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# 02A Lesson Proper for Week 7

## How to write Java Program using Integrated Development Environment (IDE)

### What is Eclipse?

The Eclipse IDE has a very long development history. In November 2001, IBM created the Eclipse Project to implement a Java-based IDE that supports development of embedded Java applications. The initial version of Eclipse derives from Visual Age - a multi-programming language IDE from IBM.

In January 2004, the Eclipse Foundation was established as an independent not-for-profit corporation to transparently develop the Eclipse Project as an open and vendor-neutral product.

Originally created for developing a Java IDE, the Eclipse Foundation is now developing a wide range of development tools that support many programming languages: C/C++, PHP, Javascript, Python, Rust...However Eclipse is best known as the most widely used IDE for Java development.

Because the Eclipse Foundation releases many packages for different programming languages and different domains, in this course the name Eclipse or Eclipse IDE refers to the package **Eclipse IDE for Java EE Developers**. And as Java programmer, you use this package most of the time.

Eclipse is free and open-source, which means you can use it at no cost and access its source code if needed. Today, Eclipse is the most widely used IDE for developing Java applications, with millions of programmers using every day. The homepage of Eclipse is [eclipse.org](https://eclipse.org).

### What programming language is used to make Eclipse?

Eclipse IDE is written mostly in Java and some native parts are written in C/C++. Eclipse can run on major operating systems like Windows, Mac and Linux. So if you are using Eclipse IDE, you are actually running a Java application.



## Who are developing Eclipse?

The Eclipse Foundation is run by members from various companies and organizations. Here to name a few: Oracle, IBM, Fujitsu, Redhat, SAP, Google, Airbus, BMW,... and some universities. And these members fund the foundation, and the Eclipse Foundation also welcomes donation to support its development.

## Versions of Eclipse

Eclipse has a long history of development so it has been evolving over many versions. Eclipse uses interesting naming for its versions, mostly based on astronomy scheme: Juno, Kepler, Luna, Mars, Neon, Oxygen, Photon...and the latest version uses different naming scheme, i.e. month-year format: Eclipse 2018-09.

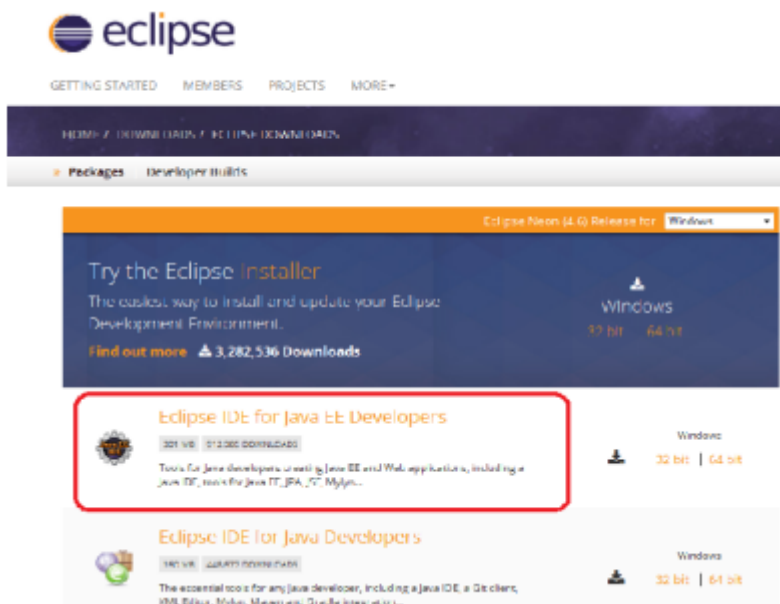
If you are new to Java programming and Eclipse IDE, this step-by-step tutorial helps you get started to be familiar with the most Java IDE by writing your first Java program using Eclipse. And you will be able to build and run your program inside Eclipse.

