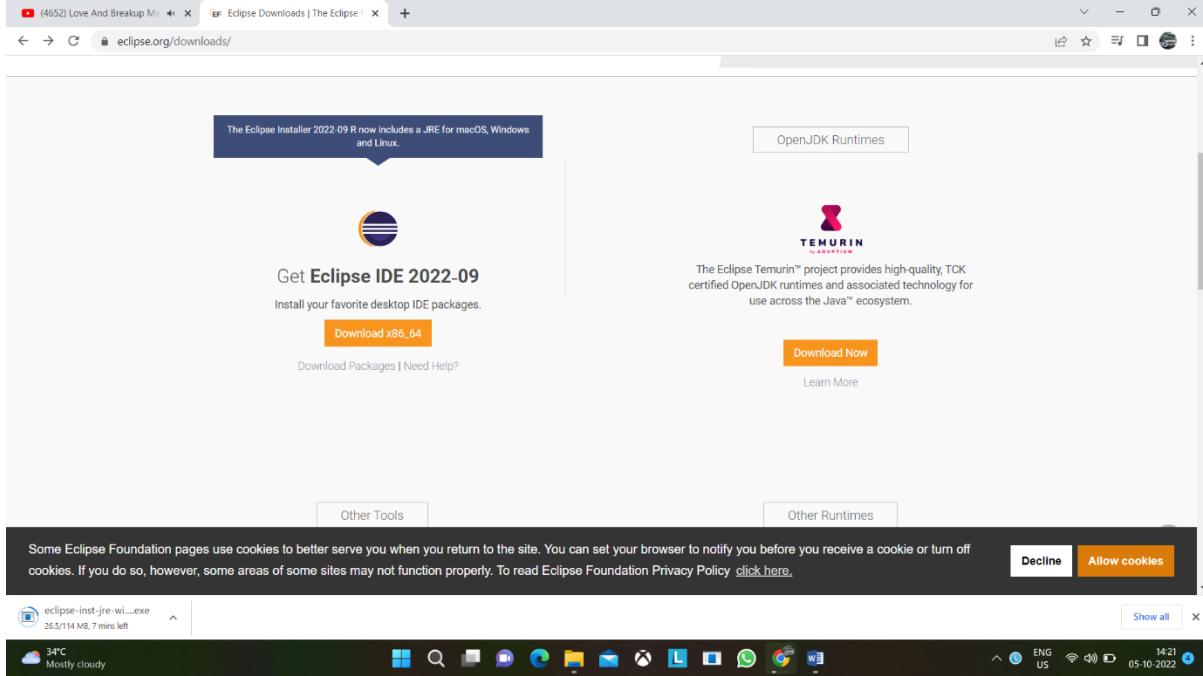
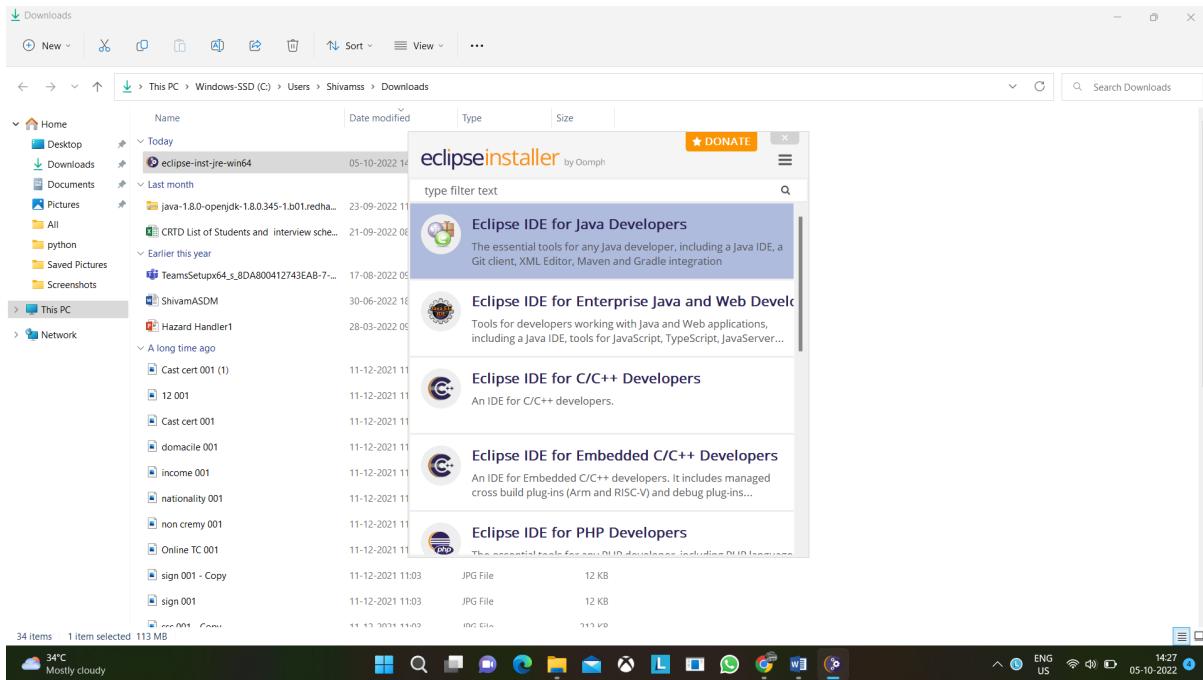


1. **Assignment:** Download, Install and do the Configuration of cloudsim.

**Step 1:** To Install Eclipse IDE, Go to Website → [www.eclipse.org](http://www.eclipse.org) → Then Click Download file for x86\_64

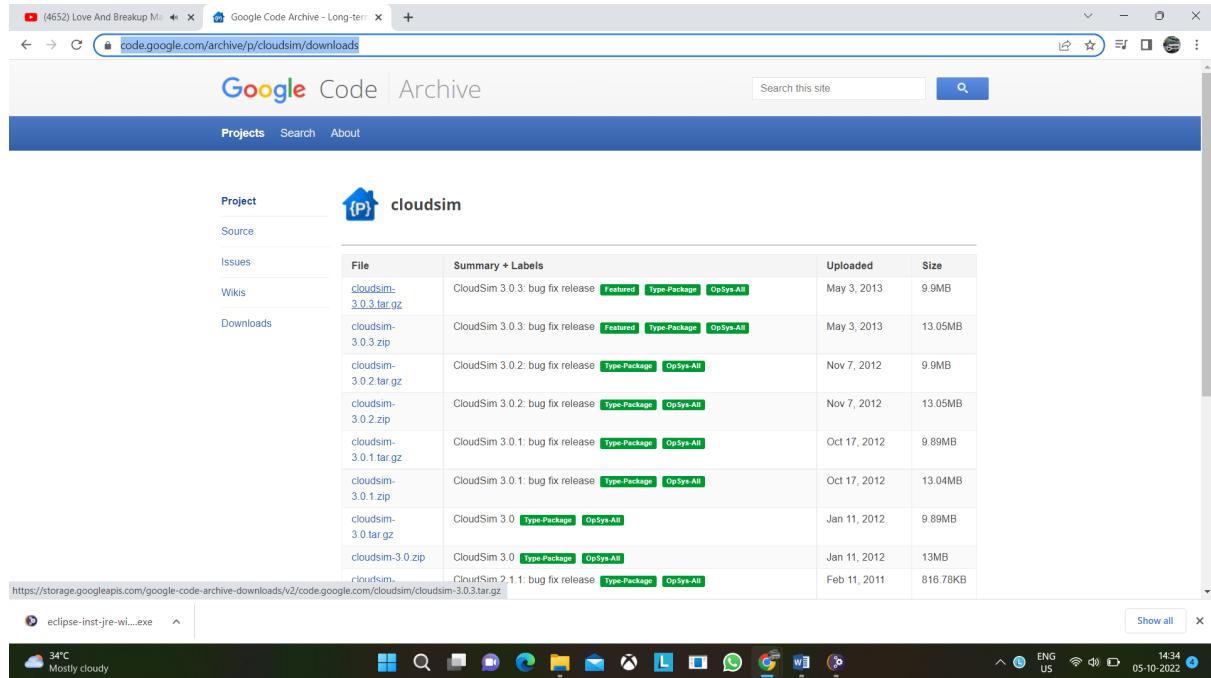


→ Extract the file → open to Install Eclipse IDE → Select for Java Developer to install



Now we in install jar files of cloudsim

**Step 2:** Go To <https://code.google.com/archive/p/cloudsim/downloads>

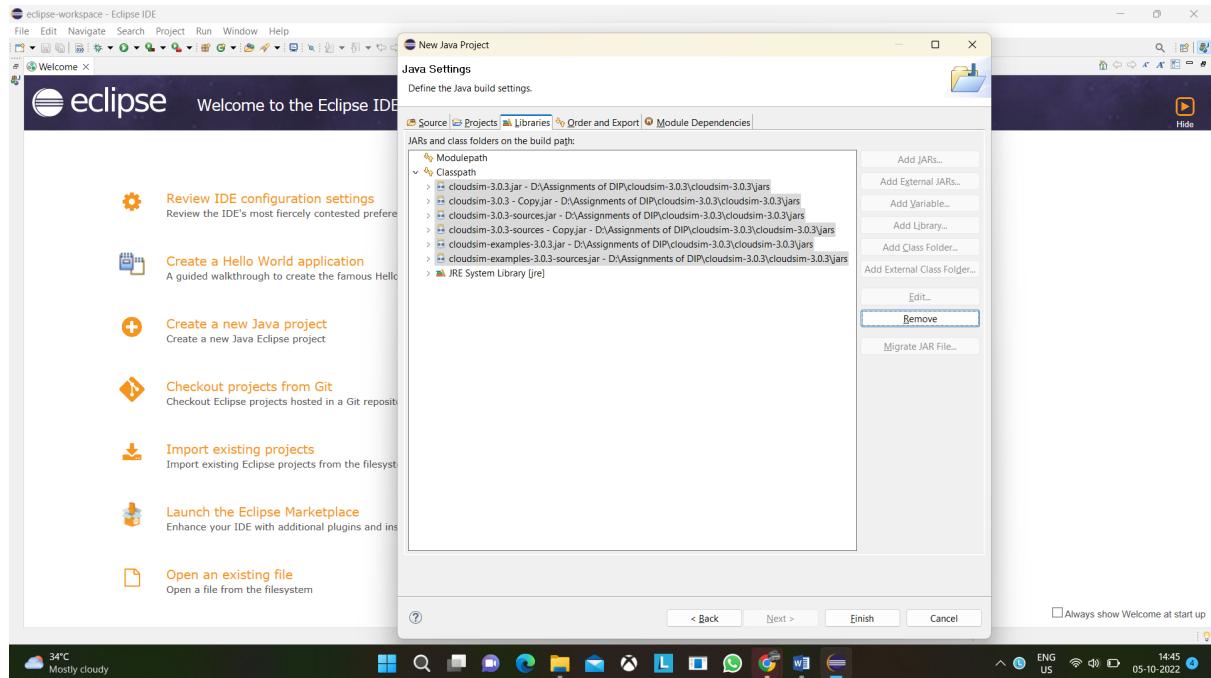


The screenshot shows a web browser window with the URL <https://code.google.com/archive/p/cloudsim/downloads>. The page is titled "Google Code | Archive" and displays a table of project releases. The table has columns for File, Summary + Labels, Uploaded, and Size. Several releases are listed, including "CloudSim 3.0.3: bug fix release" (tar.gz and zip), "CloudSim 3.0.2: bug fix release" (tar.gz and zip), "CloudSim 3.0.1: bug fix release" (tar.gz and zip), and "CloudSim 2.1.1: bug fix release" (tar.gz). The "cloudsim-3.0.3.tar.gz" file is highlighted in the table.

Select cloudsim 3.0.3 tar.gz file & download it and extract it.

**Step 3:** Before importing jar files place jar files in same project folder

Open Eclipse IDE → Click on File → New → Project → Java Project → Name the project & click on next button → Select Libraries → Click on Add Jars → Select cloudsim folder and go to jar folder select jar files Done



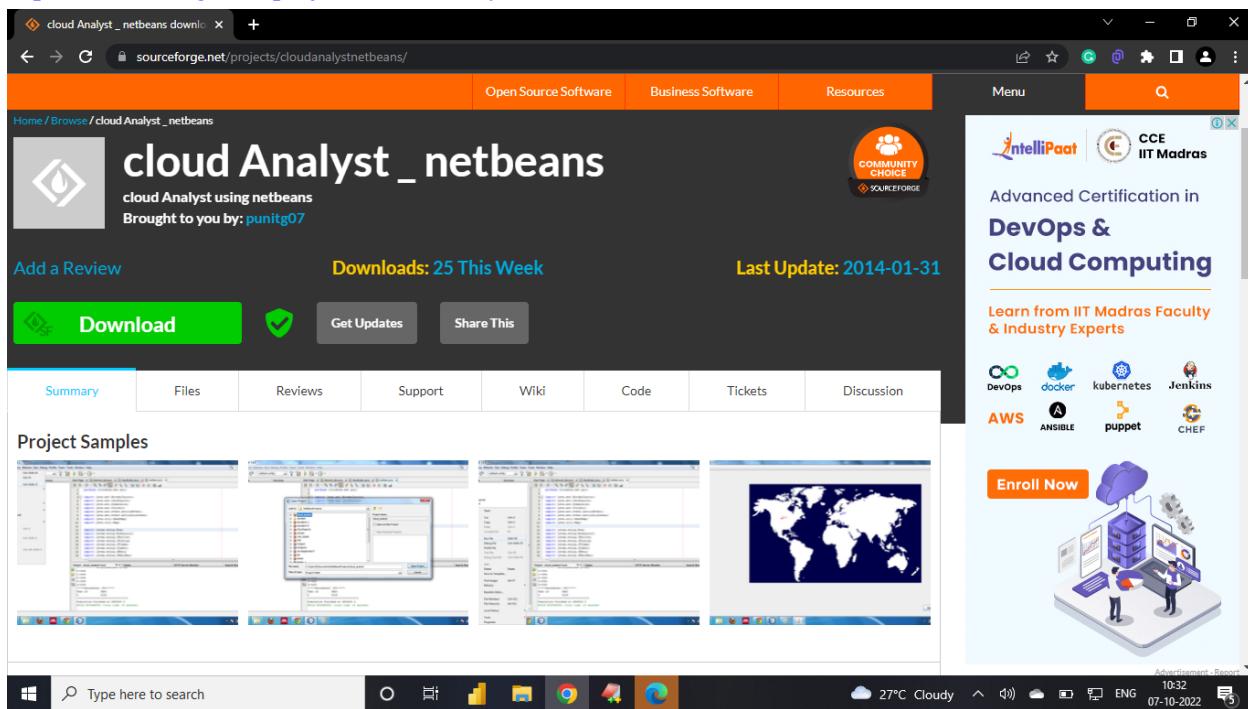
The screenshot shows the Eclipse IDE interface with the title bar "eclipse-workspace - Eclipse IDE". The main workspace shows several project icons. A "New Java Project" dialog box is open in the foreground, specifically the "Libraries" tab of the "Java Settings" section. The "Modulepath" section lists several JAR files under "Classpath", including "cloudsim-3.0.3.jar", "cloudsim-3.0.3-Copyjar", "cloudsim-3.0.3-sources", "cloudsim-3.0.3-sources-Copyjar", "cloudsim-examples-3.0.3.jar", and "cloudsim-examples-3.0.3-sources.jar". A context menu is open over the "cloudsim-3.0.3.jar" entry, with options like "Add JARs...", "Edit...", and "Remove". The status bar at the bottom shows system information like battery level, network, and date.

**Step 4:** To add jar files in existing project do as follows Right Click on Module Name → Select Build Path Option or go to properties → Go to Libraries → Click on class path → do as step 3

## 2. Assignment: Downloading and Installing Cloud Analyst

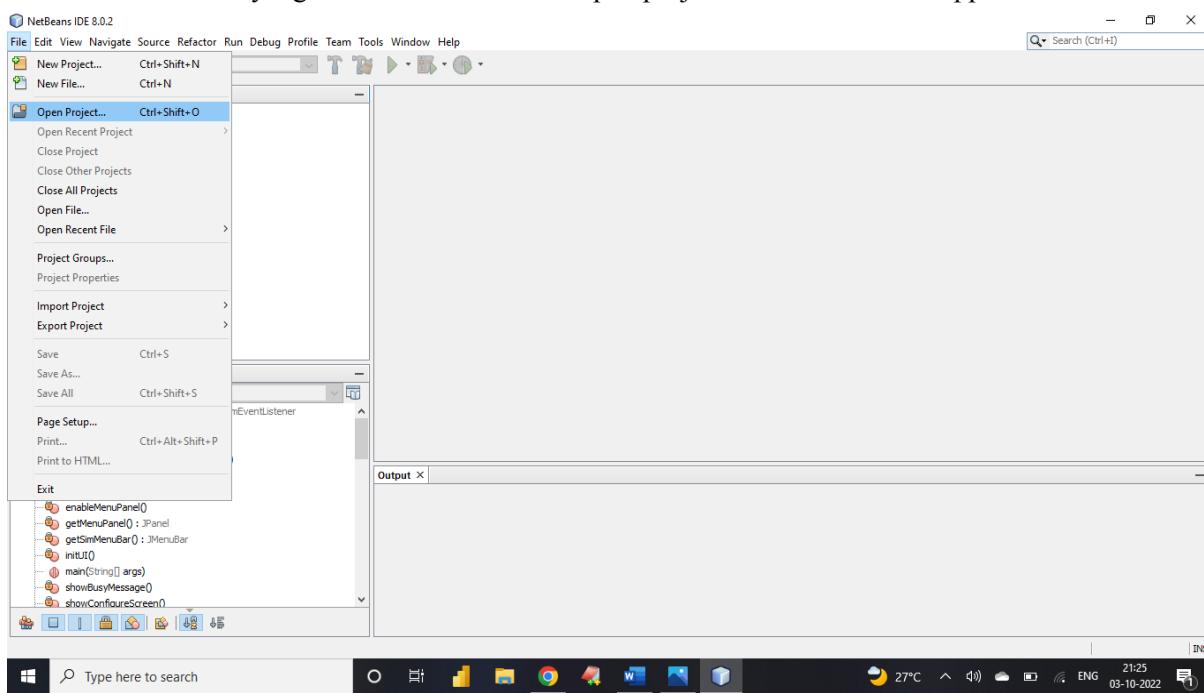
### Step 1:

Download Cloud Analyst NetBeans project from the below mentioned link  
<https://sourceforge.net/projects/cloudanalystnetbeans/>



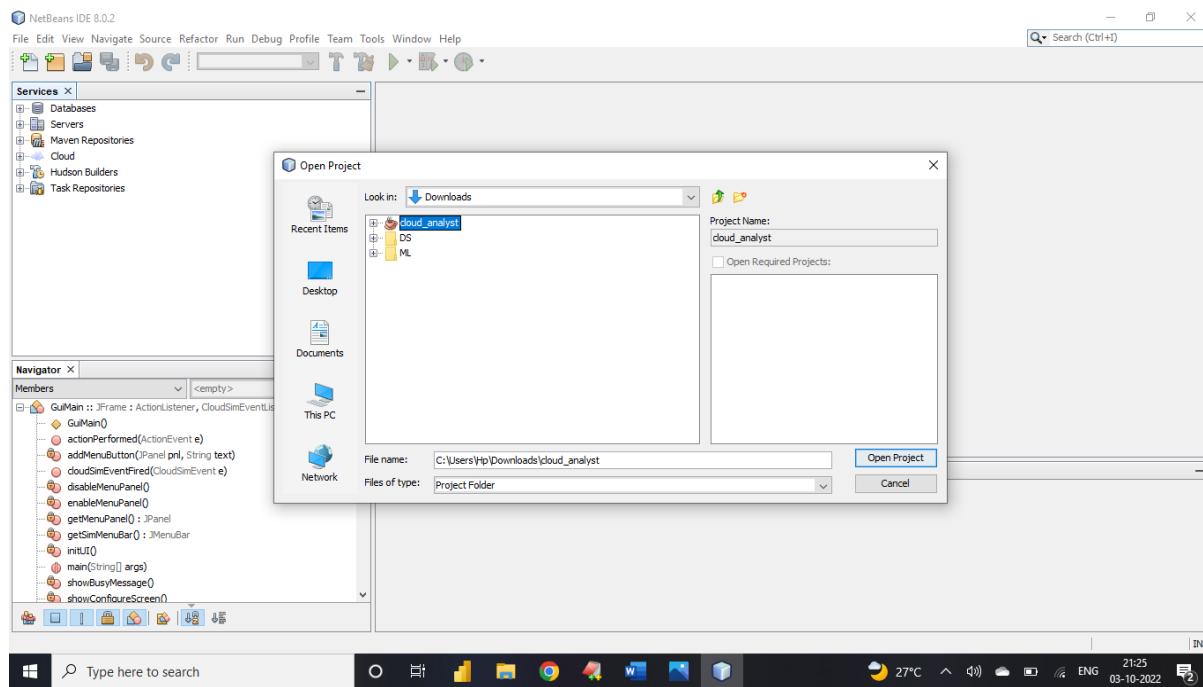
### Step 2:

To run the cloud analyst got to NetBeans File → open project → browse the unzipped folder



