Additional material of the Paper

A Family of Experiments About How Developers Perceive Delayed System Response Time

OSCAR CORNEJO*, University of Luxembourg

DANIELA BRIOLA, University of Milano - Bicocca

DANIELA MICUCCI, University of Milano - Bicocca

DAVIDE GINELLI, University of Milano - Bicocca

LEONARDO MARIANI, University of Milano - Bicocca

ADRIÁN SANTOS, ITEE University of Oulu

NATALIA JURISTO, Universidad Politécnica de Madrid

*Part of this work was carried out while the author was affiliated with University of Milano - Bicocca.

Material for the experiments in presence
(please note that the participants will read this material in the order related to the group they belong to)

GROUP: **ID:**

Entry questionnaire: please, fill in the fields, and pick the correct option

- Age:_____ Gender: M F
- Type of high school (Scientific school, Technical institute, …): _____
- Year of enrolment to this degree: _____
- Have you ever used Eclipse? YES NO If yes, have you ever used Eclipse Mars? YES NO
- Do you use, or have you ever used other IDEs (also for different languages)? If so, list them (specify also the language(s) you used with each IDE).

- For how many years have you been using a PC (not only for programming, but also in normal life): _____

GROUP: **ID:**

Experiment: instructions

You can find the file **Experiment.rar, i**n the "**\lib\exams\lab14a1\text"** directory**:** please copy-paste the file into C:\Temp, and then extract its content into C:\Temp\Experiment. You will find:

- A Workspace folder with an Eclipse project inside
- The Eclipse application and a launch script with a number (the number must match the number of the group you have been assigned to)
- For example, if you belong to group 7, you will have to find the launch_eclipse_7 script
- **ALWAYS LAUNCH ECLIPSE USING THE SCRIPT, NEVER LAUNCH IT DIRECTLY.**
- Wait for out instructions, DO NOT LAUNCH ECLIPSE YET

You will perform some tasks using Eclipse and the project inside the workspace. The project consists of **12 packages**, for a total of **650 classes**. The project implements a P2P platform for sharing files between machines. It allows to exchange files, chat between users, run code remotely, and supports automatic routing between peers, as well as other features.

You will be asked to perform 4 simple **tasks** (each task is a short sequence of operations): please follow strictly the instructions, perform all the operations in the indicated order, do not perform other operations (e.g., clicking elsewhere), do not close windows (unless specified in the task), and do not exist from the application, even if it looks like it hangs. At the end of each task you will evaluate your experience filling-in a sheet.
When you **finish a task**, close Eclipse and **wait for the command shell to close**. Only after it is **closed,** you can launch again the script.

In this experiment, we use the term **operation** to refer to a command performed by a user (you) on the application, which will respond producing a feedback. An operation starts with your own command given through the graphical interface and ends when the system produces a visual feedback that indicates that the operation has been completed. For example, when you click on an item in a menu, the feedback consists of the drop-down menu with the items related to that menu fully visualized. When a request is submitted, the application may also visualize a message that shows that there is an ongoing operation, to later produce the final outcome, which indicates that the operation actually finished.

Before continuing, take a second thinking about the notion of operation. If you have any doubt, ask!

The four tasks are shortly described below. In the following phases, you will receive a sheet with detailed instructions to complete the tasks. Once you have completed a **task** and the corresponding questionnaire, raise your hand and you will receive the next task.

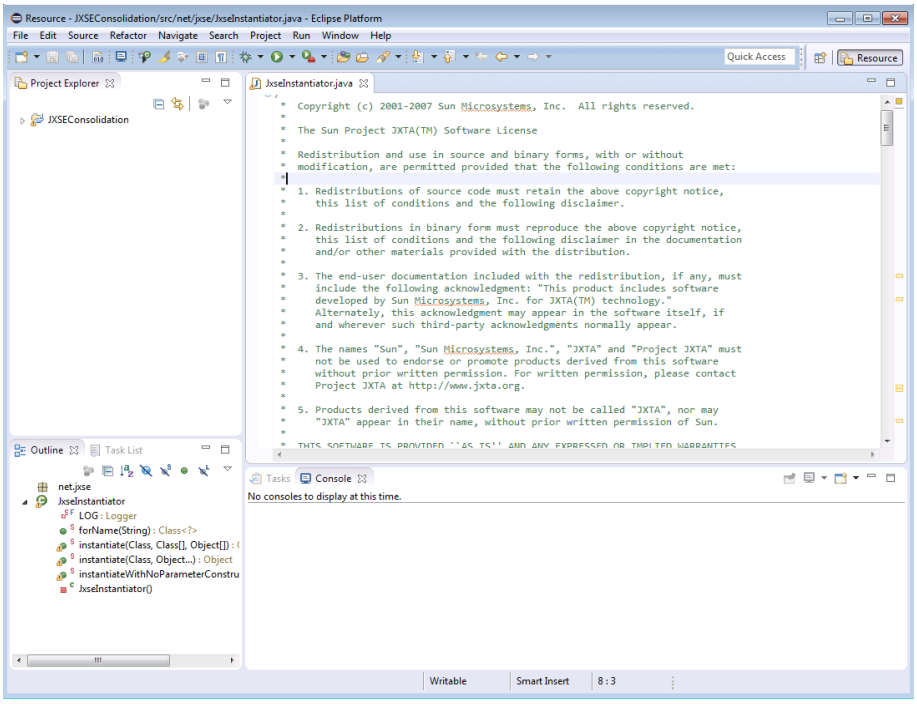
Take your time to complete tasks, there is no need to rush

- Clean & Build Task: with this task, you will delete all the compiled files of the project, then the project will be completely recompiled.
- Task Search: in this task, you will search for the string "C*" in the Java classes. Basically, you're looking for all classes in the project, and any other Java element that starts with "C".
- Task Create Type Hierarchy: with this operation Eclipse calculates the hierarchy of the classes contained in the project, and shows it to the user with a tree view.
- Task Sort Members: with this operation Eclipse reorders the elements contained in a package following a predefined order (configurable). We are ordering classes first, and then methods and properties following a certain pre-defined order. This updates the source code and the class display tree accordingly.

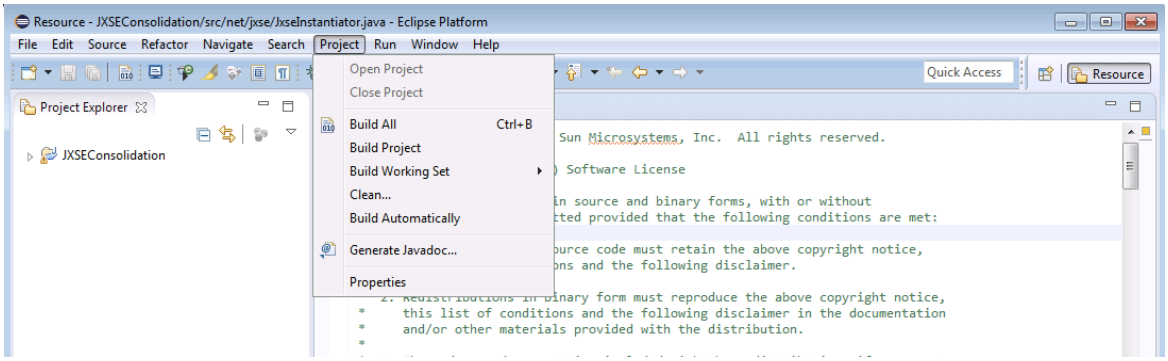
GROUP: **ID:**

Task: Clean & Build

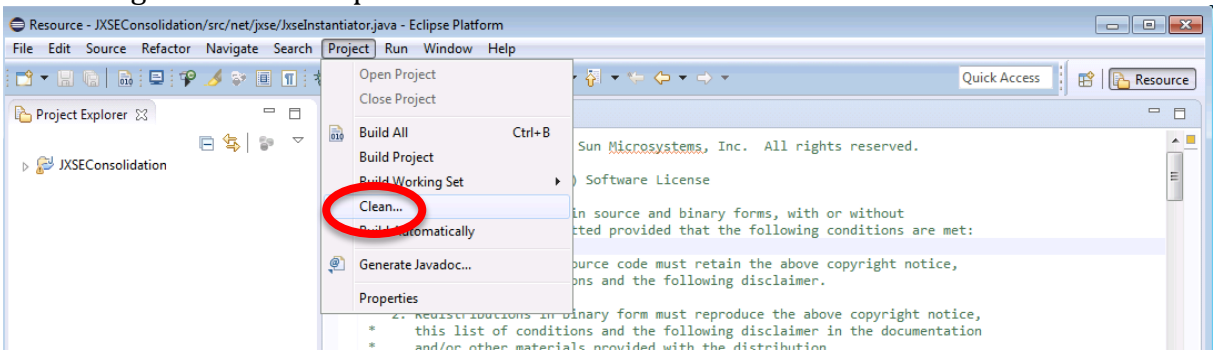
- **PreTask: Launch Eclipse by running the available script and wait for Eclipse to load completely (wait for the screen below)**

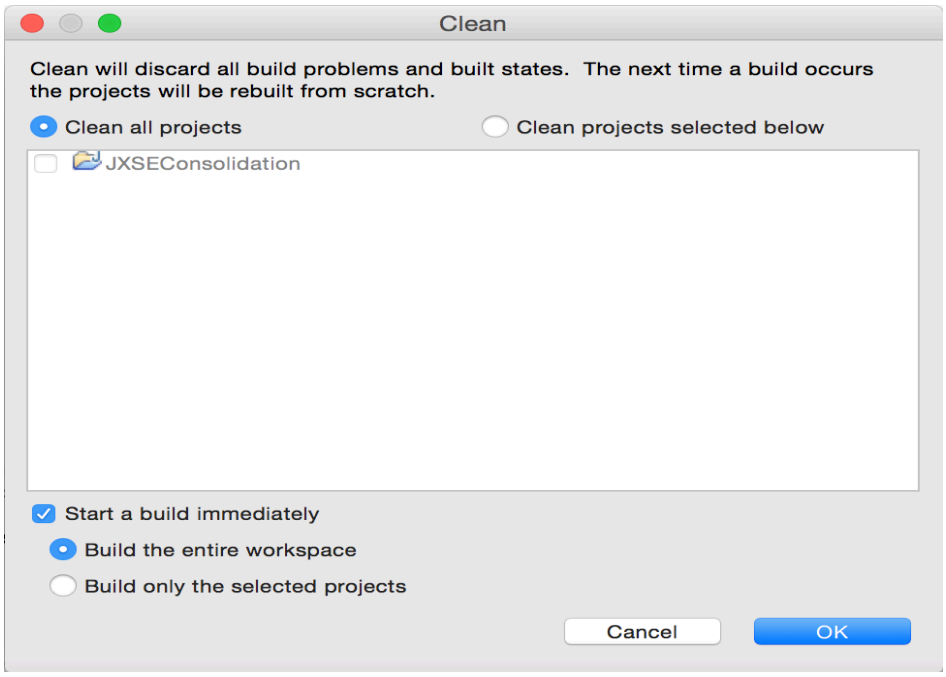


- **Operation1:** with the mouse, click on the main menu item "Project", and wait for the drop-down menu to appear (as in the image below)