### 1. Download and Install Eclipse IDE

Eclipse is the most popular Integrated Development Environment (IDE) for developing Java applications. It is robust, feature-rich, easy-to-use and powerful IDE which is the #1 choice of almost Java programmers in the world. And it is totally FREE. As of now (fall 2016), the latest release of Eclipse is Neon (version 4.6). Click the following link to download Eclipse:

<http://www.eclipse.org/downloads/eclipse-packages>

You will see the download page like this:



You can install Eclipse either by downloading the Eclipse Installer or package (zip file). I'd recommend you to download by package. Eclipse comes with various packages for different development purposes. For Java, there are two main packages listed as you see above:

- **Eclipse IDE for Java EE Developers:** This is for developing Java EE applications (web applications using Servlet & JSP).

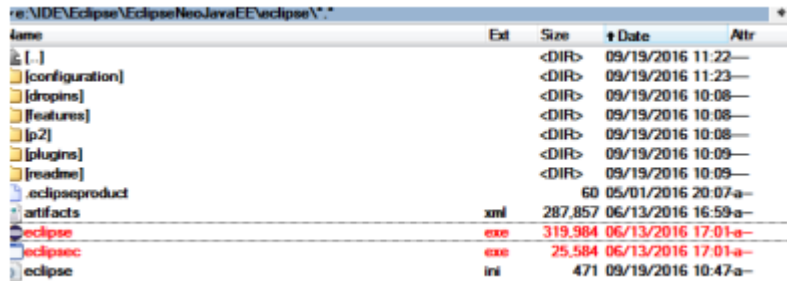


- **Eclipse IDE for Java Developers:** This is for developing Java SE applications, a subset of the Java EE Developer package.

Click on the link 32-bit or 64-bit (depending on the bit version of your operating system) to start download the package.

You will see the package name like this: eclipse-jee-neon-R-win32-x86\_64.zip

Extract this ZIP file into a directory on your computer. You will see a directory called eclipse containing Eclipse's installed files:



Name	Ext	Size	Date	Attr
[.]	<DIR>		09/19/2016 11:22	
[configuration]	<DIR>		09/19/2016 11:23	
[dropins]	<DIR>		09/19/2016 10:08	
[features]	<DIR>		09/19/2016 10:08	
[p2]	<DIR>		09/19/2016 10:08	
[plugins]	<DIR>		09/19/2016 10:09	
[readme]	<DIR>		09/19/2016 10:09	
eclipseproduct		60	05/01/2016 20:07-a-	
artifacts	xml	287,857	06/13/2016 16:59-a-	
eclipse	exe	319,984	06/13/2016 17:01-a-	
eclipsesec	exe	25,584	06/13/2016 17:01-a-	
eclipse	ini	471	09/19/2016 10:47-a-	

Eclipse Neon requires Java 8 or newer so make sure you have JDK 8 already installed on your computer. If not, follow this tutorial to install JDK.

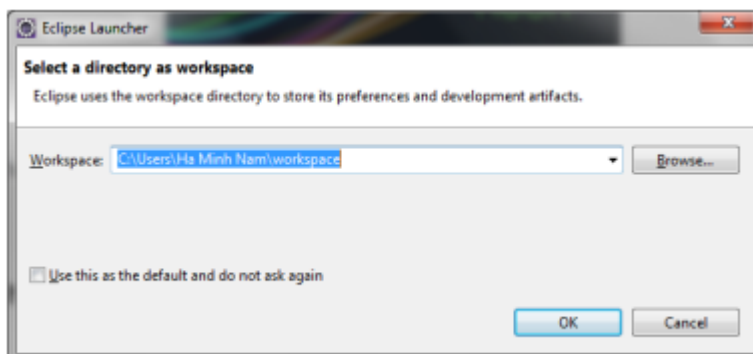
Click **eclipse.exe** file (Windows) to start the IDE. You will see the splash screen of Eclipse Neo:



That's it! You have successfully installed Eclipse IDE. Next, let's see how to create a workspace.