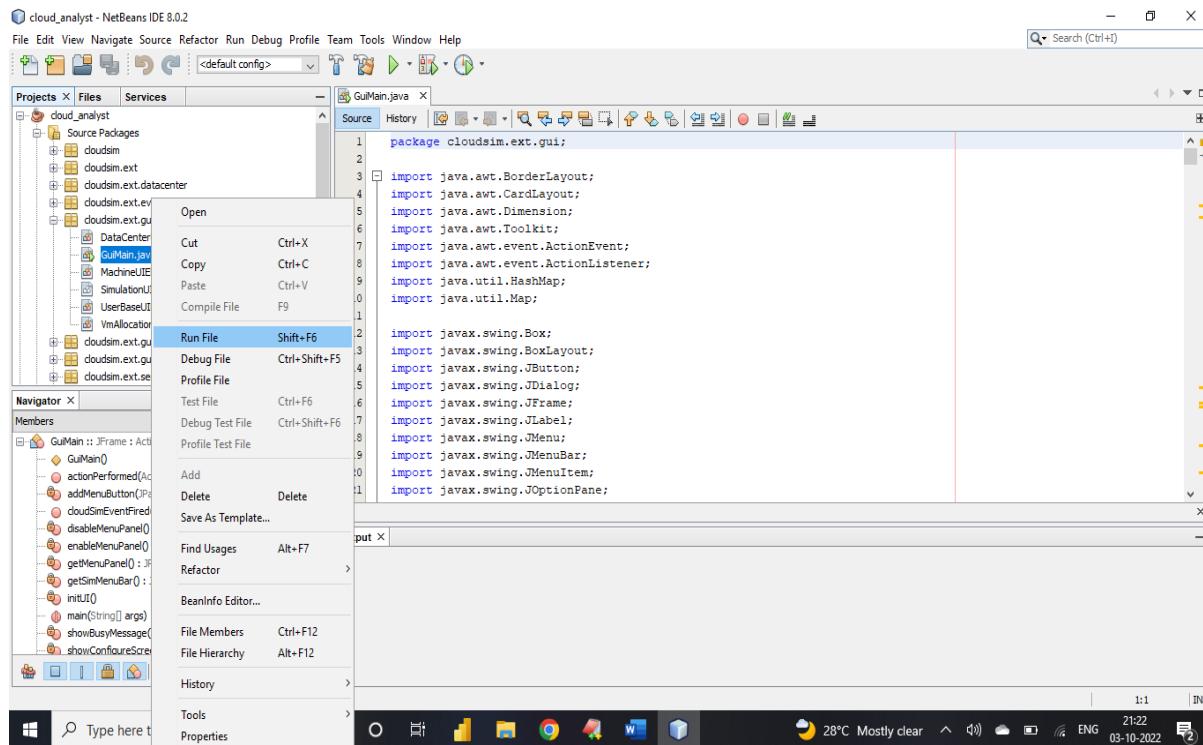
### Step 3:

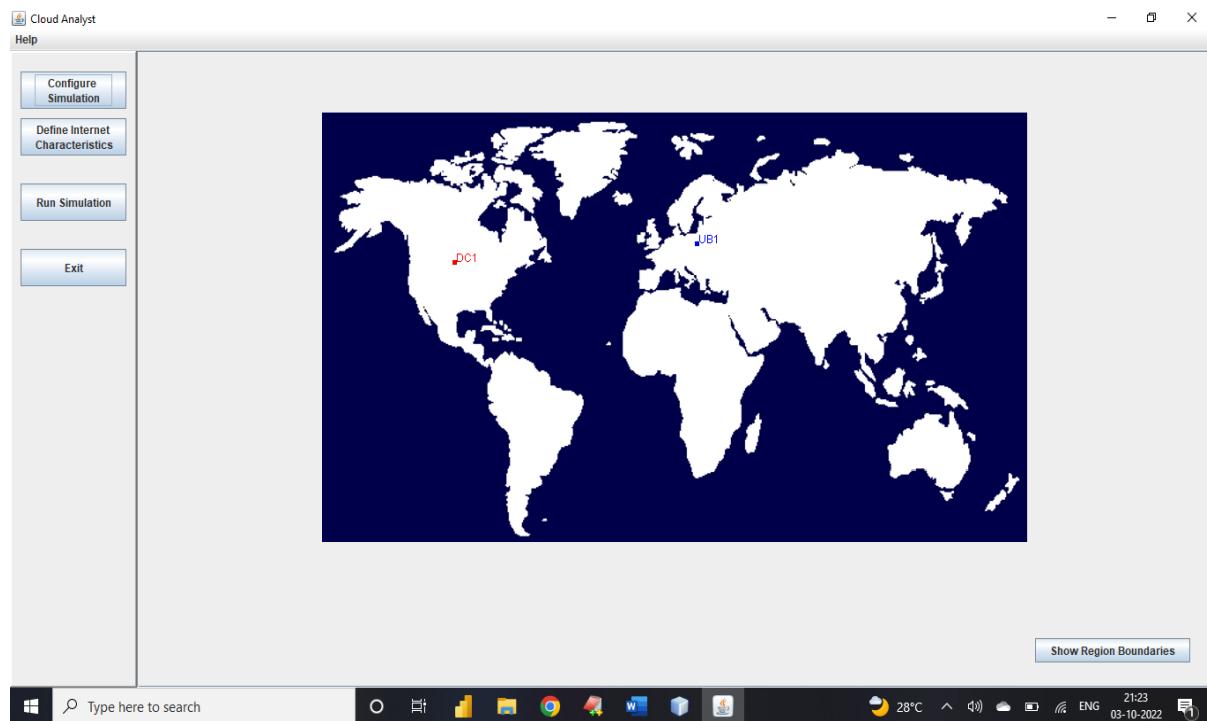
Browse the unzipped folder that you have downloaded.



#### Step 4:

Open-source package folder inside which open cloudsim.ext.gui  
right click on the gui.main.java and click run





3. **Assignment:** Creating a Warehouse Application in SalesForce.com.

**Step 1:** Log into your Sandbox or Developers Organization.

<https://developer.salesforce.com/signup>

Click on setup → create → objects → new custom objects.

Label: MySale

Plural Label: MySales

Object Name: MySale

Record Name: MySale Description

Data Type: Text

Click Save.

**Step 2:** Under MySale Go to Custom Field and Relationships → Click on New Custom Field

**Creating 1<sup>st</sup> Field:**

Select Data type as Auto Number → Next →

Enter the detail      Field Label: PROD\_ID → Next → Next → Save & New

Starting Number: 1001

**Creating 2<sup>nd</sup> Field:**

Select Data type as Auto Date → Next →

Enter the detail      Field Label: Date of Sale → Next → Next → Save & New

**Creating 3<sup>rd</sup> Field:**

Select Data type as Auto Number → Next →

Enter the detail      Field Label: Quantity Sold      Length: 3      Decimal Places: 0 → Next → Next → Save & New

**Creating 4<sup>th</sup> Field:**

Select Data type as Auto Currency → Next →

Enter the detail      Field Label: Rate      Length: 4      Decimal Places: 2  
Default Value: 10 → Next → Next → Save & New

**Creating 5<sup>th</sup> Field:**

Select Data type as Auto Currency → Next →

Enter the detail      Field Label: Qunty\_\_c\*Rate\_\_c → Next → Next → Save

**Step 3:**

Now create a Tab

Click on setup → create → tabs → new custom tab → choose MySale → Next → Next → Save.

**Step 4:**

Now create an App

Click on setup → create → Apps → new → custom app → next → Enter My Shop for the App Label → Next → visible to all → click on save.

On the top in the tab bar you can see the tab which has been created by you click on the tab you can see your object is opened just click on new button and provide the details mentioned.

4. **Assignment:** Creating an Application in SalesForce.com using Apex programming Language.

**Step 1:** Log into your Sandbox or Developers Organization.

<https://developer.salesforce.com/signup>

Click on setup → create → objects → new custom objects.

Enter Book for Label.

Enter Books for Plural Label.

Click Save.

**Step 2:** Now let's create a custom field.

In the custom field & relationship section of the Book Object click new.

Select Number for the datatype & next.

Enter Price for the field Label.

Enter 16 in the length text box.

Enter 2 in the decimal places & Next → Next → Save.

**Step 3:** Click on setup → Develop → Apex classes & click new

In the class Editor enter this class

(Book\_\_c is object API Name & Price\_\_c is custom field API Name)

```
public class MyHelloWorld
{
    public static void applyDiscount(Book__c[] Books)
    {
        for(Book__c b:Books)
        {b.Price__c*=0.9;}
    }
}
```

**Step 4:** Add a Trigger

A trigger is a piece of code that can execute objects before or after specific data manipulation language events occurred.

Click on setup → create → objects → click the object you have created ex:

Book Scroll down you can see Trigger Click on New

In the trigger Editor enter this class

```
trigger HelloWorldTrigger on Book__c(before insert)
{
    Book__c[] Books=Trigger.new;
    MyHelloWorld.applyDiscount(Books);
}
```

**Step 5:** Now create a Tab

Click on setup → create → tabs → new custom tab → choose Book → Next → Next → Save.

**Step 6:** Now create an App

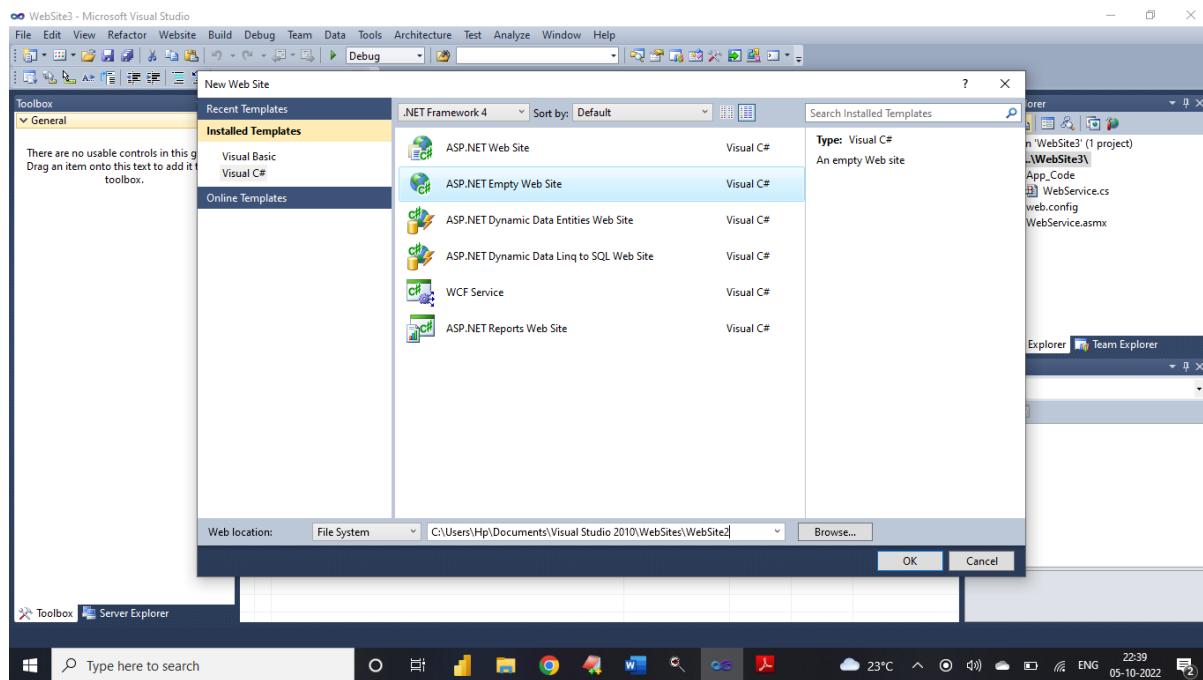
Click on setup → create → Apps → new → custom app → next → Enter My Book Shop for the App Label → Next → visible to all → click on save.

**Step 7:** Now Insert a Book

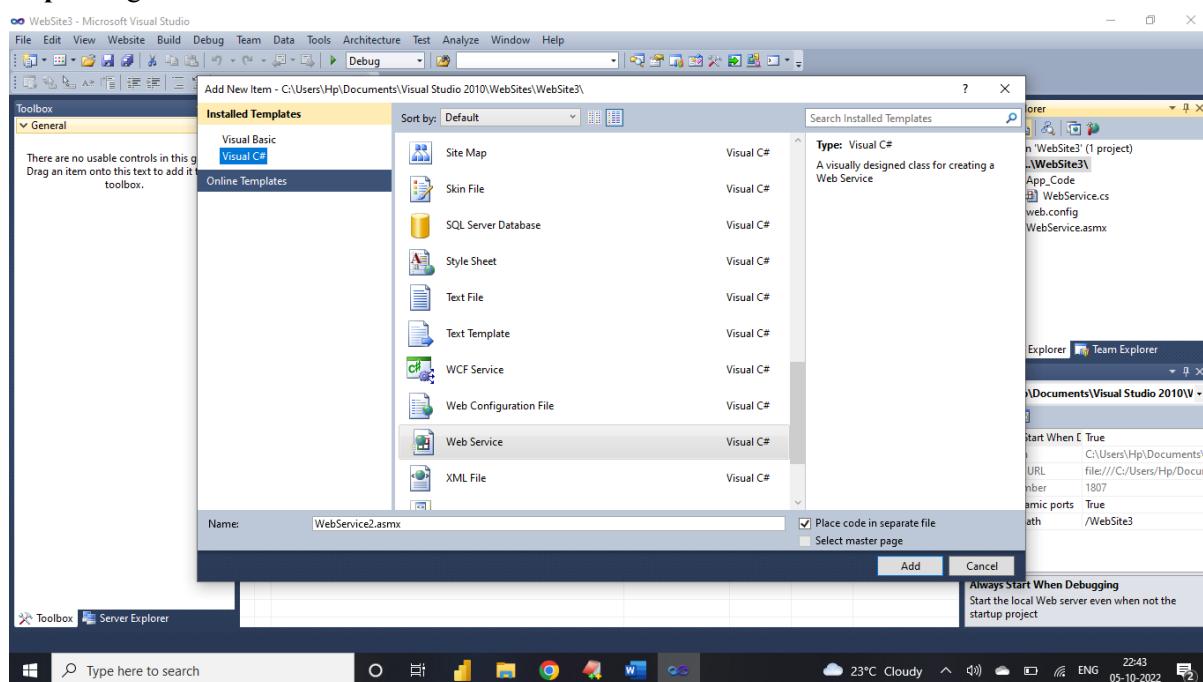
Click on My Book Shop → Books → new → insert a name for Book → insert price for that book → click on save.

## 5. Assignment: Implementation of SOAP Web services in C# Application.

Step 1: Open Visual Studio → Go to File → Select New → Web site → ASP.NET Empty Web Site



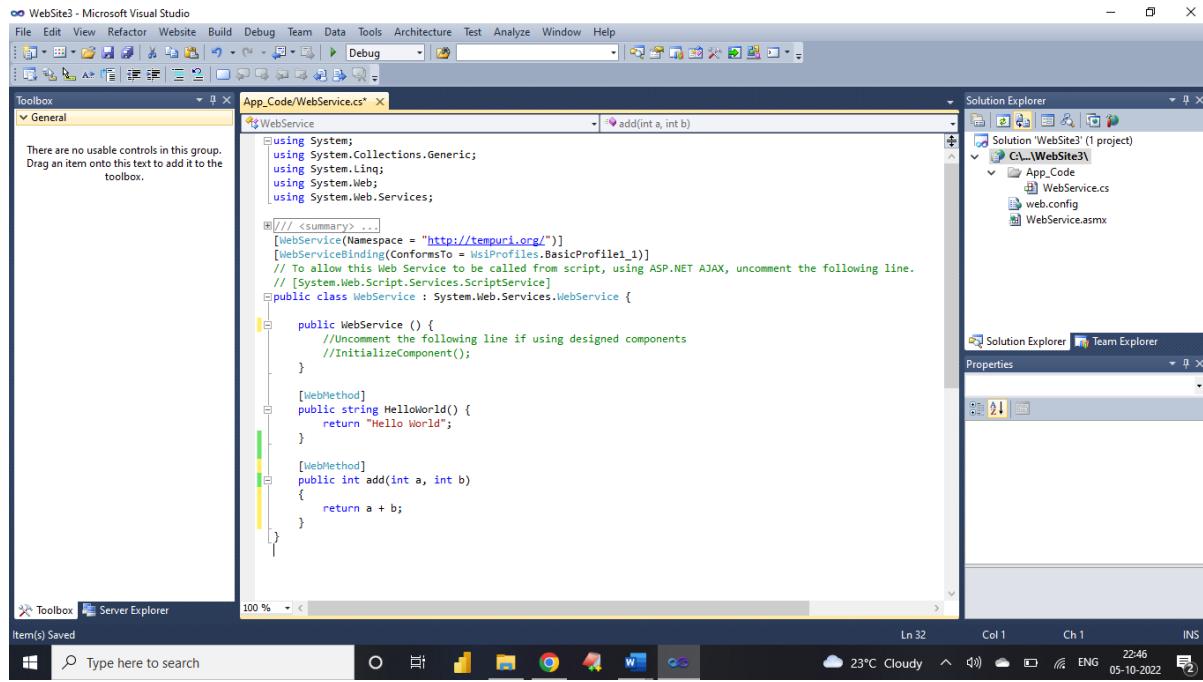
Step 2: Right Click on website Menu → Add New Item → Web Service →



Add following code

[WebMethod]

```
public int add(int a, int b)
{
    return a + b;
}
```



Test your web service by pressing F5 button on Keyboard

The following operations are supported. For a formal definition, please review the [Service Description](#).

- [HelloWorld](#)
- [add](#)

This web service is using <http://tempuri.org/> as its default namespace.

**Recommendation:** Change the default namespace before the XML Web service is made public.

Each XML Web service needs a unique namespace in order for client applications to distinguish it from other services on the Web. <http://tempuri.org/> is available for XML Web services that are under development, but published XML Web services should use a more permanent namespace.

Your XML Web service should be identified by a namespace that you control. For example, you can use your company's Internet domain name as part of the namespace. Although many XML Web service namespaces look like URLs, they need not point to actual resources on the Web. (XML Web service namespaces are URIs.)

For XML Web Services created using ASP.NET, the default namespace can be changed using the WebService attribute's Namespace property. The WebService attribute is an attribute applied to the class that contains the XML Web service methods. Below is a code example that sets the namespace to "<http://microsoft.com/webservices/>".

C#

```

[WebService(Namespace="http://microsoft.com/webservices/")]
public class MyWebService {
    // implementation
}

```

Visual Basic

```

<WebService(Namespace:="http://microsoft.com/webservices/")> Public Class MyWebService
    implementation
End Class

```

C++

```

[WebService(Namespace="http://microsoft.com/webservices/")]
public ref class MyWebService {
    // implementation
};

```

For more details on XML namespaces, see the W3C recommendation on [Namespaces in XML](#).  
For more details on WSDL, see the [WSDL Specification](#).

Click on add

localhost:1807/WebSite3/WebService.asmx?op=add

WebService

Click [here](#) for a complete list of operations.