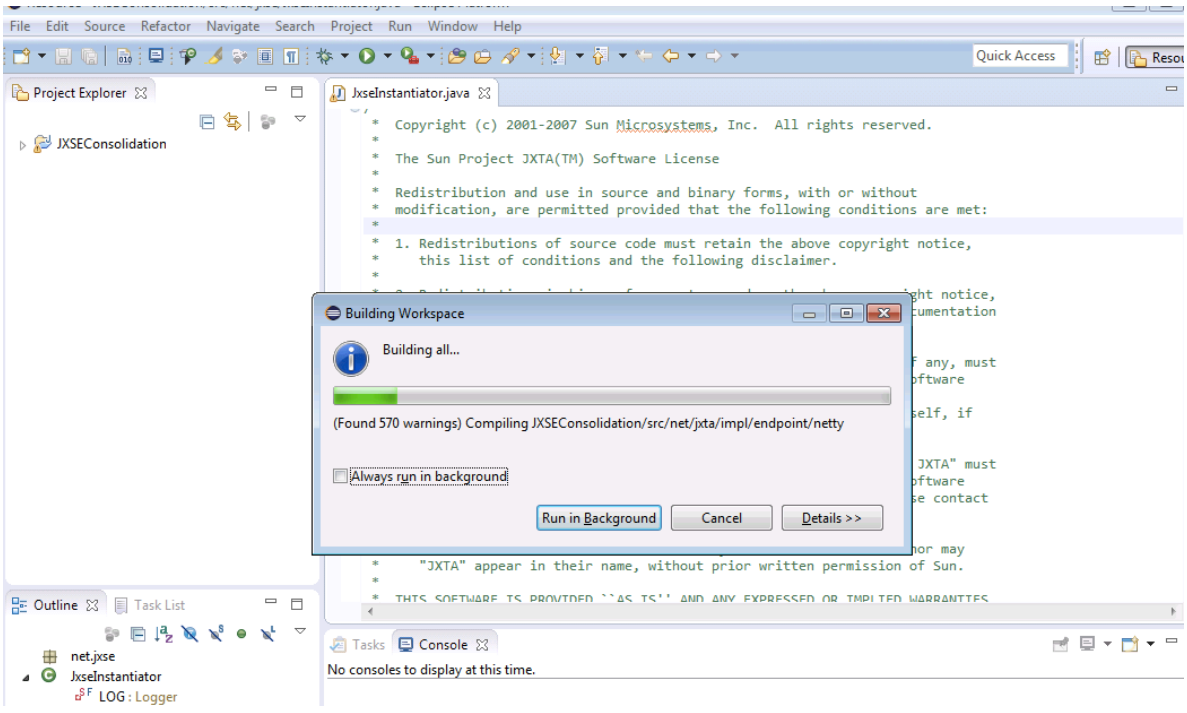
- **Operation2:** scroll with the mouse to the "Clean" item, click on it, and wait for the dialog box below to open.





- Visually check (WITHOUT MAKING ANY CLICK) that the "Clean all projects", "Start a build immediately" and "Build the entire workspace" are ticked. If they weren't, tick them (and put here _____ an x if you did it)

- **Operation3:** Click on the "OK" button: a dialog box will open showing you the progress of the clean + build operation.



- Wait for the operation to end (WITHOUT MAKING ANY CLICK). The operation will be finished when the dialog box closes (and you will see the project home screen again).
- You have finished this task! **CLOSE ECLIPSE**

GROUP: **ID:**

Task evaluation: Clean & Build

How would you evaluate each operation of the Task you have just performed? Please select only one value for each operation in the table below.

Remember, an operation starts when a command is given through the interface, and ends when the system "informs you" that the operation has been completed.

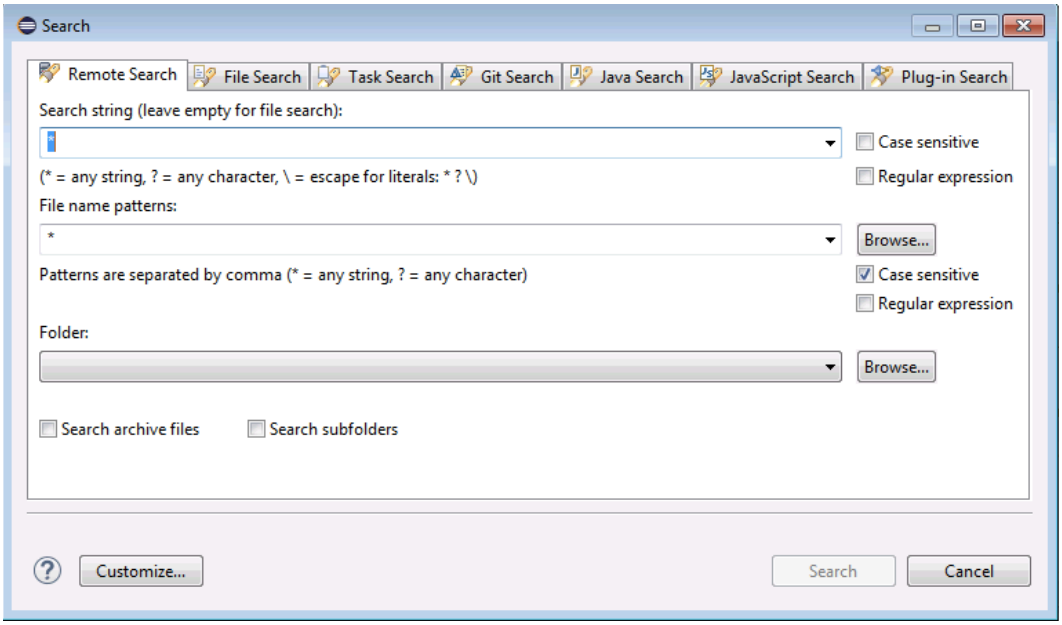
	Absolutely too slow	Slow but tolerable	Normal	Faster than normal	Too fast	I don't remember
Operation1: Click on "Project" and display the submenu						
Operation2: Click on "Clean" and open the dialog box with the options						
Operation3: Click on "Ok" to launch Clean & Build, and wait for the progress window to close.						

GROUP: **ID:**

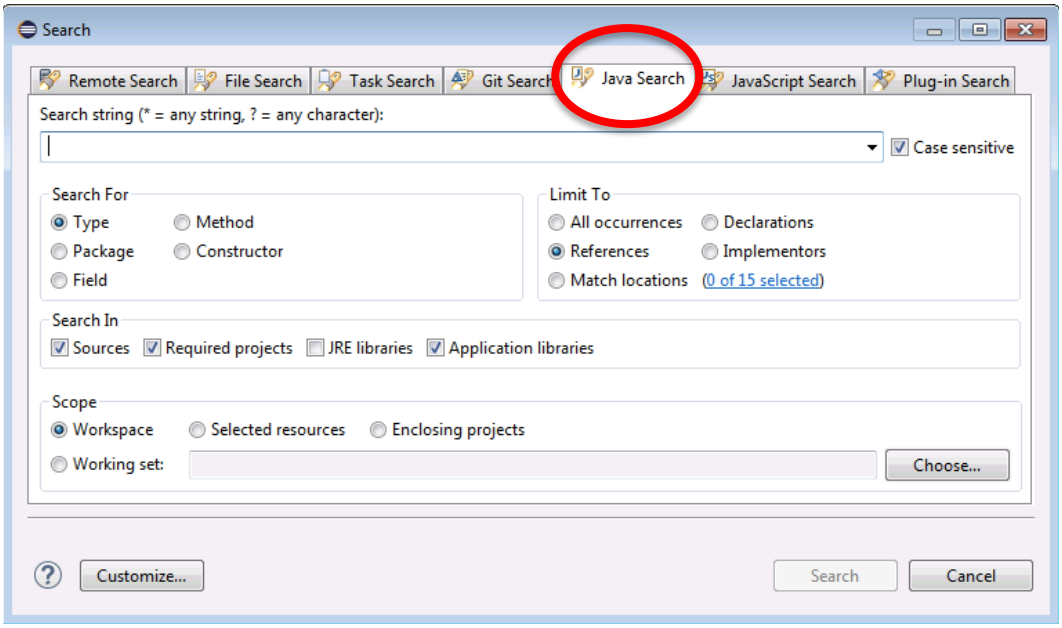
Task: Search

PreTask: Launch Eclipse by running the available script and wait for Eclipse to load completely.

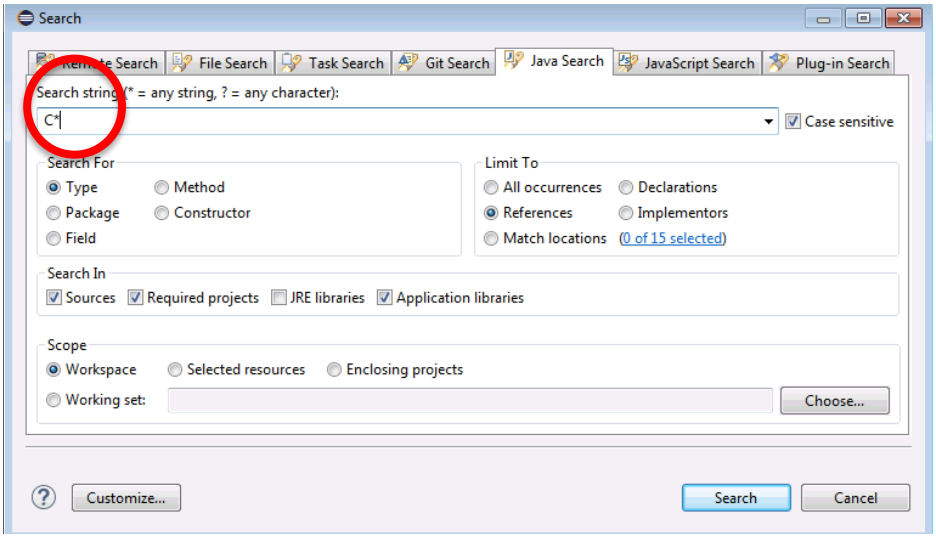
- **Operation1:** From the keyboard, press Control (Ctrl) and "H" together.
  The Search window will open, showing the "Remote Search" tab.



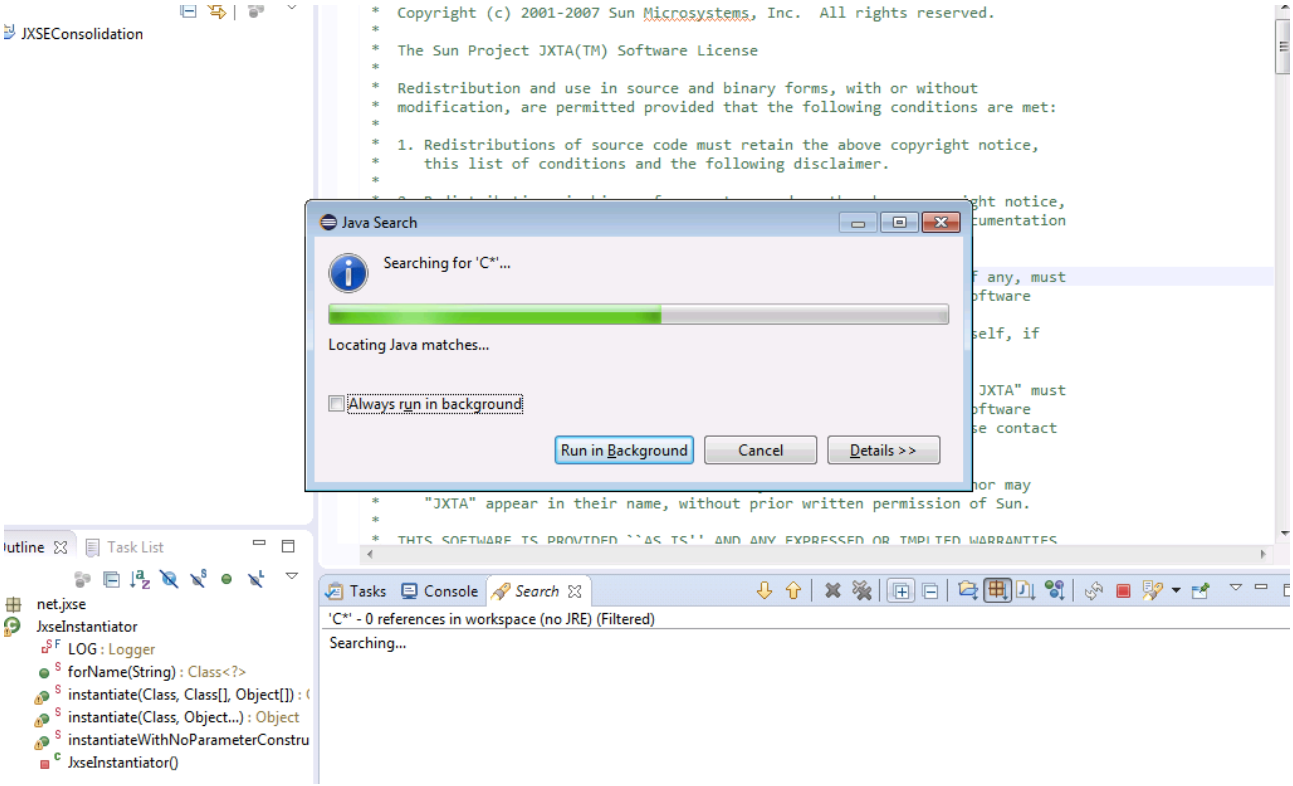
- **Operation2:** Click on the "Java Search" tab (unless you have already opened it there), to select the correct tab (the one below). The mouse cursor will be already in the text box where you can enter the desired text.