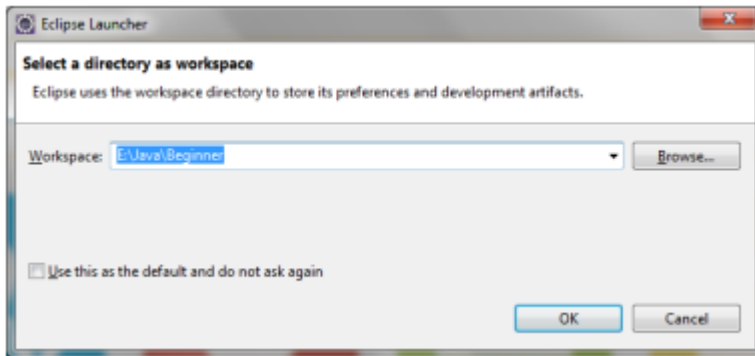
## 2. Choose a Workspace Directory

Eclipse organizes projects by workspaces. A workspace is a group of related projects and it is actually a directory on your computer. That's why when you start Eclipse, it asks to choose a workspace location like this:



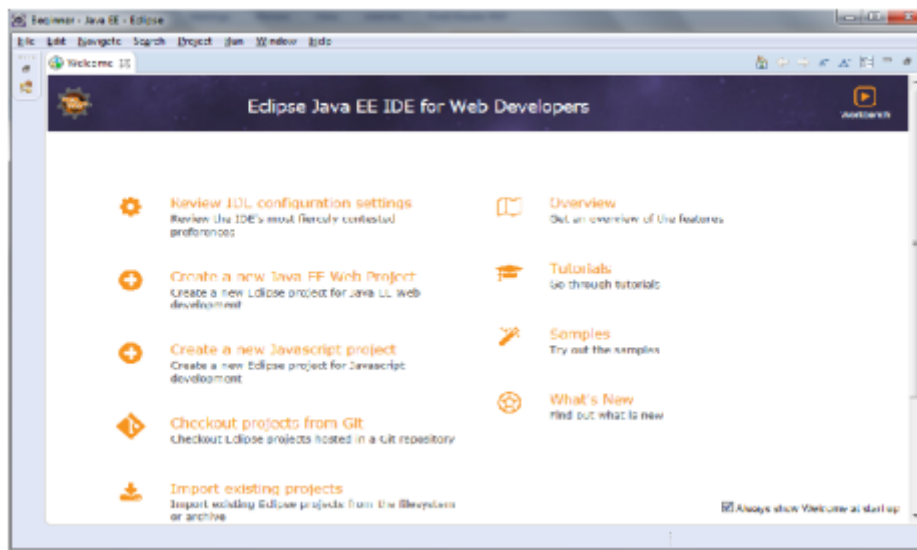
By default, Eclipse created a workspace directory at your USER\_HOME\workspace. If you want to choose another directory, click **Browse**. Here you can choose a different workspace:





Check Use this as the default and do not ask again if you don't want to be asked whenever you start Eclipse. You can always change workspace when Eclipse is running.

Click **OK**. You should see the welcome screen:

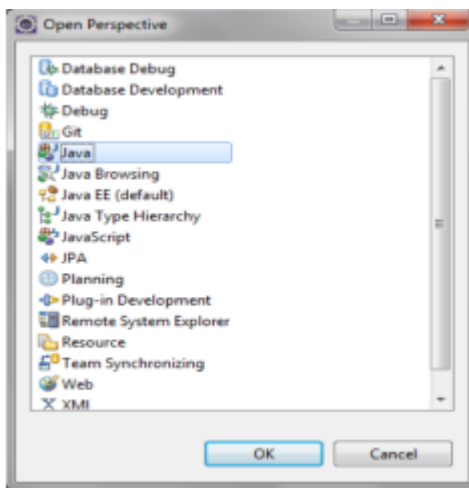


Now, we are ready to create a Java project.

