

PHY380 Getting started guide

1. Installing Java (JDK)

Download and install JDK 23.0.1 (Java Development Kit) for your operating system at <https://www.oracle.com/java/technologies/downloads/>

The screenshot shows the Oracle Java Downloads page for JDK 23.0.1. The page has a dark header with the Oracle logo and navigation links. Below the header, there are tabs for Linux, macOS, and Windows. A table lists download options for x64, with the 'x64 Installer' highlighted by a red box.

Product/file description	File size	Download
x64 Compressed Archive	228.70 MB	https://download.oracle.com/java/23/latest/jdk-23_windows-x64_bin.zip (sha256)
x64 Installer	205.21 MB	https://download.oracle.com/java/23/latest/jdk-23_windows-x64_bin.exe (sha256)
x64 MSI Installer	203.96 MB	https://download.oracle.com/java/23/latest/jdk-23_windows-x64_bin.msi (sha256)

- If you have an older version of Java, it may be easier to uninstall it at this point (unless you have a reason for using an older version of Java for development)

2. Downloading OSP workspace

Download OSP workspace zip file at <https://www.compadre.org/osp/items/detail.cfm?ID=7147>

The screenshot shows the Open Source Physics (OSP) website. The page title is 'Computer Program Detail Page'. The main content area features the title 'Open Source Physics Eclipse Workspace' and a description of the workspace. A red box highlights the 'download 12084kb .zip' link. The page also includes a sidebar with navigation links and a table of subjects, levels, and resource types.

Subjects	Levels	Resource Types
Education Practices	- Upper Undergraduate	- Collection
- Instructional Material Design	- Graduate/Professional	- Instructional Material
General Physics	- Lower Undergraduate	- Curriculum
- Computational Physics		- Reference Material
Other Sciences		
- Computer Science		

- Make folder or directory for this course titled computational_physics_25
- Unzip file and move the workspace_compadre folder inside the computational_physics_25 folder just created
- Rename workspace_compadre folder to workspace_phy380
- We will use this folder in the next step after downloading Eclipse

3. Downloading and Installing Eclipse

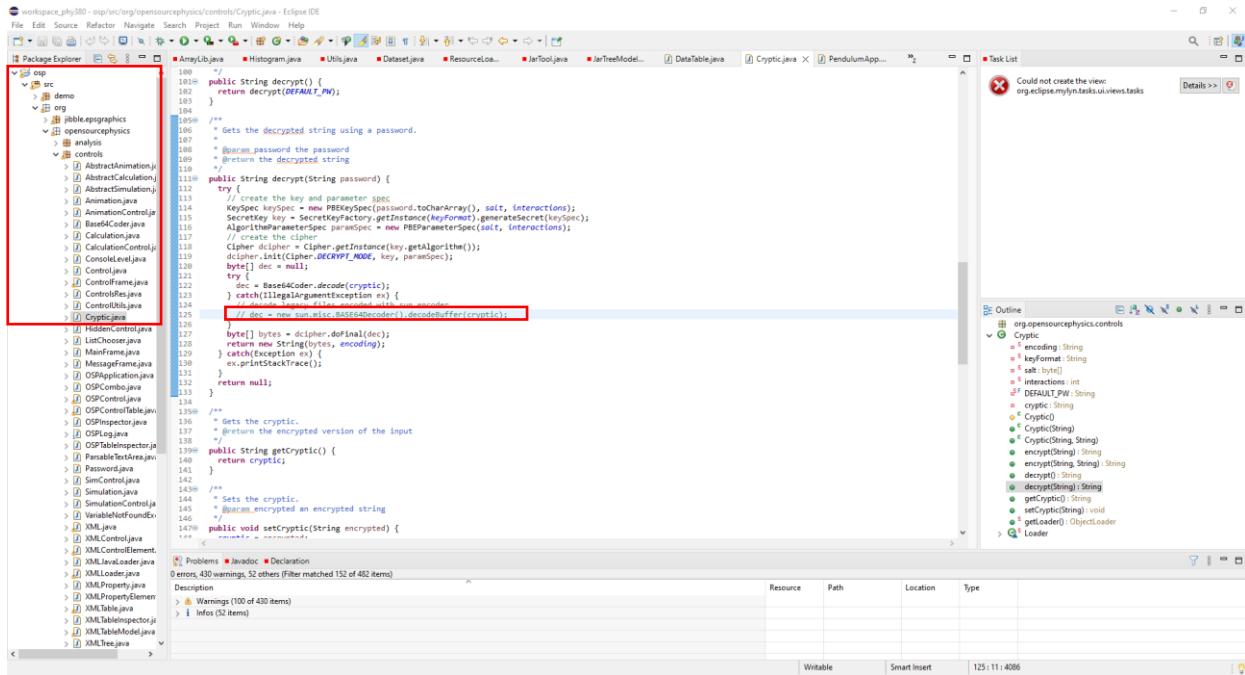
Download Eclipse (IDE, integrated development environment) for your operating system at <https://www.eclipse.org/downloads/packages/>