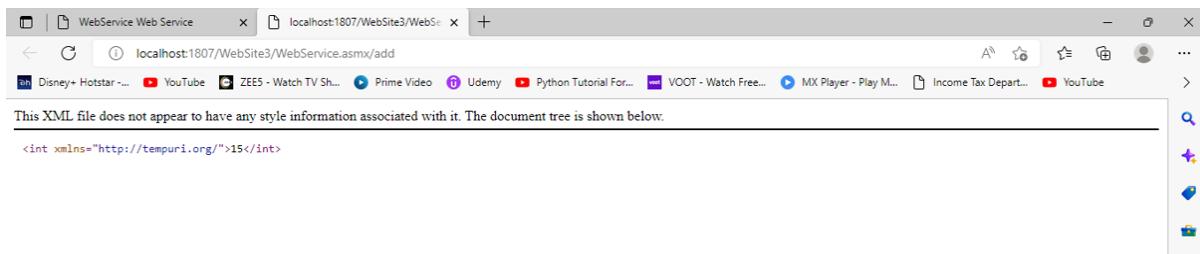
**add**

**Test**

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

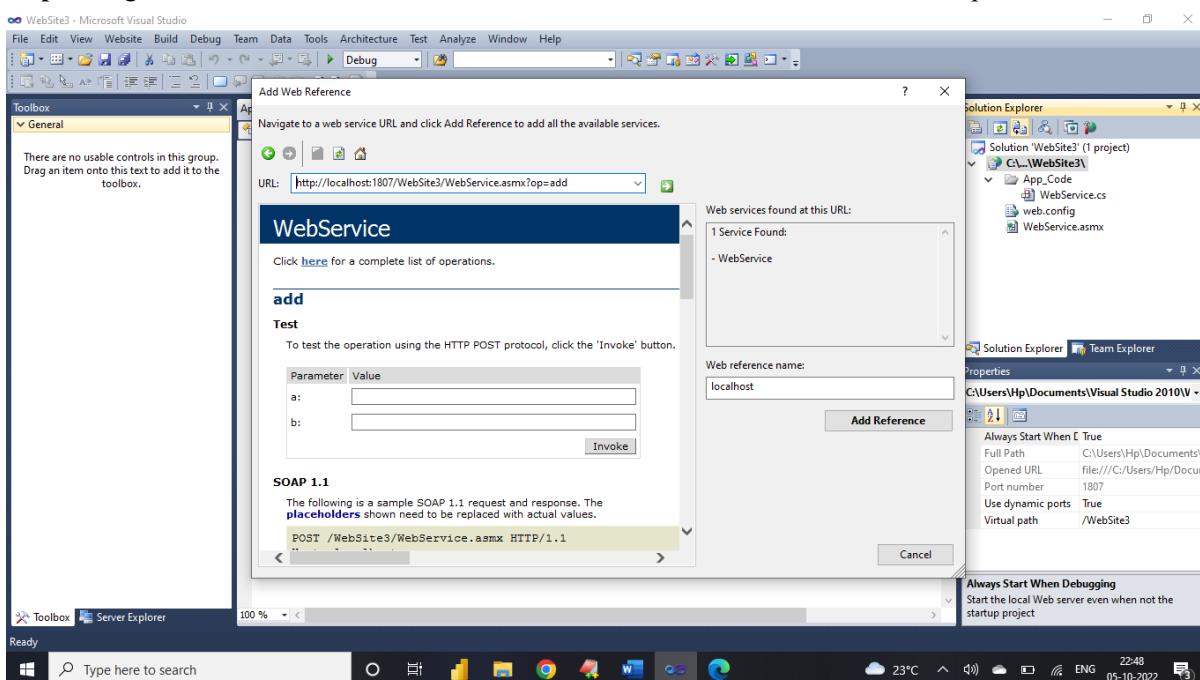
Parameter	Value
a:	<input type="text" value="5"/>
b:	<input type="text" value="10"/>

**Invoke**



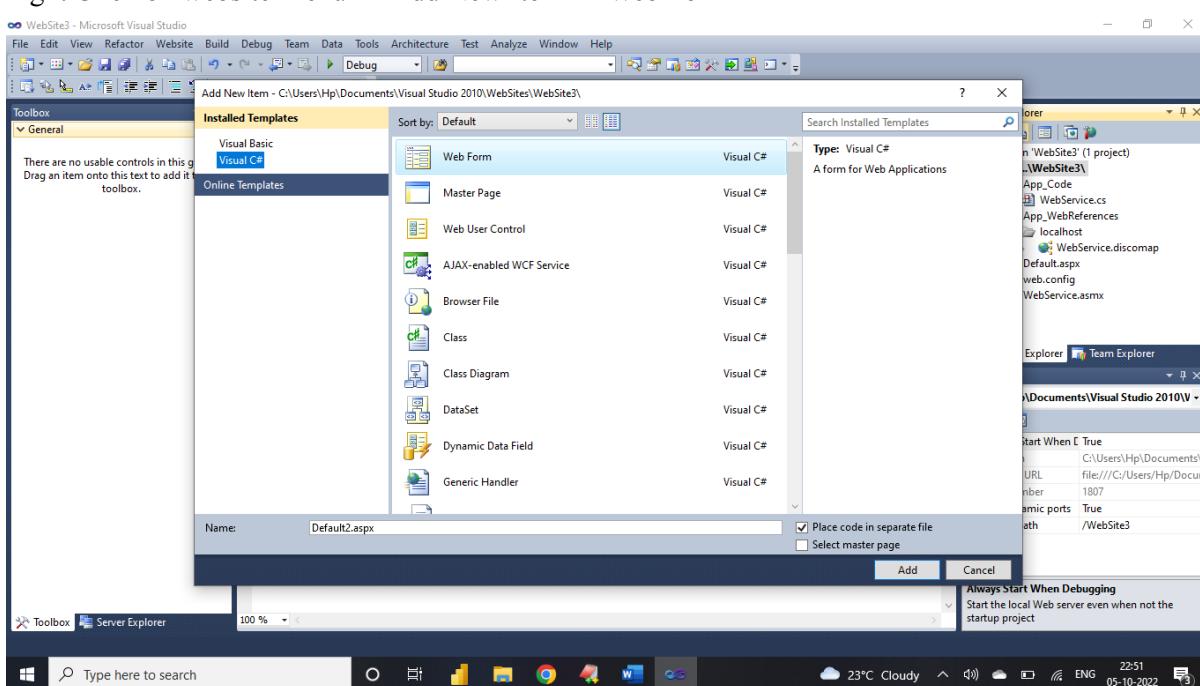
Copy URL of Web service ( having extension .asmx)

**Step 3:** Right Click on website Menu → Add Web Reference → Paste the URL copied earlier

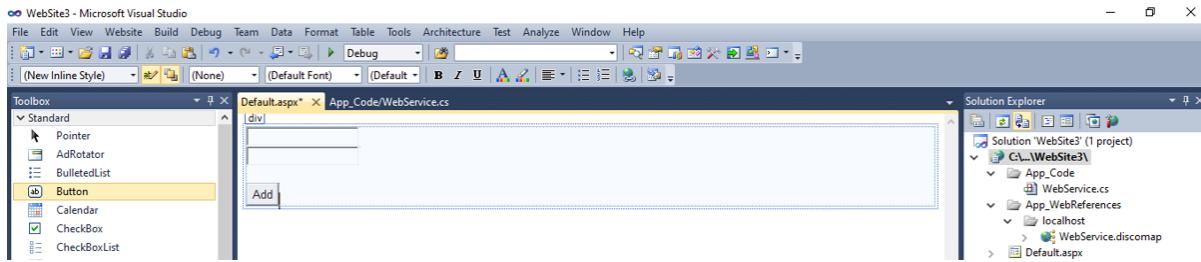


**Step 4:** Now create application for addition and add following code

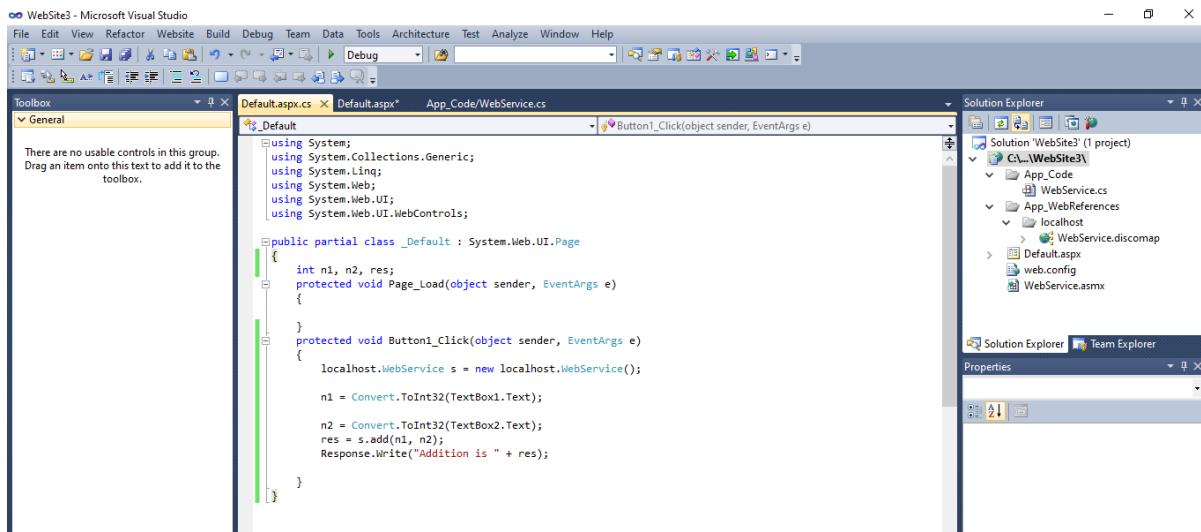
Right Click on website Menu → Add New Item → Web Form



Now Double Click on Add Button Type This Code



```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
public partial class _Default : System.Web.UI.Page
{
    int n1, n2, res;
    protected void Page_Load(object sender, EventArgs e)
    {
    }
    protected void Button1_Click(object sender, EventArgs e)
    {
        localhost.WebService s = new localhost.WebService();
        n1 = Convert.ToInt32(TextBox1.Text);
        n2 = Convert.ToInt32(TextBox2.Text);
        res = s.add(n1, n2);
        Response.Write("Addition is " + res);
    }
}
```

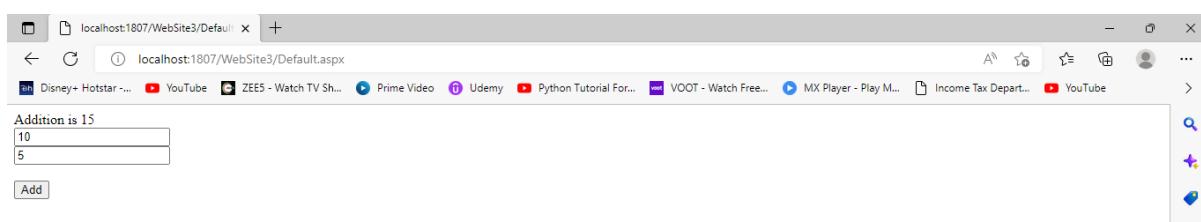


```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
public partial class _Default : System.Web.UI.Page
{
    int n1, n2, res;
    protected void Page_Load(object sender, EventArgs e)
    {
    }
    protected void Button1_Click(object sender, EventArgs e)
    {
        localhost.WebService s = new localhost.WebService();

        n1 = Convert.ToInt32(TextBox1.Text);

        n2 = Convert.ToInt32(TextBox2.Text);
        res = s.add(n1, n2);
        Response.Write("Addition is " + res);
    }
}
```

Run the Application



6. **Assignment:** Implementation of Para-Virtualization using VM Ware ‘s Workstation/ Oracle’s Virtual Box and Guest O.S.

### Download and Install VirtualBox

To download the VirtualBox, follow the instructions below.

**Step 1:** To download the latest version of VirtualBox, visit the official [VirtualBox](https://www.virtualbox.org/wiki/Downloads) website in your web browser.

**Step 2:** Now, download the VirtualBox from here.



**Step 3:** Navigate the folder where you have downloaded your VirtualBox and double-click on the downloaded "VirtualBox" file to run it.

**Step 4:** "Oracle VM VirtualBox 6.1.6 Setup" window will appear on the screen and click on the "Next" button to proceed.

**Step 5:** Choose the location where you want to install the VirtualBox and click on the "Next" button to proceed.

**Step 6:** Choose the options as per your choice and click on the "Next" button.

**Step 7:** Click on the Yes button and then the "Install" button.

### Download Ubuntu

Follow the instructions below to download the Ubuntu ISO file.

**Step 1:** To download the latest version of Ubuntu, i.e., Ubuntu, visit the official [Ubuntu](https://www.ubuntu.com/) website in your web browser.

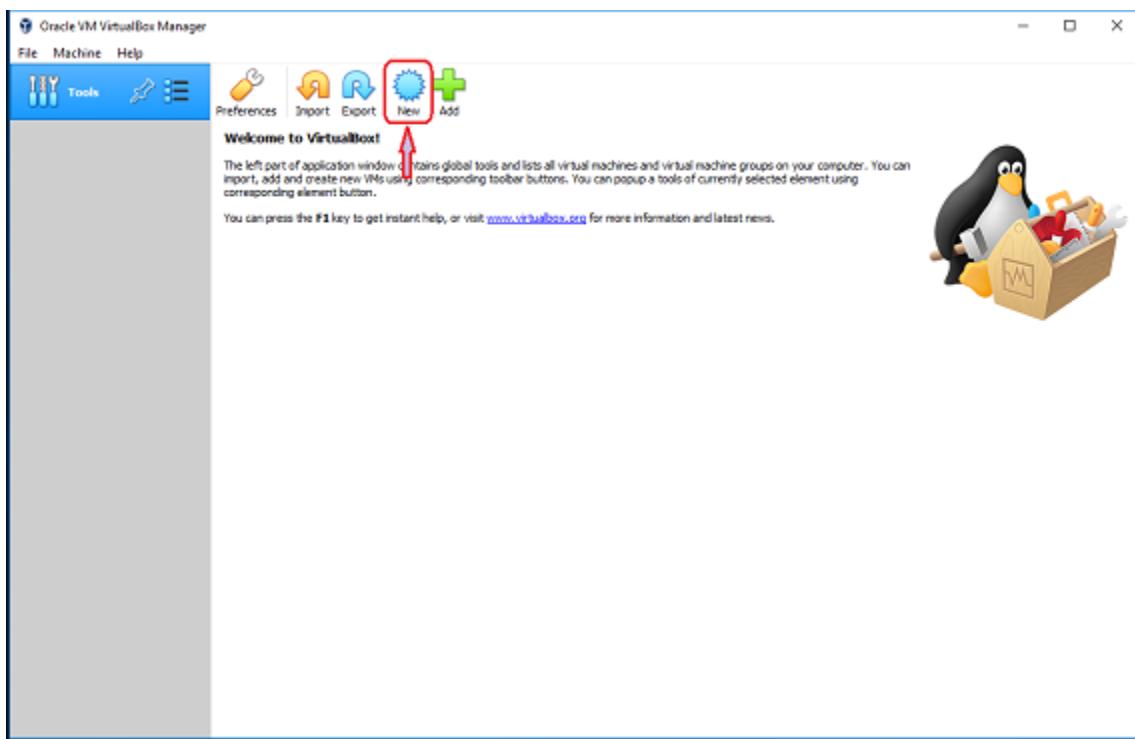
**Step 2:** By clicking on the "Download" button, you can download the latest version of Ubuntu, i.e., Ubuntu 20.04 LTS (long term support).

The screenshot shows a web browser displaying the Ubuntu desktop download page at [ubuntu.com/download/desktop](https://ubuntu.com/download/desktop). The page features a prominent orange header bar with the word 'ubuntu'. Below the header, there are navigation links for 'Enterprise', 'Developer', 'Community', 'Download', 'Downloads' (which is highlighted in orange), 'Overview', 'Cloud', 'IoT', 'Raspberry Pi', 'Server', 'Desktop' (which is also highlighted in blue), 'Alternative downloads', and 'Ubuntu flavours'. A search bar is located in the top right corner. The main content area has a large title 'Download Ubuntu Desktop' and a section for 'Ubuntu 20.04 LTS'. This section includes a brief description of what LTS means, a link to 'Ubuntu 20.04 LTS release notes', and a 'Recommended system requirements' link. On the right side of this section, there is a green 'Download' button with white text, which is enclosed in a red rectangular box. Below the download button, there is additional text about other versions of Ubuntu Desktop, including torrents, network installers, local mirrors, and past releases.

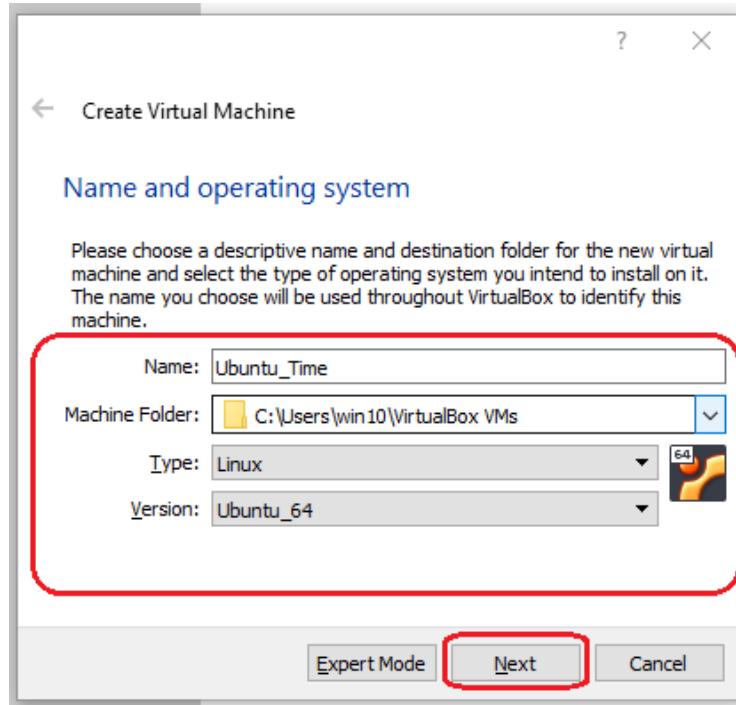
## Creating a Virtual Machine

Now, it is time to create a Virtual Machine. Follow the instructions below to proceed.

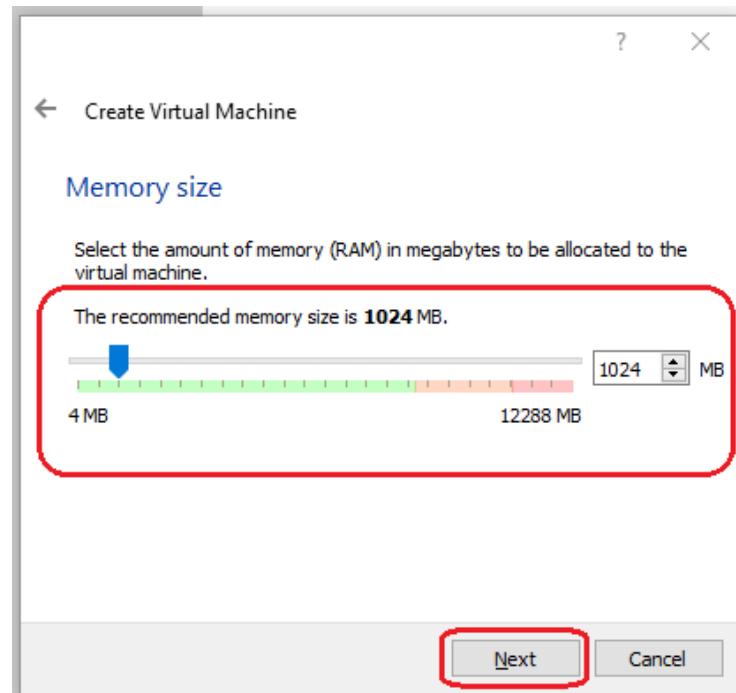
**Step 1:** Open VirtualBox and click on the "New" button.



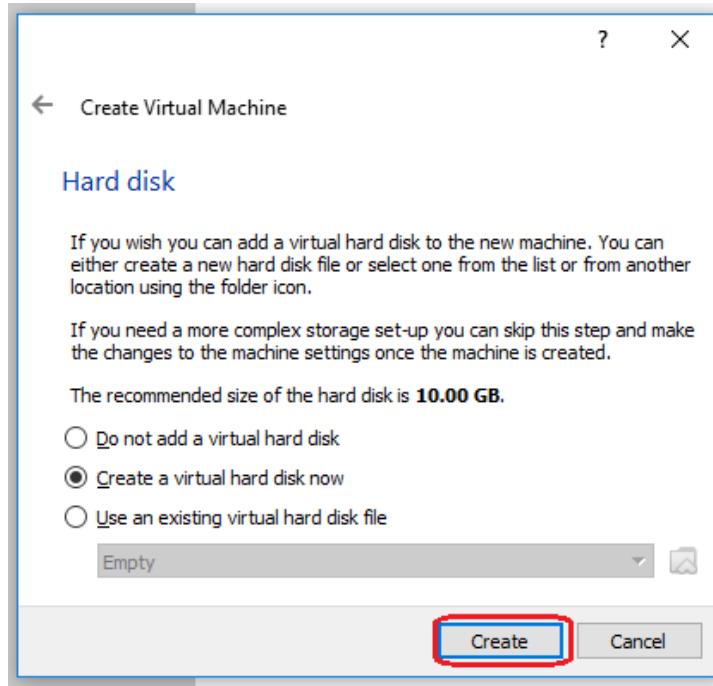
**Step 2:** Choose a name for your virtual machine with its location. Based on the name you entered, VirtualBox will try to predict the "Type" and "Version". Otherwise, from the drop-down menu, select "Linux" as the type and "Ubuntu" as the version and click on the "Next" button.



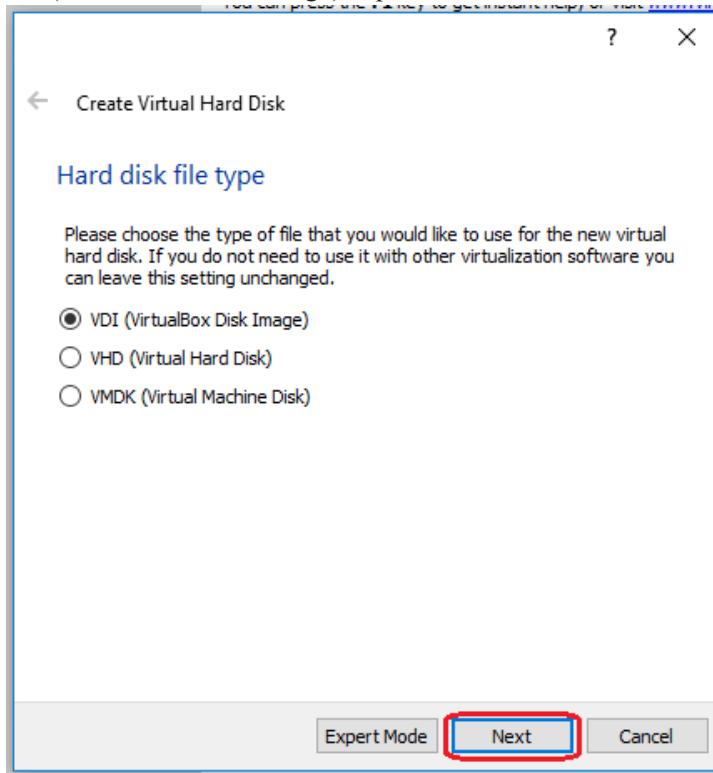
**Step 3:** With the help of the slider, choose the amount of memory (RAM) to be allocated to the virtual machine. (The recommended memory size is 1024 MB (1 GB). Please note that this memory will only be used while using a virtual machine).



