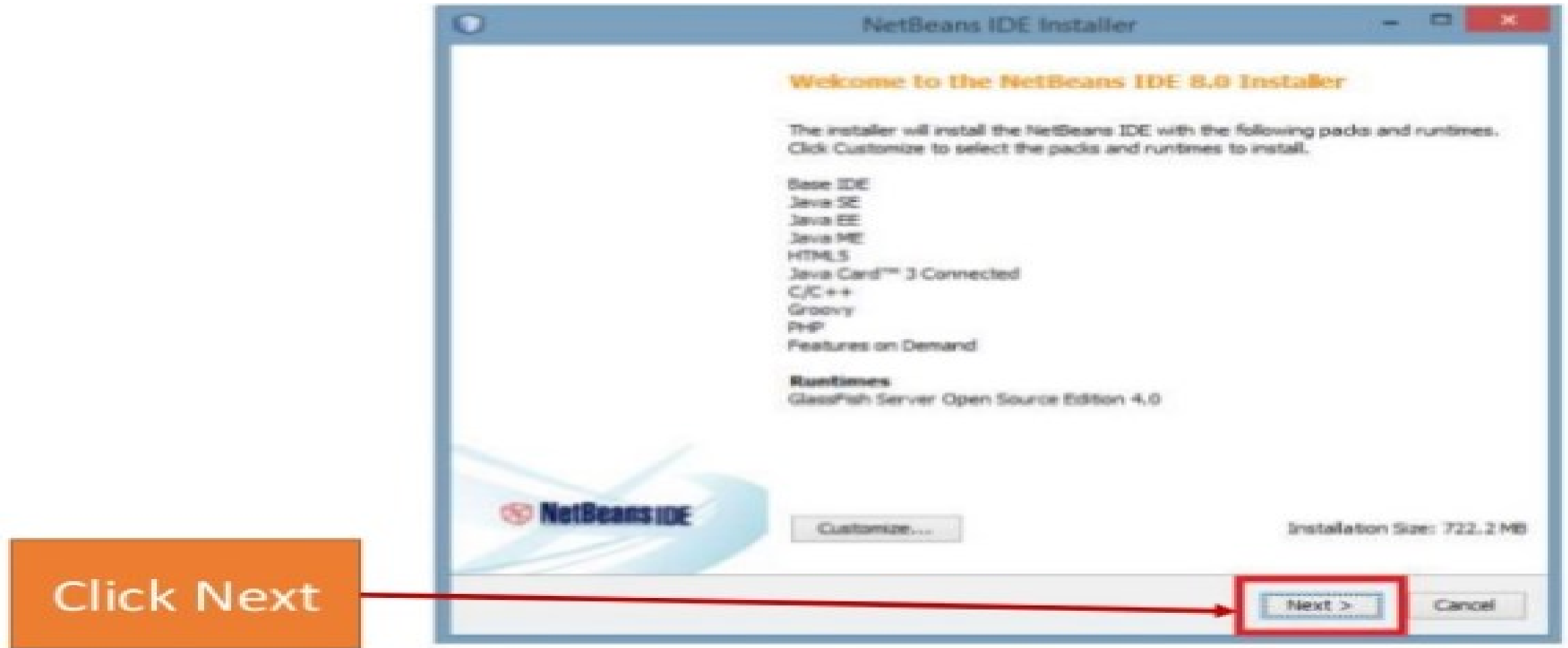


INSTALLATION OF NETBEANS

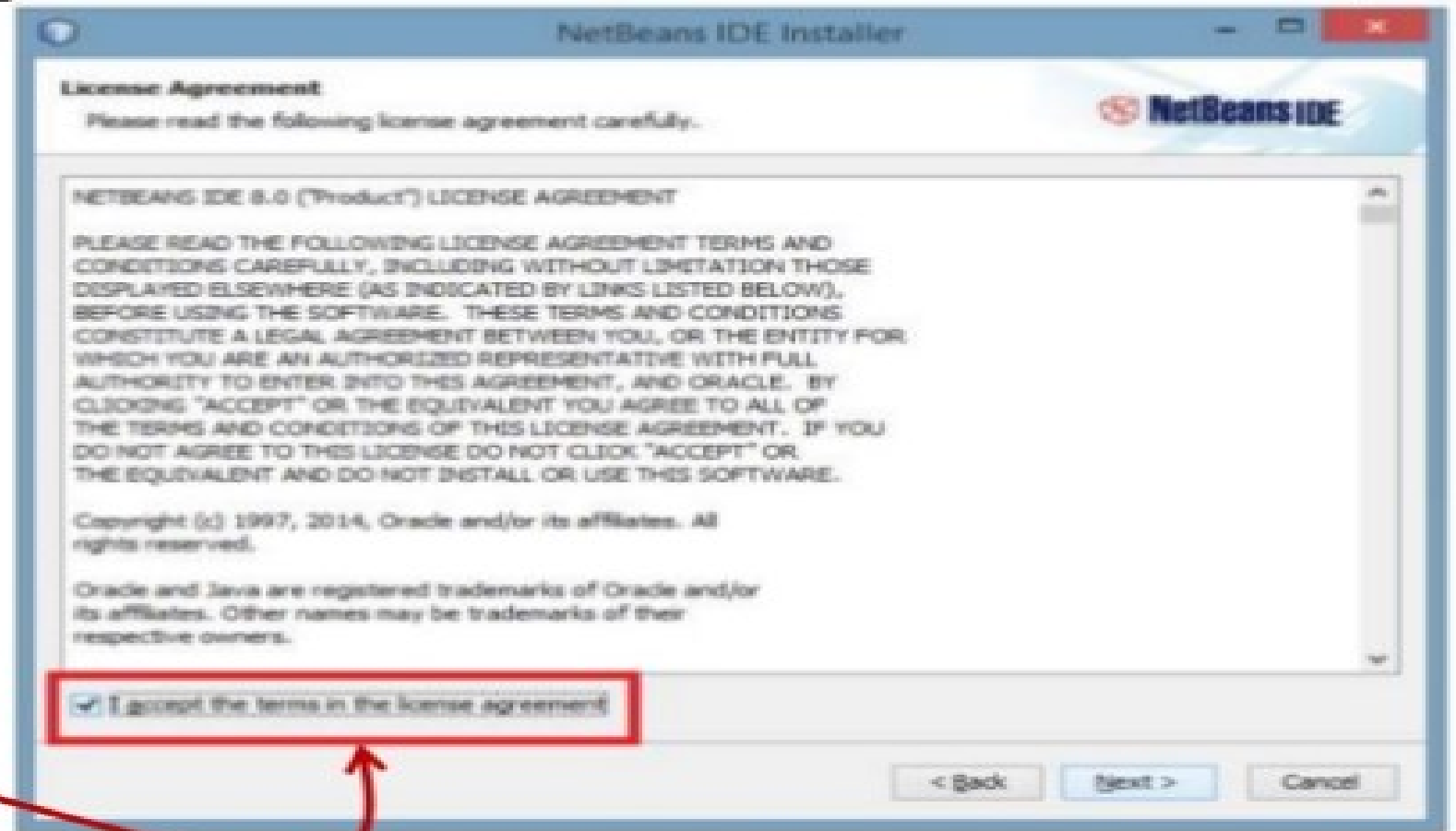
- Secondly now we install NetBeans



INSTALLATION OF NETBEANS

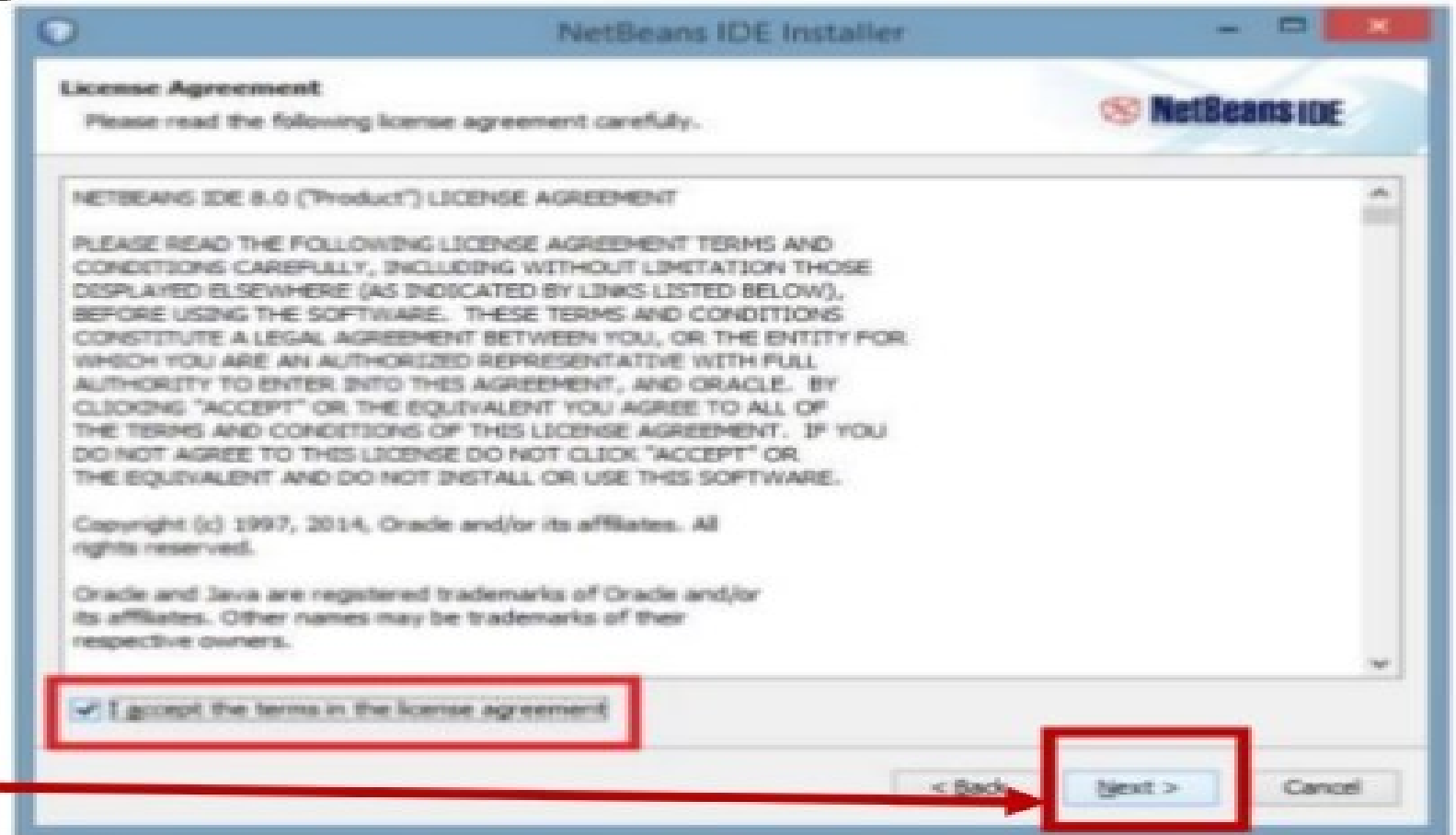


INSTALLATION OF NETBEANS



Click the "Accept"
Checkbox.