- **Operation3:** Enter the string "C*" having as much as possible care not to make mistakes (however, in case of errors, correct the text to get C*).



- **Operation4:** Click on the "Search" button: a dialog box will open showing you the progress: behind it, at the bottom of the window, you will see the log of the operation (as in the image below). The operation will be finished when the dialog box closes. At that point, the Task is finished. **CLOSE ECLIPSE**



GROUP: **ID:**

Task evaluation: Search

How would you evaluate each operation of the Task you have just performed? Please select only one value for each operation in the table below.

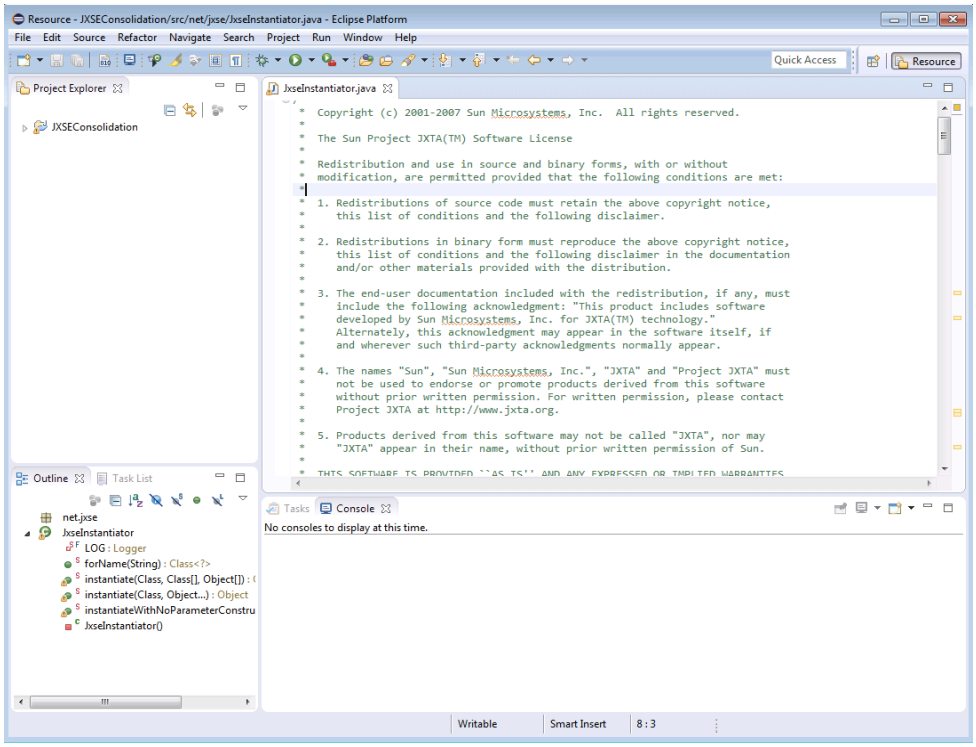
Remember, an operation starts when a command is given through the interface, and ends when the system "informs you" that the operation has been completed.

	Absolutely too slow	Slow but tolerable	Normal	Faster than normal	Too fast	I don't remember
Operation1: Open the search window through Ctrl + H						
Operation2: Click on the "Java Search" tab						
Operation3: Insert the string "C*".						
Operation4: Press on "ok" to launch the search and wait for the dialog to close.						

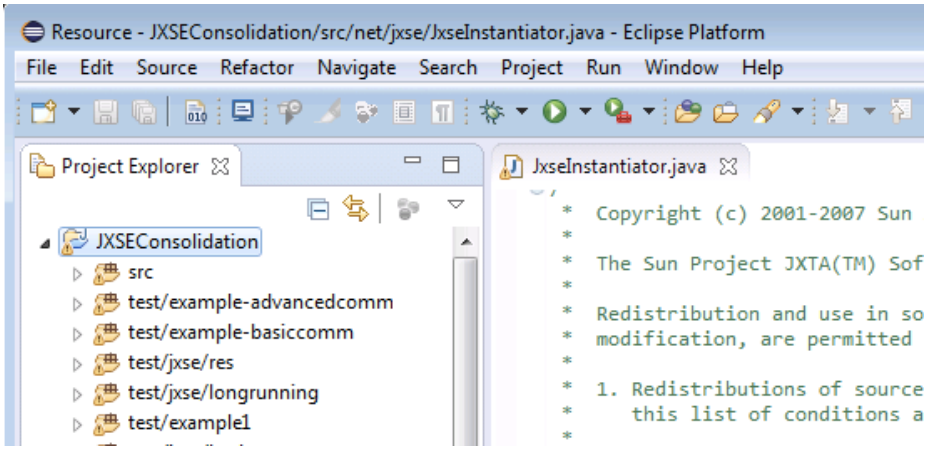
GROUP: **ID:**

Task: Create Type Hierarchy

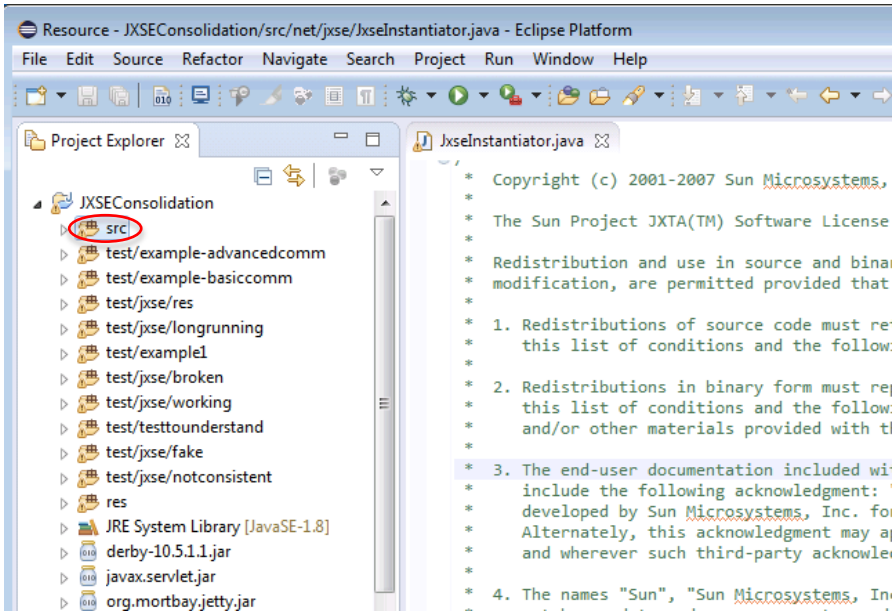
PreTask: Launch Eclipse by running the available script and wait for Eclipse to load completely.



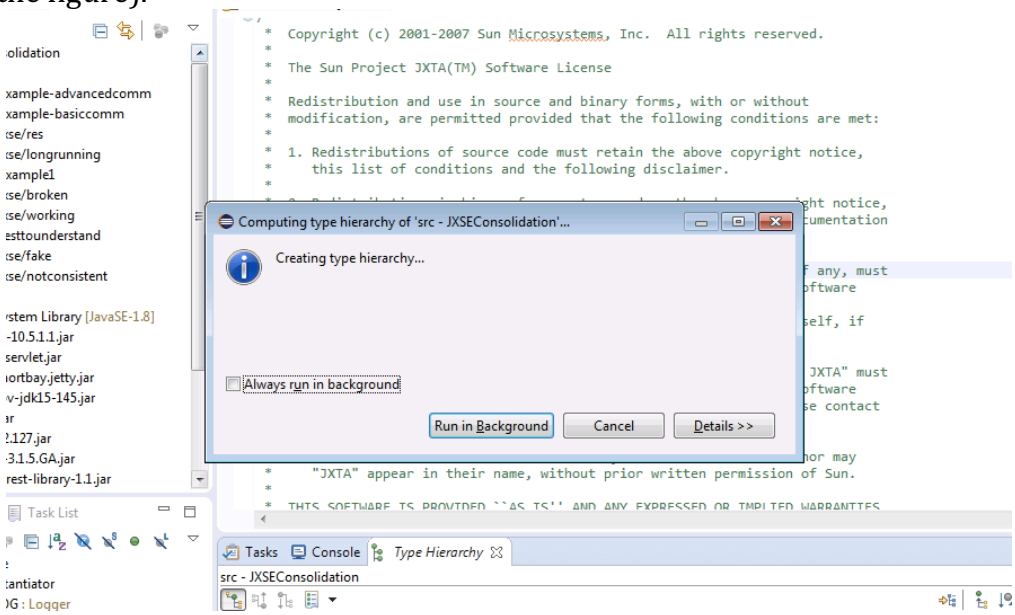
- **Operation1:** With the mouse, make a DOUBLE CLICK on the project, so you can expand it.



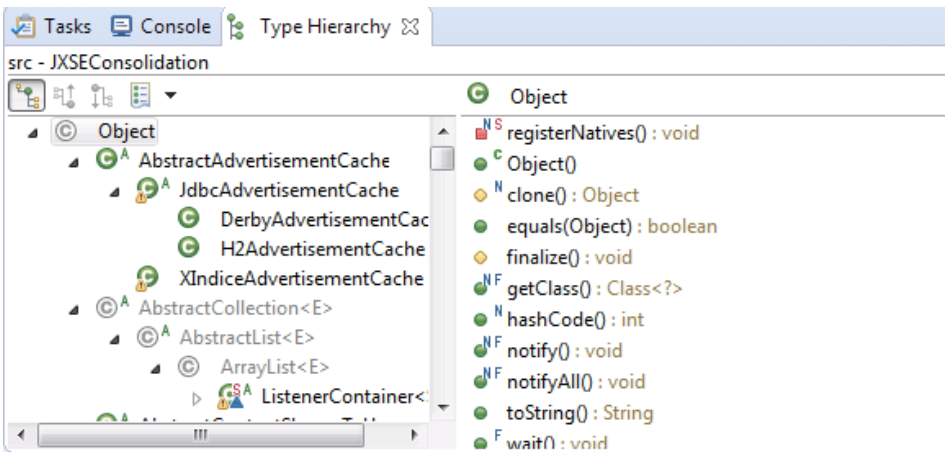
- **Operation2:** make a SINGLE CLICK on the "src" package, so you can select it (you don't need to expand it)



- **Operation3:** press F4. By doing so, you will launch the command to create the hierarchy of types. A window will be displayed showing the progress status (as shown in the figure).



- Wait until the window closes, and the hierarchy appears on the left of the screen, as in the figure. The task is finished. CLOSE ECLIPSE



GROUP: **ID:**

Task evaluation: Create Type Hierarchy

How would you evaluate each operation of the Task you have just performed? Please select only one value for each operation in the table below.

Remember, an operation starts when a command is given through the interface, and ends when the system "informs you" that the operation has been completed.