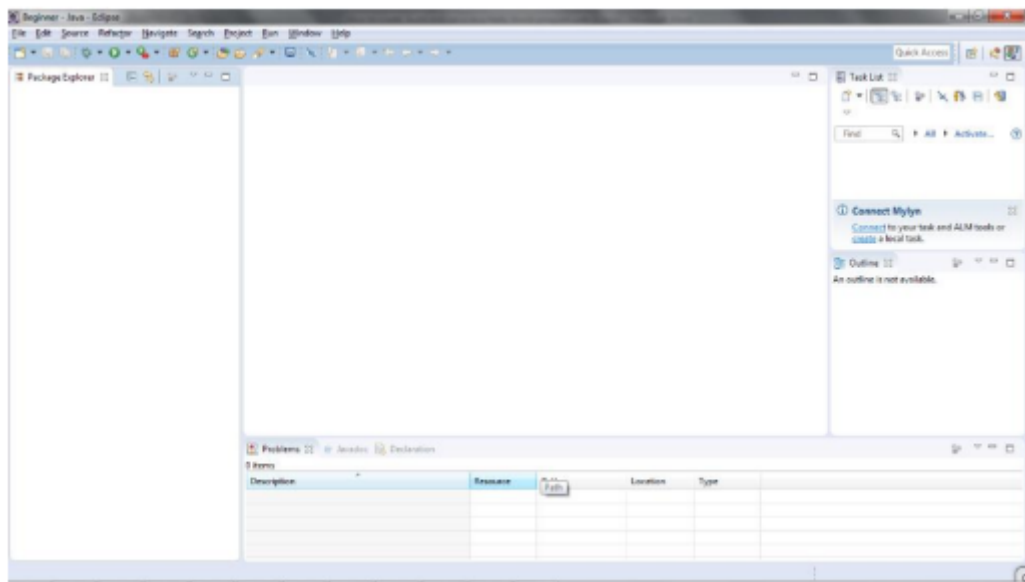
### 3. Change Perspective

Before creating a new Java project, let familiarize yourself with Perspective. Imagine a perspective is a predefined configuration specialized for a specific aspect of development process such as Java, Java EE, Debug, Database Development, Web, etc. Depending on your need, you can switch back and forth among different perspectives during a development session. Since we installed Eclipse IDE for Java EE Developers, the default perspective is Java EE. To change perspective, go to Window > Perspective > Open Perspective > Other... You will see a small dialog listing all available perspectives:





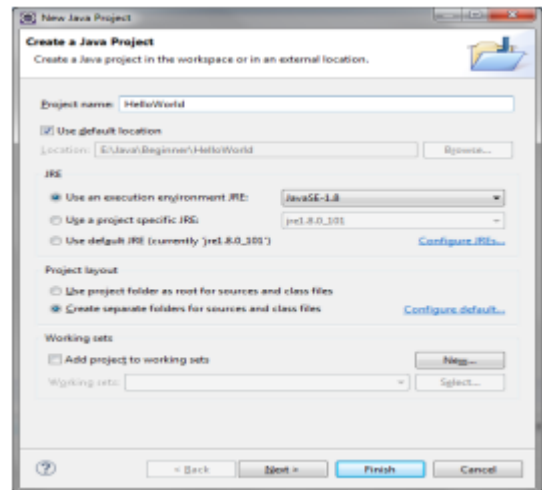
Here we choose Java perspective. Click OK. Here’s how the Java perspective would look like