INSTALLATION OF NETBEANS

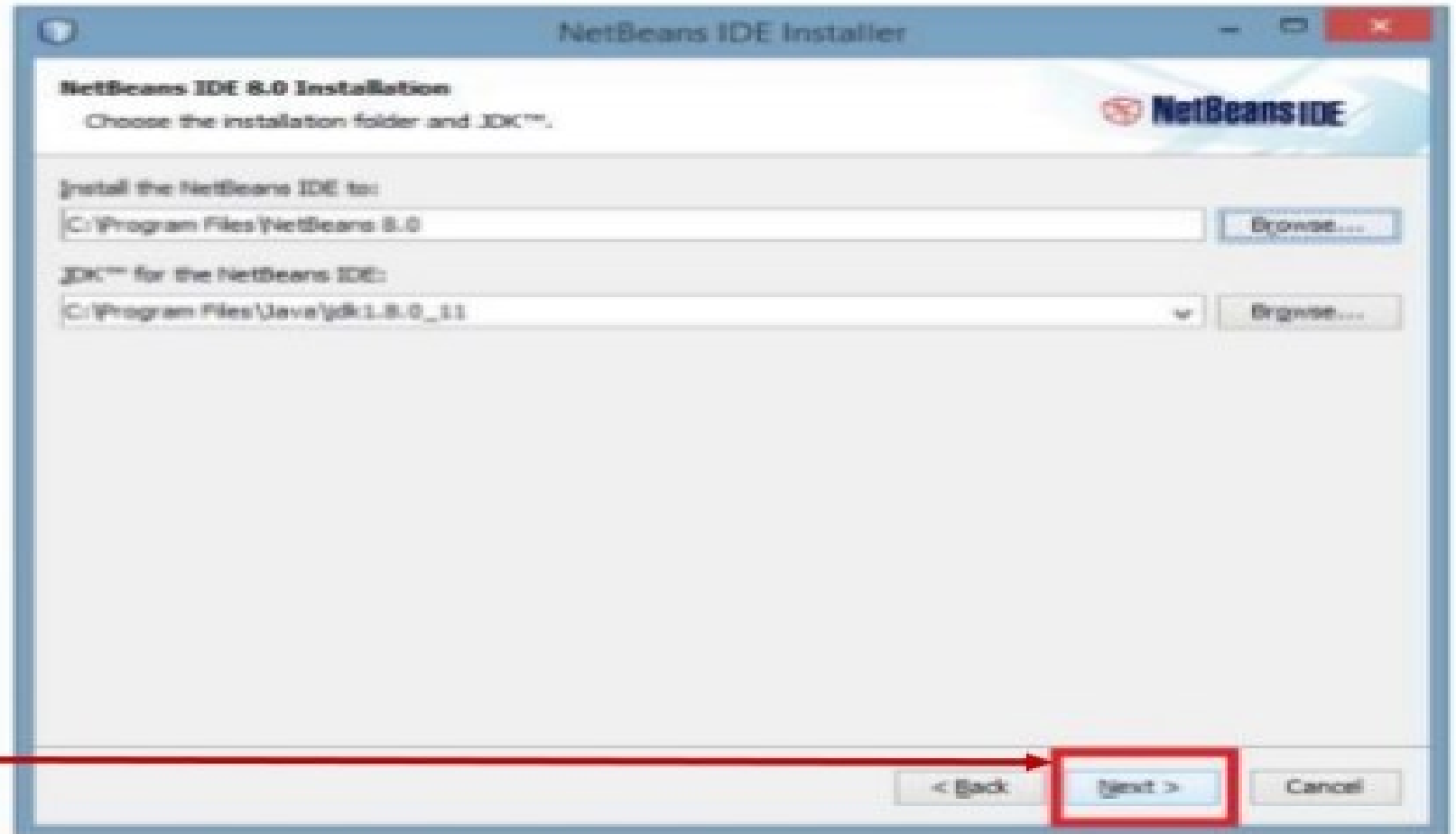


After Click the
“Next” Button

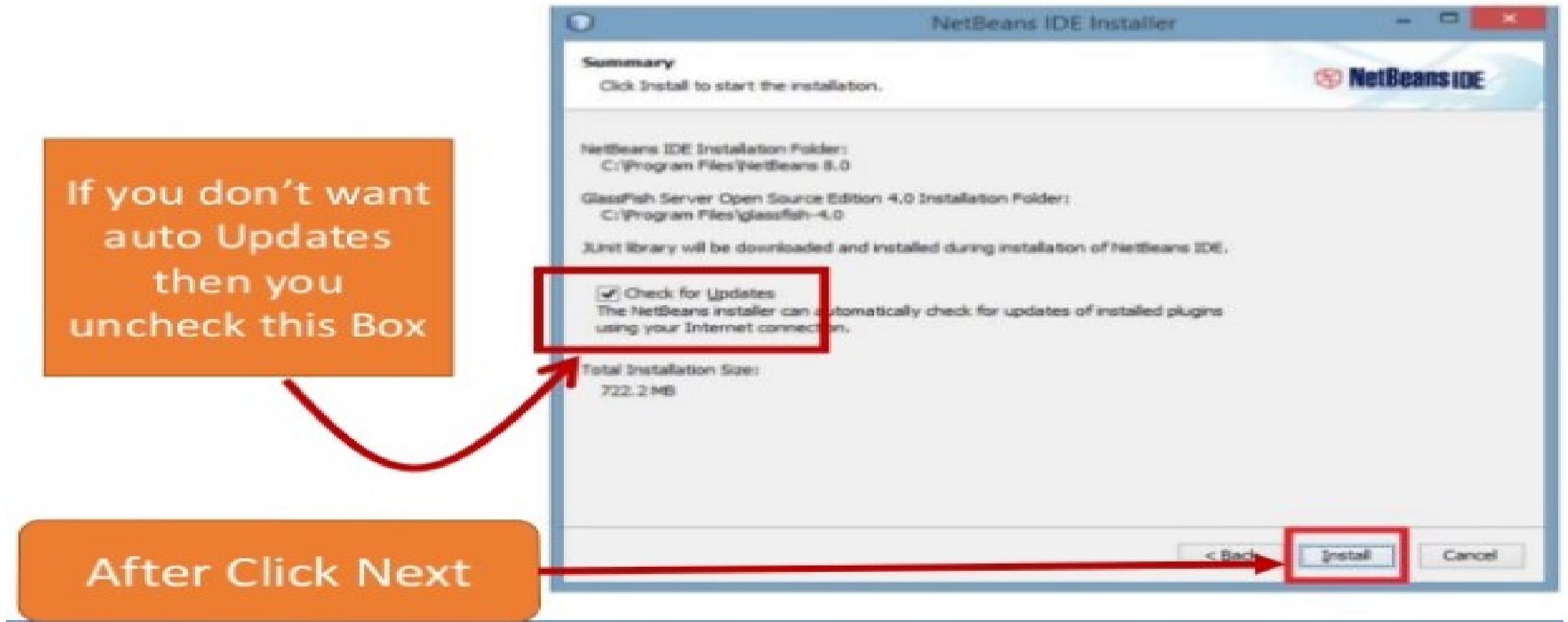
INSTALLATION OF NETBEANS

Please Don't
Change the
Installation Path
Because Default
Path is
Recommended