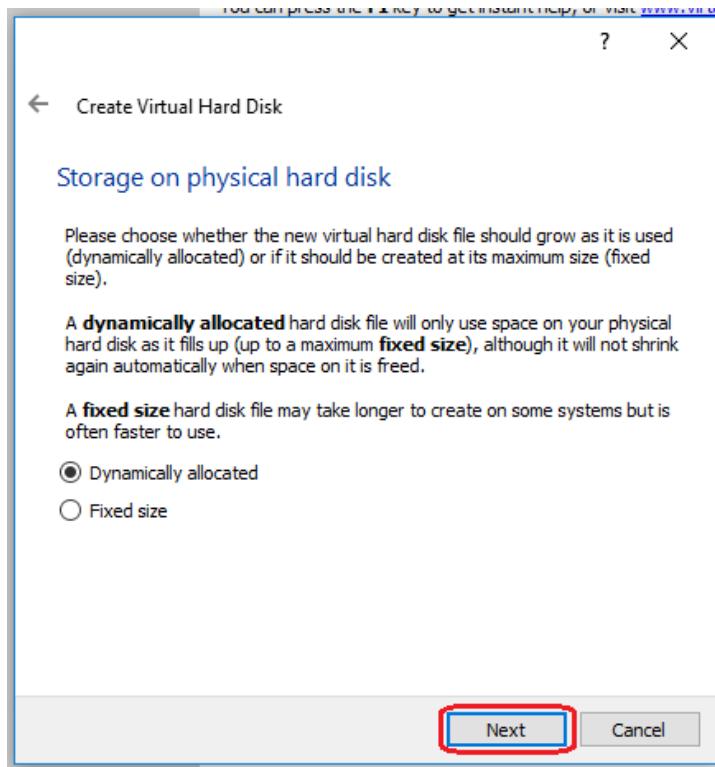
**Step 4:** Select "Create a virtual hard disk now" option and click on the "Create" button to proceed.



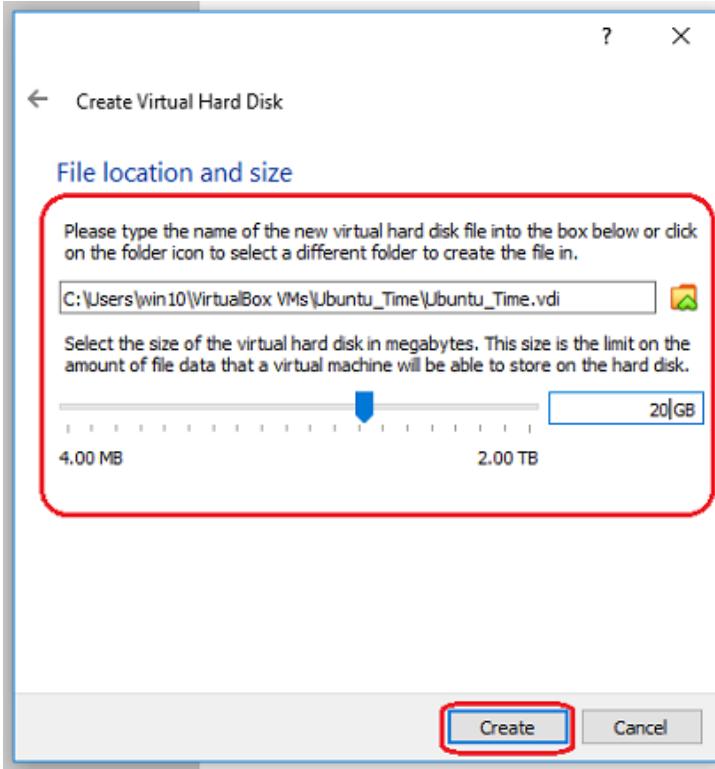
**Step 5:** Choose the "VDI (VirtualBox Disk Image)" option and click "Next".



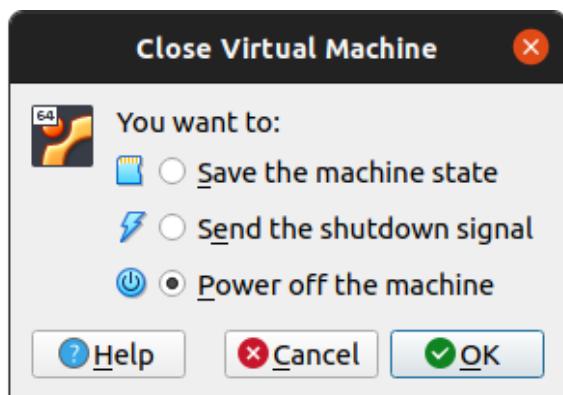
**Step 6:** Again, click on the "Next" button.



**Step 7:** Select the amount of space for your virtual machine and click the "Create" button. (This will be used for your operating system which is going to be installed, so give as much space as possible).



**Step 8:** When you click on the "Close" button of your virtual machine window (at the top right of the window, just like you would close any other window on your system), VirtualBox asks you whether you want to "save" or "power off" the VM. (As a shortcut, you can also press the Host key together with "Q".)



## 7. Assignment: Installation and Configuration of Hadoop.

First of all, you need to install Java since Hadoop is based on it. Then, you need to download and configure Hadoop File System itself. Also, I recommend you to have [WinRAR](#) installed because you will need to extract some files.

### Java Installation and Configuration

#### Java Download

As stated in [Hadoop Java Versions](#):

Apache Hadoop 3.3 and upper supports Java 8 and Java 11 (runtime only), but Hadoop compilation with Java 8 is mandatory.

Apache Hadoop from 3.0.x to 3.2.x now supports only Java 8.

Apache Hadoop from 2.7.x to 2.10.x support both Java 7 and 8.

In this guide, I will explain how to install Hadoop 3.1.3, so you need Java 8.

First of all, you need an Oracle account. If you don't have one [create it here](#). The procedure is very straightforward, you just need to complete a form and verify your email.

After your Oracle account is created, you need to go to [Windows Java 8 SE Development Kit official download site](#) and download the x64 Installer:

The screenshot shows the Oracle Java SE Development Kit 8u321 download page. At the top, there's a navigation bar with links for Oracle, Products, Industries, Resources, Support, Events, Developer, Partners, View Accounts, and Contact Sales. Below the navigation bar, there are two tabs: Java 8 and Java 11, with Java 8 selected. The main content area is titled "Java SE Development Kit 8u321". It includes a note that Java SE subscribers will receive JDK 8 updates until at least December of 2030. A note also states that the Oracle JDK 8 license changed in April 2019. Below this, there's a section about the Oracle Technology Network License Agreement, mentioning that it's substantially different from prior Oracle JDK 8 licenses. It notes that personal use and development use are allowed at no cost, while other uses require a license. A link to the FAQ is provided. Further down, it says commercial license and support are available for a low cost with Java SE Subscription. It also mentions that JDK 8 software is licensed under the Oracle Technology Network License Agreement for Oracle Java SE. A "JDK 8u321 checksum" link is present. Below these details, there's a table showing download links for different operating systems: Linux, macOS, Solaris, and Windows. The Windows row is highlighted with a yellow background. The table has columns for "Product/file description", "File size", and "Download". The "Download" column contains links for "jdk-8u321-windows-i586.exe" and "jdk-8u321-windows-x64.exe". At the bottom of the page, there's a "Documentation Download" button.

Product/file description	File size	Download
x86 Installer	157.99 MB	<a href="#">jdk-8u321-windows-i586.exe</a>
x64 Installer	171.09 MB	<a href="#">jdk-8u321-windows-x64.exe</a>

Then, you will be asked to accept (clicking on the checkbox) the [Oracle Technology Network License Agreement for Oracle Java SE](#). Once the checkbox is marked, click the button to download the installer:

The Oracle Technology Network License Agreement for Oracle Java SE is substantially different from other Oracle MPN Licenses. This license applies to uses, such as personal use before downloading and using.

I reviewed and accept the Oracle Technology Network License Agreement for Oracle Java SE

Required

You will be redirected to the login screen in order to download the file.

[Download jdk-8u321-windows-x64.exe](#)

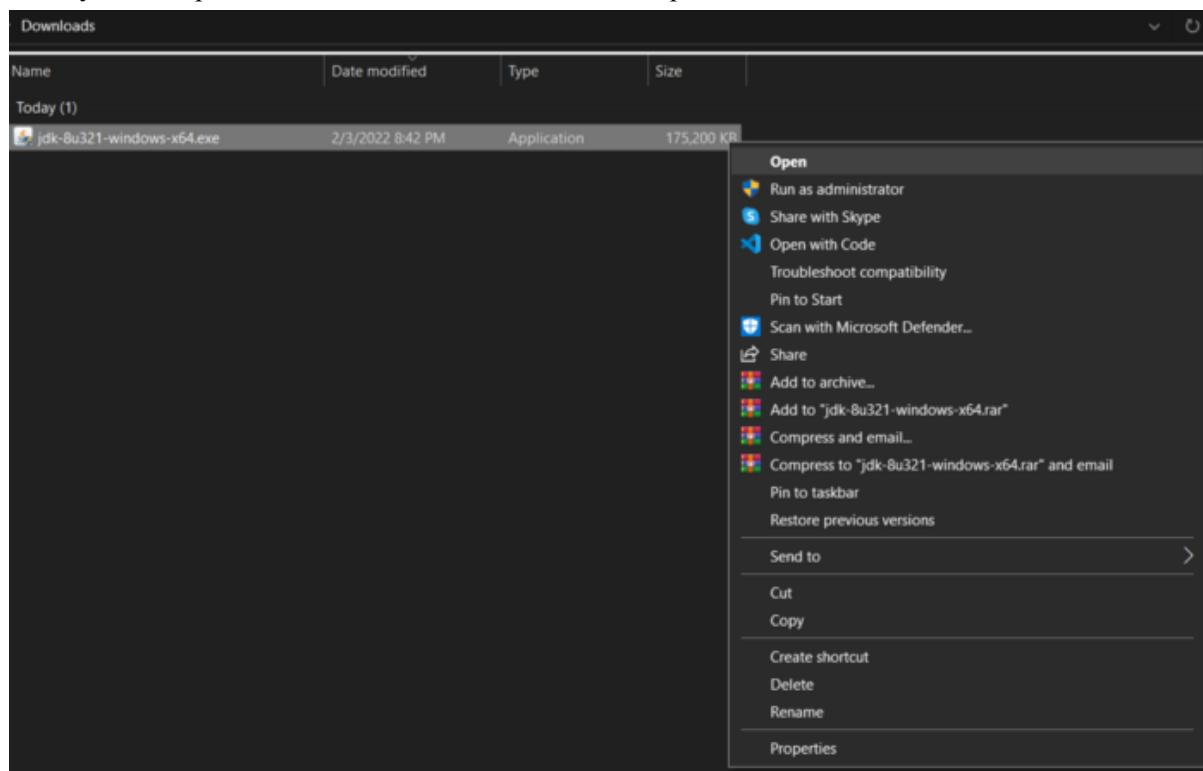
Product/file description	x86 Installer	x64 Installer
	157.99 MB	171.09 MB
	<a href="#">jdk-8u321-windows-i586.exe</a>	<a href="#">jdk-8u321-windows-x64.exe</a>

[Documentation Download](#)

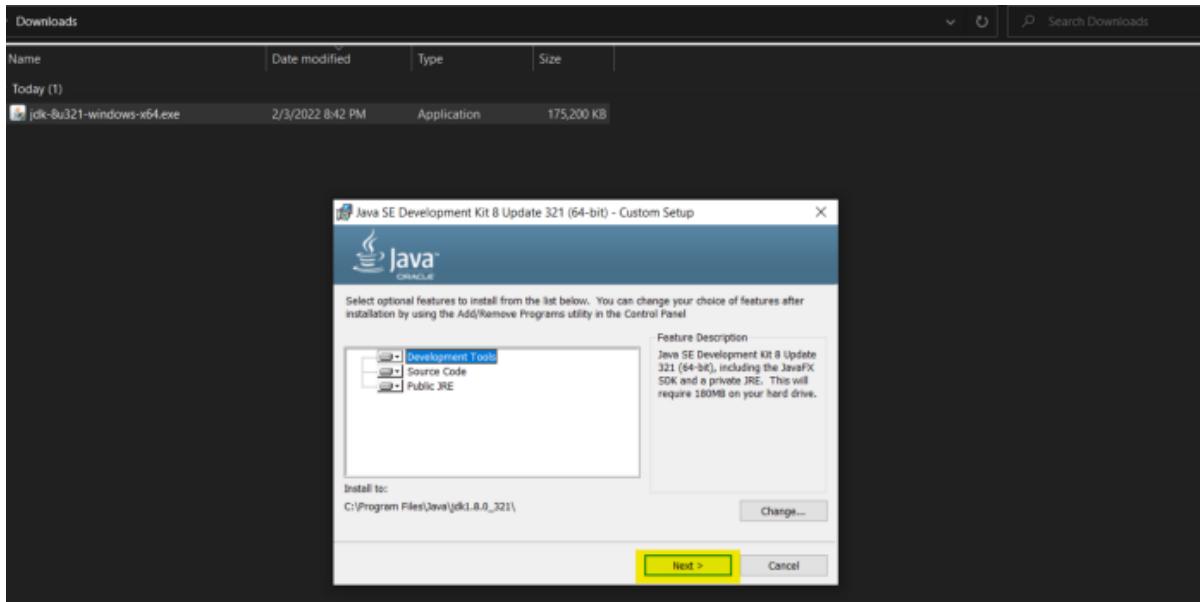
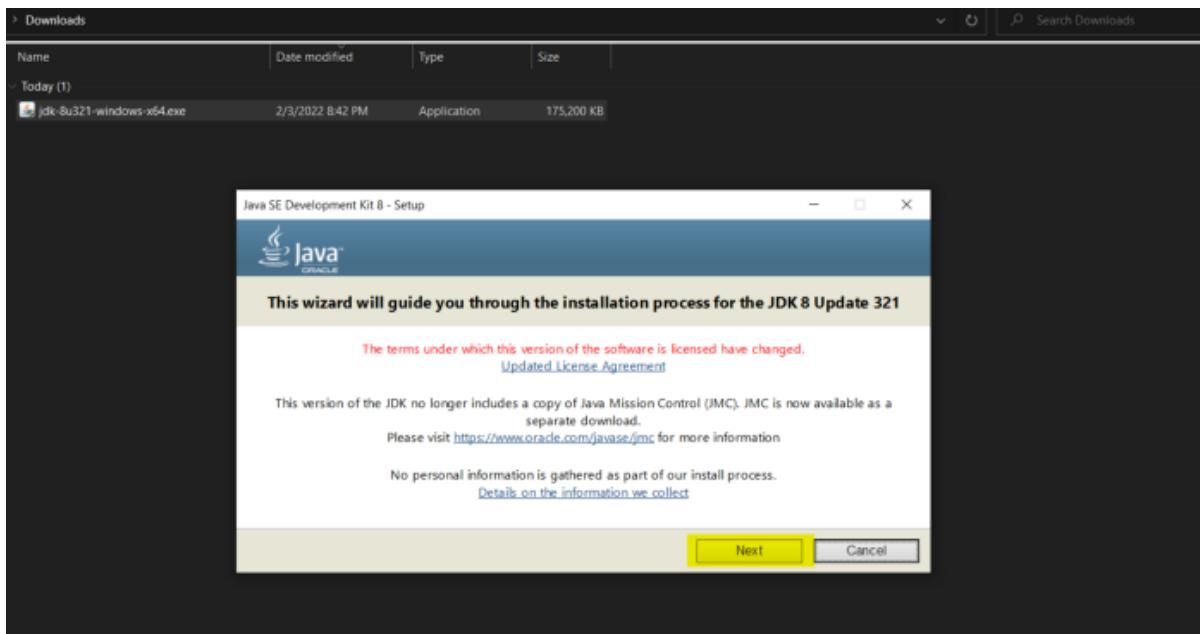
After that, you will be asked to sign in with your Oracle account and then the installer download will start immediately:

## Java Installation

Then, you must proceed with the Java installation. Just open the folder where installer is in and run it:

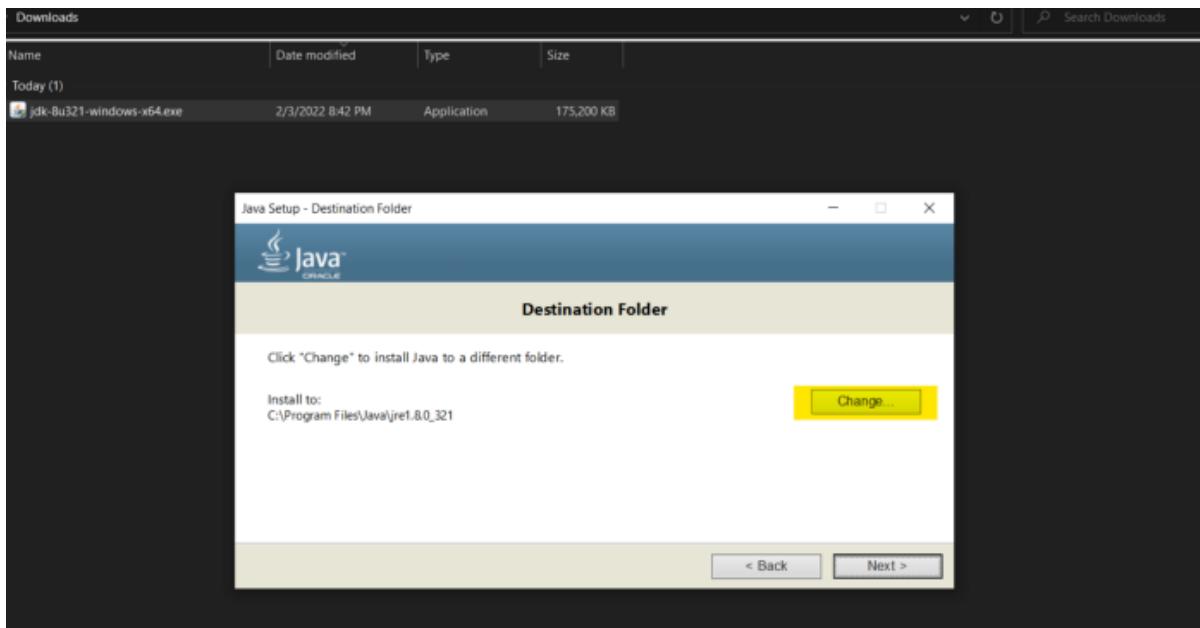


Next, the installation wizard will be shown, click on Next in the following two views:

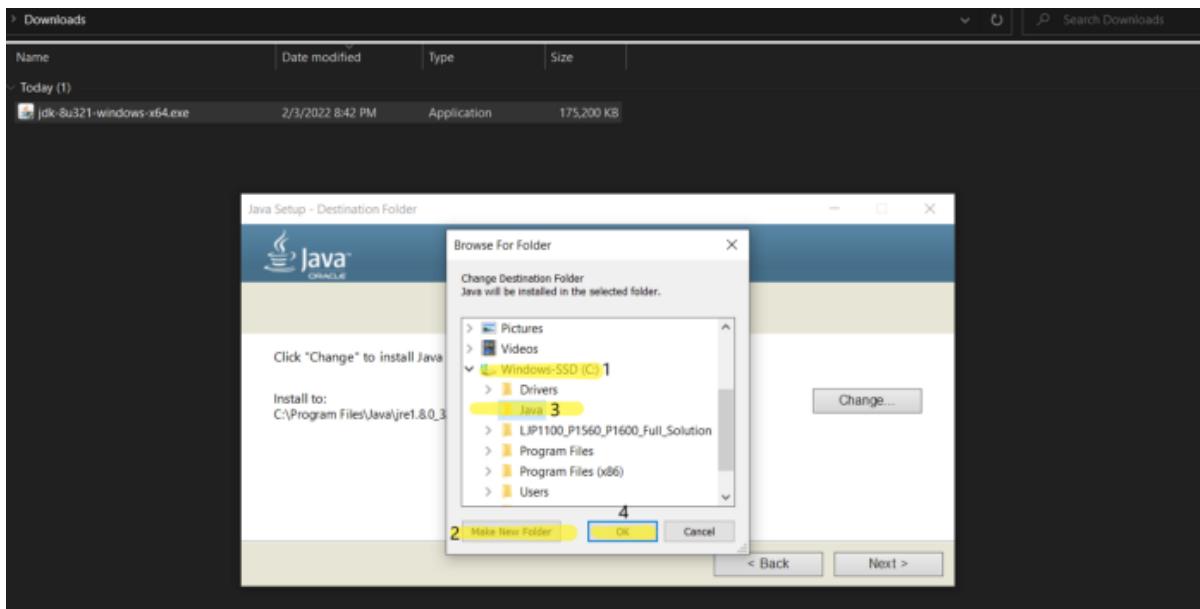


The third view is to select the destination folder where SDK files will be stored. Here, you need to create the folder “Java” in the root path of your storage drive