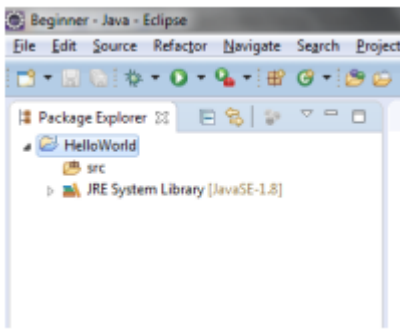


4. Create a Java Project

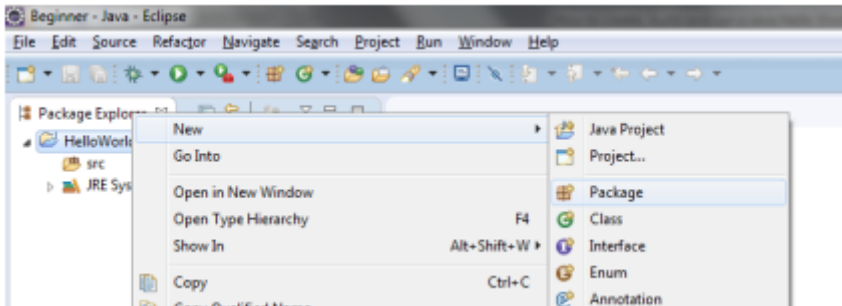
To create a new Java project in Eclipse, go to **File > New > Java Project**. The New Java Project wizard dialog appears let you specify configurations for the project:

Enter project name: HelloWorld. Leave the rest as it is, and click **Finish**. You should see the HelloWorld project is created in the Package Explorer view as following:

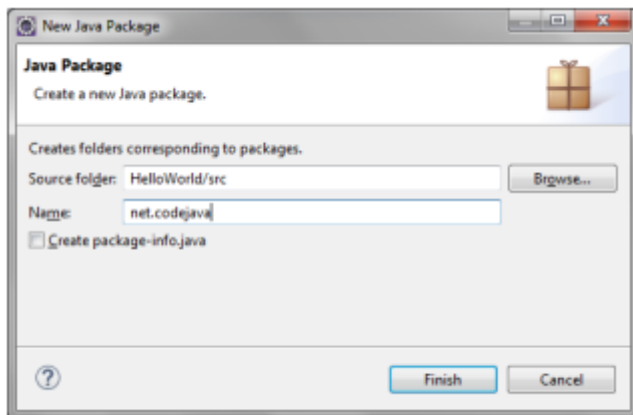




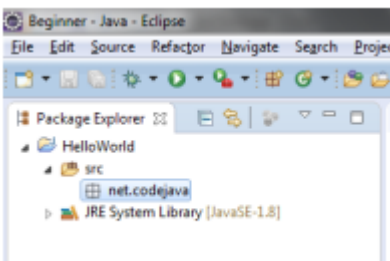
It's recommended to create a package for your project. Right click on the project, and select **New > Package** from the context menu:



In the New Java Package dialog, enter the name your package. Here I enter net.codejava:



Click Finish. You should see the newly created package appears:

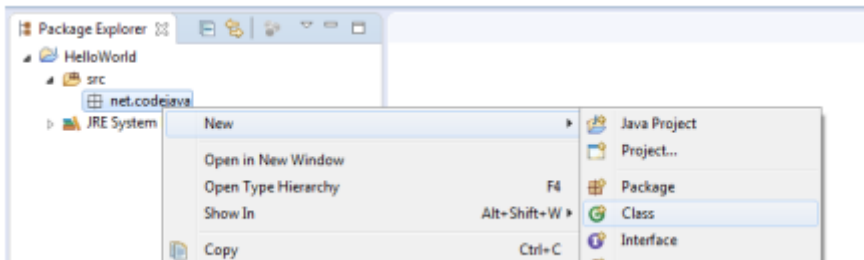


Now, it's time to create a Java class for your hello world application.