Click Next



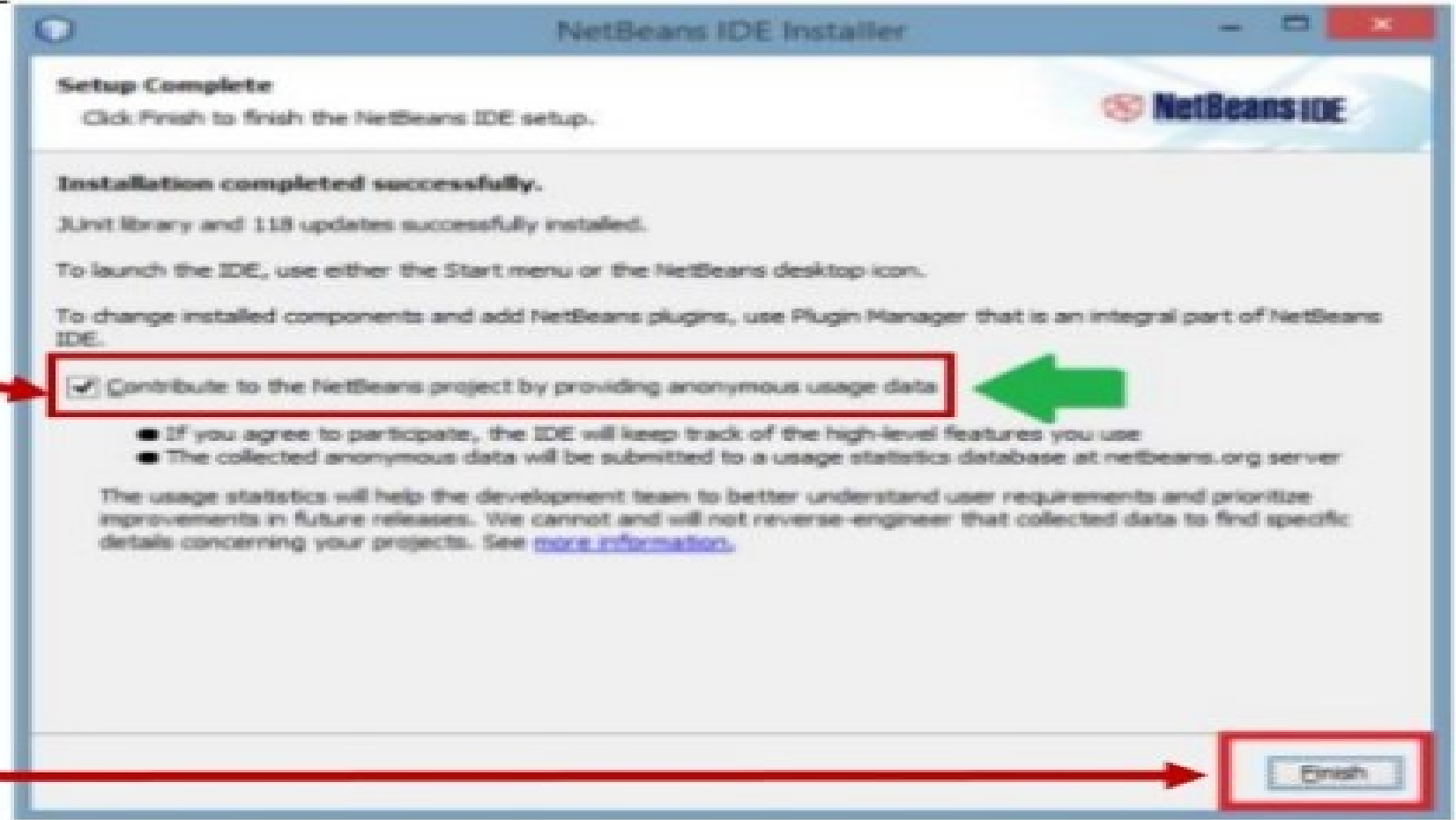
INSTALLATION OF NETBEANS



INSTALLATION OF NETBEANS

Uncheck this
Checkbox

After Click Finish

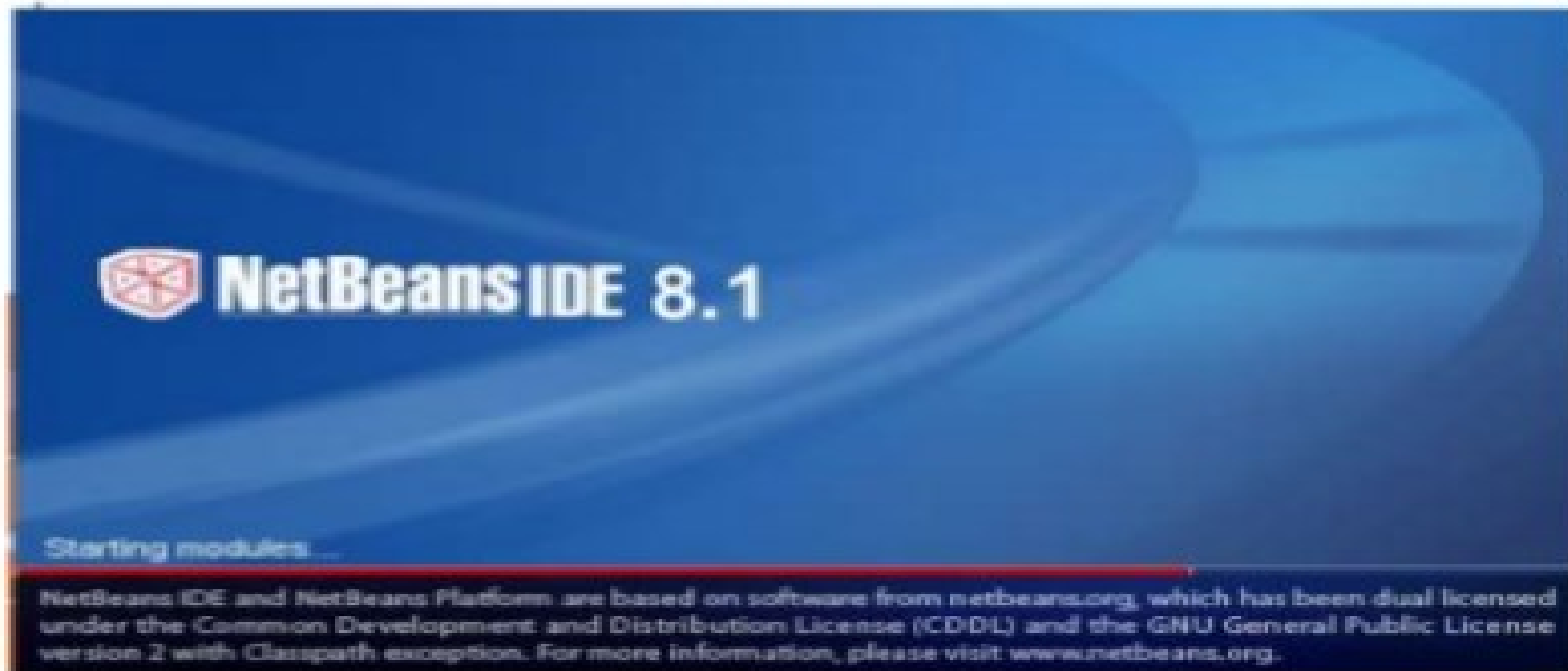


INSTALLATION OF NETBEANS

NetBeans Installation Completed.!