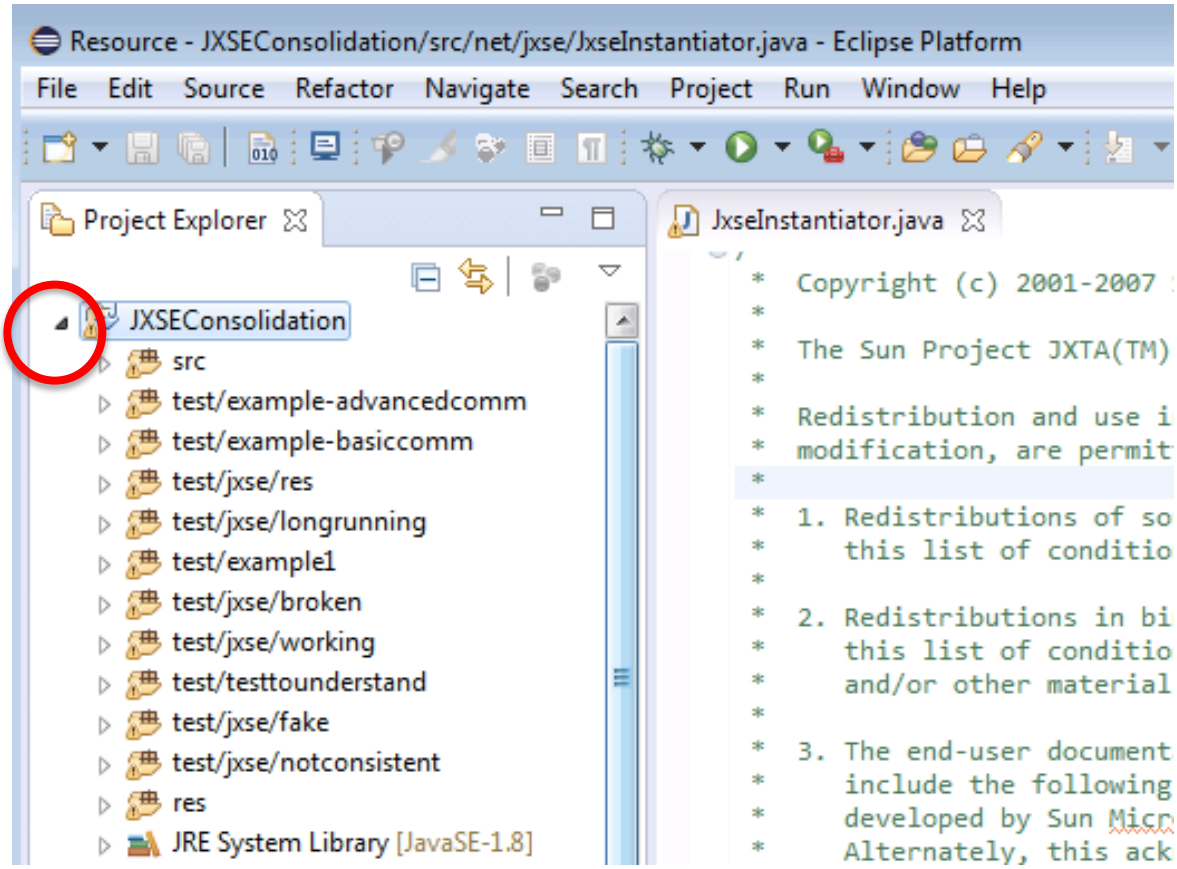
	Absolutely too slow	Slow but tolerable	Normal	Faster than normal	Too fast	I don't remember
Operation1: with a double click on the name, expand the project structure						
Operation2: Click on the "src" package to select it.						
Operation3: press F4 to launch the creation of Type Hierarchy						

GROUP: **ID:**

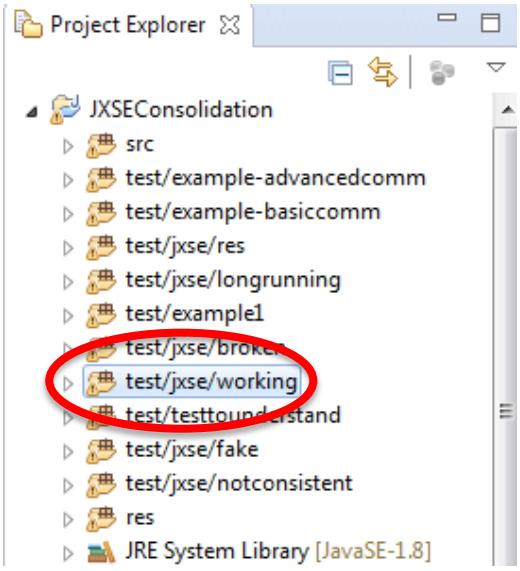
Task: Sort Members

PreTask: Launch Eclipse by running the available script and wait for Eclipse to load completely.

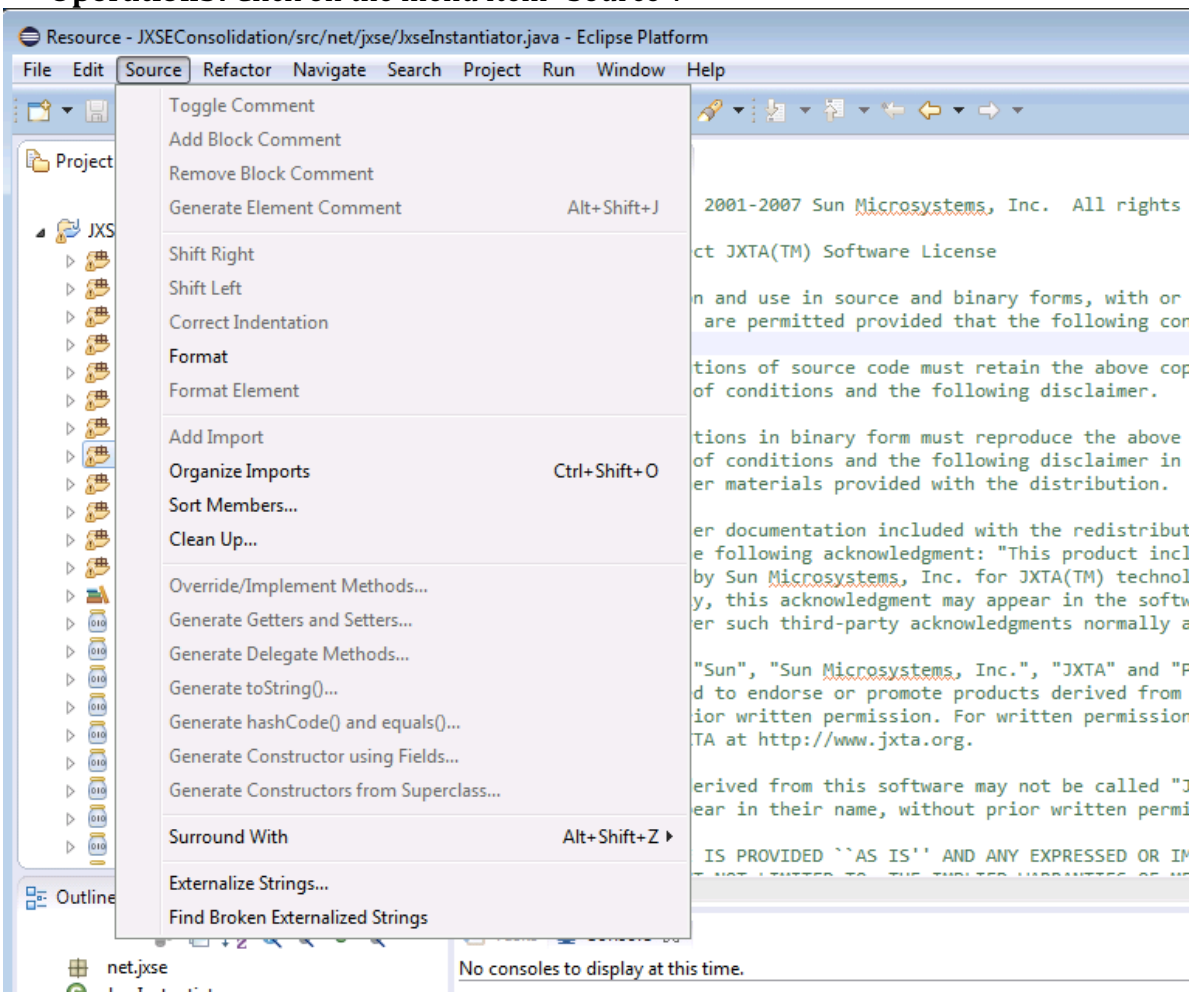
- **Operation1:** Click on the small arrow button (at the left of the project name), to expand it.



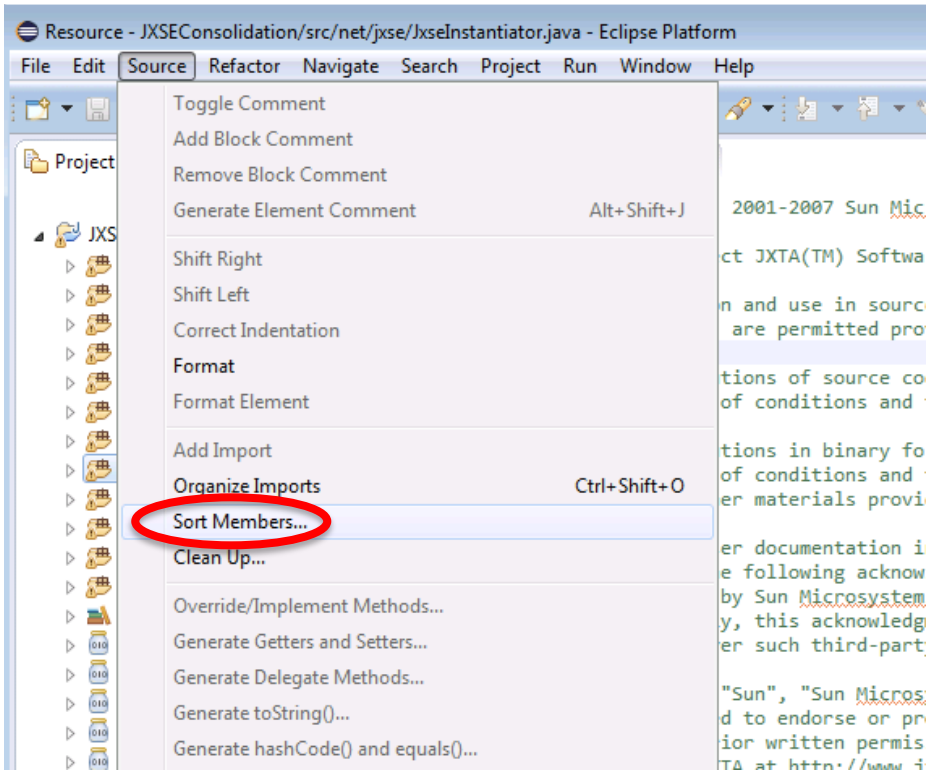
- **Operation2:** Click **once** on the package named "working" to select it.



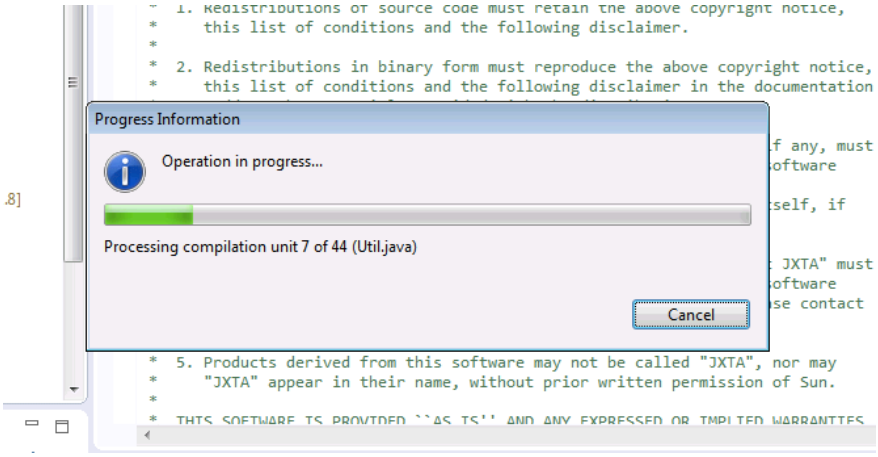
- **Operation3:** Click on the menu item "Source".



- **Operation4:** Click on "Sort Members": by doing so, you will launch the command to sort classes, properties and methods. A window will be displayed showing the progress of the operation



- Wait until the window closes: at that point, the operation is completed, and the task is finished. CLOSE ECLIPSE



GROUP: **ID:**

Task evaluation: Sort Members

How would you evaluate each operation of the Task you have just performed? Please select only one value for each operation in the table below.

Remember, an operation starts when a command is given through the interface, and ends when the system "informs you" that the operation has been completed.