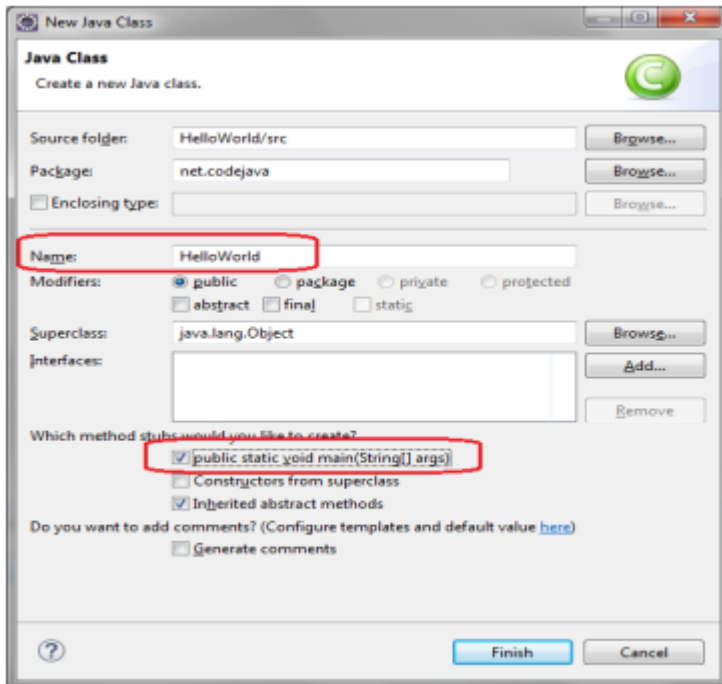
## 5. Write Your First Java Program

To create a new Java class under a specified package, right click on the package and select **New > Class** from the context menu:

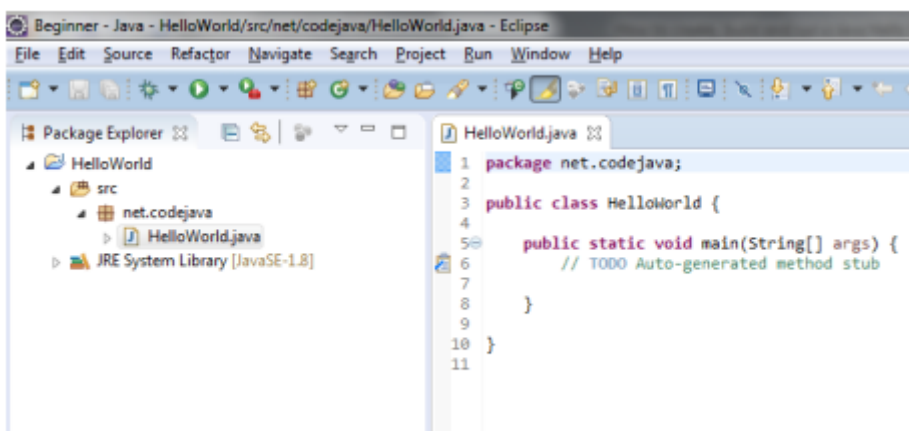




The **New Java Class** dialog appears, type the name of class as HelloWorld and choose the option to generate the main() method:



And click **Finish**. The HelloWorld class is generated like this:



Now, type some code in the main() method to print the message “Hello World” to the console:



```

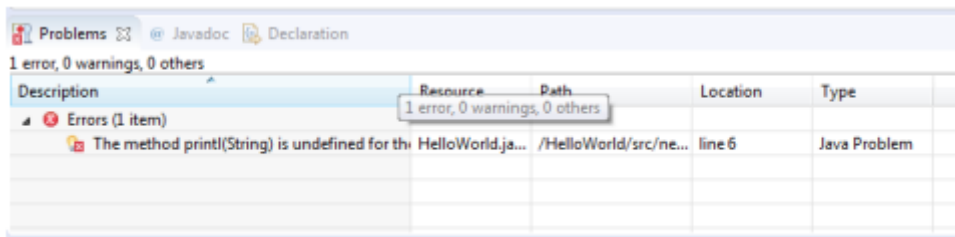
1 package net.codejava;
2
3 public class HelloWorld {
4
5     public static void main(String[] args) {
6         System.out.println("Hello World");
7     }
8
9 }
10