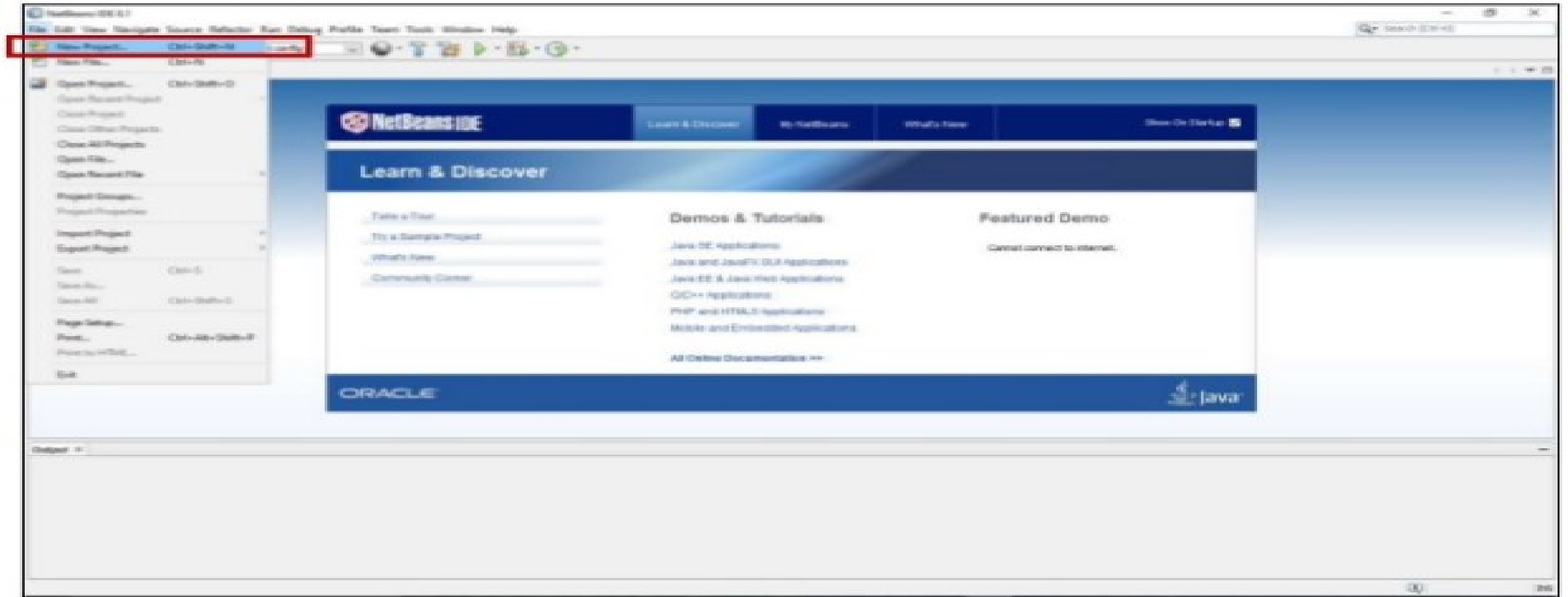


CREATE YOUR FIRST PROJECT



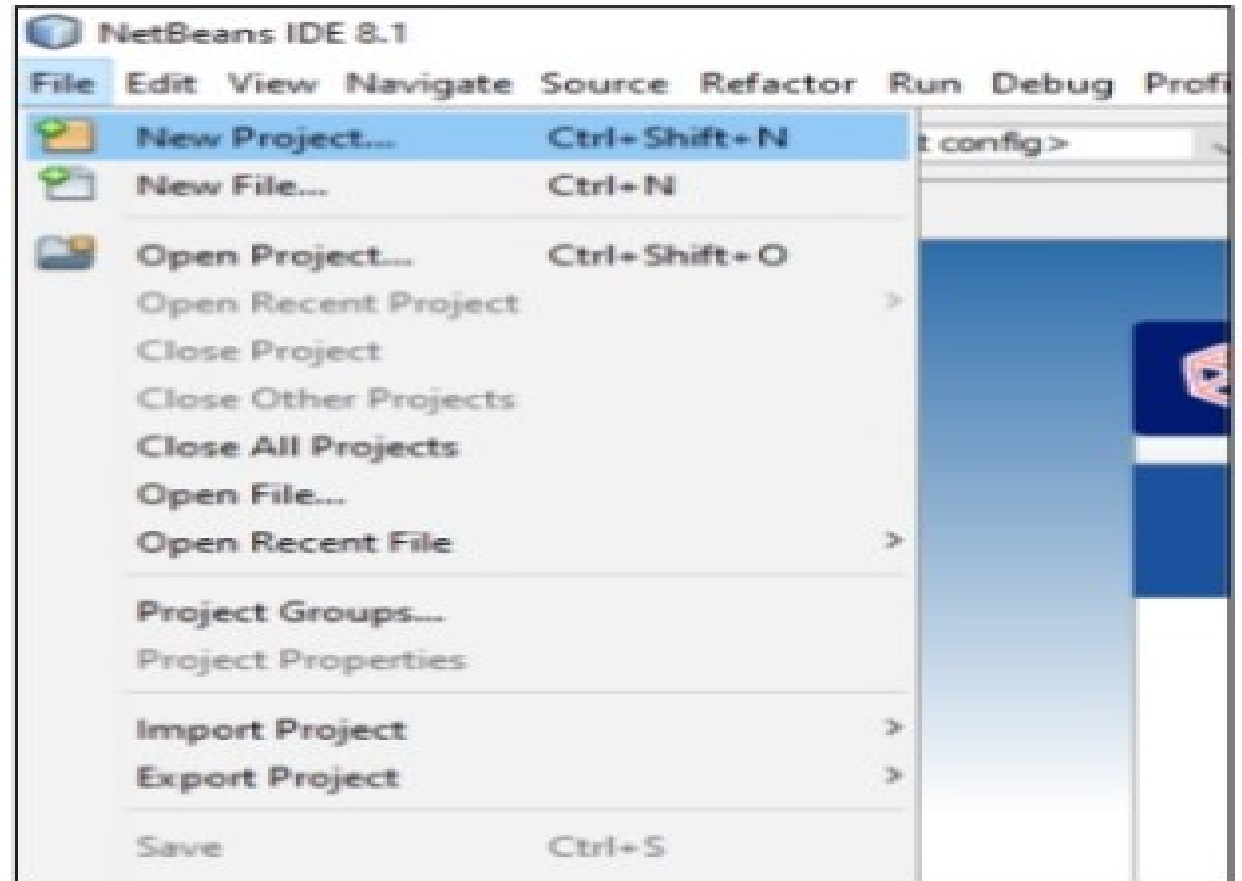
Wait Until Loading is Complete

CREATE YOUR FIRST PROJECT

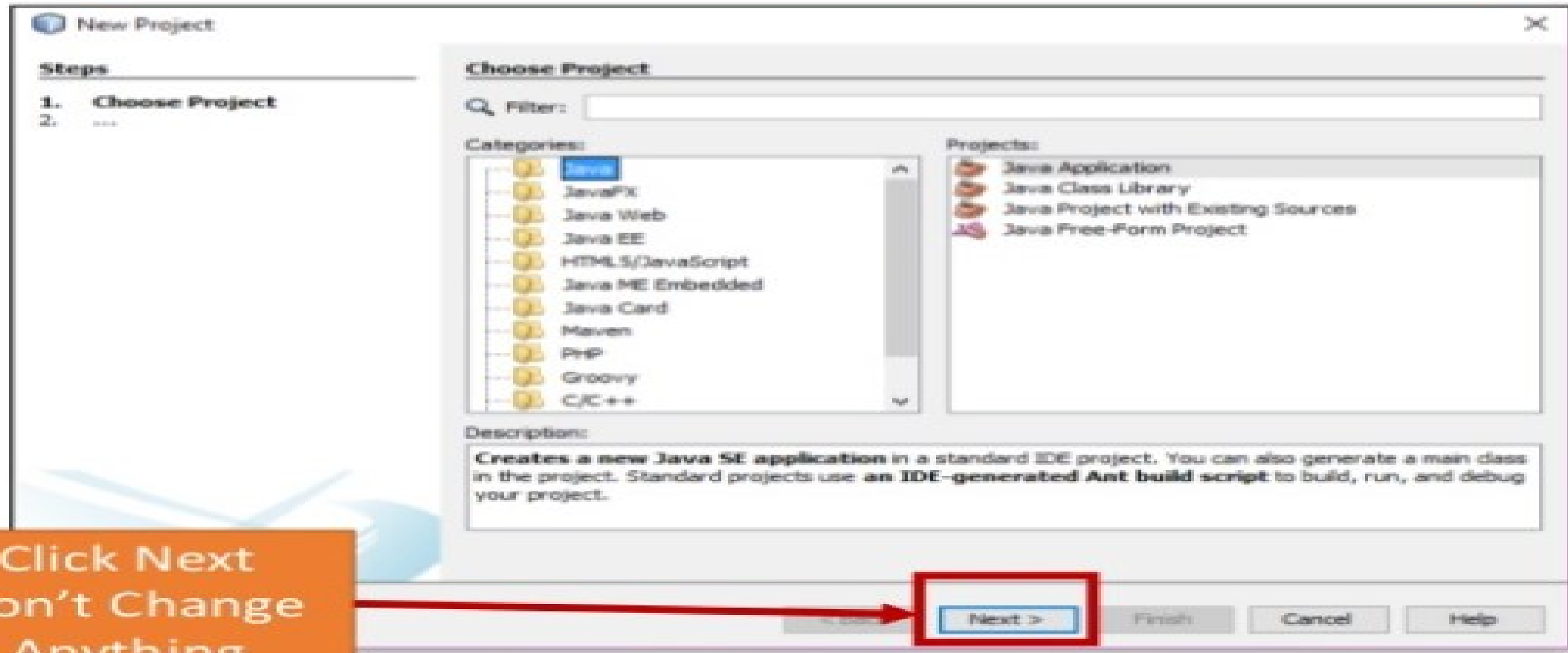


CREATE YOUR FIRST PROJECT

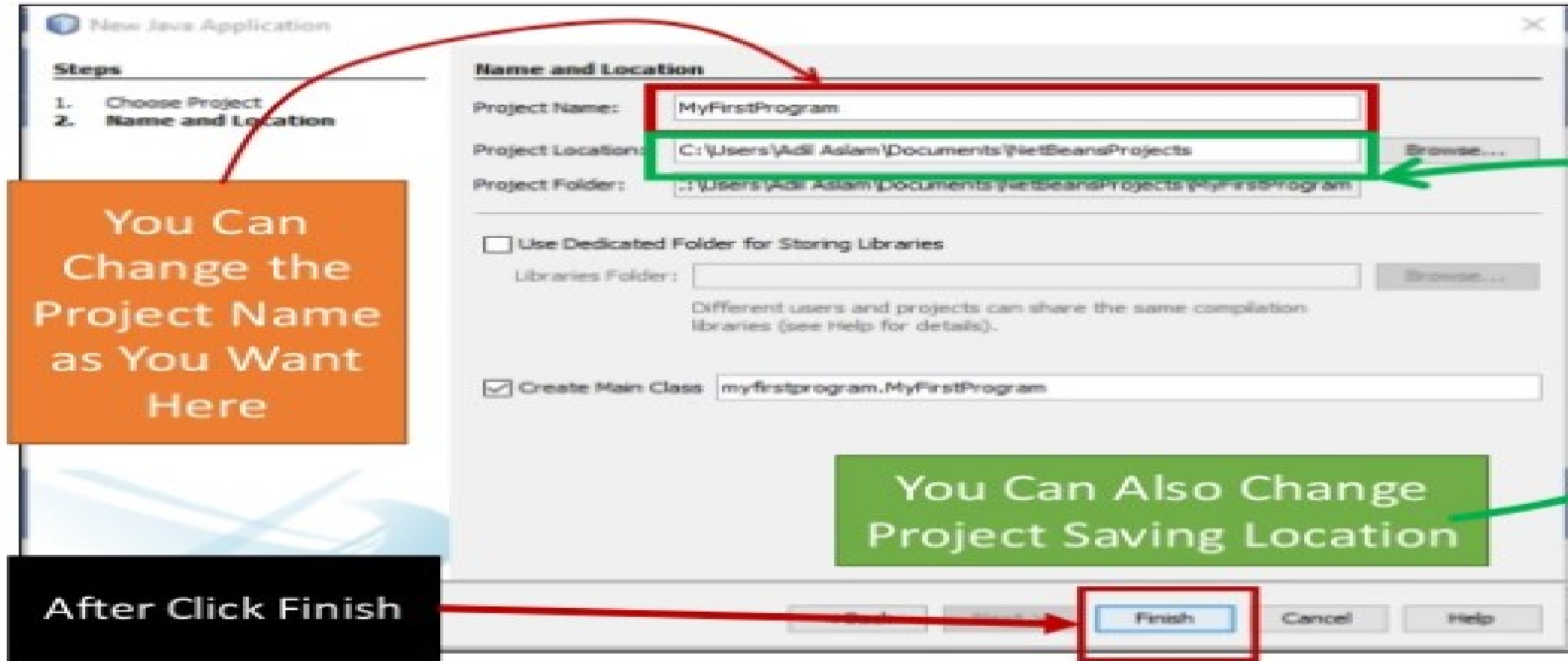
For New Project
Follow me
Click File then Click
New Project