The screenshot shows the Eclipse Foundation website's download page for Eclipse IDE 2024-12 R. The page features a dark header with the Eclipse Foundation logo and navigation links. Below the header, there's a breadcrumb trail: Home / Downloads / Packages / Release / Eclipse IDE 2024-12 / R. The main content area is divided into sections. A prominent blue box titled 'Try the Eclipse Installer 2024-12 R' highlights the installer as the easiest way to install and update the IDE. It includes statistics: 201,573 Installer Downloads and 327,001 Package Downloads and Updates. A red box highlights the 'Download' section, which lists three options: macOS x86_64 | AArch64, Windows x86_64 | AArch64, and Linux x86_64 | AArch64 | riscv64. Below this, there's a section for 'Eclipse IDE 2024-12 R Packages' and a specific package for 'Eclipse IDE for Enterprise Java and Web Developers' (544 MB, 145,880 Downloads). To the right, there are sections for 'RELATED LINKS' (including Compare & Combine Packages, New and Noteworthy, Install Guide, Documentation, Updating Eclipse, Forums, and Simultaneous Release) and 'MORE DOWNLOADS' (listing other builds from 2024-09 to 2023-06).

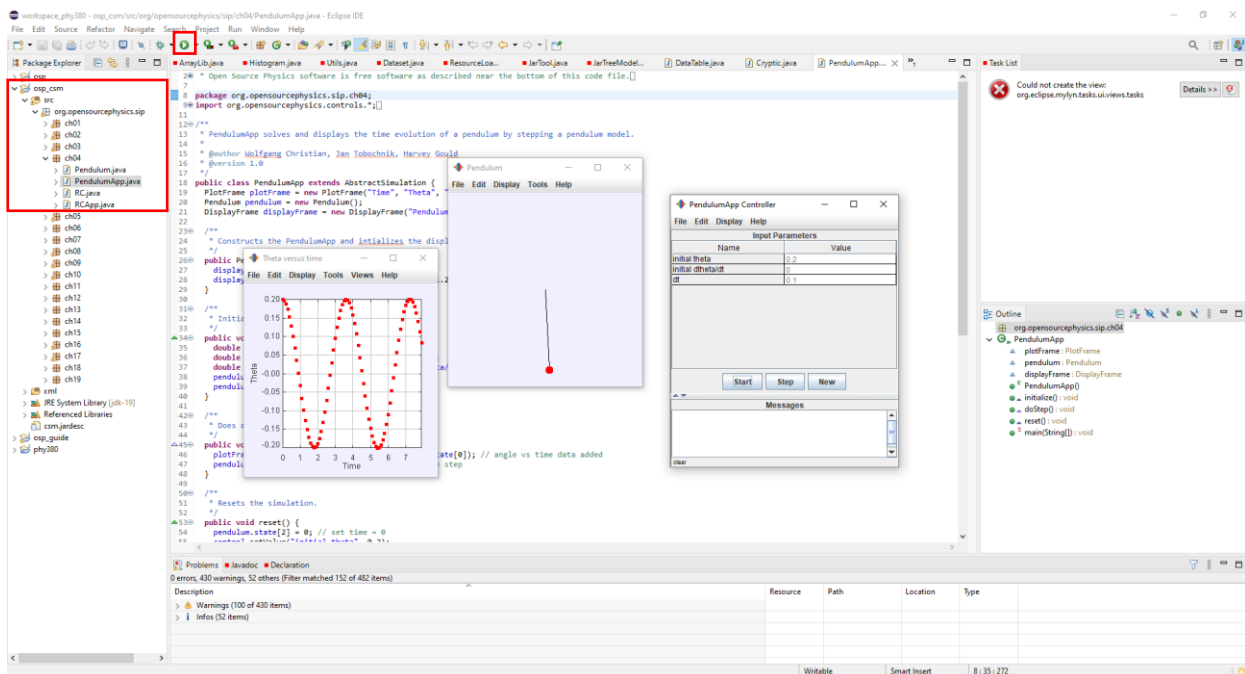
- Download Eclipse Installer 2024-12 R
- Run Eclipse installer executable and select Eclipse IDE for Java Developers