```

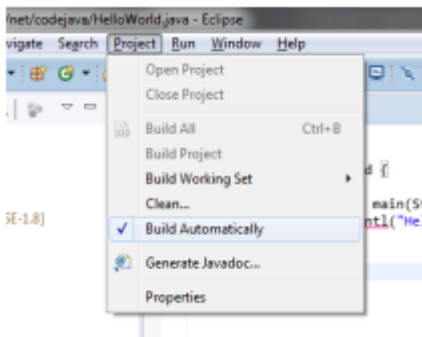
That's it. We have created a Java hello world program using Eclipse IDE.

## 6. Compile, Build and Run Your First Java Program

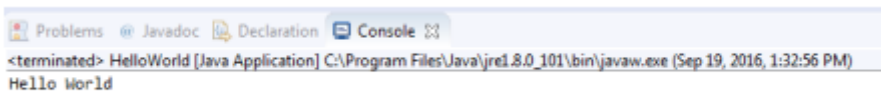
By default, Eclipse compiles the code automatically as you type. And it will report compile errors in the Problems view at the bottom like this:



If you want to disable automatically build feature, click the menu **Project** and uncheck Build Automatically



However, it's strongly recommended to keep the auto build mode for it helps you detect errors instantly. Now, let's run the hello world application. Click menu **Run > Run** (or press **Ctrl + F11**), Eclipse will execute the application and show the output in the Console view:



That's it! The HelloWorld program has run and printed the output "Hello World" and terminates.

## Parts of an Eclipse Window

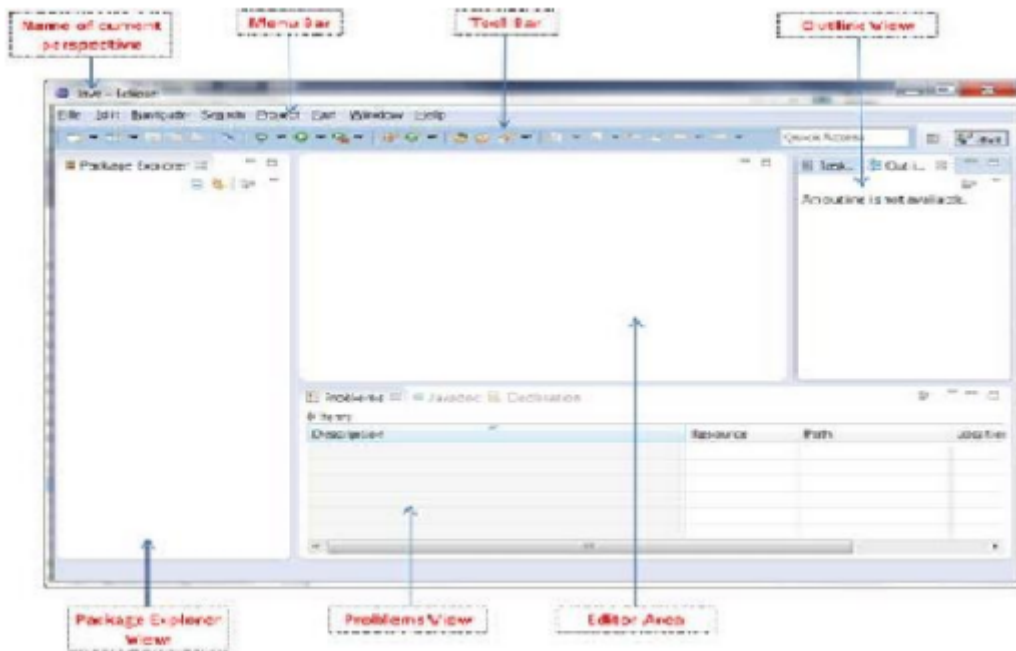
The major visible parts of an eclipse window are –