	Absolutely too slow	Slow but tolerable	Normal	Faster than normal	Too fast	I don't remember
Operation1: displays, with a click on the arrow at the left of the project, the project structure						
Operation2: select the package named “working” with a click						
Operation3: Click on the menu item "Source".						
Operation4: Click on the "Sort Members" item (which launches the procedure)						

GROUP: **ID:**

Closing questionnaire

- According to you, the overall duration of the experiment was:
  - ☐ Ok
  - ☐ Too long (I wouldn't have gone ahead after the task _____)
  - ☐ I could have complete another _____ tasks with the same level of attention.

- Was the "step-by-step description (action by action)" of the tasks clear to you?

	Absolutely no	More no than yes	Yes, with a few inaccuracies	Absolutely yes
Task Type Hierarchy				
Task Sort Members				
Task Clean & Build				
Task Search				

If you have any comments on the Tasks descriptions, please report them here:

_____

- About the questions asked after each task:
  - Were the questions clear to you?
    - Absolutely not
    - Mostly not
    - Mostly yes
    - Absolutely yes
  - Were the answer options (table columns) clear to you?
    - Absolutely not
    - Mostly not
    - Mostly yes
    - Absolutely yes

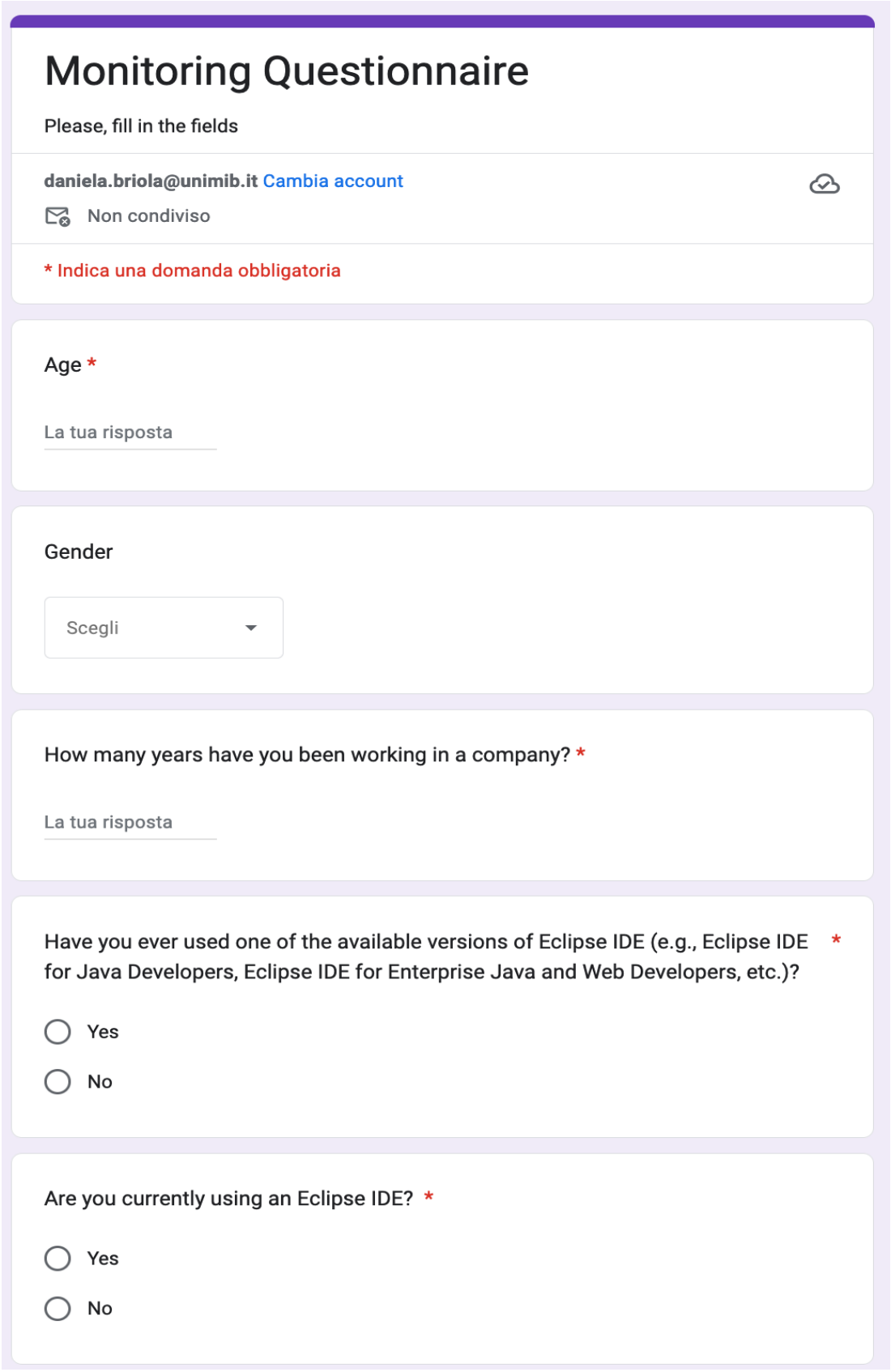
- Report here any comments about the experiment, both on the organization and on the tasks. Any suggestion for us is valuable, and will help us improve our process for the next round of experiments

_____
_____
_____
_____
_____
_____

THANK YOU VERY MUCH FOR PARTICIPATING!! ☺

Material for the validation experiment with professionals (please note that the participants will download and read this material with the task order related to the group they belong to: each group has a different online form, linking to the video with the correct overheads, the instruction and forms, in the order associated to the specific group)

Screenshots from the online form (where the videos can be downloaded too):
https://docs.google.com/forms/d/e/1FAIpQLSejAAHItX4n-yURcx6z8ODQC6Z1uuLux5L0Fkn2nGS2pFbNZw/viewform



Monitoring Questionnaire

Please, fill in the fields

daniela.briola@unimib.it Cambia account

Non condiviso

* Indica una domanda obbligatoria

Age *

La tua risposta

Gender

Scegli

How many years have you been working in a company? *

La tua risposta

Have you ever used one of the available versions of Eclipse IDE (e.g., Eclipse IDE for Java Developers, Eclipse IDE for Enterprise Java and Web Developers, etc.)? *

- Yes
- No

Are you currently using an Eclipse IDE? *

- Yes
- No

Overview

Main concepts

You will watch 4 videos showing examples of Eclipse tasks, like cleaning&building a project and search for an item. Each task is characterized by a series of actions (operations), with a beginning and an end: pay attention to their durations.

Examples of two operations and their beginning and end are given below:

Example 1 - Operation: Click on a menu item; beginning: the mouse click on the menu item; end: the appearance of the menu.

Example 2 - Operation: Click on a button that results in the appearance of a window showing the progress of an operation; beginning: the mouse click; end: the closure of the window.

Instructions

As you go through the questionnaire, you will find 4 sections, all organized in the same following way. They provide:

- A link to download a ZIP file that contains 1) a **PDF file** with a description of the operations you should pay attention to while watching the video. THIS FILE SHOULD BE READ BEFORE PLAYING THE VIDEO. 2) **the video** that is the subject of the experiment;
- A short questionnaire to answer.

The videos show some tasks on a project consisting of 12 packages, for a total of 650 classes.

Video 1: CleanAndBuild

Description of the video: this task deletes all the compiled files of the project, then the project will be completely recompiled.

Download the ZIP file containing the material for the experiment related to this task by clicking here.

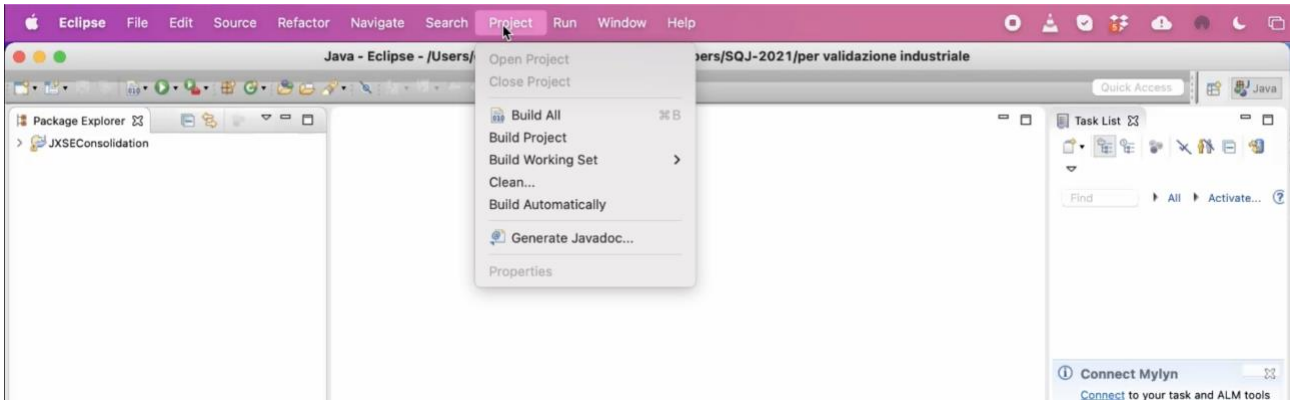
How would you evaluate each operation of the Task you have just watched? *

	Too Slow	Slower Than Normal	Normal	Faster than Normal	Too fast	I don't remember
Operation1: Click on "Project" and show the submenu	○	○	○	○	○	○
Operation2: Click on "Clean" and open the dialog box with the options	○	○	○	○	○	○
Operation3: Click on "OK" to launch Clean & Build, and wait for the progress window to close.	○	○	○	○	○	○

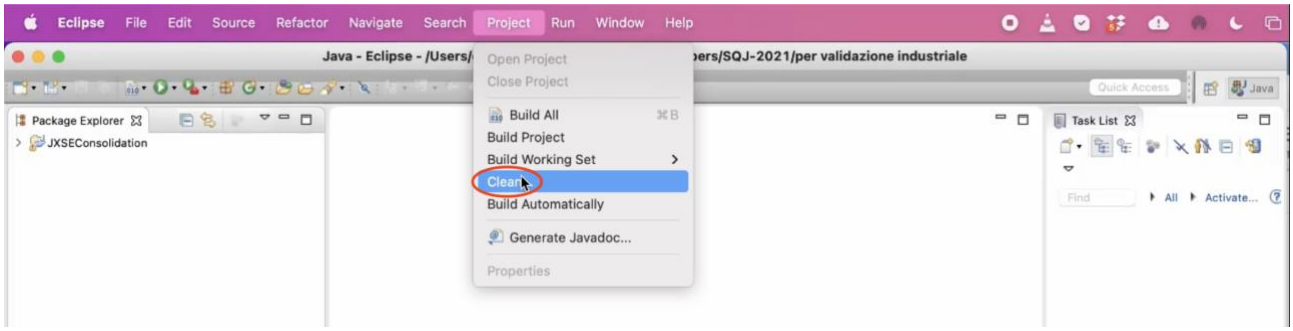
Task: Clean & Build

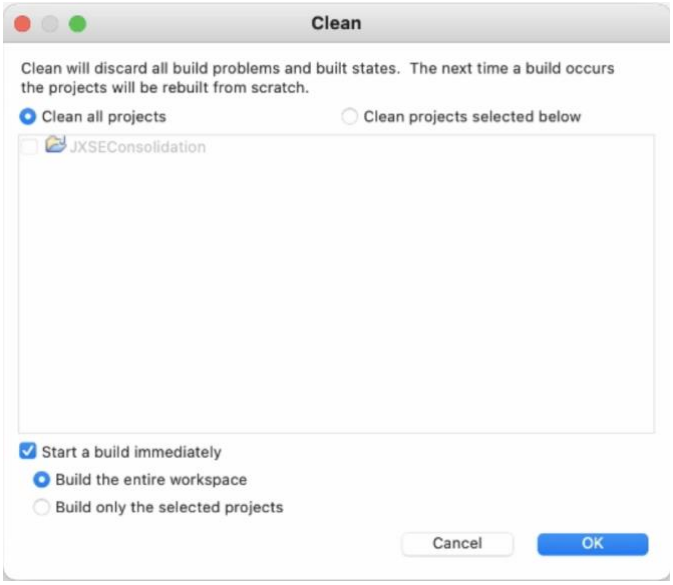
PreTask: Read the descriptions of the operations described below, play the video, and pay attention to the length (time duration) of those operations.