- Default folder locations during installation should be fine (should automatically select the folder where you installed JDK 23.0.1, making sure to select jdk-23 in the “Java 21+ VM” box)
- Launch Eclipse
- Select the folder containing the OSP workspace downloaded from the previous step (computational_physics_25/workspace_phy380) to direct Eclipse to open the OSP workspace and click Launch
- Select continue to update workspace that was created with an older version

4. Using Eclipse

- After performing the previous step, Eclipse should open and there should be three folders in the package explorer tab on the left of the screen (osp, osp_csm, osp_guide)
- There should be a single error (shown at bottom of screen); to fix this open the osp folder and subfolders that show a red x (src > org > opensourcephysics > controls > Cryptic.java)
- Double-click Cryptic.java to open the file with the error
 - On line 125 of Cryptic.java, add the two characters // in front of “dec = ...” to comment out this line and then save this file



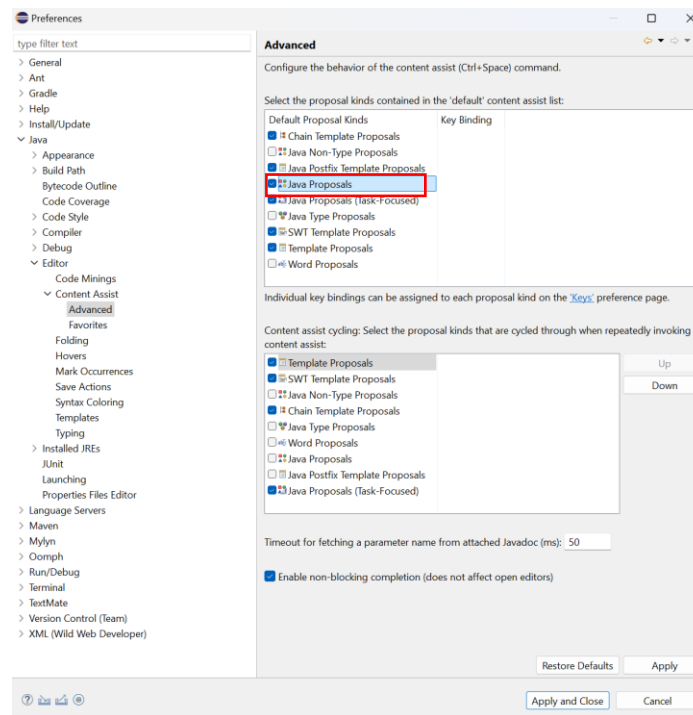
- To check that things are working, open osp_csm folder > src > org.opensourcephysics.sip > ch04 > PendulumApp.java
 - To compile and run this program, click the play button at the top of eclipse (green button) while PendulumApp.java tab is in focus