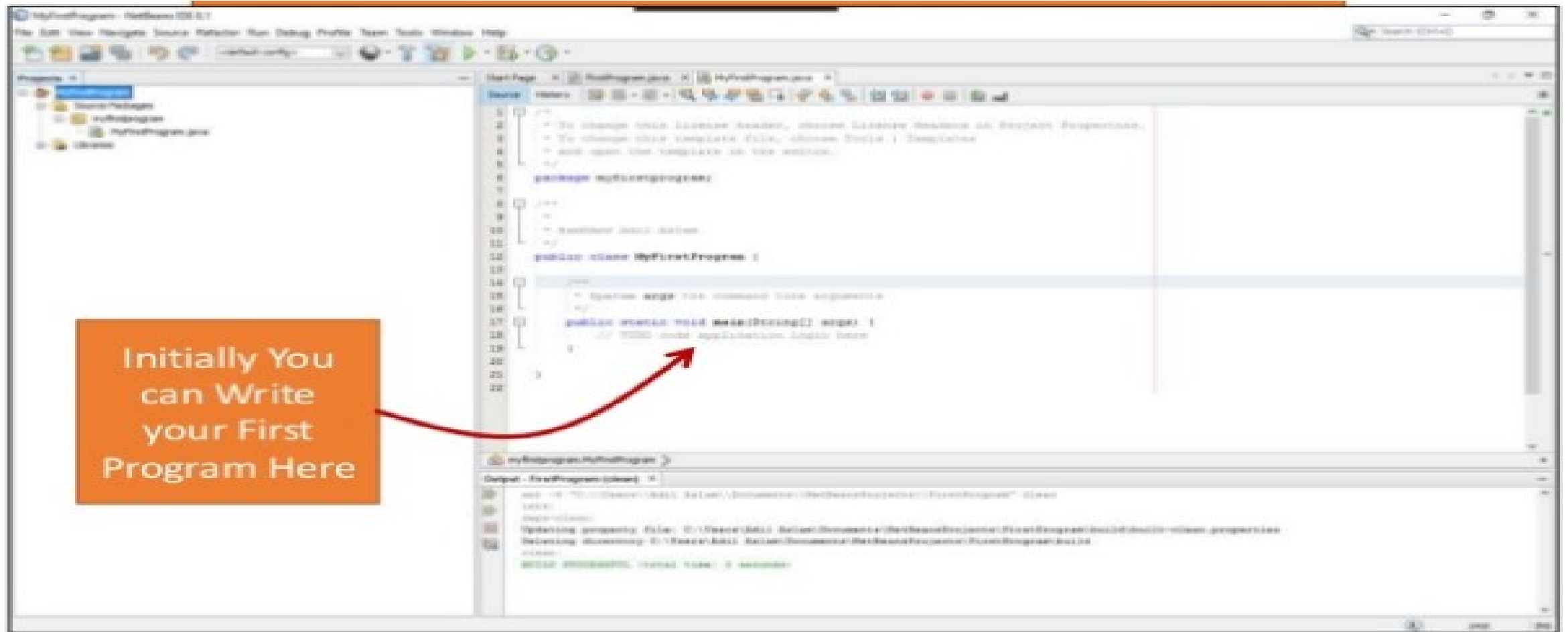
CREATE YOUR FIRST PROJECT



CREATE YOUR FIRST PROJECT



CREATE YOUR FIRST PROJECT

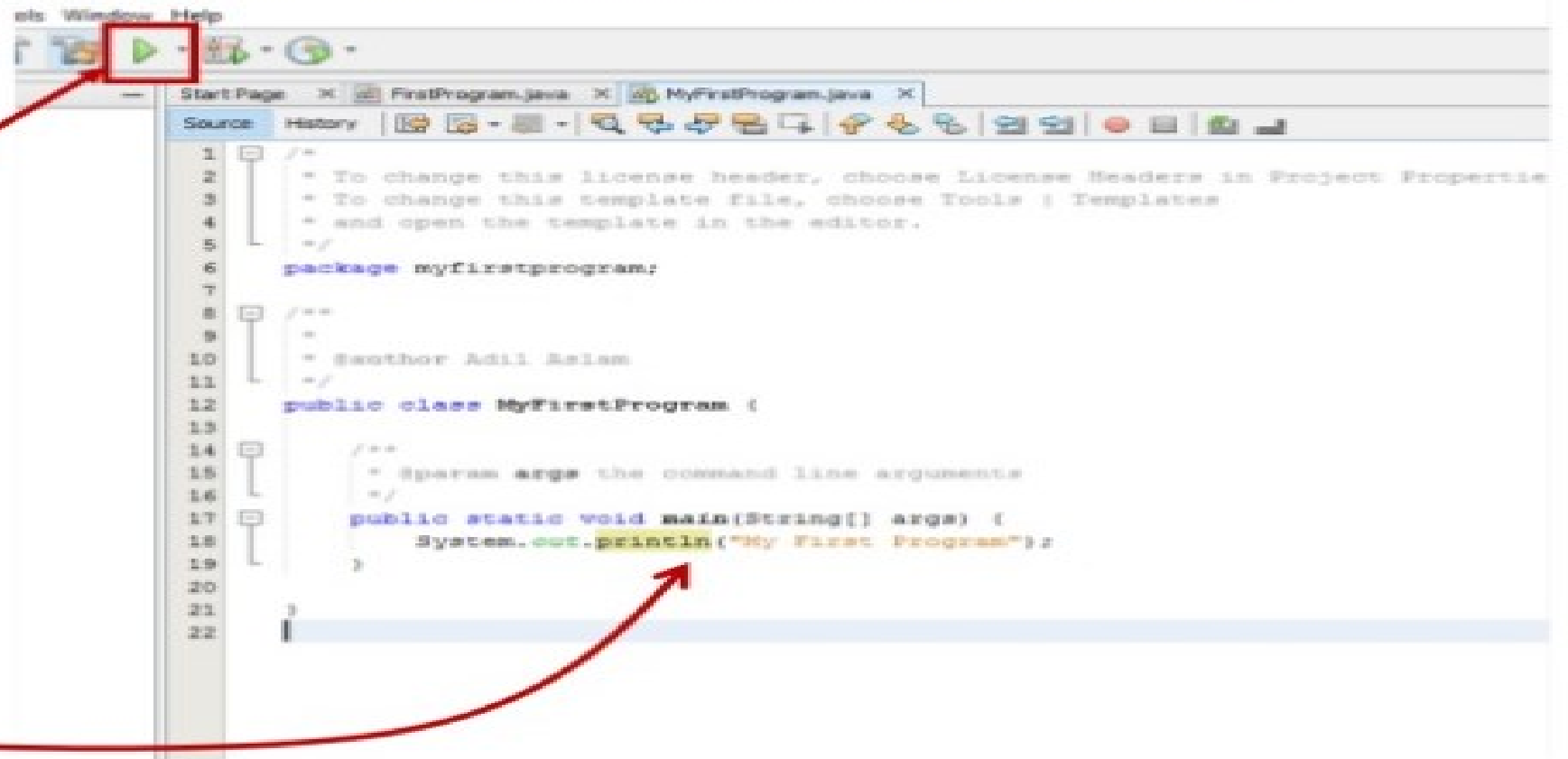


CREATE YOUR FIRST PROJECT

First Program

For Run this
Program
Click Here

This is the
First Program
Example

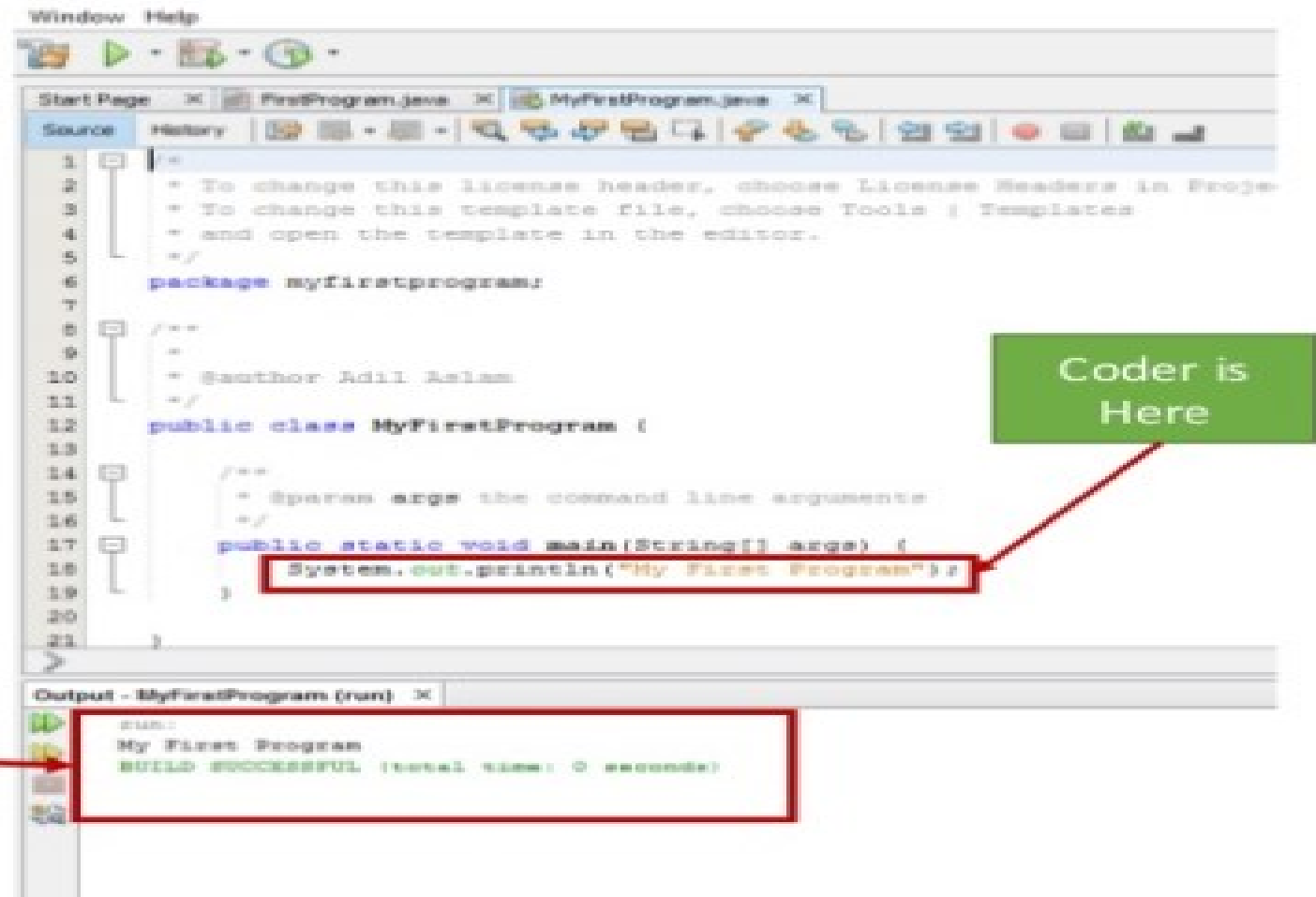


The screenshot shows an IDE window titled 'First Program'. The code editor displays a Java program. A red box highlights the 'Run' button (a green play icon) in the top toolbar. A red arrow points from a green box labeled 'For Run this Program Click Here' to this button. Another red arrow points from an orange box labeled 'This is the First Program Example' to the `System.out.println("My First Program");` line in the code.

```
1  /*  
2   * To change this license header, choose License Headers in Project Properties  
3   * To change this template file, choose Tools | Templates  
4   * and open the template in the editor.  
5   */  
6  package myfirstprogram;  
7  
8  /**  
9   *  
10   * Author: Adil Aslam  
11   */  
12  public class MyFirstProgram {  
13  
14      /**  
15       * Represents the command line arguments  
16       */  
17      public static void main(String[] args) {  