- **Operation1**: Focus on the action that starts with the mouse clicking on the main menu item "Project", and finishes when the drop-down menu appears (as in the image below).

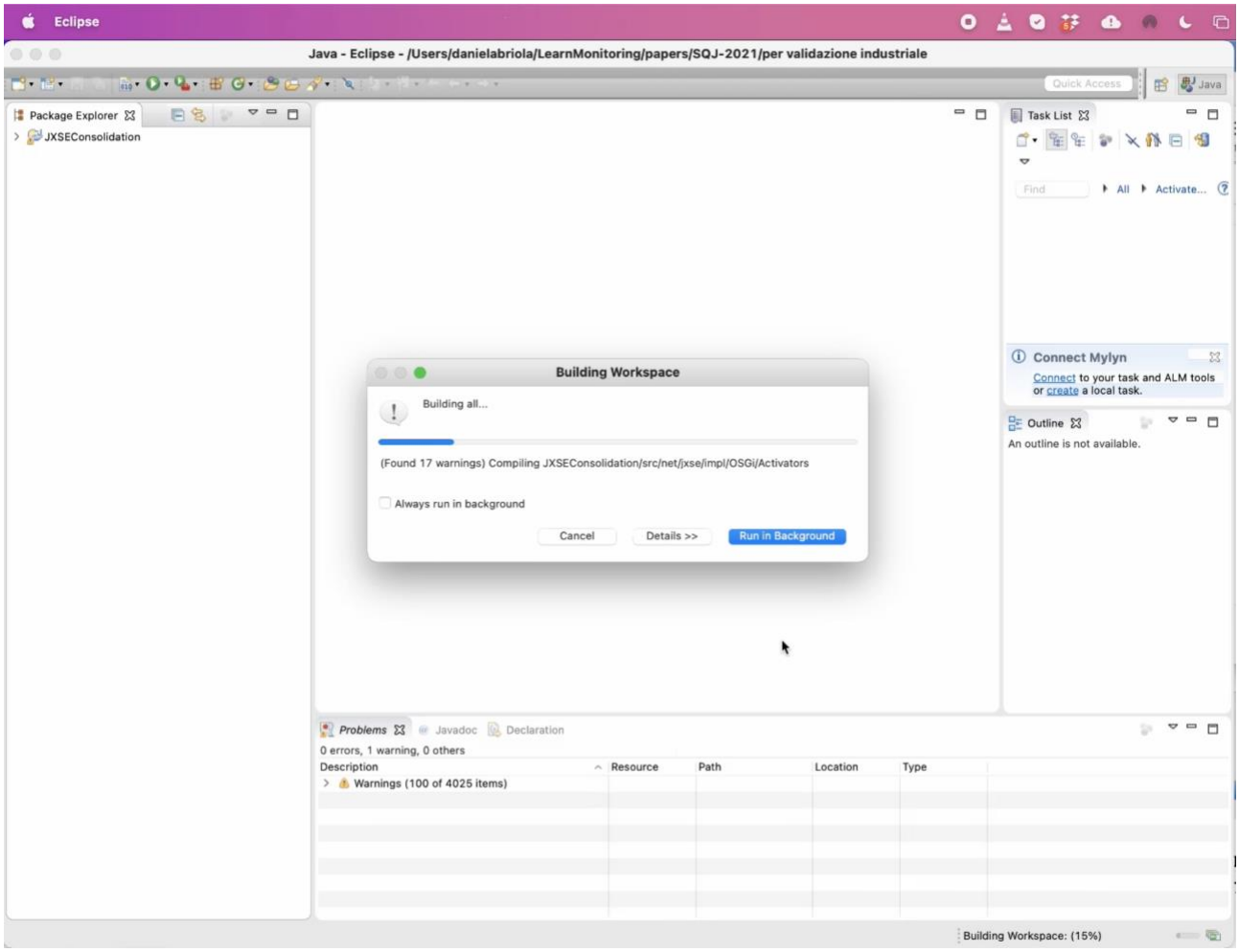


- **Operation2**: Focus on the action that starts with the mouse moving and clicking on the "Clean" item, and finishes when the “Clean” dialog box appears (as in the image below).





- **Operation3**: Focus on the action that starts with the mouse clicking on the "OK" button in the dialog box “Clean”: a new dialog box will open showing you the progress of the clean & build operations as shown in the image below. The operation will be finished when the dialog box closes.



- Wait for the end of the video to finish this task! **Close the video.**

Video 2: Search

Description of the video: this task searches for the string "C*" in the Java classes. Basically, it searches for all classes in the project, and any other Java element that starts with "C".

Download the ZIP file containing the material for the experiment related to this task by clicking **here**.

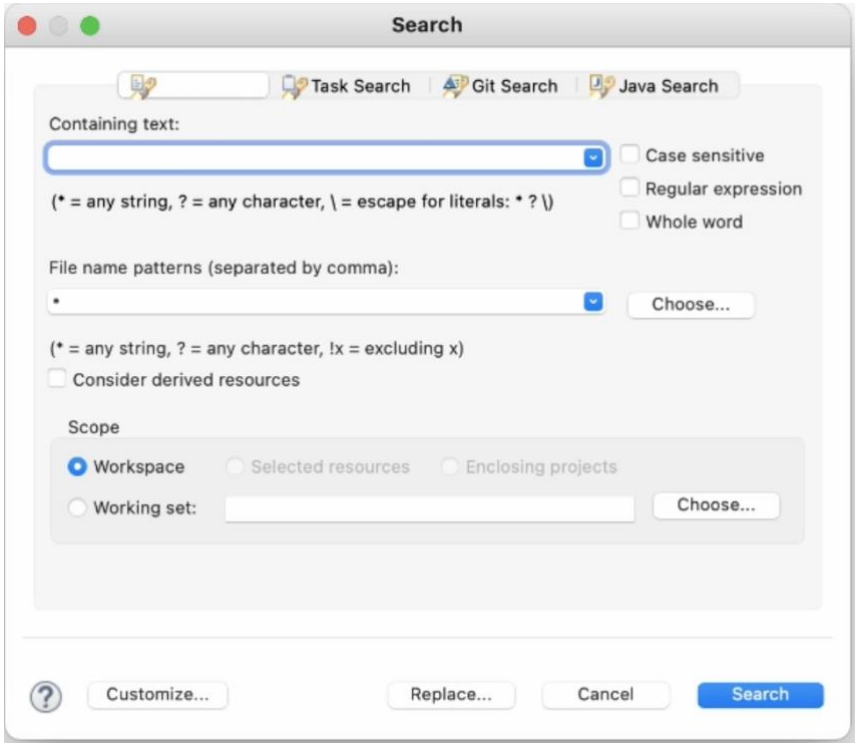
How would you evaluate each operation of the Task you have just watched? *

	Too Slow	Slower Than Normal	Normal	Faster than Normal	Too fast	I don't remember
Operation1: Open the search window	○	○	○	○	○	○
Operation2: Click on the "Java Search" tab	○	○	○	○	○	○
Operation3: Insert the string "C*"	○	○	○	○	○	○
Operation4: Press on the "Search" button to launch the search and wait for the dialog to close	○	○	○	○	○	○

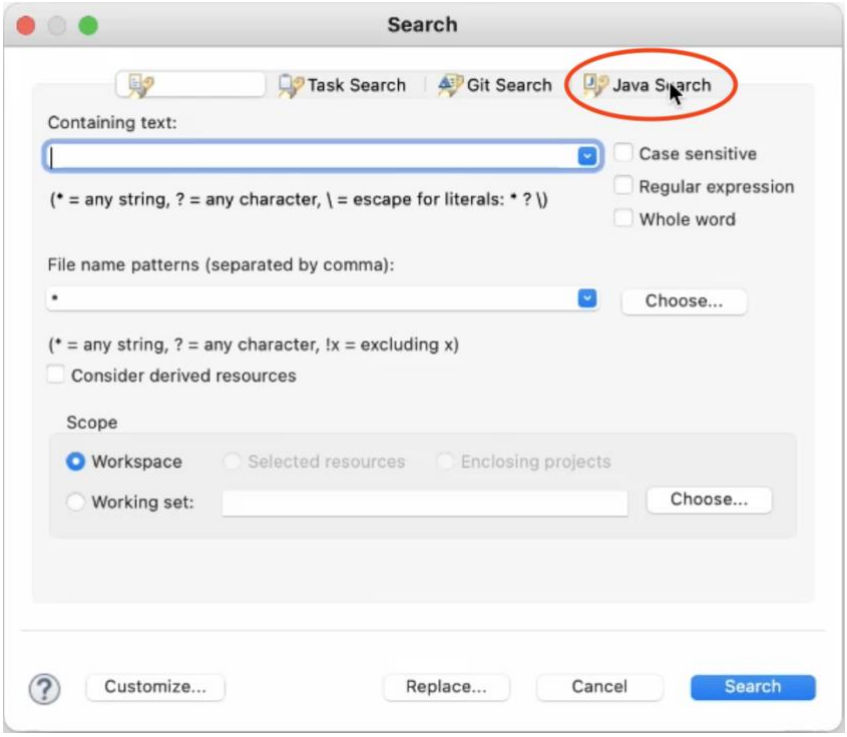
Task: Search

PreTask: Read the descriptions of the operations described below, play the video, and pay attention to the length (time duration) of those operations.

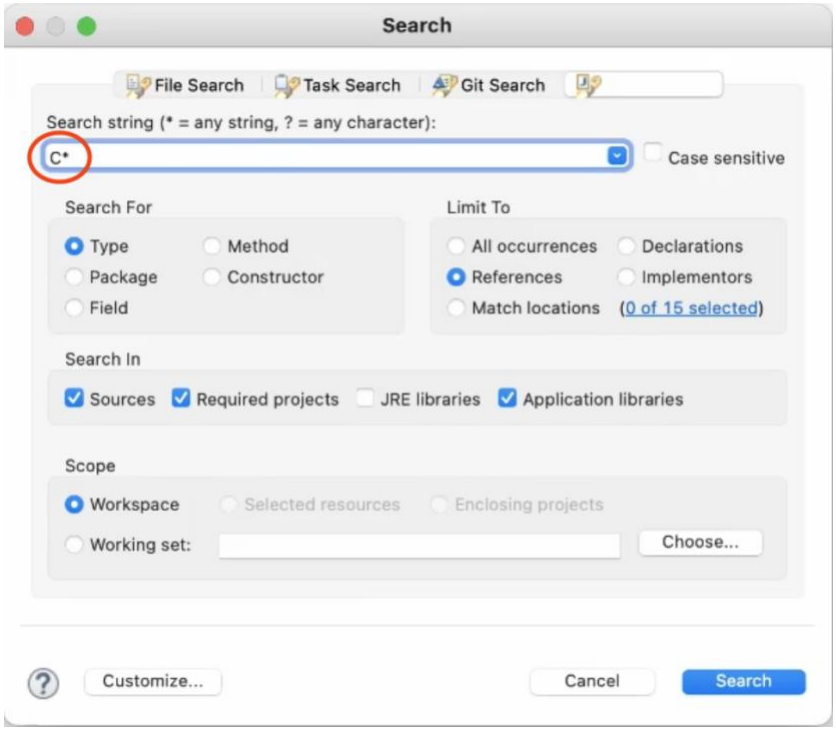
- **Operation1**: Focus on the time that it takes for the “Search” dialog box shown in the image below to appear.