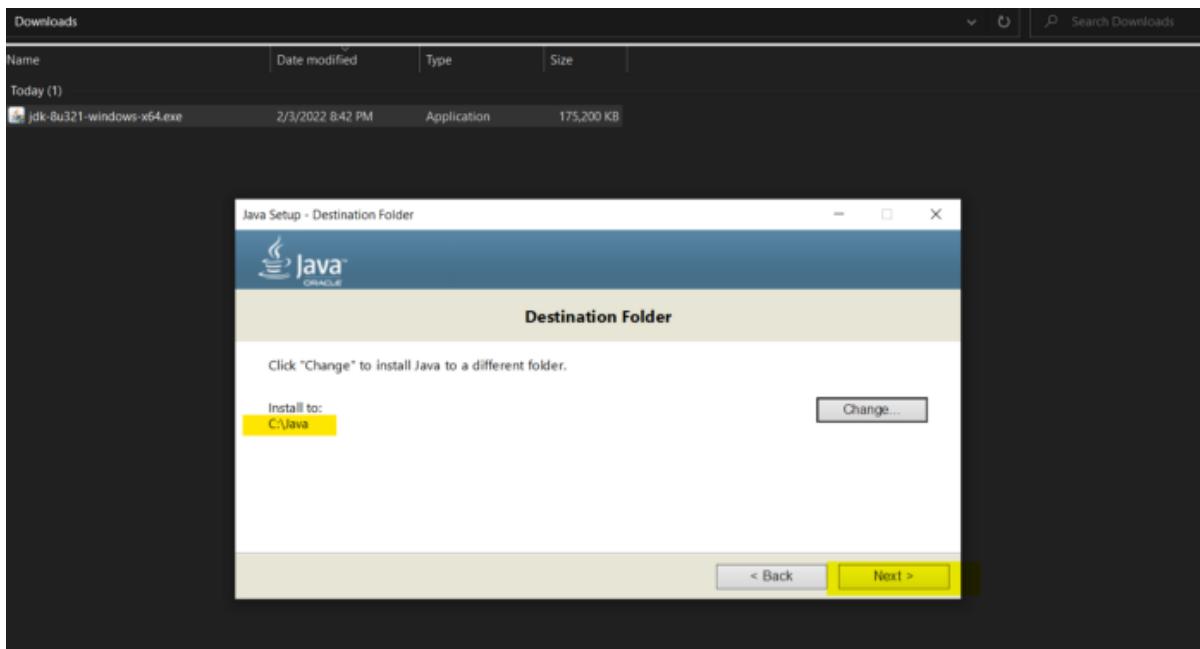
1.- Select Change:



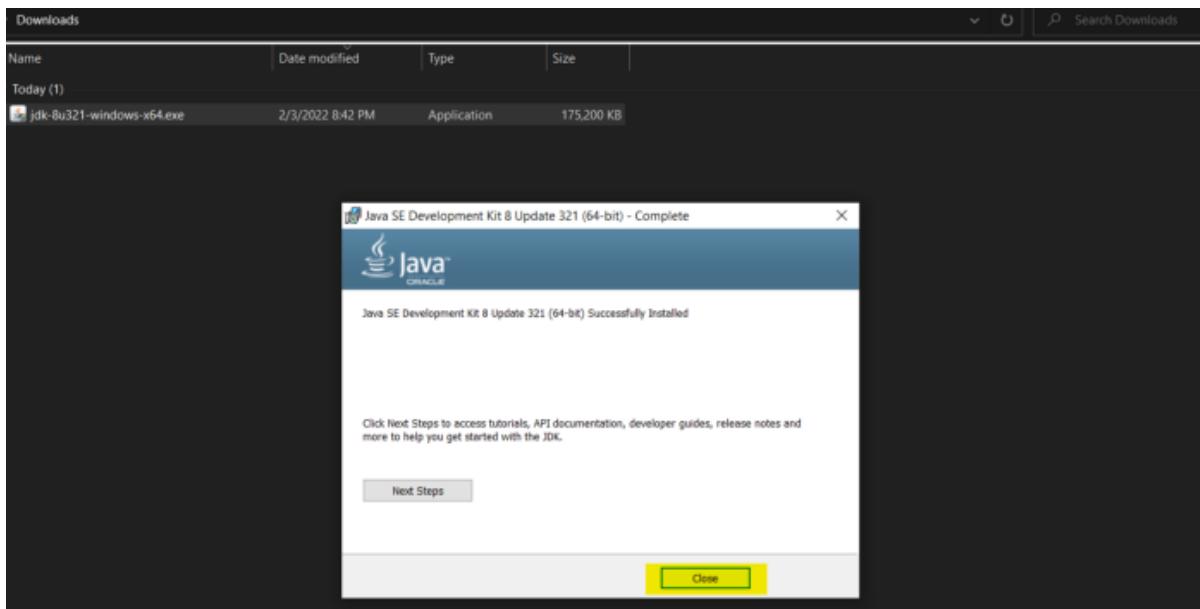
2.- In the Browse for Folder window, select your storage drive (In my case, the C: drive), click on Make New Folder button and assign the name “Java” to the new directory, then click OK:



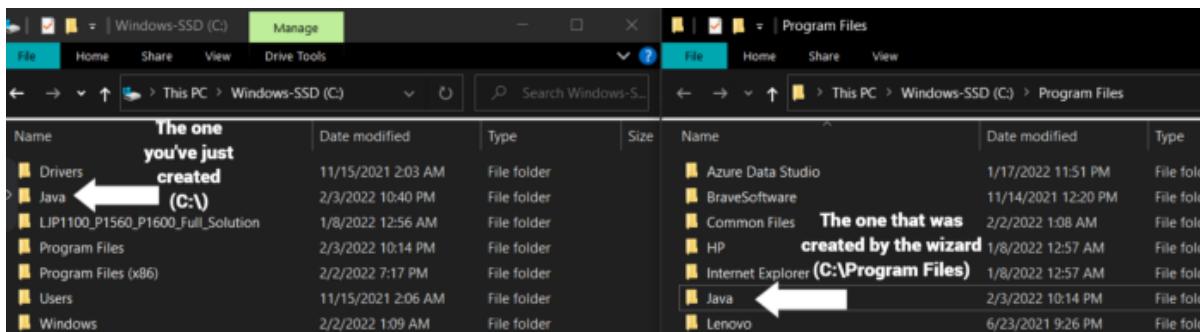
After that, you need to check if the destination folder has been updated. Once you have verified it, click on Next > and wait the installation to finish:



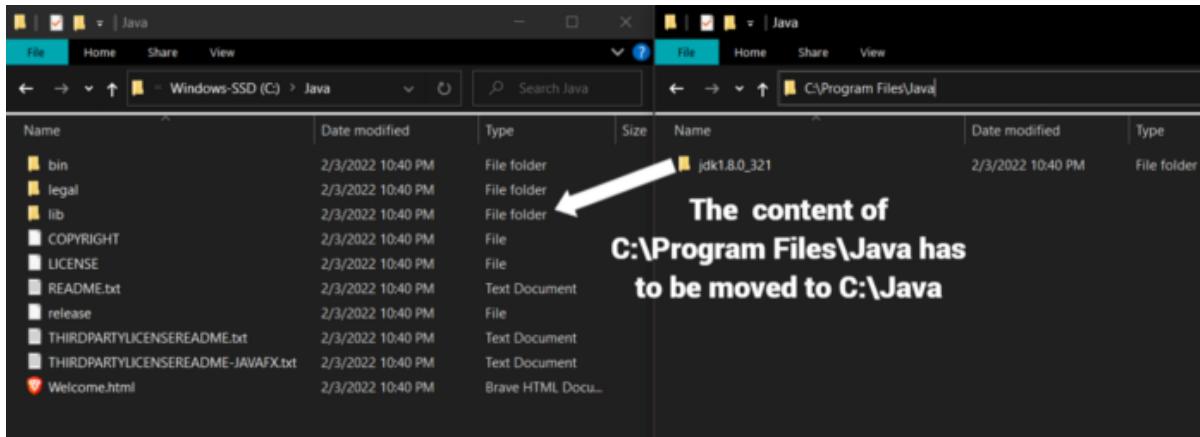
When this view displays, the installation has been finished and you can close the wizard:



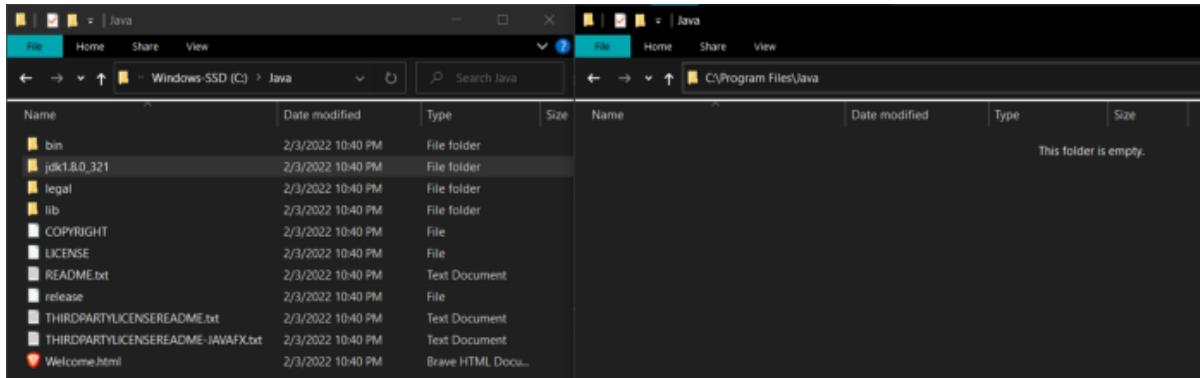
After this, you will see that there are two folders named “Java” the one you’ve just created and the other one will be inside the “Program Files” folder in your storage drive, the latter was created by the Java Installation Wizard:



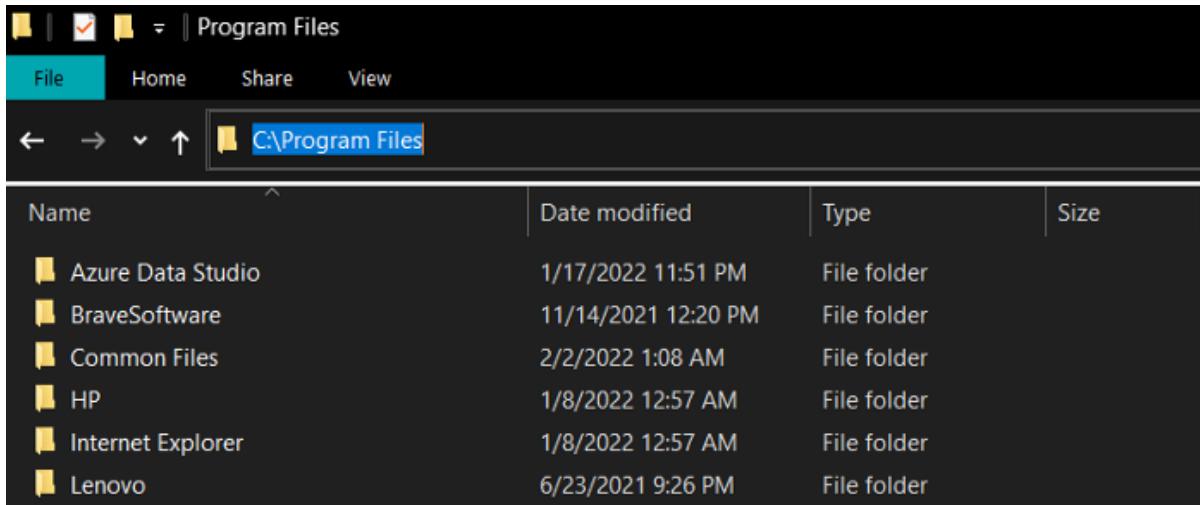
You need to move the content of the folder created by the wizard (C:\Program Files\Java) to the Java folder you have created (C:\Java) to avoid problems latter when you configure the environment variables:



After that, C:\Program Files\Java folder will be empty:

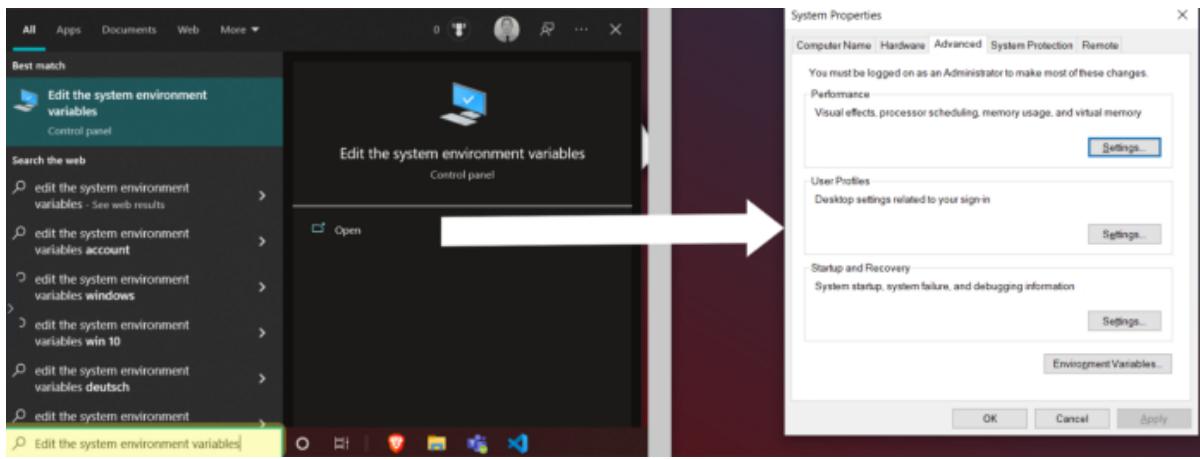


Then, you need to remove C:\Program Files\Java. As you can see, this folder no longer exists:

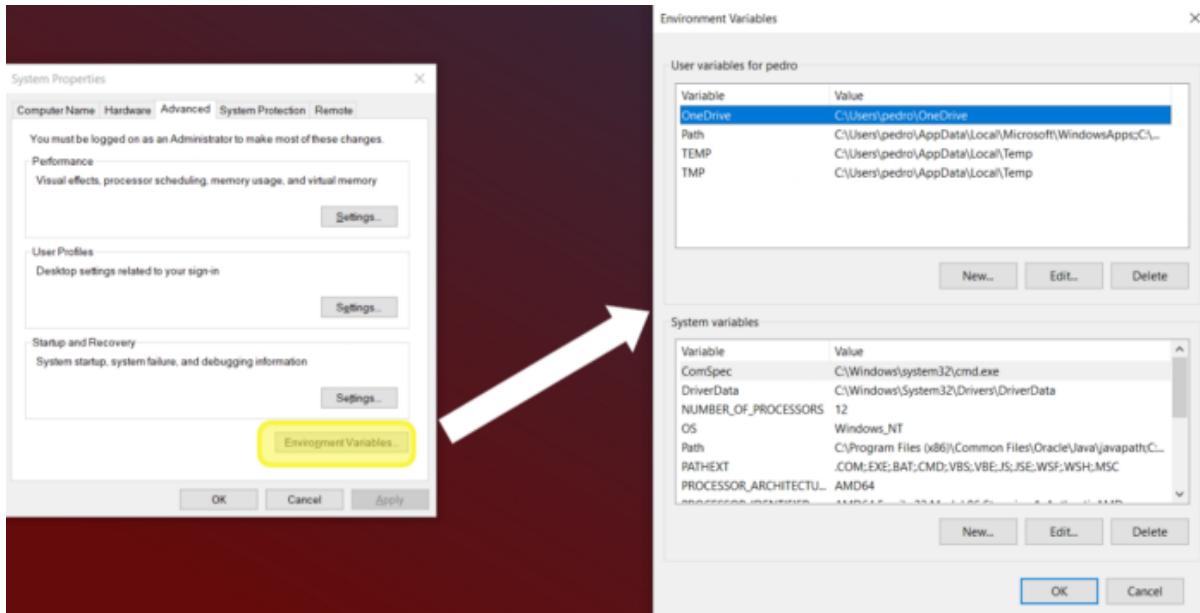


## Java Environment Variable Configuration

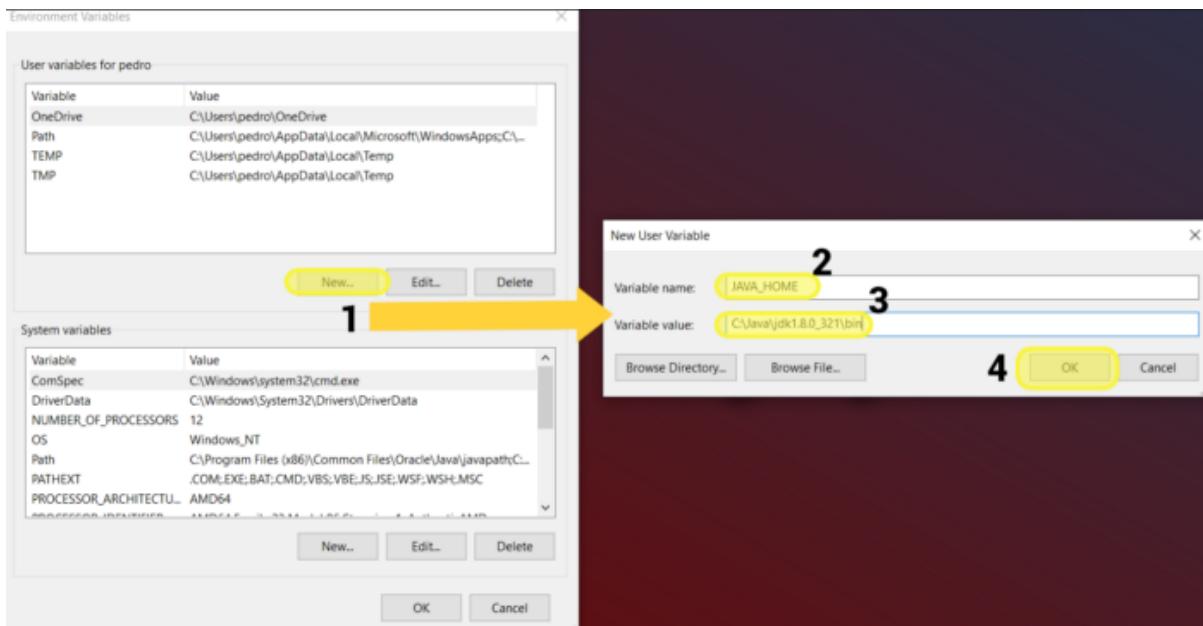
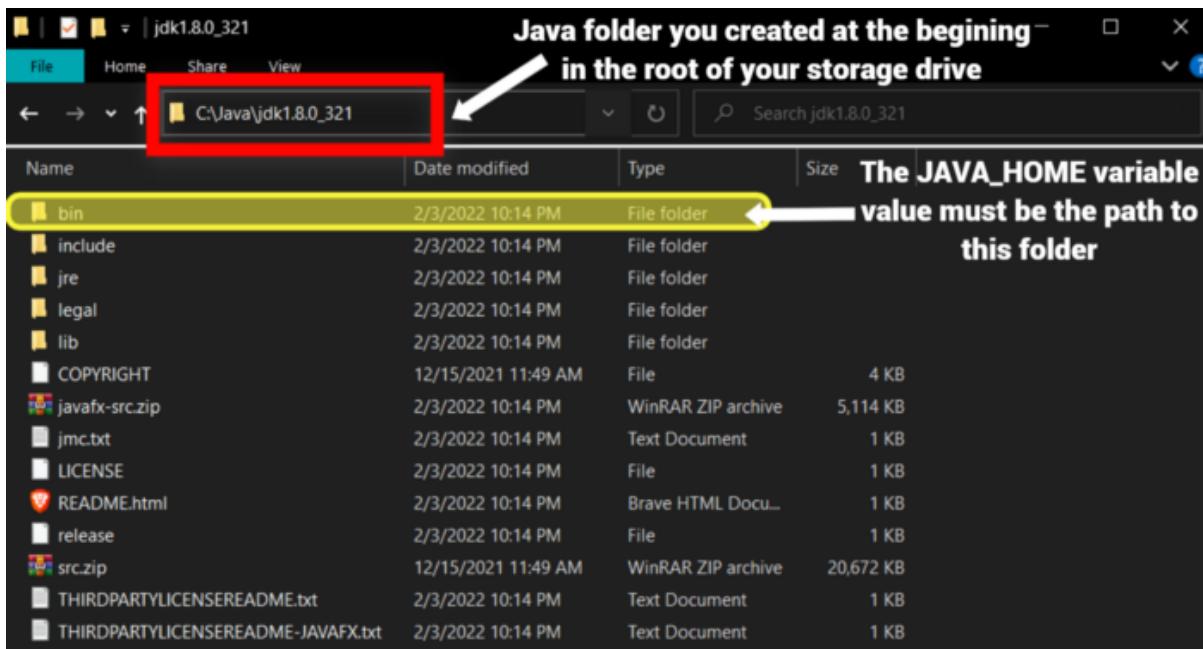
Now, you need to create an environment variable for Java. To do so, type “Edit the system environment variables” in the Windows search bar and select that option:



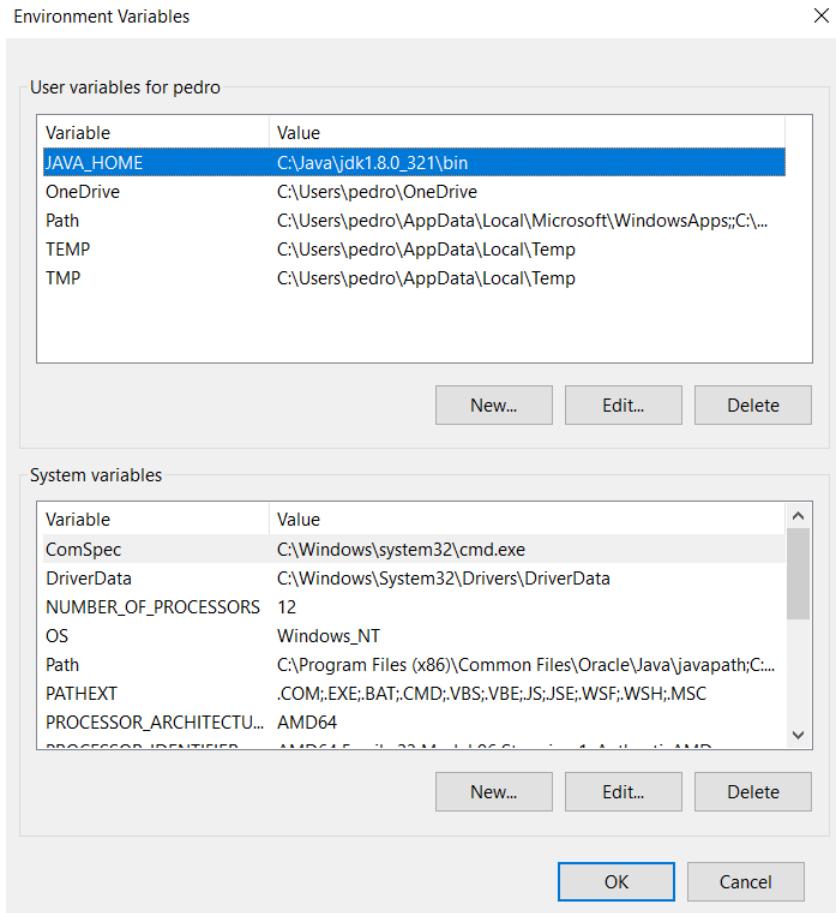
In the “System properties” view click on Environment Variables to open that window:



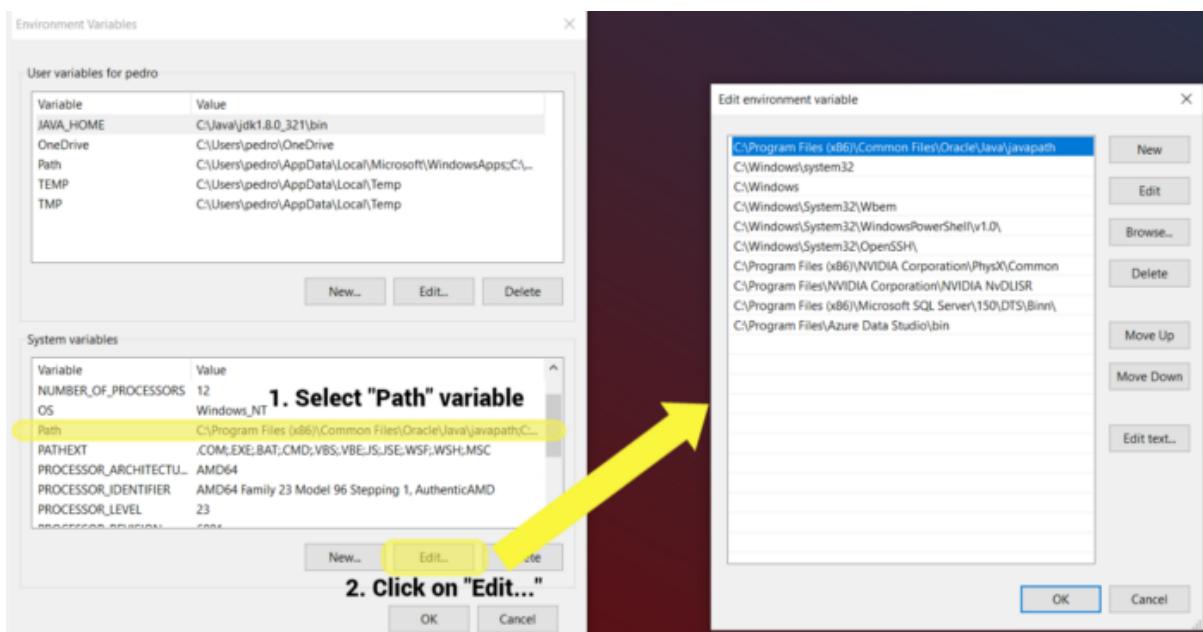
Now, in the “Environment Variables” window click on the New... button of the “User variables for <username>” panel. After that, “New User Variable” window will appear; there, you have to create the JAVA\_HOME variable. In the Variable value field you need to write the path of the bin directory which is inside of the jdk folder. Recall that jdk folder is located inside of the Java folder you previously created in the root of your storage drive. In my case I had to write C:\Java\jdk1.8.0\_321\bin:



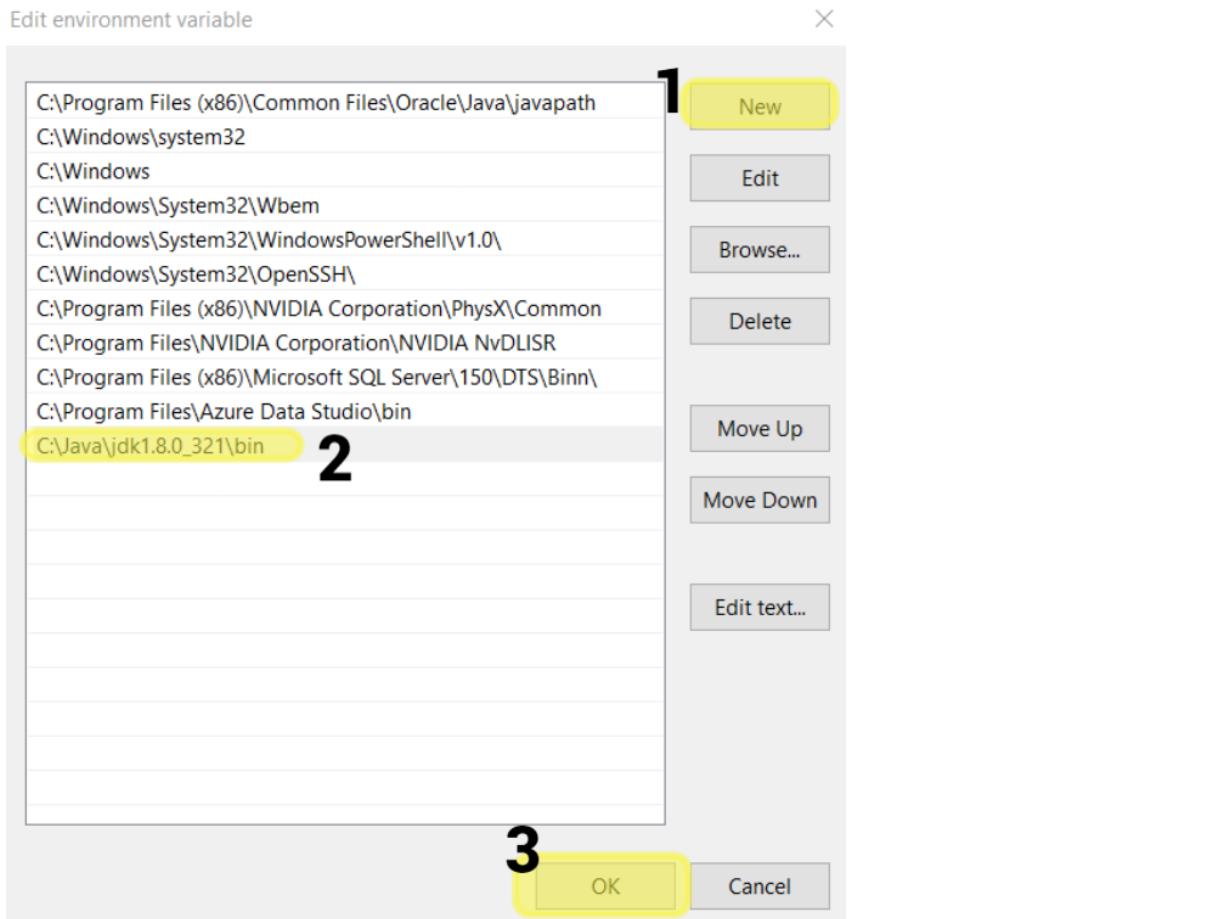
When you click on OK, the previous window will close and you can see the new variable at the top of the User variables for <username> list:



Now, in the System variables panel, find the Path variable, select it and click on Edit... to open the Edit environment variable window:



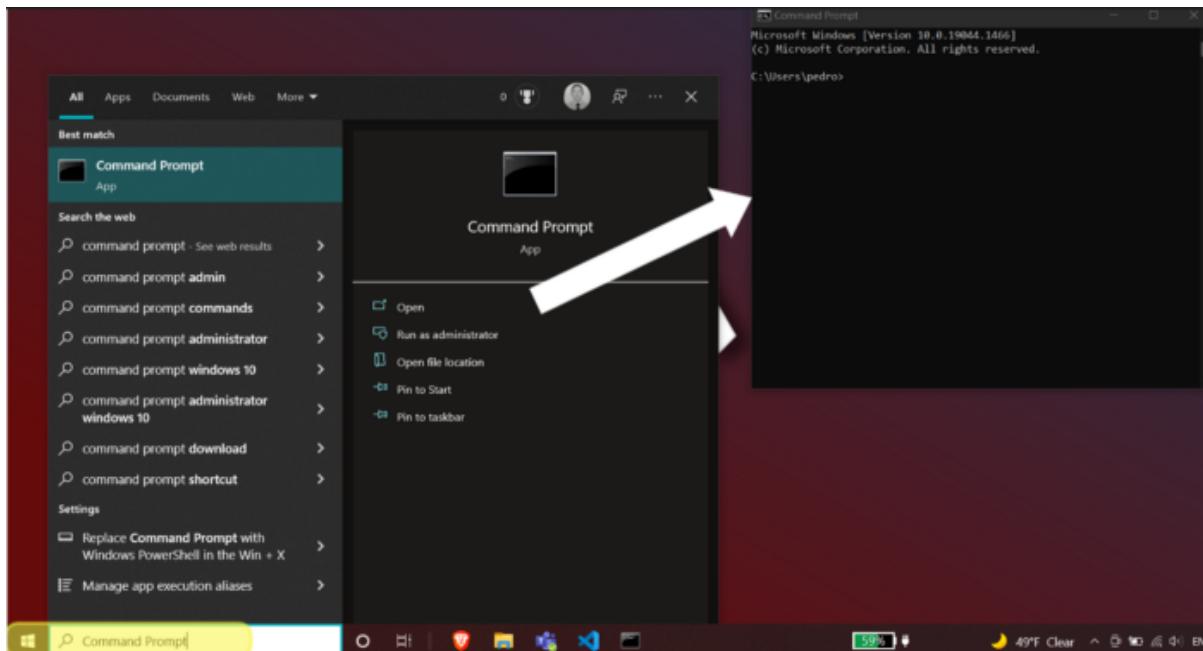
In the Edit environment variable window, click on New and write the path to the jdk folder, the exact same path you've just assigned to the JAVA\_HOME user variable. Then, click on OK:



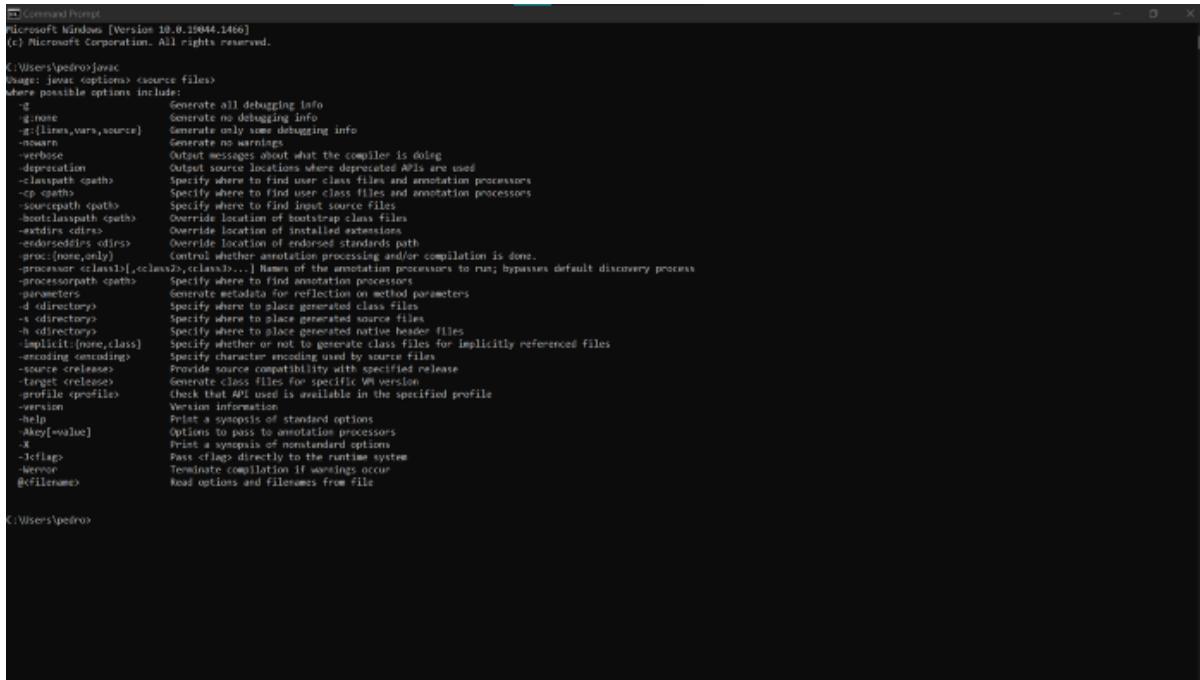
Now, be careful and click on OK in all windows related to the environment variables to save the changes; otherwise, you will need to repeat this process again.

### Java Installation Verification

To check if Java was correctly installed, open the Windows Command Prompt. You can do this typing Command Prompt in the Windows search bar:



In the command prompt write javac and hit Enter. If you see this output, then Java is working properly:



```
Microsoft Windows [Version 10.0.19044.1466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\pedro\javac
Usage: javac <options> <source files>
where possible options include:
  -g[lines,vars,source]   Generate all debugging info
  -g:none               Generate no debugging info
  -g:[lines,vars,source]  Generate only some debugging info
  -nowarn               Generate no warnings
  -verbose              Output messages about what the compiler is doing
  -deprecation          Output source locations where deprecated APIs are used
  -classpath <path>     Specify where to find user class files and annotation processors
  -cp <path>             Specify where to find user source files
  -sourcepath <path>    Specify where to find user class files and annotation processors
  -bootclasspath <path>  Override location of bootstrap class files
  -extdirs <dirs>        Override location of installed extensions
  -endorseddirs <dirs>  Override location of endorsed standards path
  -proc:({none,only})    Control whether annotation processing and/or compilation is done.
  -processor <class1>[,<class2>,...] Names of the annotation processors to run; bypasses default discovery process
  -processorpath <path>  Specify where to find annotation processors
  -parameters            Generate metadata for reflection method parameters
  -d <directory>         Specify where to place generated class files
  -s <directory>         Specify where to place generated source files
  -h <directory>         Specify where to place generated native header files
  -implicit:{none,class} Specify whether or not to generate class files for implicitly referenced files
  -encoding <encoding>   Specify character encoding used by source files
  -source <release>      Provide source compatibility with specified release
  -target <release>      Generate class files for specific VM version
  -profile <profile>     Check that API used is available in the specified profile
  -version               Print the configured standard options
  -help                 Options to pass to annotation processors
  -Xkey[=value]           Print a synopsis of nonstandard option
  -J<flag>               Pass <flag> directly to the runtime system
  -Werror               Terminate compilation if warnings occur
  -R<filename>          Read options and filenames from file
```

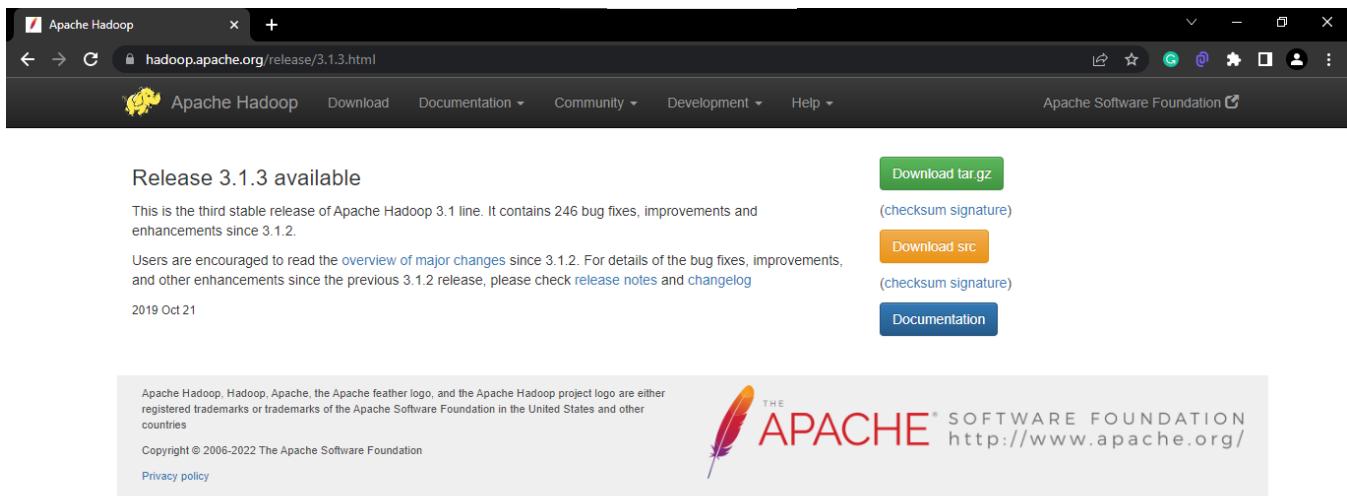
Now, you can check the installed Java version typing java -version:

If you have had no problems, congratulations! that means you have installed Java successfully on your computer.

## Hadoop File System Configuration

### Hadoop Download

Once Java is working properly, you need to download and configure Hadoop File System. To do so, go to [Hadoop official downloads site](#):



The screenshot shows a web browser displaying the Apache Hadoop 3.1.3 release page. The URL in the address bar is [hadoop.apache.org/release/3.1.3.html](https://hadoop.apache.org/release/3.1.3.html). The page title is "Release 3.1.3 available". It features a green "Download tar.gz" button and an orange "Download src" button. Below these are links for "checksum signature" and "Documentation". The Apache Software Foundation logo is visible in the footer.

Release 3.1.3 available

This is the third stable release of Apache Hadoop 3.1 line. It contains 246 bug fixes, improvements and enhancements since 3.1.2.

Users are encouraged to read the [overview of major changes](#) since 3.1.2. For details of the bug fixes, improvements, and other enhancements since the previous 3.1.2 release, please check [release notes](#) and [changelog](#).

2019 Oct 21

Download tar.gz  
(checksum signature)

Download src  
(checksum signature)

Documentation

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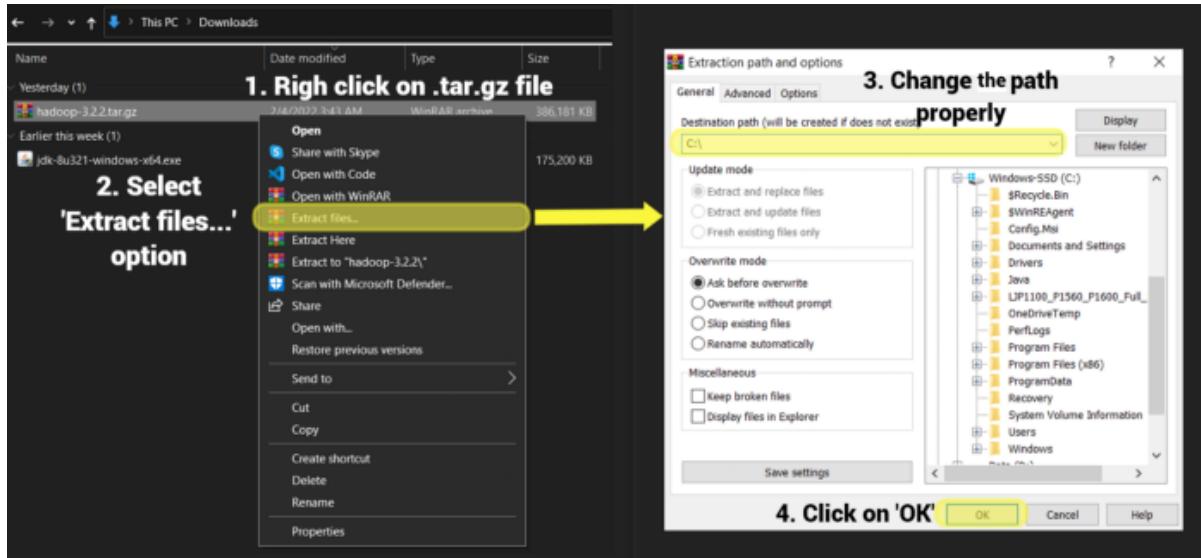
Privacy policy