18          System.out.println("My First Program");  
19      }  
20  
21  }  
22
```

CREATE YOUR FIRST PROJECT

First Program



The screenshot shows an IDE window with two tabs: 'FirstProgram.java' and 'MyFirstProgram.java'. The 'MyFirstProgram.java' tab is active, displaying the following code:

```
1  /*  
2   * To change this license header, choose License Headers in Proj  
3   * To change this template file, choose Tools | Templates  
4   * and open the template in the editor.  
5   */  
6  package myfirstprogram;  
7  
8  /**  
9   *  
10   * @author Adil Aslam  
11   */  
12  public class MyFirstProgram {  
13  
14      /**  
15       * @param args the command line arguments  
16       */  
17      public static void main(String[] args) {  
18          System.out.println("My First Program");  
19      }  
20  }  
21
```

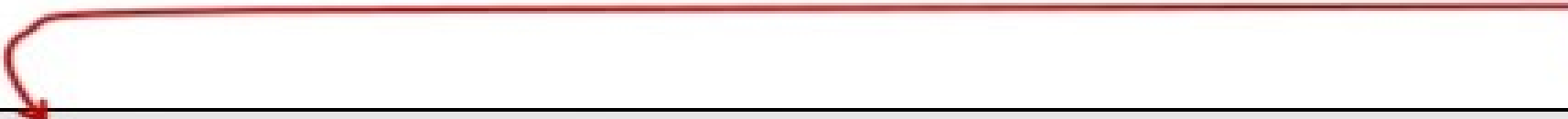
A green box labeled 'Coder is Here' points to the `System.out.println("My First Program");` line. Below the code editor, the 'Output - MyFirstProgram (run)' window shows the output:

```
START:  
My First Program  
BUILD SUCCESSFUL (total time: 0 seconds)
```

An orange box labeled 'Output of this Program is Here' points to the output window.