- Views
- Editors (all appear in one editor area)
- Menu Bar





- Toolbar

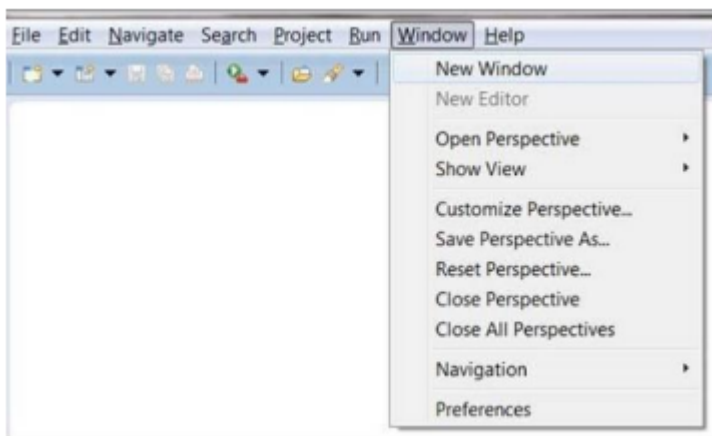


An eclipse perspective is the name given to an initial collection and arrangement of views and an editor area. The default perspective is called java. An eclipse window can have multiple perspectives open in it but only one perspective can be active at any point of time. A user can switch between open perspectives or open a new perspective. A perspective controls what appears in some menus and tool bars.

### Typical Eclipse Menus

The typical menus available on the menu bar of an Eclipse window are –

- File menu
- Edit menu
- Navigate menu
- Search menu
- Project menu
- Run menu
- Window menu
- Help menu



### Brief Description of Menus



Sr.No	Menu Name & Description
1	<b>File</b> The File menu allows you to open files for editing, close editors, save editor content and rename files. Among the other things, it also allows you to import and export workspace content and shutdown Eclipse.
2	<b>Edit</b> The Edit menu presents items like copy & paste.
3	<b>Source</b> The Source menu is visible only when a java editor is open. It presents a number of useful menu items related to editing java source code.
4	<b>Navigate</b> The Navigate menu allows you to quickly locate resources and navigate to them.
5	<b>Search</b> The Search menu presents items that allow you to search the workspace for files that contain specific data.
6	<b>Project</b> The menu items related to building a project can be found on the Project menu.
7	<b>Run</b> The menu items on the Run menu allow you to start a program in the run mode or debug mode. It also presents menu items that allow you to debug the code.
8	<b>Window</b> The Window menu allows you to open and close views and perspectives. It also allows you to bring up the Preferences dialog.
9	<b>Help</b> The Help menu can be used to bring up the Help window, Eclipse Marketplace view or Install new plug-ins. The about Eclipse menu item gives you version information.

## EXERCISE 1

A student will create a C program. What possible editor will be used to create the program?



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## EXERCISE 2

Your school would like to create simple registration system to help students enrolled in the college. Are you willing to use Integrated Development Environment (IDE) to develop the registration system?

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## 2nd Semester Enrollment



A banner for Bestlink College of the Philippines (BCP) featuring a blue-tinted image of a modern building. The text is overlaid on the image. At the top right, it says "visit www.bcp.edu.ph". The main headline in large red letters reads "Enrollment registration is now Ongoing". Below this, in white text on a blue background, it says "For 2nd Semester SY 2021 - 2022". Underneath that, in white text on a dark blue background, it says "We are accepting new students, returnees and transferees." On the right side, there is a quote: "Be trained to be the best, Be linked to success" next to the BCP logo. At the bottom left, there is an email icon and the address "bcp-inquire@bcp.edu.ph". At the bottom right, there is a phone icon and the numbers "(8)442-8601 | (8)518-8050".

visit [www.bcp.edu.ph](http://www.bcp.edu.ph)

# Enrollment registration is now Ongoing

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We are accepting new students, returnees and transferees.





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-  Assignments
-  Forums
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-  Resources

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