5. Enable Java proposals to Eclipse

IDE's like Eclipse can list possible functions based on context, but this is not set by default

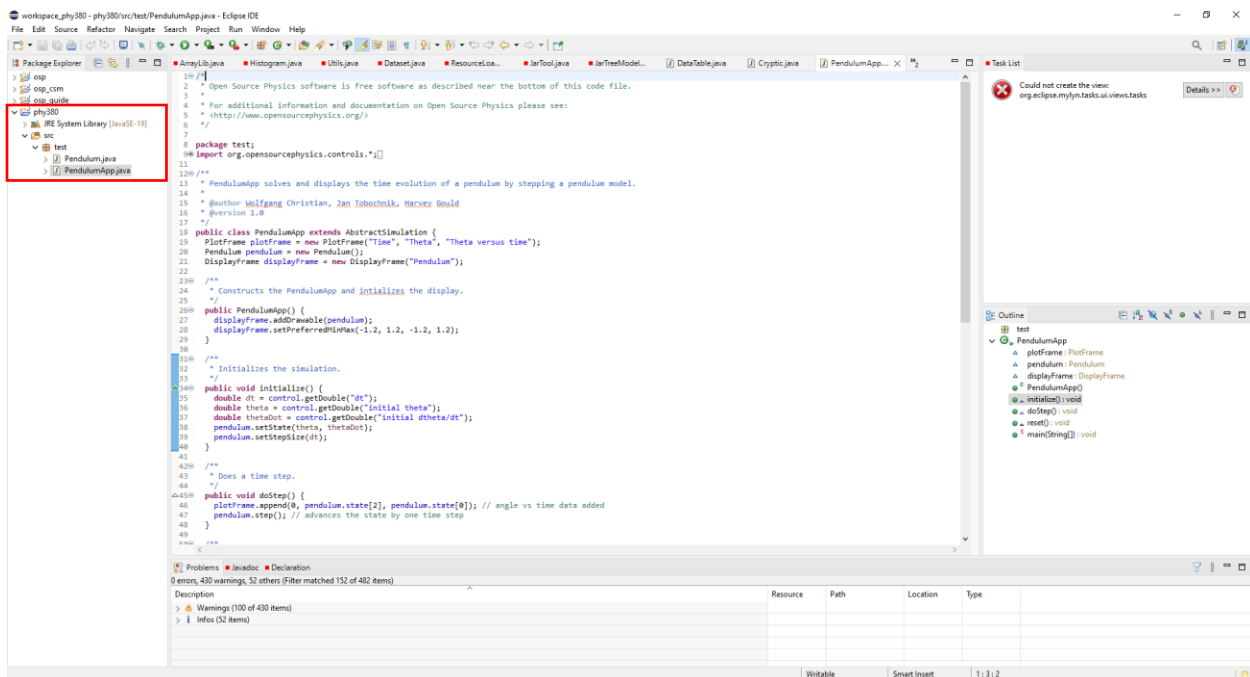
- Go to the menu option Window > Preferences > Java > Editor > Content Assist > Advanced
- Check Java Proposals if it is not already checked to make Eclipse suggest functions based on context



6. Create new Java project

Want to create a new Java project to organize all Java files that you write or edit for this course