First Java Program


Class Keyword



```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```

First Java Program

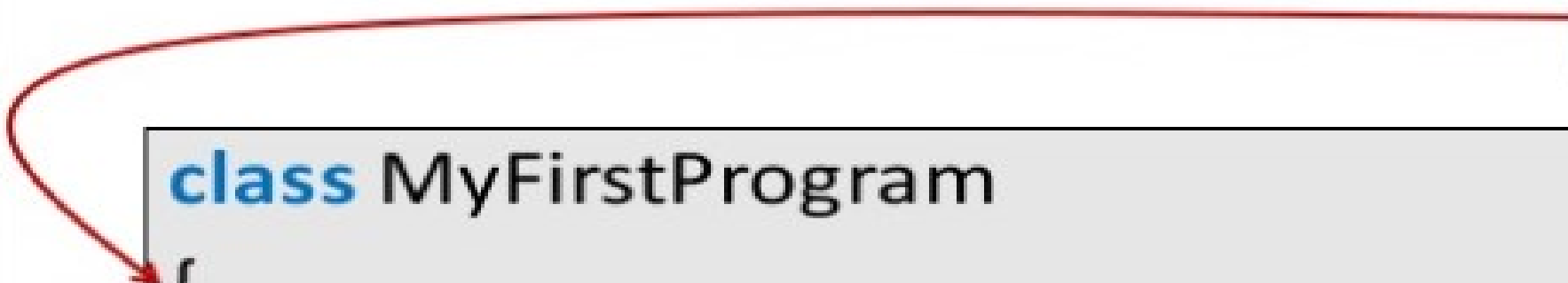
Class Name



```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```

First Java Program

Starting of Class
Level Scope



```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```

First Java Program

This is Called
One Block

```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```

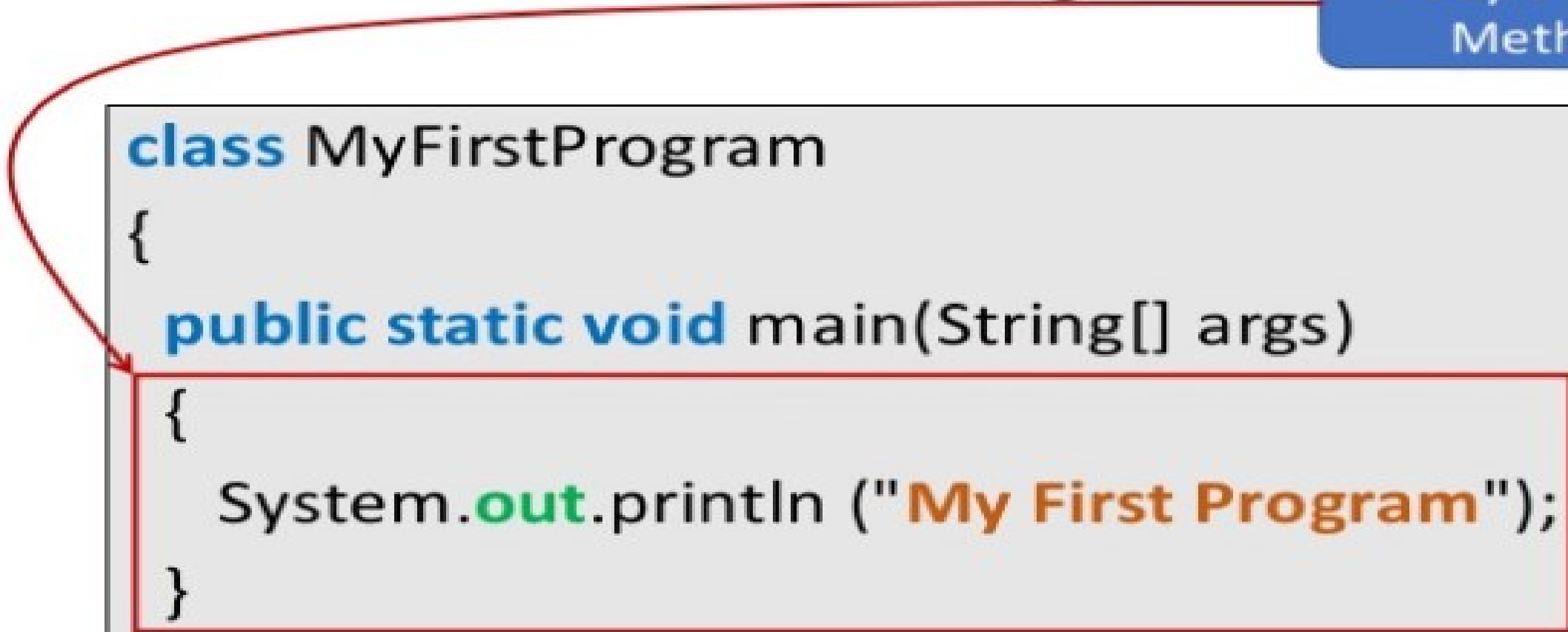
First Java Program

This is Called
Main Method

```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```


First Java Program

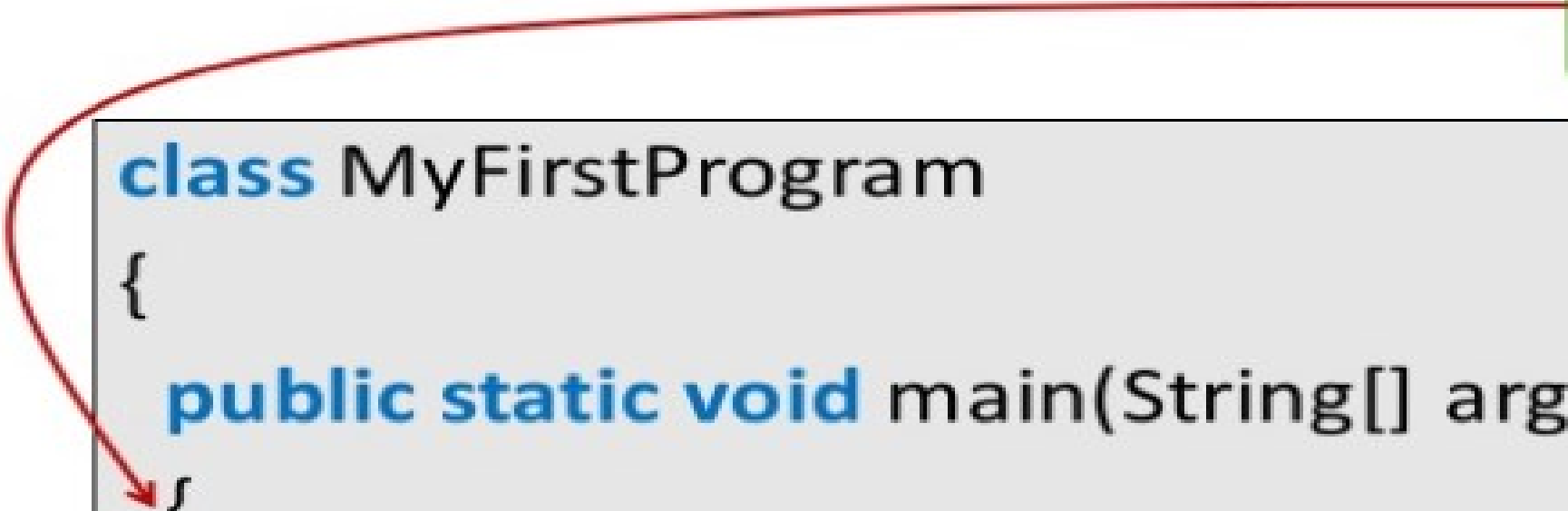
Body of Main
Method