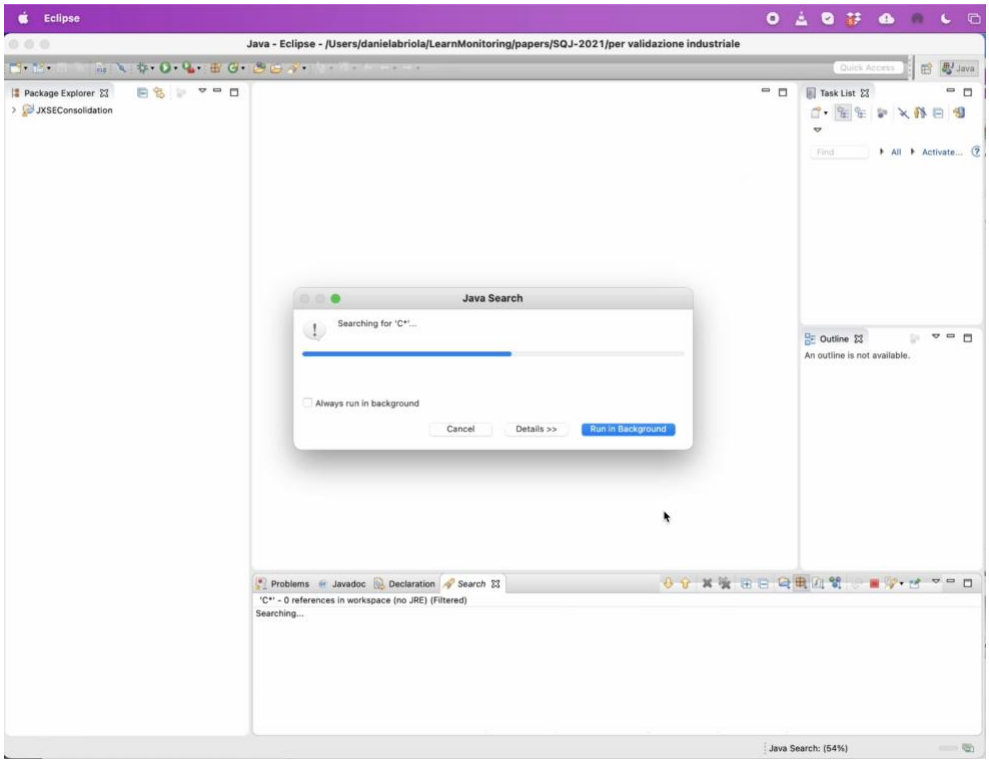
- **Operation2**: Focus on the action in which the mouse clicks on the "Java Search" tab as highlighted by the red circle in the image below.



- **Operation3**: Focus on the action in which the string "C*" is entered in the search box as shown in the image below.



- **Operation4**: Focus on the action in which the mouse clicks on the "Search" button of the previous window: a new dialog box will open showing you the progress as in the image below. The operation will be finished when the dialog box closes.



- Wait for the end of the video to finish this task! **Close the video.**

Video 3: SortMembers

Description of the video: this task reorders the elements contained in a package following a predefined order (configurable).

Download the ZIP file containing the material for the experiment related to this task by clicking **here**.

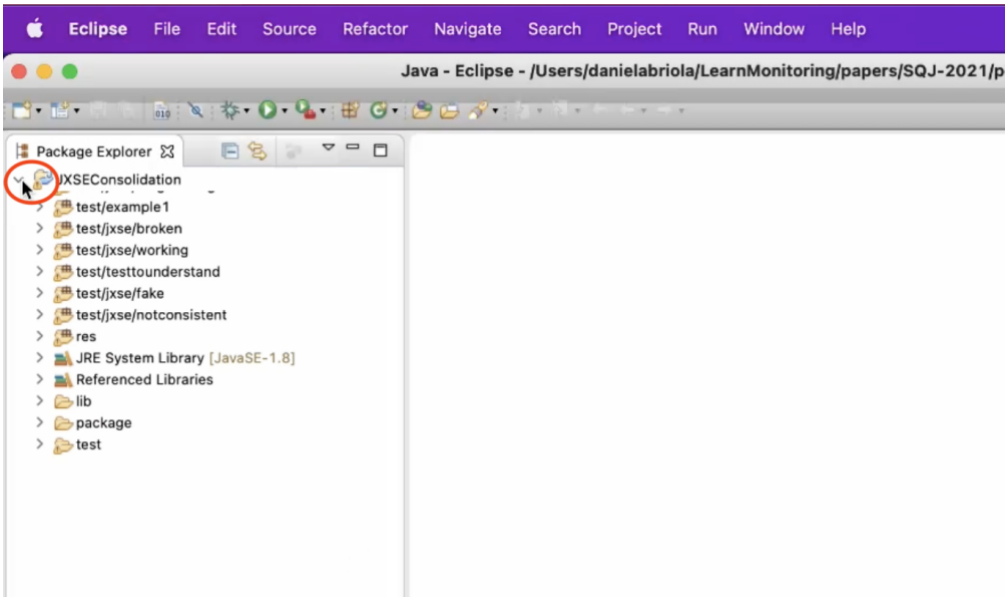
How would you evaluate each operation of the Task you have just watched? *

	Too Slow	Slower Than Normal	Normal	Faster than Normal	Too fast	I don't remember
Operation1: displays the project structure with a click on the arrow on the left of the project name	○	○	○	○	○	○
Operation2: select the package named “working” with a click	○	○	○	○	○	○
Operation3: Click on the menu item "Source"	○	○	○	○	○	○
Operation4: Click on the "Sort Members" item (which launches the procedure)	○	○	○	○	○	○

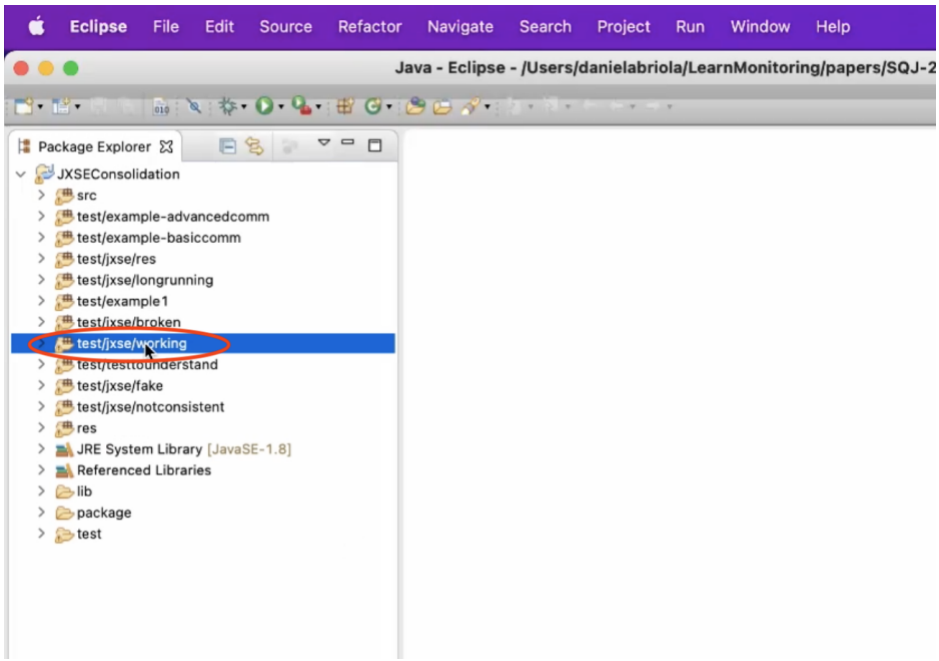
Task: Sort Members

PreTask: Read the descriptions of the operations described below, play the video, and pay attention to the length (time duration) of those operations.

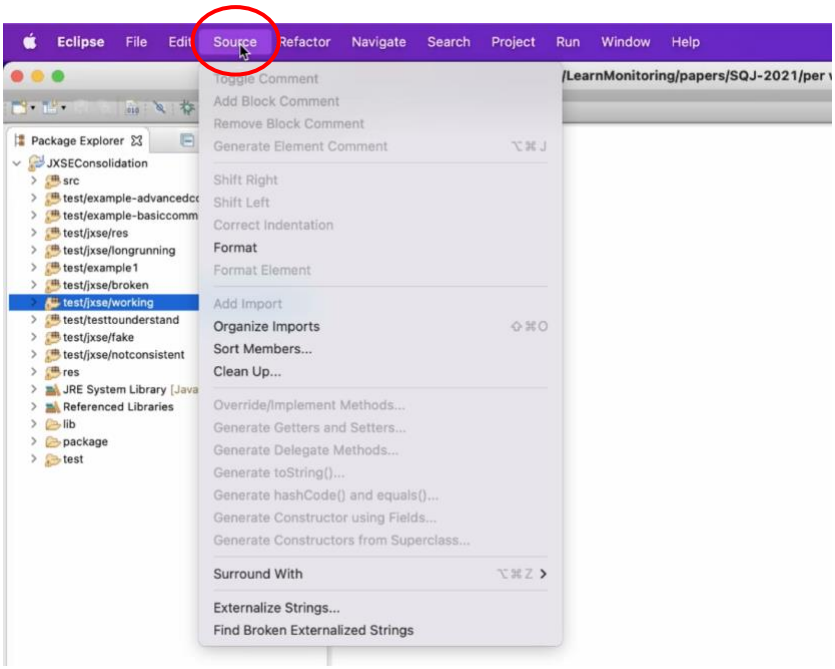
- **Operation1**: Focus on the action in which the mouse clicks on the small arrow button (on the left of the project name) to expand it, as shown in the image below.



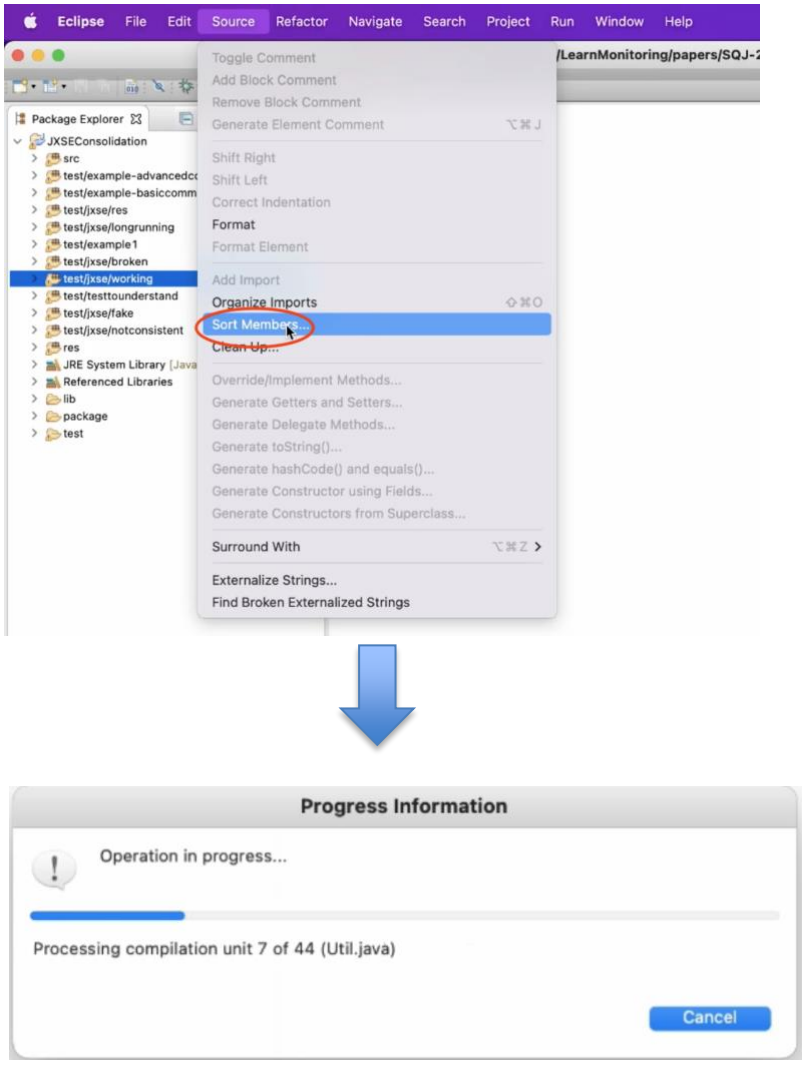
- **Operation2**: Focus on the action in which the mouse selects the package named "working" with a single click on it.



- **Operation3**: Focus on the action in which the mouse clicks on the menu item "Source" as shown in the image below.



- **Operation4**: Focus on the action in which the mouse clicks on "Sort Members": a window will be displayed showing the progress of the operation. The operation will be finished when the dialog box closes.



- Wait for the end of the video to finish this task! **Close the video.**

Video 4: TypeHierarchy

Description of the video: this task calculates the hierarchy of the classes contained in the project, and shows it to the user with a tree view.

Download the ZIP file containing the material for the experiment related to this task by clicking **here**.

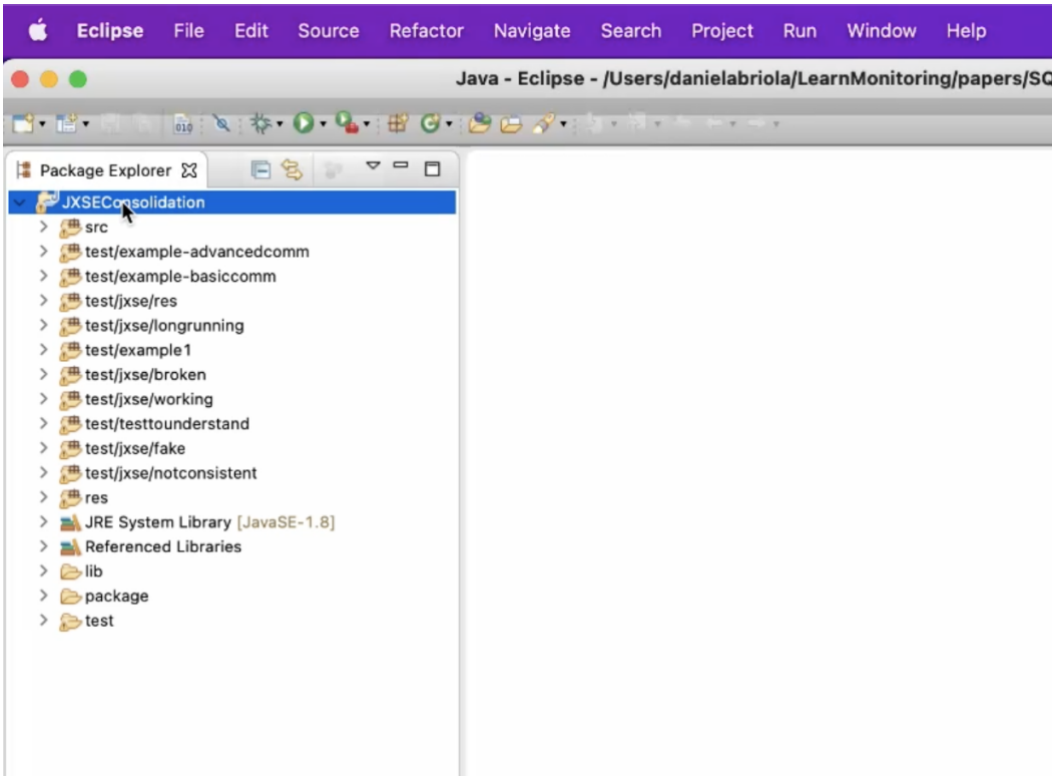
How would you evaluate each operation of the Task you have just watched? *

	Too Slow	Slower Than Normal	Normal	Faster than Normal	Too fast	I don't remember
Operation1: with a double click on the name, expand the project structure	○	○	○	○	○	○
Operation2: click on the "src" folder to select it.	○	○	○	○	○	○
Operation3: right click on the src folder to show the corresponding menu	○	○	○	○	○	○
Operation4: click on “Open Type Hierarchy” menu voice to launch the creation of Type Hierarchy	○	○	○	○	○	○

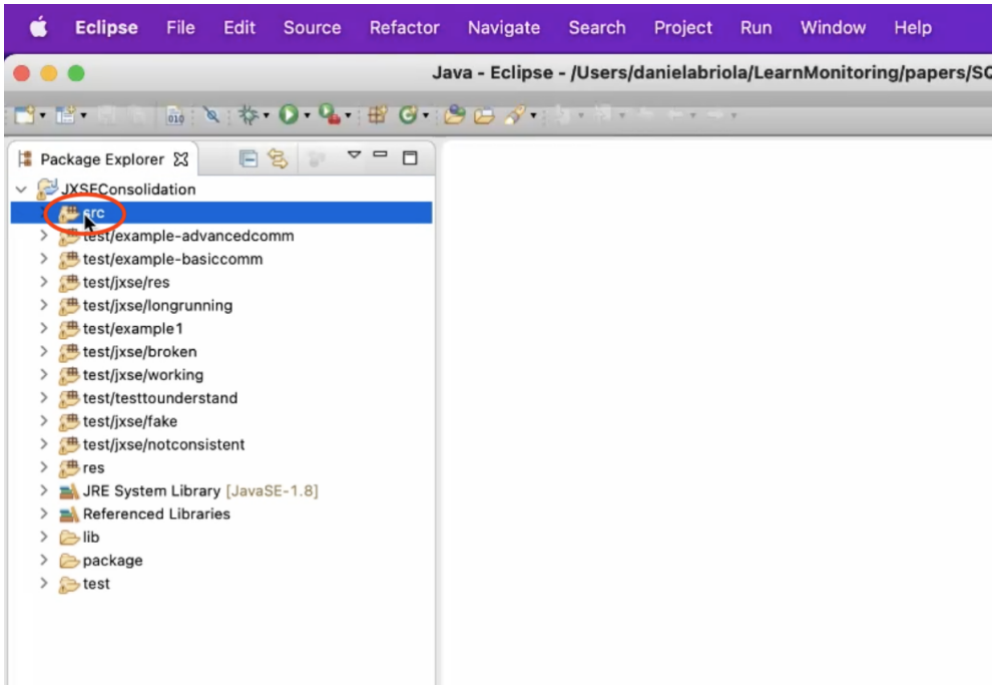
Task: Create Type Hierarchy

PreTask: Read the descriptions of the operations described below, play the video, and pay attention to the length (time duration) of those operations.

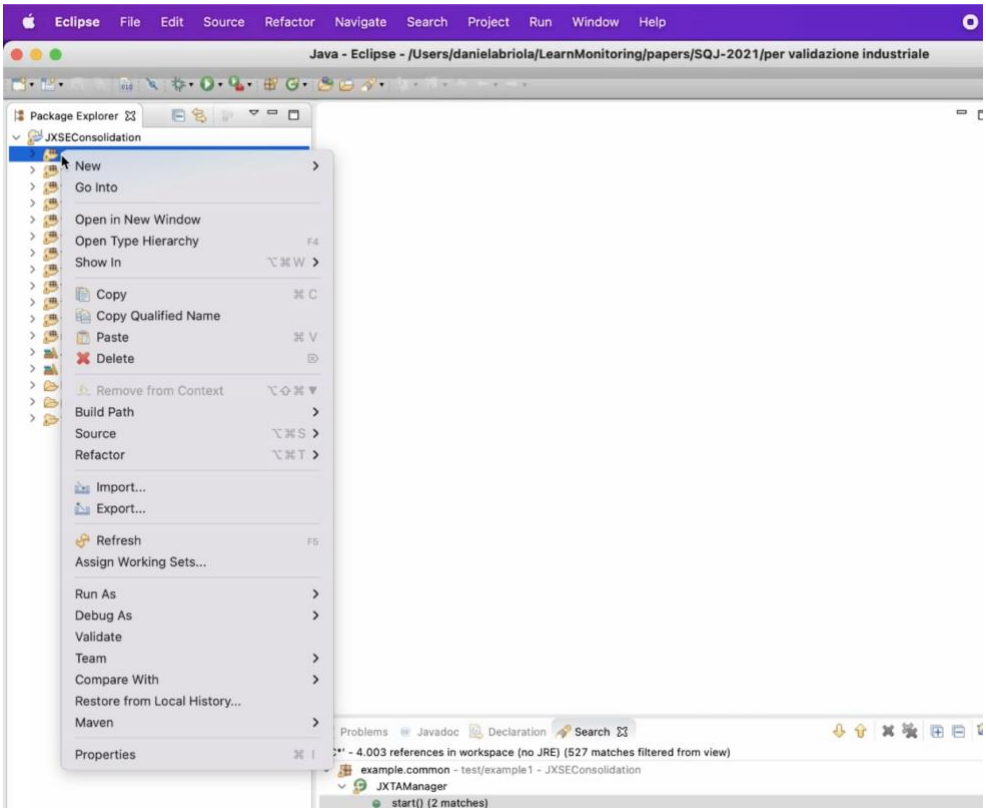
- **Operation1**: Focus on the action in which the mouse makes a double click on the project in the Project Explorer, and then the sub folders appear.



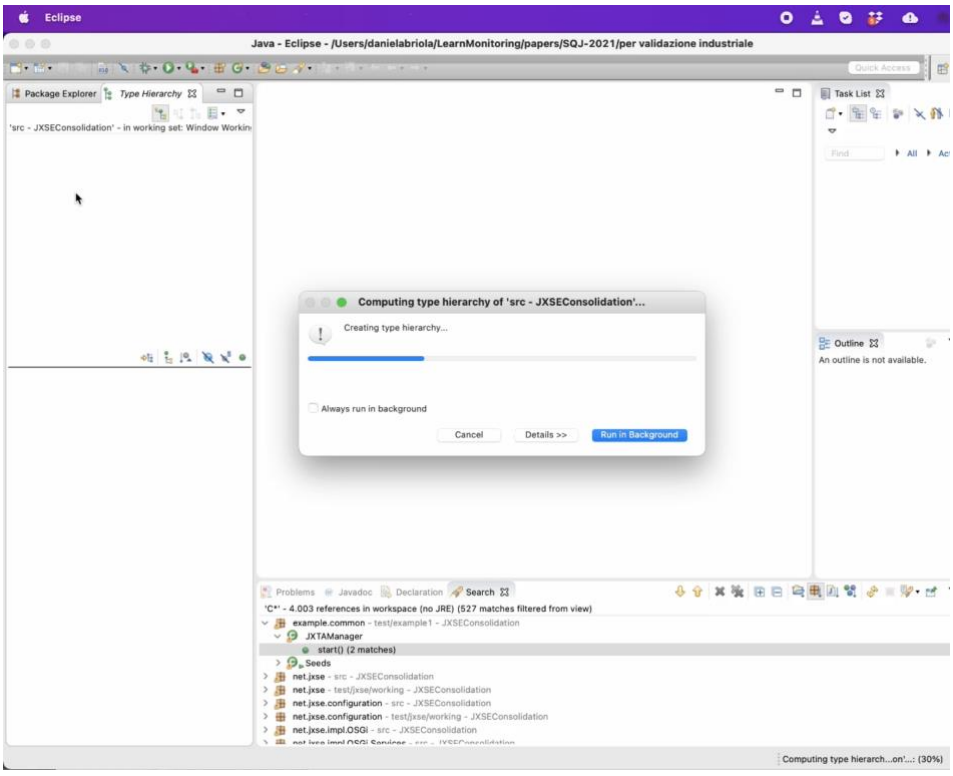
- **Operation2**: Focus on the action in which the mouse selects the "src" folder with a single click on it, as shown in the image below.



- **Operation3**: Focus on the action in which with a right click on the “src” folder the menu is shown as in the image below.



- **Operation 4**: Focus on the action in which the mouse clicks on the “Open Type Hierarchy” item of the previous menu: a window will be displayed showing the progress status (as shown in the image below). The operation will be finished when the dialog box closes.



- Wait for the end of the video to finish this task! **Close the video.**

Closing questionnaire

According to you, the overall duration of the experiment was: *

- ◯ Ok
- ◯ Too long
- ◯ I could have watched other videos with the same level of attention

Were the descriptions of the operations shown in the videos clear to you? *

	Absolutely no	More no than yes	Yes, with a few inaccuracies	Absolutely yes
Video CleanAndBuild	◯	◯	◯	◯
Video Search	◯	◯	◯	◯
Video Sort Members	◯	◯	◯	◯
Video Type Hierarchy	◯	◯	◯	◯

If you have any comments on the descriptions of the operations, please report them here:

La tua risposta

About the questions asked after each task, were the questions clear to you? *

- ◯ Absolutely not
- ◯ Mostly not
- ◯ Mostly yes
- ◯ Absolutely yes

About the questions asked after each task, were the answer options (table columns) clear to you? *

- ◯ Absolutely not
- ◯ Mostly not
- ◯ Mostly yes
- ◯ Absolutely yes

Report here any comments about the experiment, both on the organization and on the videos. Any suggestion for us is valuable, and will help us improve our process for the next round of experiments.

La tua risposta