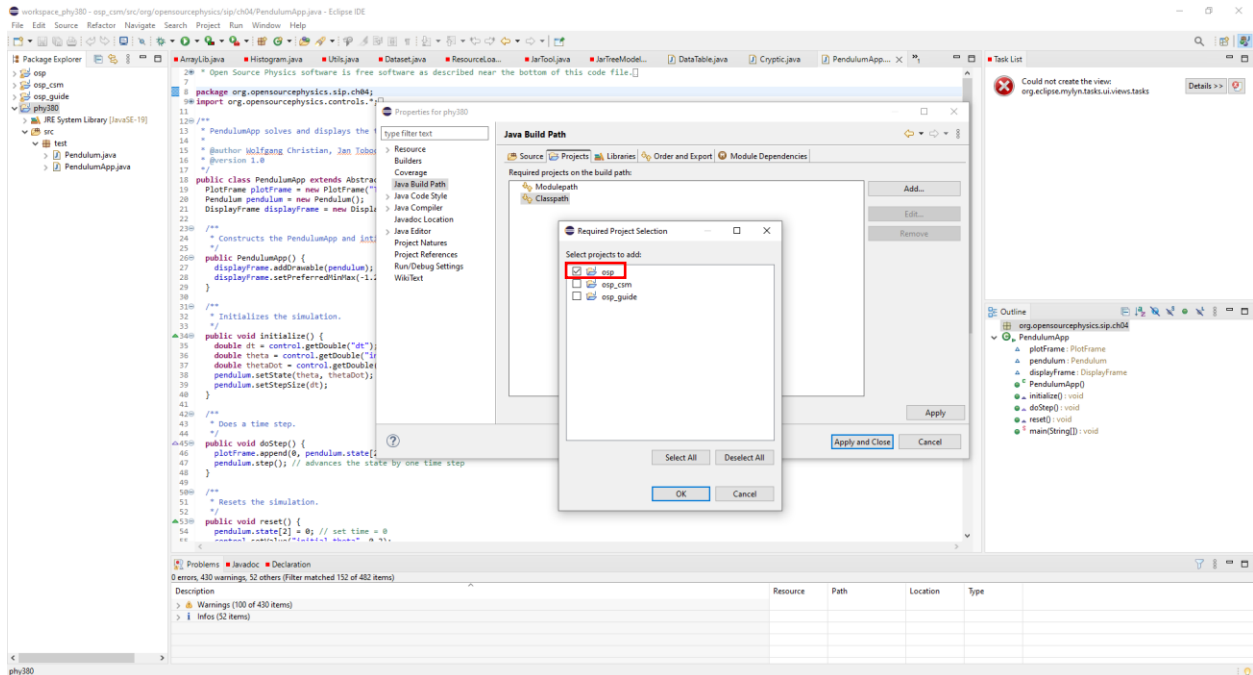
- Go the menu options in Eclipse and select File -> New -> Java Project
- Name the project phy380 and uncheck "Create module-info.java file" and then click Finish



- This should make a new project in the package explorer window called phy380; can modify files freely in this folder without worrying about breaking osp

Make a new package within the phy380 project for each new assignment (e.g. homeworks, course project) in order to keep things organized!

- If you open phy380 project, it should expand to show an src (source) folder
- Right click on src to bring up a menu to create a new > Package
- Name this package test
- Copy Pendulum.java and PendulumApp.java from osp_csm > src > org.osp.sip > ch04 into this test package
- There should be errors at this point (indicated by red x on Pendulum.java and PendulumApp.java) since the osp libraries are not in the build path for phy380 package



- To add the osp libraries to the build path, right click phy380 and go to Properties and then Java Build Path
- Click the Projects tab under Java Build Path and then Classpath then click Add..
- Check the box next to osp and then select "OK" to close this window and then "Apply and Close" on the Properties window
- This should remove the errors and allow you to press the play button in Eclipse with the PendulumApp.java file from the phy380 package open