THE APACHE SOFTWARE FOUNDATION <http://www.apache.org/>

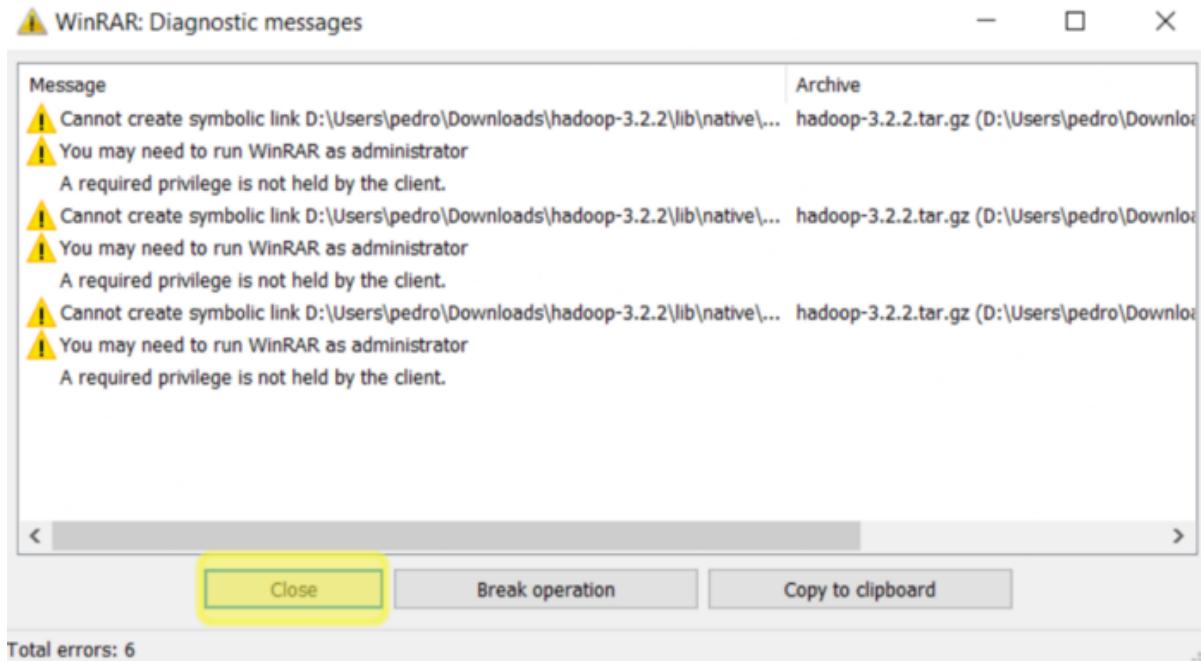
Click on [Download tar.gz](#) file

## Hadoop Extraction

Once you have the .tar.gz file locally, extract it directly in the root of your storage drive (the same folder where you have previously created Java directory) with WinRAR Extract files... option. If you don't do it this way (i.e. extract it on the current folder and after that move the result manually) you may encounter with [Destination Path Too Long error](#) as I did:



Just before extraction finishes, some error messages may be shown. If this occurs, don't worry, just ignore them clicking on Close:



Now, you have Java and Hadoop folders in the same location:

Name	Date modified	Type	Size
Drivers	11/15/2021 2:03 AM	File folder	
hadoop-3.2.2	2/5/2022 1:44 PM	File folder	
Java	2/3/2022 11:16 PM	File folder	
LJP1100_P1560_P1600_Full_Solution	1/8/2022 12:56 AM	File folder	
Program Files	2/3/2022 11:18 PM	File folder	
Program Files (x86)	2/2/2022 7:17 PM	File folder	
Users	11/15/2021 2:06 AM	File folder	
Windows	2/2/2022 1:09 AM	File folder	

## Hadoop Configuration

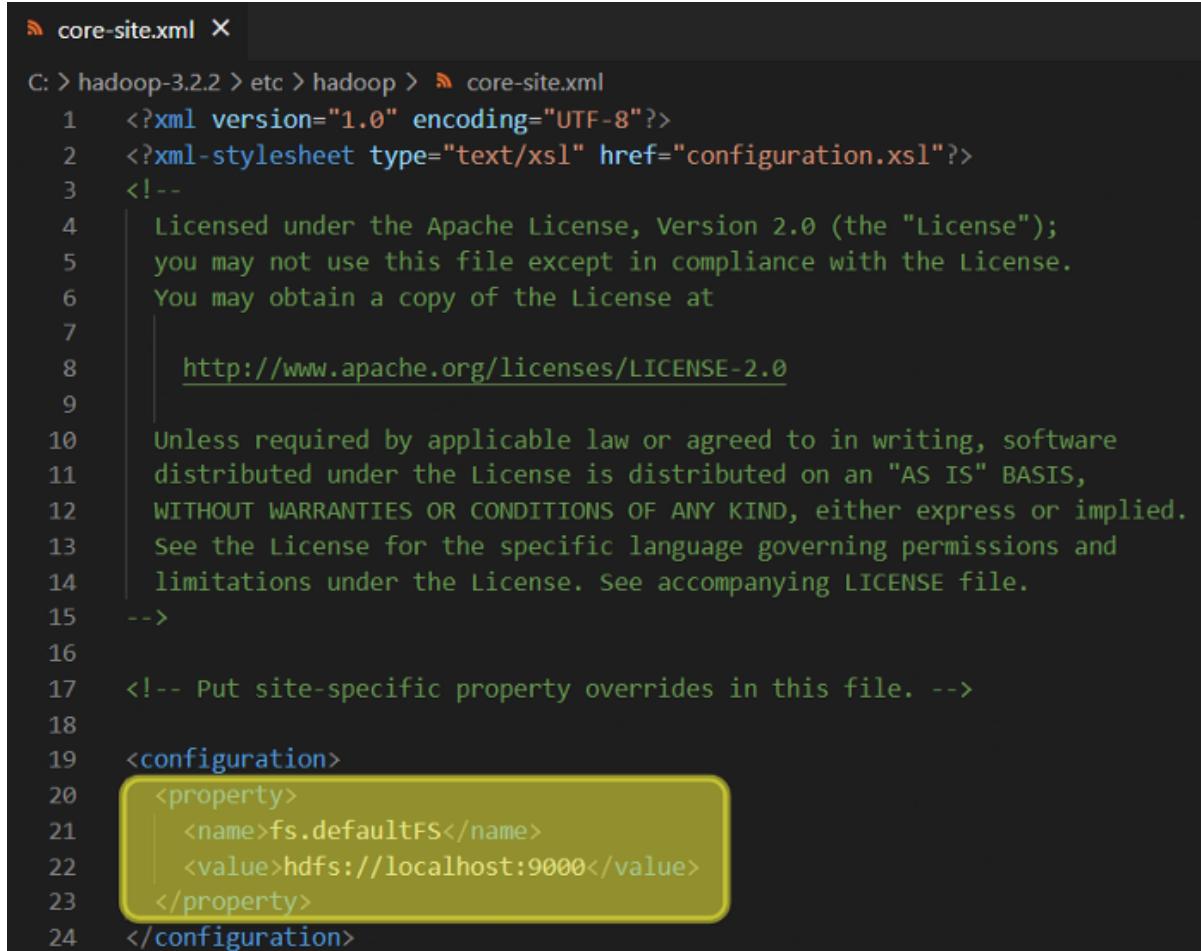
Now, you need to configure some Hadoop files. If you have downloaded the same Hadoop version as me, then you need to go to etc\hadoop folder within the previously extracted Hadoop directory (in my case, the complete path is C:\hadoop-3.1.3\etc\hadoop). Once there, open the following five files with your preferred text editor:

core-site.xml, hadoop-env.cmd, hdfs-site.xml, mapred-site.xml, yarn-site.xml

Name	Date modified	Type	Size
shellprofile.d	2/5/2022 1:44 PM	File folder	
capacity-scheduler.xml	1/3/2021 2:54 AM	XML Source File	9 KB
configuration.xsl	1/3/2021 2:57 AM	XSL Stylesheet	2 KB
container-executor.cfg	1/3/2021 2:54 AM	Configuration Sou...	2 KB
core-site.xml	2/5/2022 11:05 PM	XML Source File	1 KB
hadoop-env.cmd	2/5/2022 10:39 PM	Windows Comma...	4 KB
hadoop-env.sh	1/3/2021 3:11 AM	SH Source File	16 KB
hadoop-metrics2.properties	1/3/2021 2:28 AM	Properties Source ...	4 KB
hadoop-policy.xml	1/3/2021 2:28 AM	XML Source File	12 KB
hadoop-user-functions.sh.example	1/3/2021 2:28 AM	EXAMPLE File	4 KB
hdfs-site.xml	2/5/2022 11:05 PM	XML Source File	2 KB
https-env.sh	1/3/2021 2:33 AM	SH Source File	2 KB
https-log4j.properties	1/3/2021 2:33 AM	Properties Source ...	2 KB
https-signature.secret	1/3/2021 2:33 AM	SECRET File	1 KB
https-site.xml	1/3/2021 2:33 AM	XML Source File	1 KB
kms-acls.xml	1/3/2021 2:29 AM	XML Source File	4 KB
kms-env.sh	1/3/2021 2:29 AM	SH Source File	2 KB
kms-log4j.properties	1/3/2021 2:29 AM	Properties Source ...	2 KB
kms-site.xml	1/3/2021 2:29 AM	XML Source File	1 KB
log4j.properties	1/3/2021 2:28 AM	Properties Source ...	15 KB
mapred-env.cmd	1/3/2021 2:57 AM	Windows Comma...	1 KB
mapred-env.sh	1/3/2021 2:57 AM	SH Source File	2 KB
mapred-queues.xml.template	1/3/2021 2:57 AM	TEMPLATE File	5 KB
mapred-site.xml	2/5/2022 11:17 PM	XML Source File	1 KB
ssl-client.xml.example	1/3/2021 2:28 AM	EXAMPLE File	3 KB
ssl-server.xml.example	1/3/2021 2:28 AM	EXAMPLE File	3 KB
user_ec_policies.xml.template	1/3/2021 2:32 AM	TEMPLATE File	3 KB
workers	1/3/2021 2:28 AM	File	1 KB
yarn-env.cmd	1/3/2021 2:54 AM	Windows Comma...	3 KB
yarn-env.sh	1/3/2021 2:54 AM	SH Source File	7 KB
yarnservice-log4j.properties	1/3/2021 2:54 AM	Properties Source ...	3 KB
yarn-site.xml	2/5/2022 11:23 PM	XML Source File	1 KB

In the [core-site.xml](#) you need to set the default Hadoop File System location. Paste this chunk of code inside <configuration> tag:

```
<property>
  <name>fs.defaultFS</name>
  <value>hdfs://localhost:9000</value>
</property>
```



```
core-site.xml X

C: > hadoop-3.2.2 > etc > hadoop > core-site.xml
1   <?xml version="1.0" encoding="UTF-8"?>
2   <?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
3   <!--
4       Licensed under the Apache License, Version 2.0 (the "License");
5       you may not use this file except in compliance with the License.
6       You may obtain a copy of the License at
7
8           http://www.apache.org/licenses/LICENSE-2.0
9
10      Unless required by applicable law or agreed to in writing, software
11          distributed under the License is distributed on an "AS IS" BASIS,
12          WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
13          See the License for the specific language governing permissions and
14          limitations under the License. See accompanying LICENSE file.
15  -->
16
17  <!-- Put site-specific property overrides in this file. -->
18
19  <configuration>
20    <property>
21      <name>fs.defaultFS</name>
22      <value>hdfs://localhost:9000</value>
23    </property>
24  </configuration>
```

In the [hadoop-env.cmd](#) file you need to provide the path to Java. This path was previously used when you set the JAVA\_HOME environment variable. In my case, I set the JAVA\_HOME value to : C:\Java\jdk1.8.0\_321\bin; but now, \bin folder must be removed from the path, i.e. I had to use C:\Java\jdk1.8.0\_321 path. You need to assign this path as JAVA\_HOME value around line 25:

```

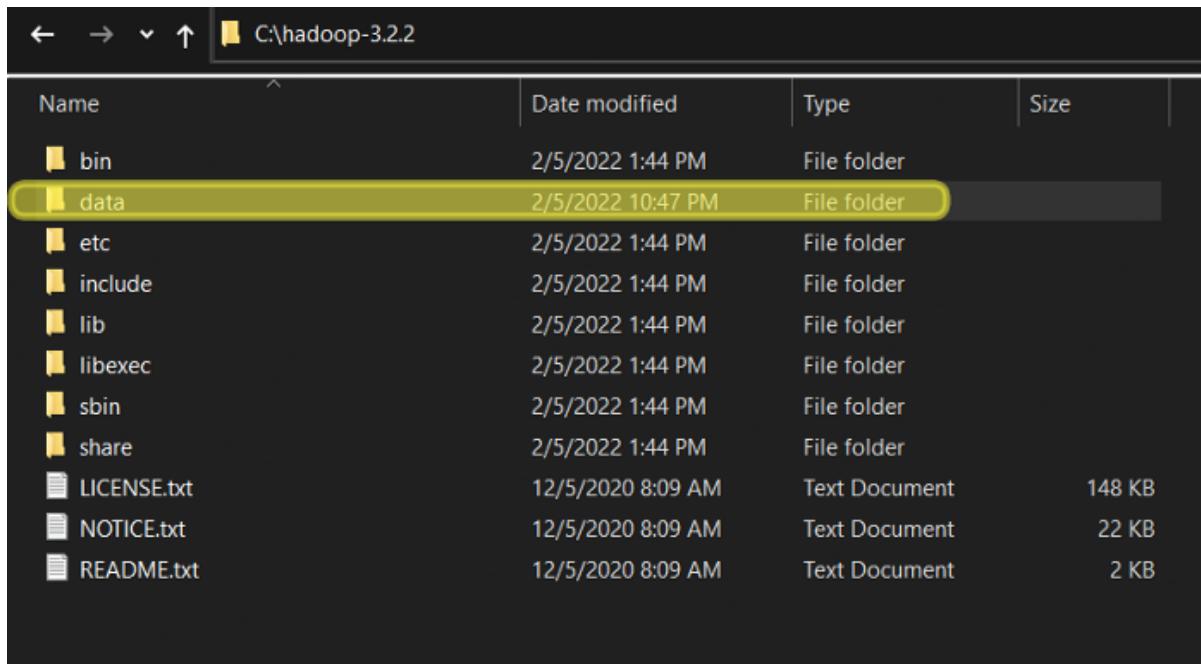
hadoop-env.cmd X

C: > hadoop-3.2.2 > etc > hadoop > hadoop-env.cmd

1  @echo off
2  @rem Licensed to the Apache Software Foundation (ASF) under one or more
3  @rem contributor license agreements. See the NOTICE file distributed with
4  @rem this work for additional information regarding copyright ownership.
5  @rem The ASF licenses this file to You under the Apache License, Version 2.0
6  @rem (the "License"); you may not use this file except in compliance with
7  @rem the License. You may obtain a copy of the License at
8  @rem
9  @rem     http://www.apache.org/licenses/LICENSE-2.0
10 @rem
11 @rem unless required by applicable law or agreed to in writing, software
12 @rem distributed under the License is distributed on an "AS IS" BASIS,
13 @rem WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
14 @rem See the License for the specific language governing permissions and
15 @rem limitations under the License.
16
17 @rem Set Hadoop-specific environment variables here.
18 |
19 @rem The only required environment variable is JAVA_HOME. All others are
20 @rem optional. When running a distributed configuration it is best to
21 @rem set JAVA_HOME in this file, so that it is correctly defined on
22 @rem remote nodes.
23
24 @rem The java implementation to use. Required.
25 set JAVA_HOME=C:\Java\jdk1.8.0_321
26
27 @rem The jsvc implementation to use. Jsvc is required to run secure datanodes.
28 @rem set JSVC_HOME=%JSVC_HOME%
29

```

Before you edit [hdfs-site.xml](#) file, you need to create some new folders. Go to Hadoop main directory in the root of your storage drive and create data folder inside of it:



Name	Date modified	Type	Size
bin	2/5/2022 1:44 PM	File folder	
data	2/5/2022 10:47 PM	File folder	
	2/5/2022 1:44 PM	File folder	
	2/5/2022 1:44 PM	File folder	
	2/5/2022 1:44 PM	File folder	
	2/5/2022 1:44 PM	File folder	
	2/5/2022 1:44 PM	File folder	
	2/5/2022 1:44 PM	File folder	
	12/5/2020 8:09 AM	Text Document	148 KB
	12/5/2020 8:09 AM	Text Document	22 KB
LICENSE.txt	12/5/2020 8:09 AM	Text Document	2 KB
NOTICE.txt	12/5/2020 8:09 AM	Text Document	
README.txt	12/5/2020 8:09 AM	Text Document	

Now, create the datanode and namenode folders inside the new data directory:

Name	Date modified	Type	Size
datanode	2/5/2022 10:50 PM	File folder	
namenode	2/5/2022 10:51 PM	File folder	

As you can see, datanode folder has the path C:\hadoop-3.1.3\data\datanode and namenode directory path is C:\hadoop-3.1.3\data\namenode.

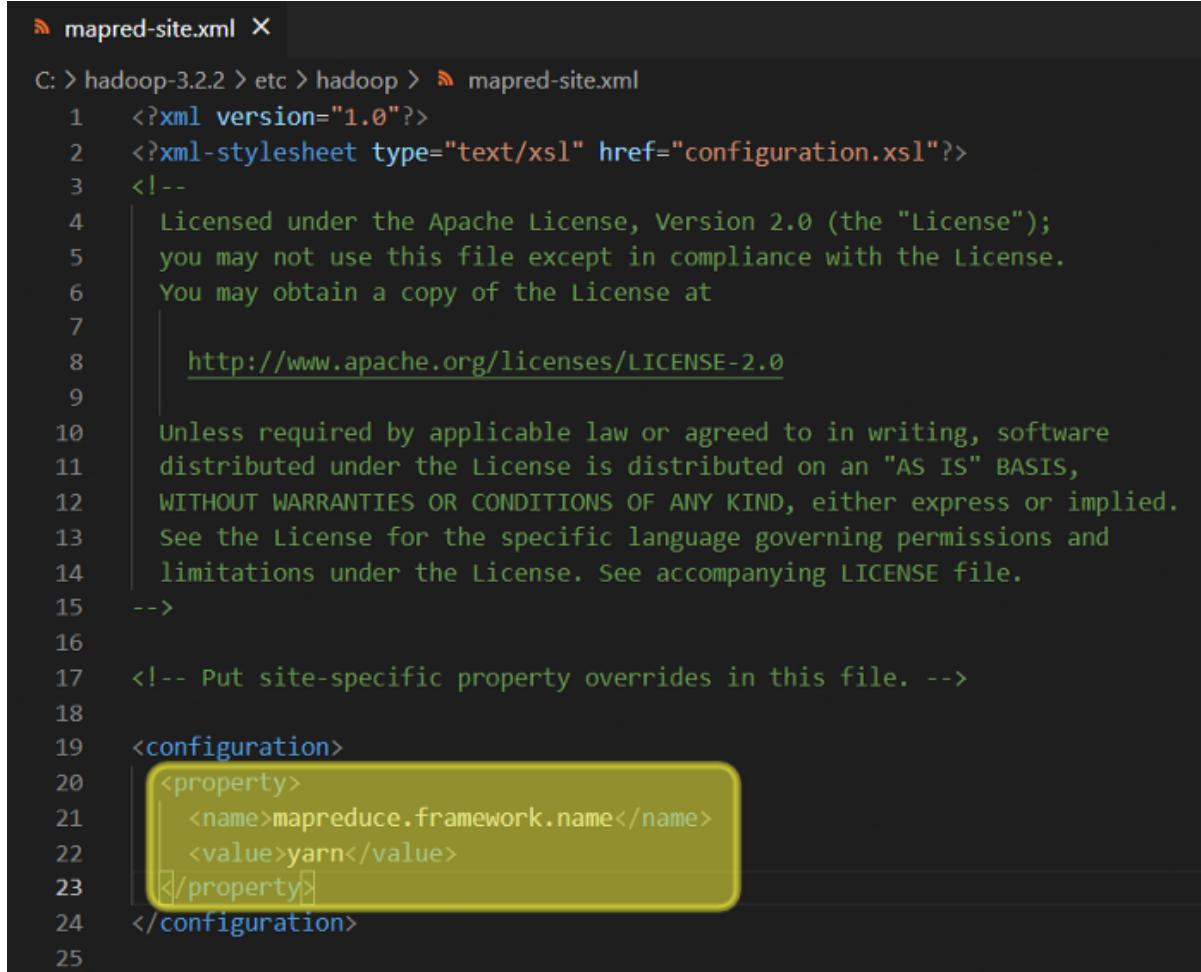
Once this is done, you need to provide this folders paths as properties in the [hdfs-site.xml](#) file. You can copy the following chunk directly into <configuration> tag, just be careful to adjust the datanode and namenode paths according to your machine locations:

```
<property>
<name>dfs.replication</name>
<value>1</value>
</property><property>
<name>dfs.namenode.name.dir</name>
<value>C:\hadoop-3.1.3\data\namenode</value>
</property><property>
<name>dfs.datanode.data.dir</name>
<value>C:\hadoop-3.1.3\data\datanode</value>
</property>
```

```
hdfs-site.xml x
C: > hadoop-3.2.2 > etc > hadoop > hdfs-site.xml
1  <?xml version="1.0" encoding="UTF-8"?>
2  <?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
3  <!--
4      Licensed under the Apache License, Version 2.0 (the "License");
5      you may not use this file except in compliance with the License.
6      You may obtain a copy of the License at
7
8          http://www.apache.org/licenses/LICENSE-2.0
9
10     Unless required by applicable law or agreed to in writing, software
11     distributed under the License is distributed on an "AS IS" BASIS,
12     WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
13     See the License for the specific language governing permissions and
14     limitations under the License. See accompanying LICENSE file.
15 -->
16
17 <!-- Put site-specific property overrides in this file. -->
18
19 <configuration>
20     <property>
21         <name>dfs.replication</name>
22         <value>1</value>
23     </property>
24
25     <property>
26         <name>dfs.namenode.name.dir</name>
27         <value>C:\hadoop-3.2.2\data\namenode</value>
28     </property>
29
30     <property>
31         <name>dfs.datanode.data.dir</name>
32         <value>C:\hadoop-3.2.2\data\datanode</value>
33     </property>
34 </configuration>
35
```