```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```

First Java Program

Start of Main
Method level
scope



```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```

First Java Program

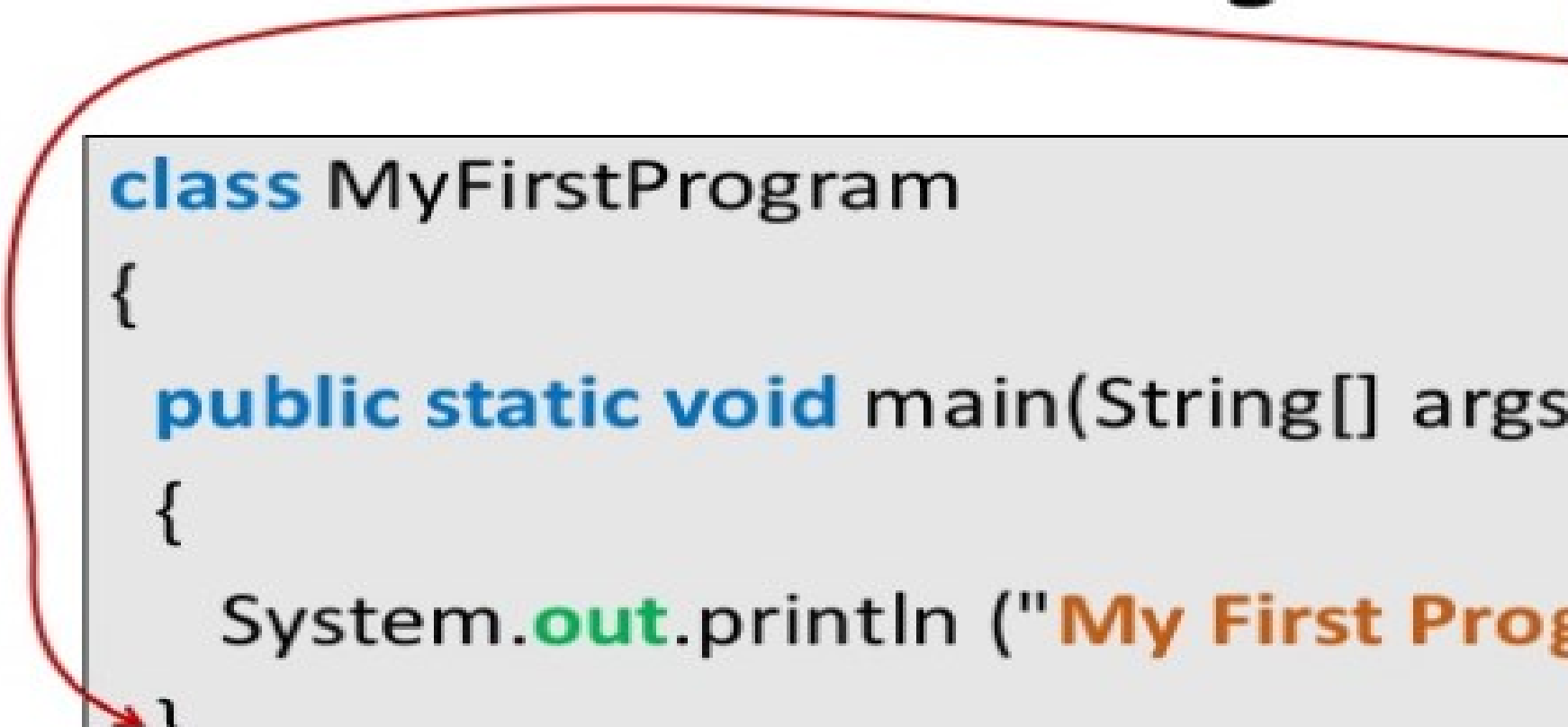
Print on Screen

```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```

First Java Program

End of Main
Method

```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```



First Java Program

End of Class

```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```

First Java Program

Semicolon use
to terminate
the statement.



```
class MyFirstProgram
{
    public static void main(String[] args)
    {
        System.out.println ("My First Program");
    }
}
```

BLOCKS IN JAVA

- A block (or a compound statement) is a group of statements surrounded by braces { }.
- All the statements inside the block is treated as one unit. Blocks are used as the body in constructs like function, if-else and loop, which may contain multiple statements but are treated as one unit.
- For example

```
public static void main(String[] args)
{
    System.out.println ("My First Program");
}
```



The diagram illustrates a Java code block. A red bracket on the left side of the code lines from the opening brace to the closing brace, indicating the scope of the block. A red line extends from the middle of this bracket to a green rectangular callout box on the right. The callout box contains the text "This is one block".

This is one block

FIRST JAVA PROGRAM

- **Class:** is use to declare a class in java.
- **Public:** is a access modifies which represent visibility. public means it is visible to everyone.
- **Static:** is a keyword. It is known as static method. The main method is executed by the JVM, so it does not require to create object to invoke the main method. So it saves memory.
- **Void:** is the return type of the method. void means method does not return any value.
- **main() :** main() method is the most important method in a Java program. This is the method which is executed, hence all the logic must be inside the main() method. If a java class is not having a main() method, it causes compilation error.
- **String args[]:** is used for command line argument.
- **System.out.println():** is used to print statement.

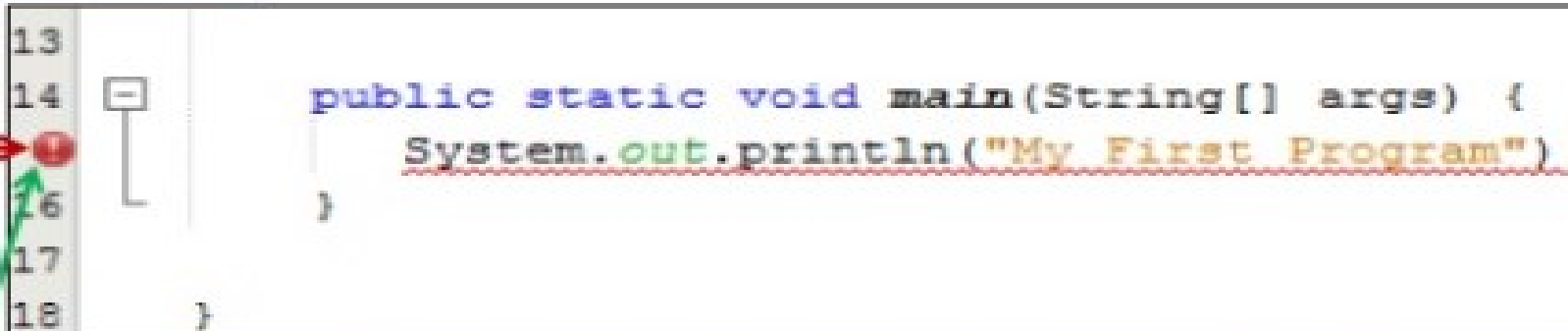
EXPLANATION OF PRINT STATEMENT

The whole line `system.out.println` is explained below:

- **System:** System is the class provided by Java that contains variables and methods.
- **Out:** Out is the system's static variable.
- **Println:** Println is the method of system class that is used to print the given text or variable.

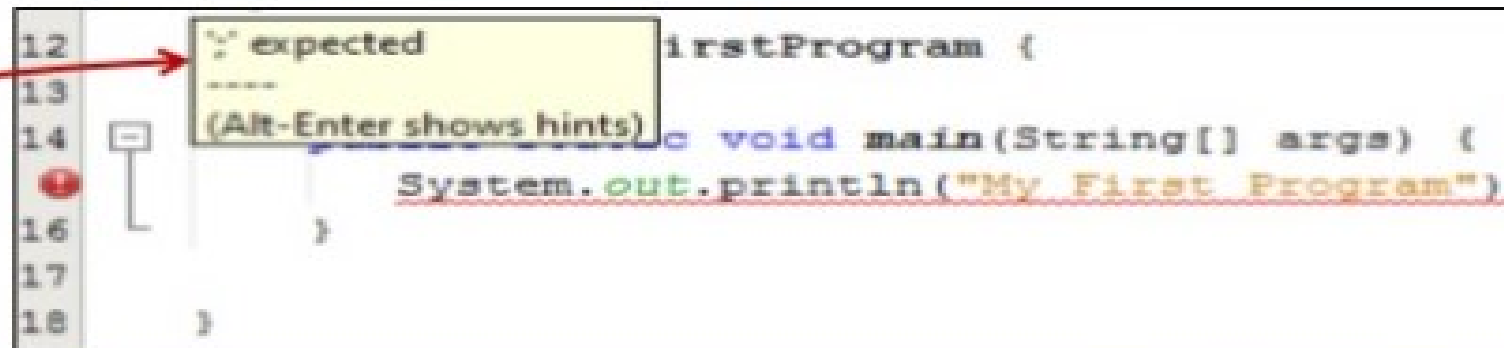
This is an Error Indication

Error Correction



```
13  
14 public static void main(String[] args) {  
    System.out.println("My First Program")  
16 }  
17  
18 }
```

For Error Correction Move Your Mouse Pointer In this Error dot and you can See Suggestion for Error Correction





```
12  
13  
14 public static void main(String[] args) {  
    System.out.println("My First Program")  
16 }  
17  
18 }
```


This is the Suggestion and Show that Semicolon is Missing at the end of this Statement

Error Correction

Before Error Correction

```
13  
14  public static void main(String[] args) {  
15      System.out.println("My First Program")  
16 }  
17  
18 }
```

After Error Correction

```
13  
14  public static void main(String[] args) {  
15     System.out.println("My First Program");  
16 }  
17  
18 }  
19
```

THANK YOU.....

DO YOU HAVE ANY QUESTIONS ?