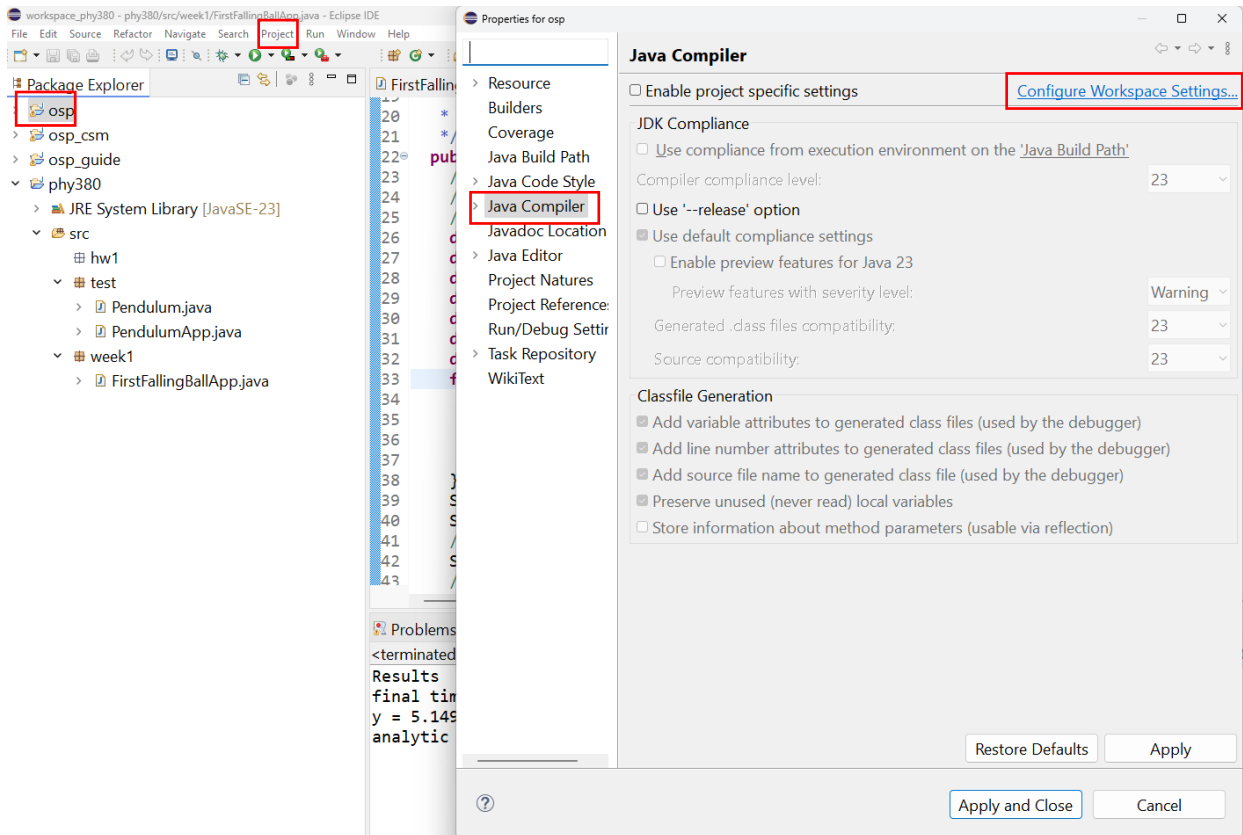
7. Troubleshooting

- If when trying to open Eclipse seemingly nothing happens, try adding the following two lines to the eclipse.ini file (located at C:\Users\USERNAME\eclipse\java-2024-12\eclipse\eclipse.ini on Windows) after the line "--launcher.appendVmargs"

-vm

C:\Program Files\Java\jdk-23\bin

- If you have an error related to Java version being 1.8 or 1.9 the compliance level of the compiler needs to be changed (since we are using JDK 23). This is done by first clicking osp folder, then going to Project -> Properties. Then go to Java Compiler and click "Configure Workspace Settings..." If it is grayed out uncheck the box that says "enable project specific settings"



- From the second window that opens check the box “use default compliance settings” if it is not checked and also change 1.8/1.9 in the top compliance level to 23, then click “Apply and close”