In the [mapred-site.xml](#) file you need to set yarn as the MapReduce framework. Copy the following code inside <configuration> tag:

```
<property>
  <name>mapreduce.framework.name</name>
  <value>yarn</value>
</property>
```



```
mapred-site.xml ×

C: > hadoop-3.2.2 > etc > hadoop > mapred-site.xml
1   <?xml version="1.0"?>
2   <?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
3   <!--
4     Licensed under the Apache License, Version 2.0 (the "License");
5     you may not use this file except in compliance with the License.
6     You may obtain a copy of the License at
7
8       http://www.apache.org/licenses/LICENSE-2.0
9
10    Unless required by applicable law or agreed to in writing, software
11    distributed under the License is distributed on an "AS IS" BASIS,
12    WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
13    See the License for the specific language governing permissions and
14    limitations under the License. See accompanying LICENSE file.
15  -->
16
17  <!-- Put site-specific property overrides in this file. -->
18
19  <configuration>
20    <property>
21      <name>mapreduce.framework.name</name>
22      <value>yarn</value>
23    </property>
24  </configuration>
25
```

In the last file, [yarn-site.xml](#), you need again to copy some code inside <configuration> tag:

```
<property>
  <name>yarn.nodemanager.aux-services</name>
  <value>mapreduce_shuffle</value>
</property><property>
  <name>yarn.nodemanager.auxservices.mapreduce.shuffle.class</name>
  <value>org.apache.hadoop.mapred.ShuffleHandler</value>
</property>
```

```

yarn-site.xml X

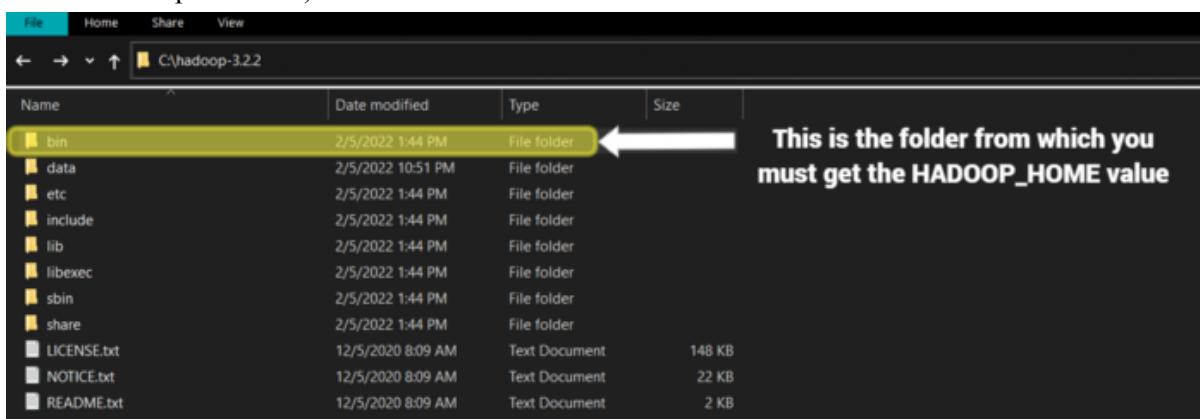
C: > hadoop-3.2.2 > etc > hadoop > yarn-site.xml

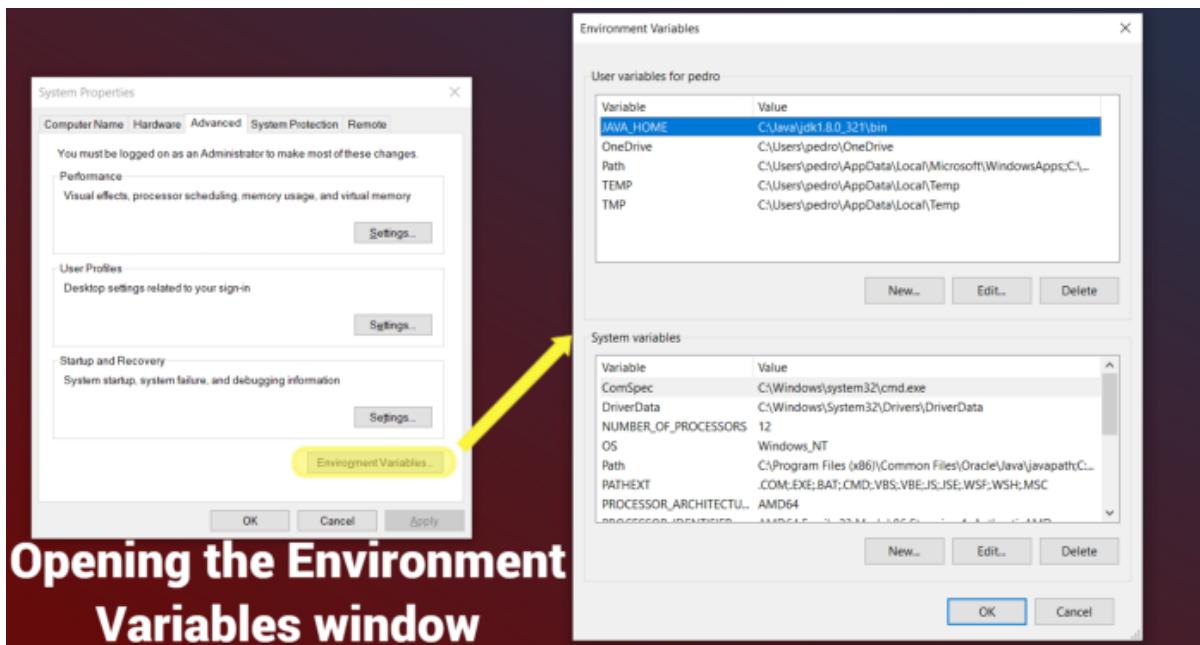
1   <?xml version="1.0"?>
2   <!--
3       Licensed under the Apache License, Version 2.0 (the "License");
4       you may not use this file except in compliance with the License.
5       You may obtain a copy of the License at
6
7           http://www.apache.org/licenses/LICENSE-2.0
8
9       Unless required by applicable law or agreed to in writing, software
10      distributed under the License is distributed on an "AS IS" BASIS,
11      WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
12      See the License for the specific language governing permissions and
13      limitations under the License. See accompanying LICENSE file.
14  -->
15 <configuration>
16   <property>
17     <name>yarn.nodemanager.aux-services</name>
18     <value>mapreduce_shuffle</value>
19   </property>
20
21   <property>
22     <name>yarn.nodemanager.auxservices.mapreduce.shuffle.class</name>
23     <value>org.apache.hadoop.mapred.ShuffleHandler</value>
24   </property>
25 </configuration>
26

```

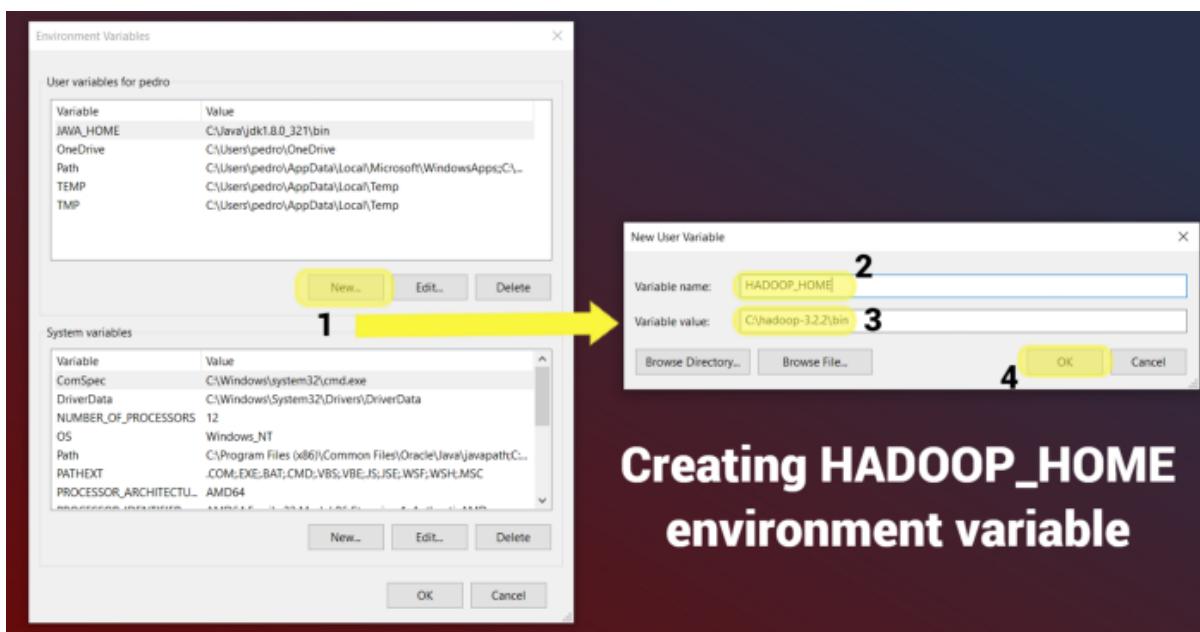
## Hadoop Environment Variable Configuration

Once all five files are properly edited, now you need to create an environment variable for Hadoop. Open the environment variables window as you did when you created JAVA\_HOME variable (recall you can open the Environment Variables typing "Edit the system environment variables" in the Windows search bar) and create the HADOOP\_HOME variable, assign the Hadoop bin folder path as its value (in my case: C:\hadoop-3.1.3\bin):



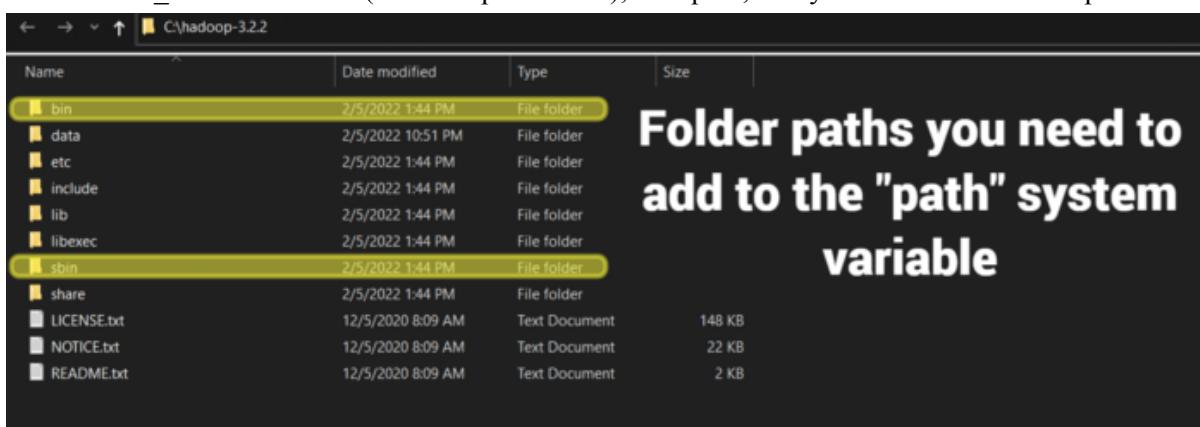


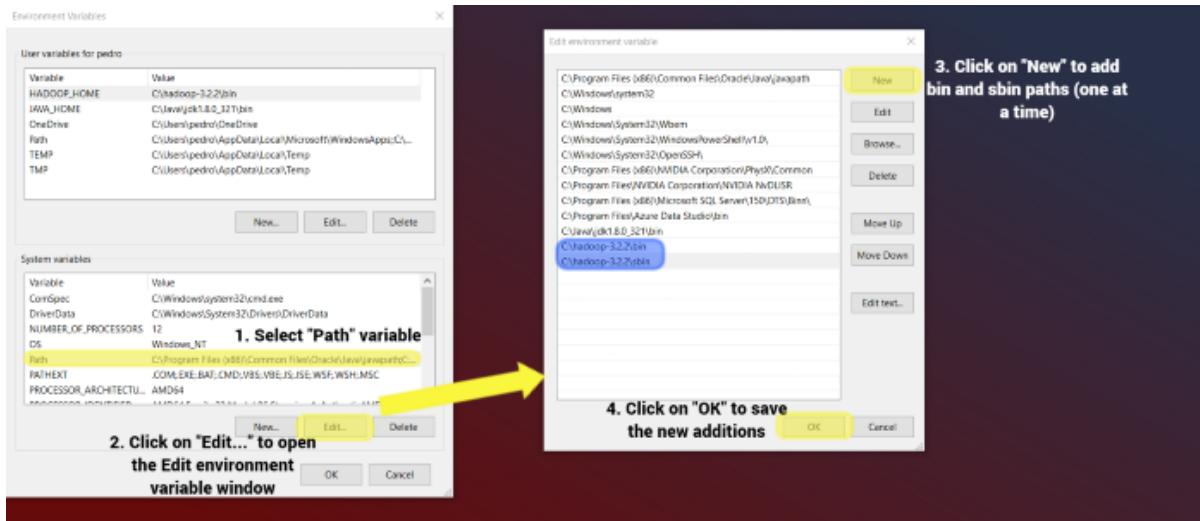
## Opening the Environment Variables window



## Creating HADOOP\_HOME environment variable

Now, you need to edit the Path system variable to add paths to bin and sbin folders of Hadoop. Both folders are in the root directory of Hadoop. So, bin path is the same you've just assigned to HADOOP\_HOME variable (`C:\hadoop-3.1.3\bin`); sbin path, in my case will be `C:\hadoop-3.1.3\sbin`:

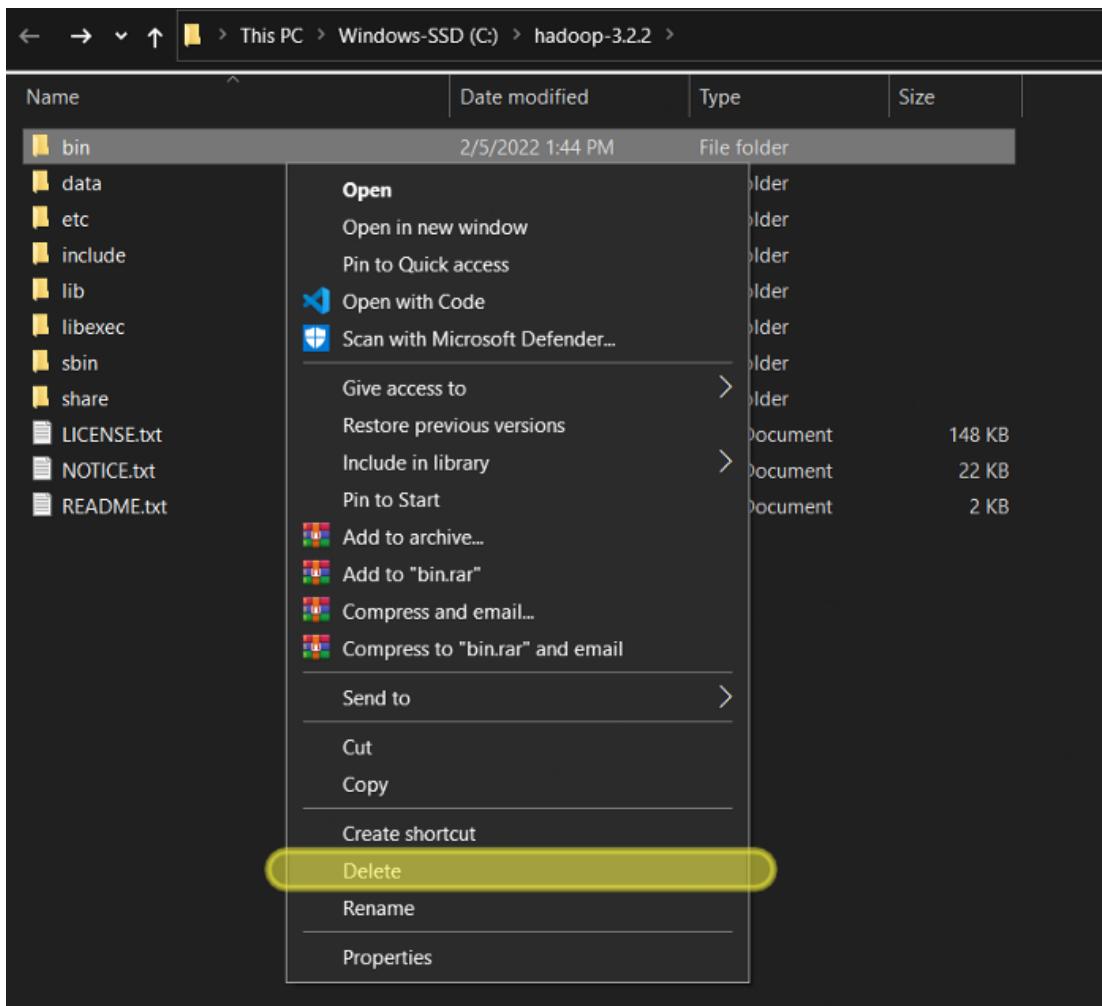




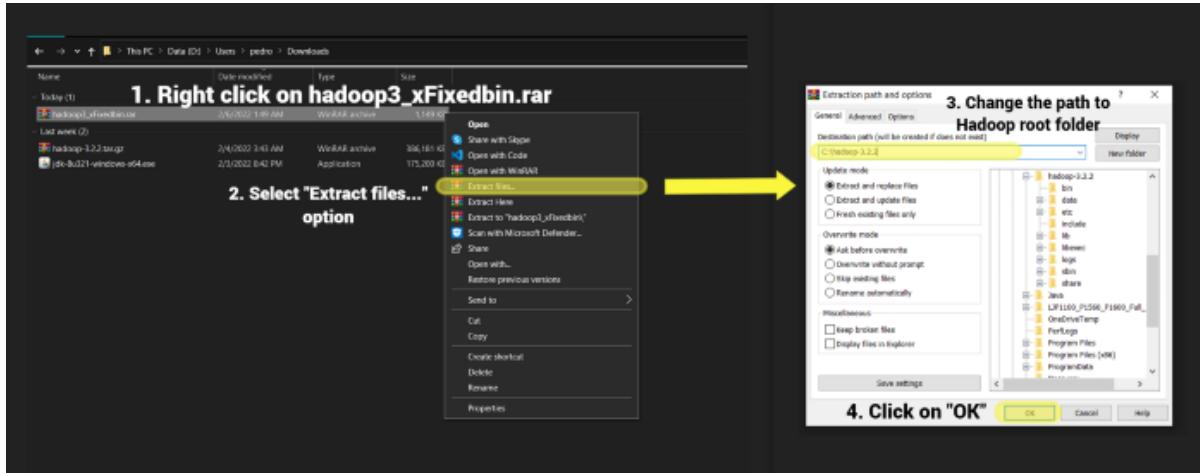
Once done, be careful and click on OK in all windows related to the environment variables to save the changes; otherwise, you will need to repeat this process again.

## Fix of Hadoop 'bin' Folder

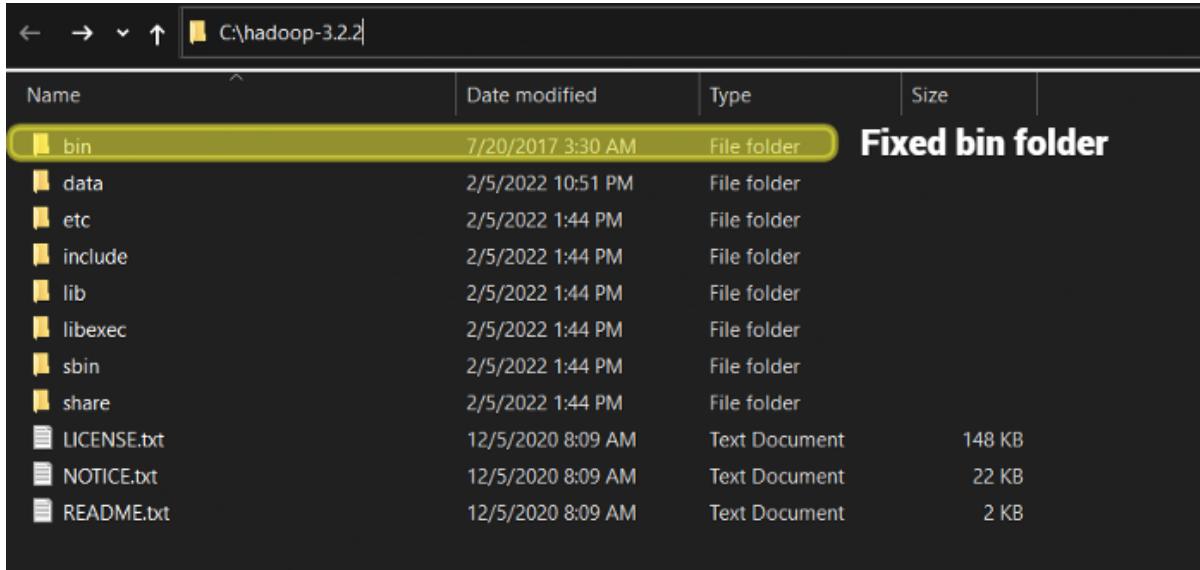
Now, you need to fix some configuration files. To do it, you need to replace the Hadoop bin folder with another bin folder which already contains all the files properly configured. First, download this compressed file (<https://drive.google.com/file/d/1zuT8G3D2JFkbkdv6fMhnBOj8YSsgJc-/view>). Then, you need to delete bin folder:



After that, you must decompress [hadoop 3.2.1 configuration files.zip](#) in order to move the fixed bin folder to the Hadoop root location:



Now, you can check the new and fixed bin folder is in Hadoop root:



And that's it, you now have Hadoop File System configured on your computer.

## Hadoop Installation Verification

Finally, to check if Hadoop is working properly you need to run it. To do so, open a command prompt as administrator. Recall you can do this typing “Command Prompt” in the Windows search bar:

Now, you need to go to the sbin directory inside hadoop folder; in my case, sbin directory is in C:\hadoop-3.1.3\sbin. Once you have typed this path press Enter:

