

Using VanillaDB

Database Systems
DataLab, CS, NTHU
Spring, 2021



VanillaDB

Simple, fast, and extensible database system prototypes.

Projects

- There are 3 projects in VanillaDB
 - Single-node DBMS: VanillaCore
 - Benchmarking: VanillaBench
 - Communication module for distributed DBMSs: VanillaComm

Outline

- VanillaCore
 - Prepare Everything You Need
 - Server Properties
 - Starting Up VanillaCore
 - Console SQL Interpreter

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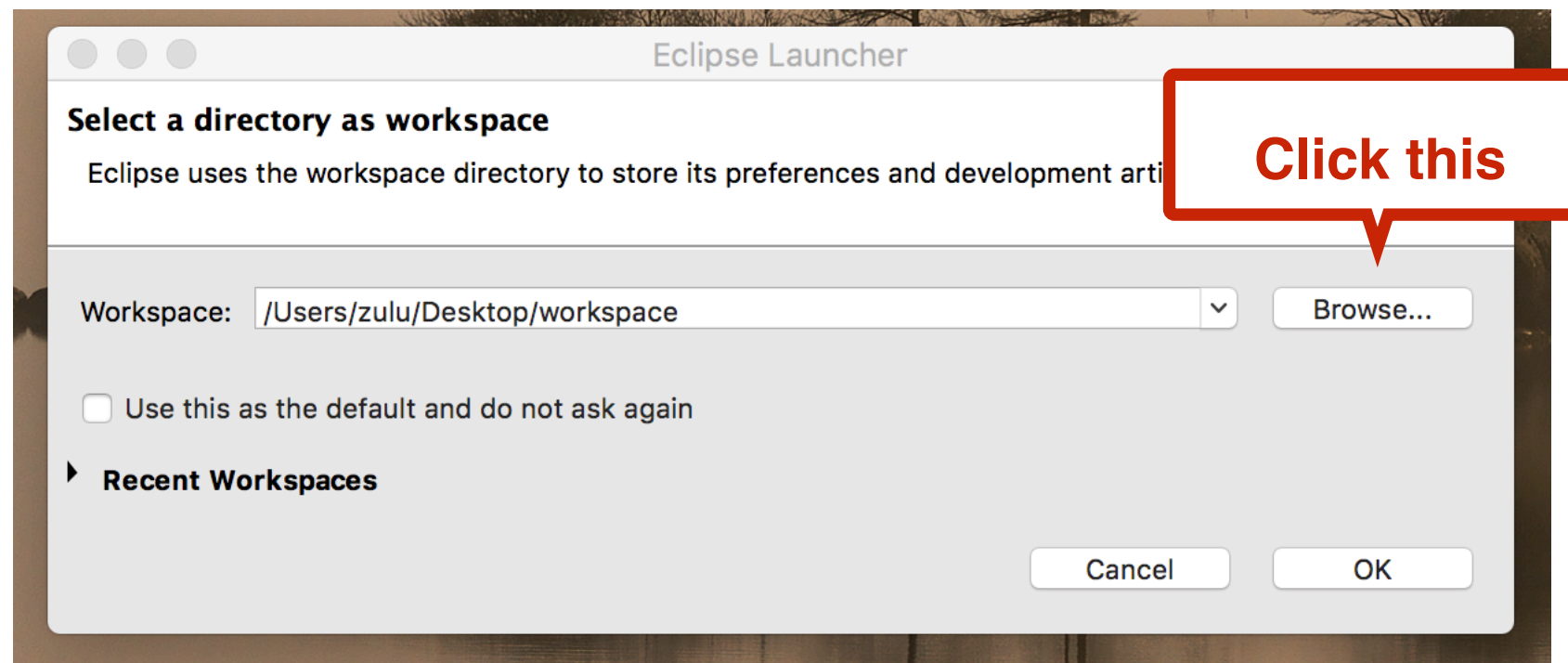
Setting Up Environment

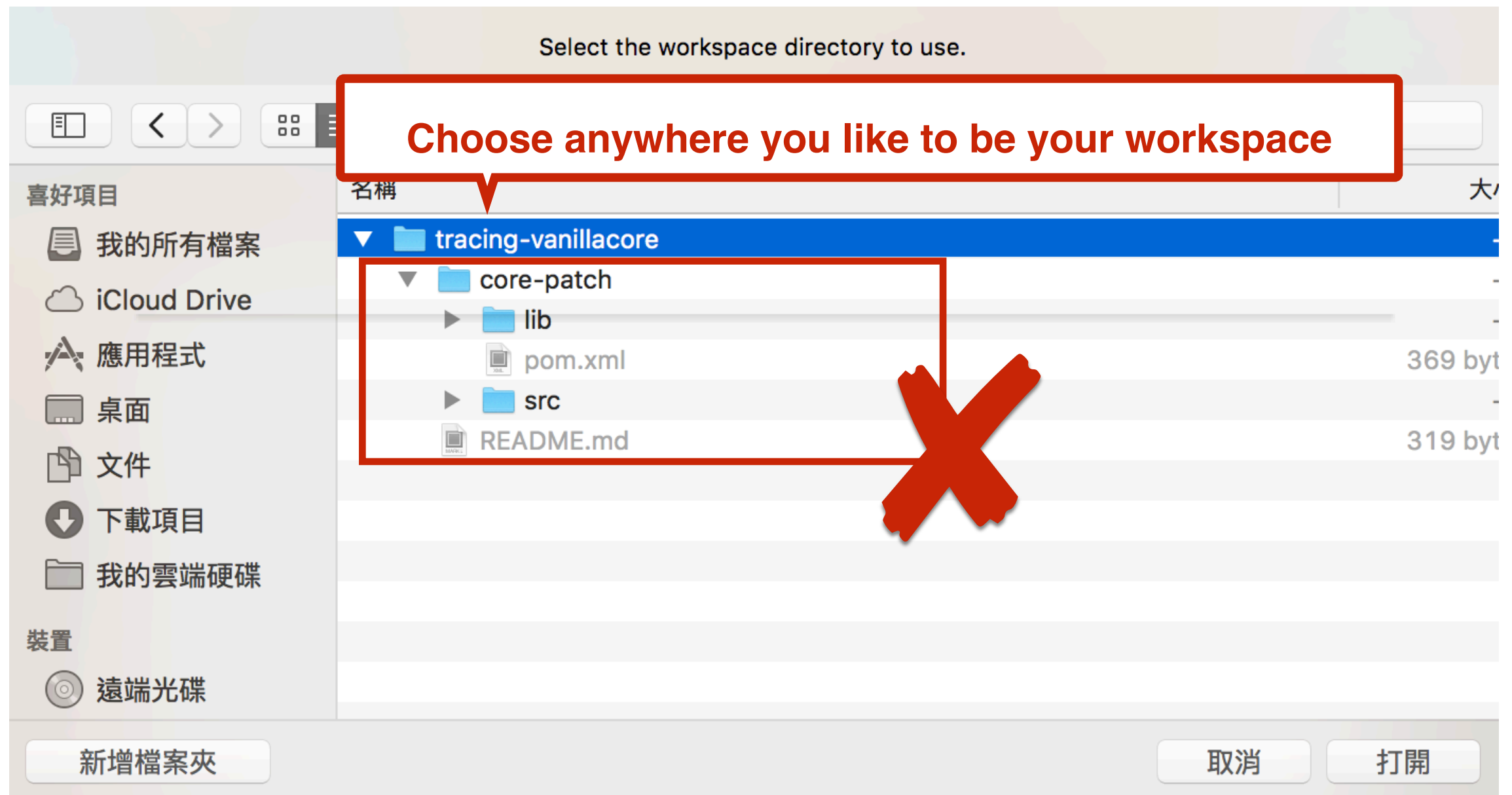
- JDK 8
 - <https://www.oracle.com/tw/java/technologies/javase/javase-jdk8-downloads.html>
- Eclipse (latest version: 2020-12)
 - <https://www.eclipse.org/downloads/packages/installer>

Downloading The Project

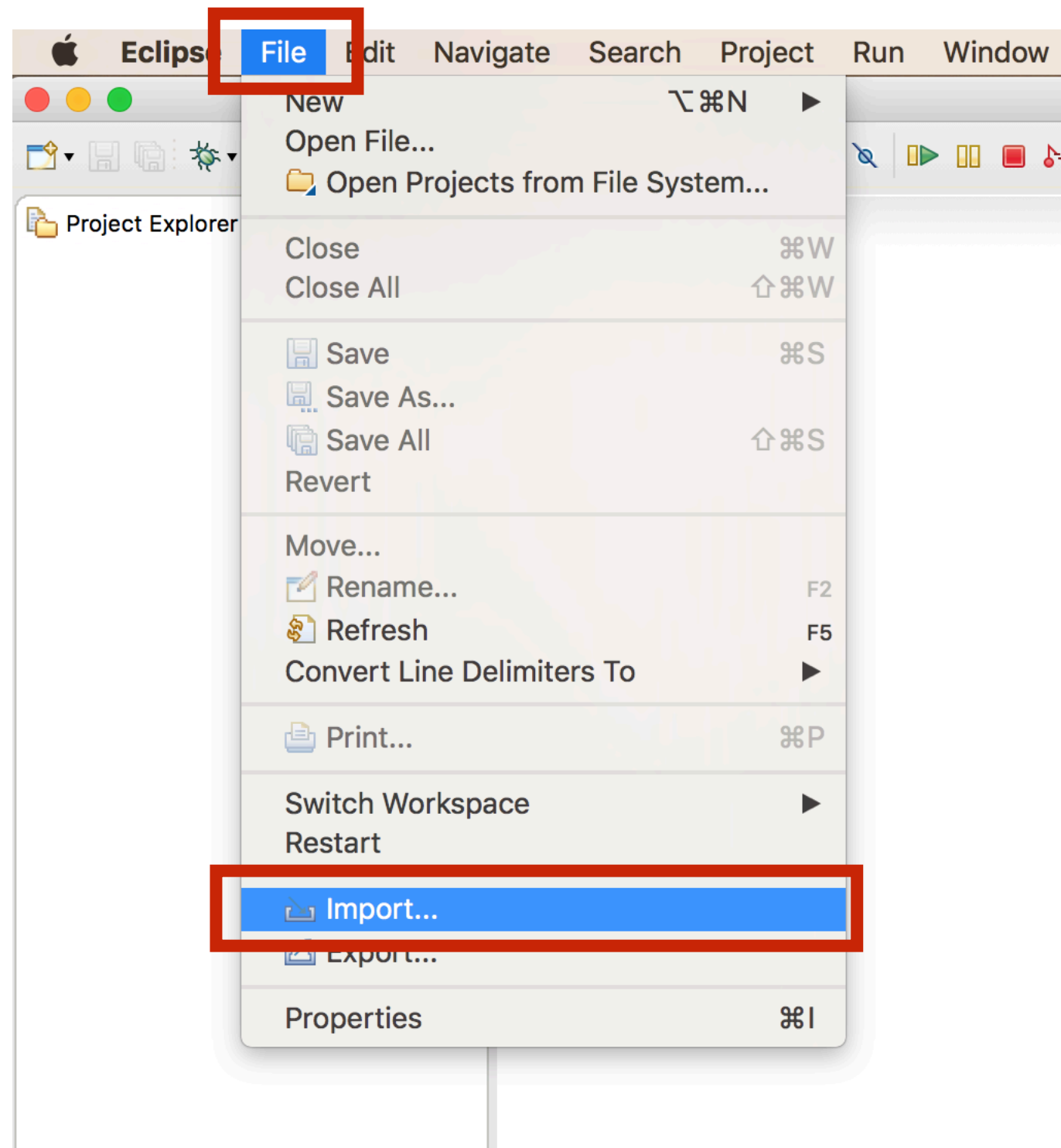
- Clone VanillaDB here
 - <https://shwu10.cs.nthu.edu.tw/courses/databases/2021-spring/vanilladb>

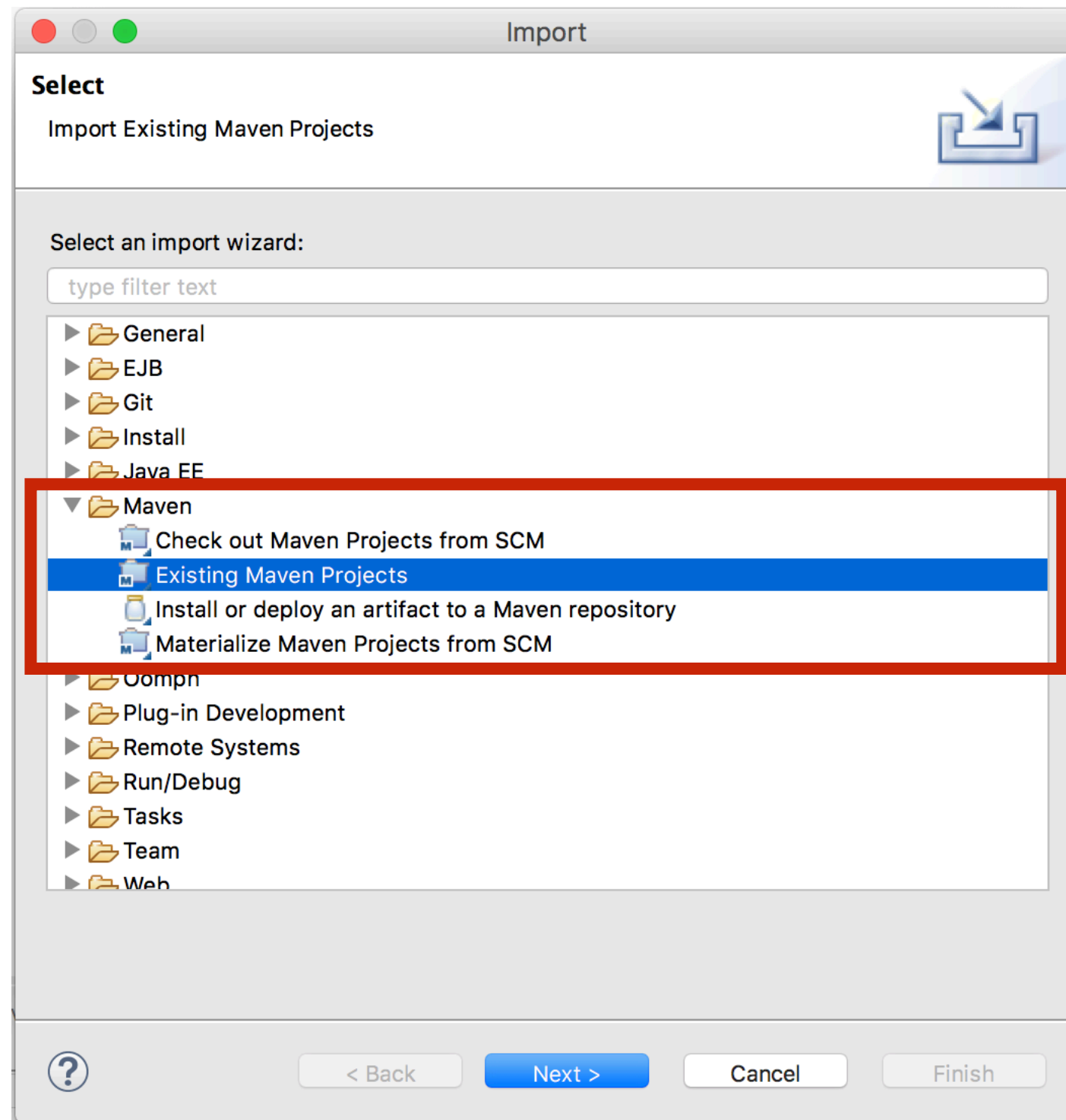
How to Import VanillaCore

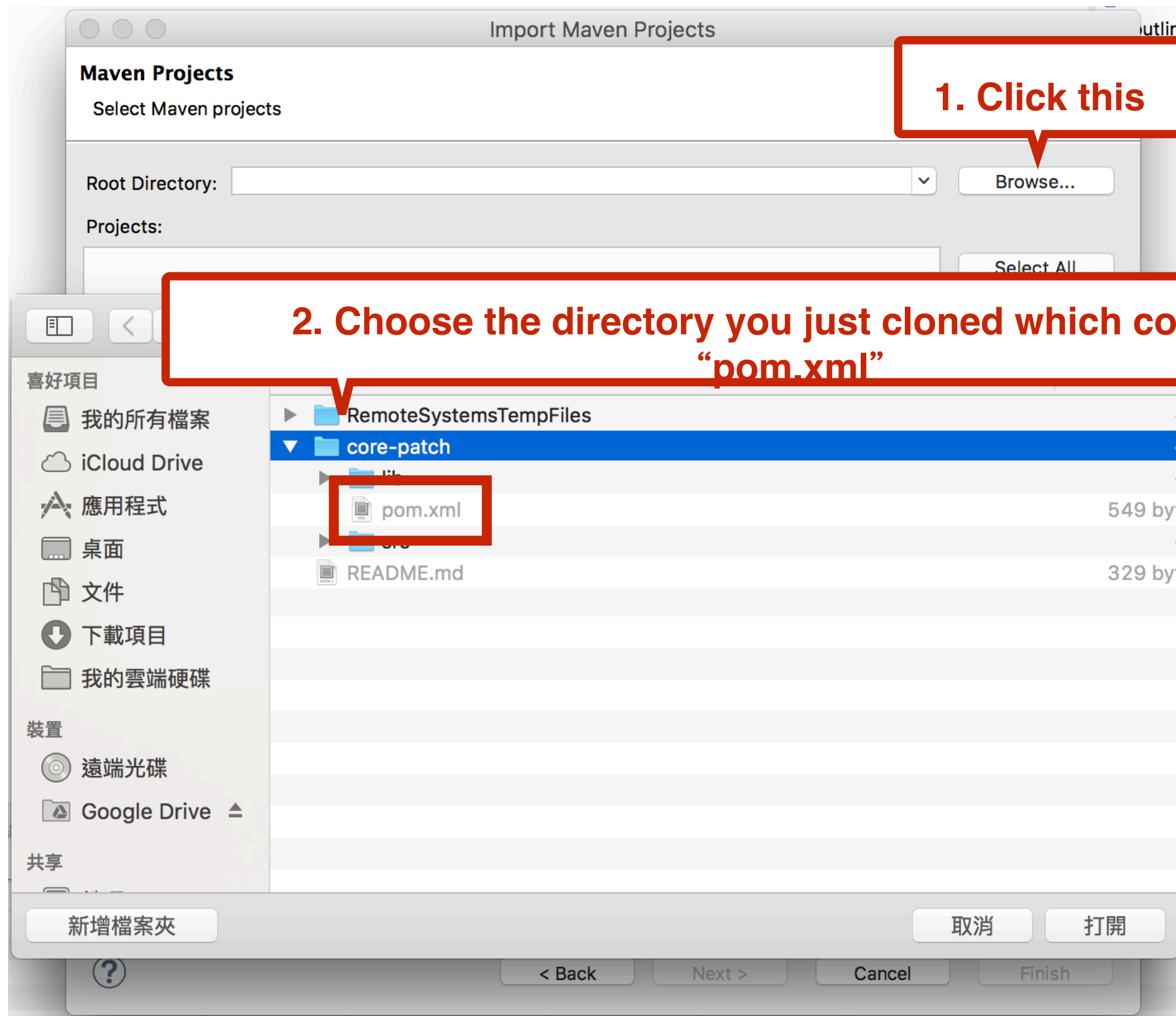


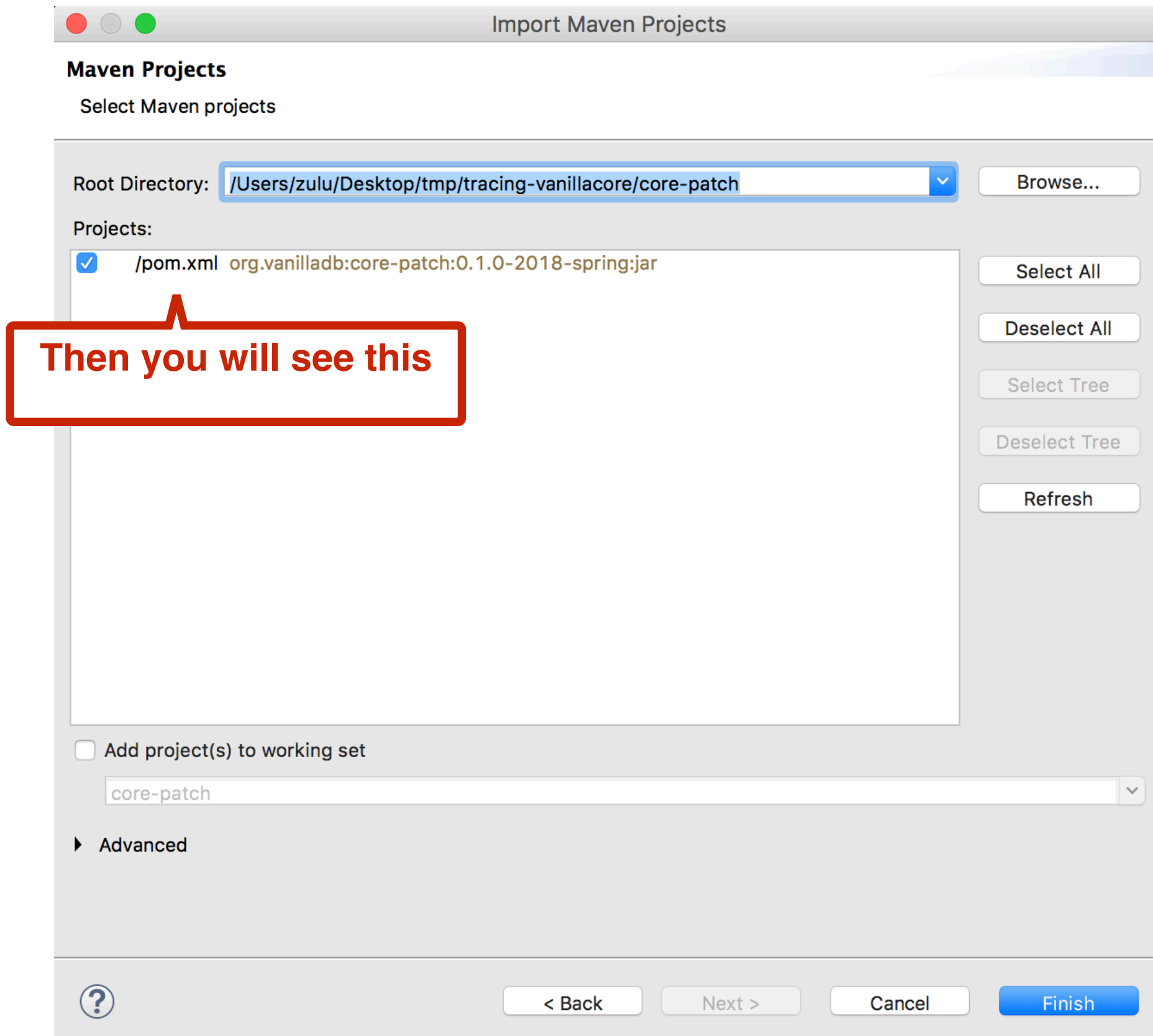


But be careful to not choose the directory which contains “pom.xml” !!

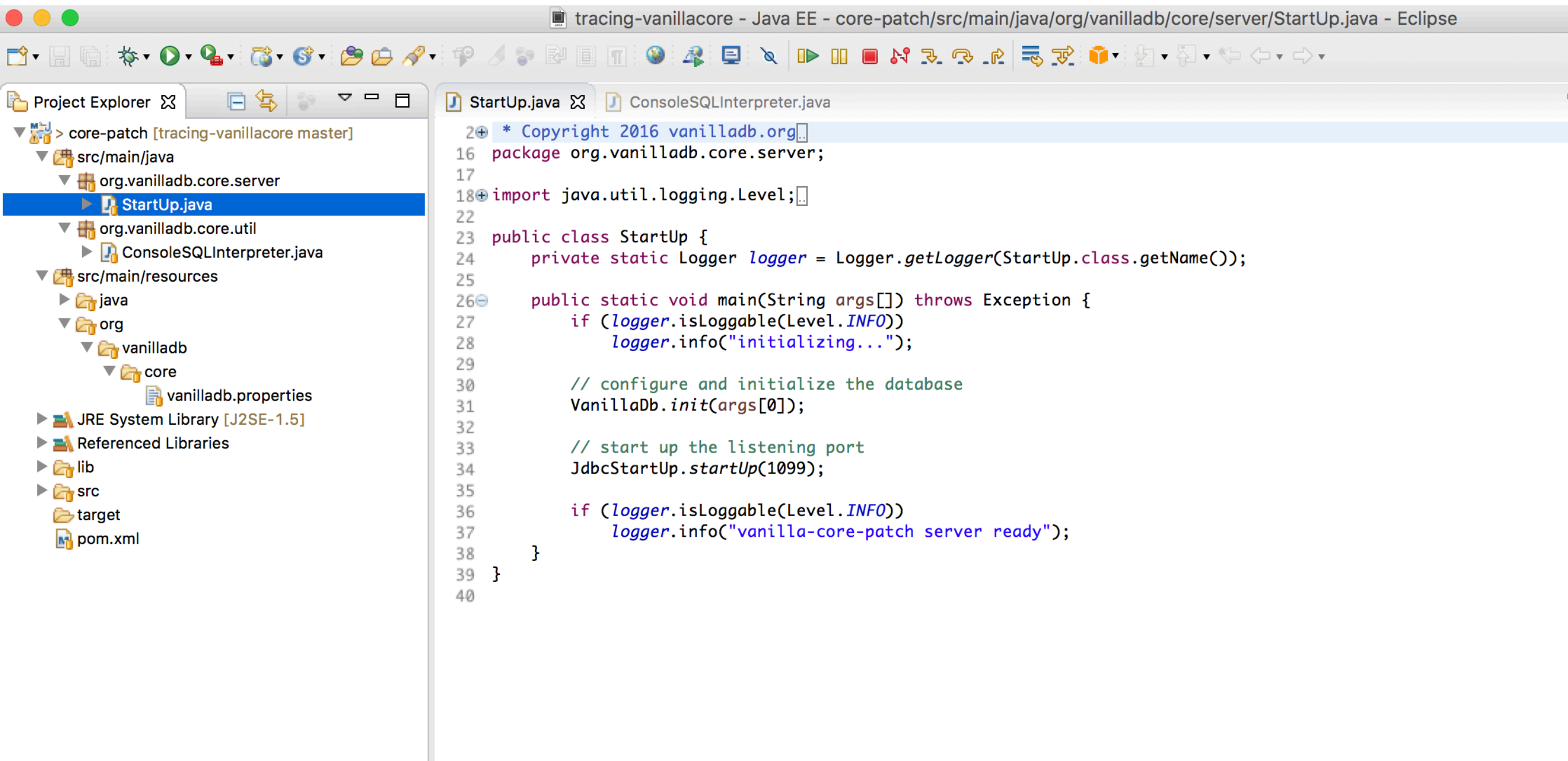








Done



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 - Console SQL Interpreter

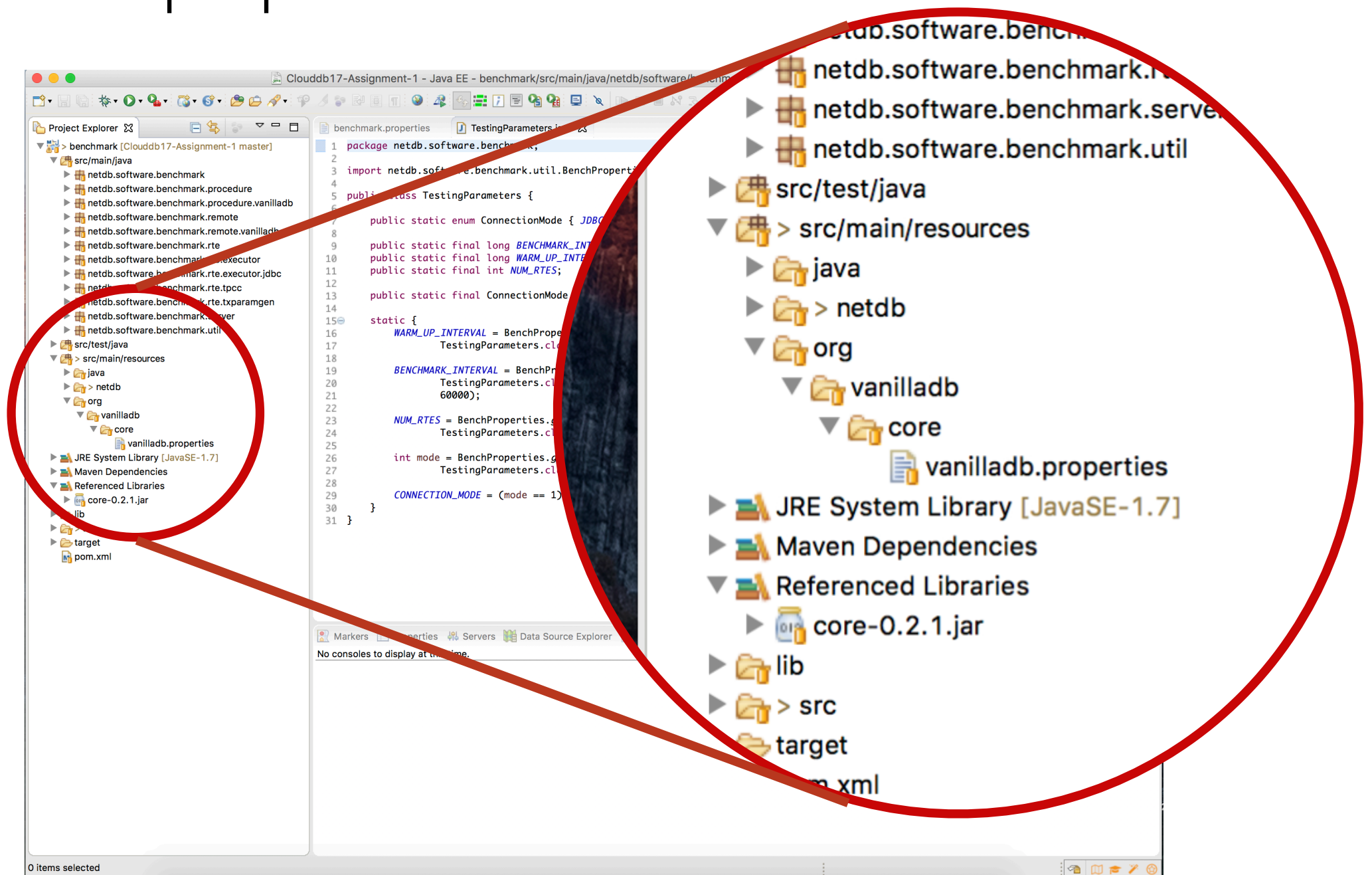
VanillaCore Properties File



- Configurations for VanillaCore are all stored in a properties file

VanillaCore Properties File

- vanilladb.properties



vanilladb.properties

```
benchmark.properties  TestingParameters.java  vanilladb.properties ✕
1 #
2 # VanillaDB configuration file
3 #
4 # This file is a single place for controlling all constant fields defined in
5 # VanillaDB classes. The path of this file should be set as a system property
6 # keyed "org.vanilladb.core.config.file" so the content will to be
7 # processed during VanillaDB initiation.
8 #
9
10
11 #
12 # File package settings
13 #
14
15 # The number of bytes in a block. A common value is 4K.
16 org.vanilladb.core.storage.file.Page.BLOCK_SIZE=4096
17 # The parent directory of database files.
18 org.vanilladb.core.storage.file.FileMgr.DB_FILES_DIR=
19 # The directory of log files.
20 org.vanilladb.core.storage.file.FileMgr.LOG_FILES_DIR=
21 org.vanilladb.core.storage.file.io.IoAllocator.USE_O_DIRECT=false
22
23
24 #
25 # Buffer package settings
26 #
27
28 # The maximum waiting time for pinning a buffer. Original value is 10 seconds.
29 org.vanilladb.core.storage.buffer.BufferMgr.MAX_TIME=10000
30 # The epsilon value for tuning waiting time.
31 org.vanilladb.core.storage.buffer.BufferMgr.EPSILON=50
32 # The size of buffer pool.
33 org.vanilladb.core.storage.buffer.BufferMgr.BUFFER_POOL_SIZE=102400
34
35
36 #
```

vanilladb.properties

```
10
11 #
12 # File package settings
13 #
14
15 # The number of bytes in a block. A common value is 4K.
16 org.vanilladb.core.storage.file.Page.BLOCK_SIZE=4096
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18 org.vanilladb.core.storage.file.FileMgr.DB_FILES_DIR=
19 # The directory of log files.
20 org.vanilladb.core.storage.file.FileMgr.LOG_FILES_DIR=
21 org.vanilladb.core.storage.file.io.IoAllocator.USE_O_DIRECT=false
22
23
```

Example of windows path: C:\\Users\\XXXX\\Downloads\\vanilladb

- Your DataBase files will be stored in this directory
- If it is empty, the Default directory would be your User directory

Outline

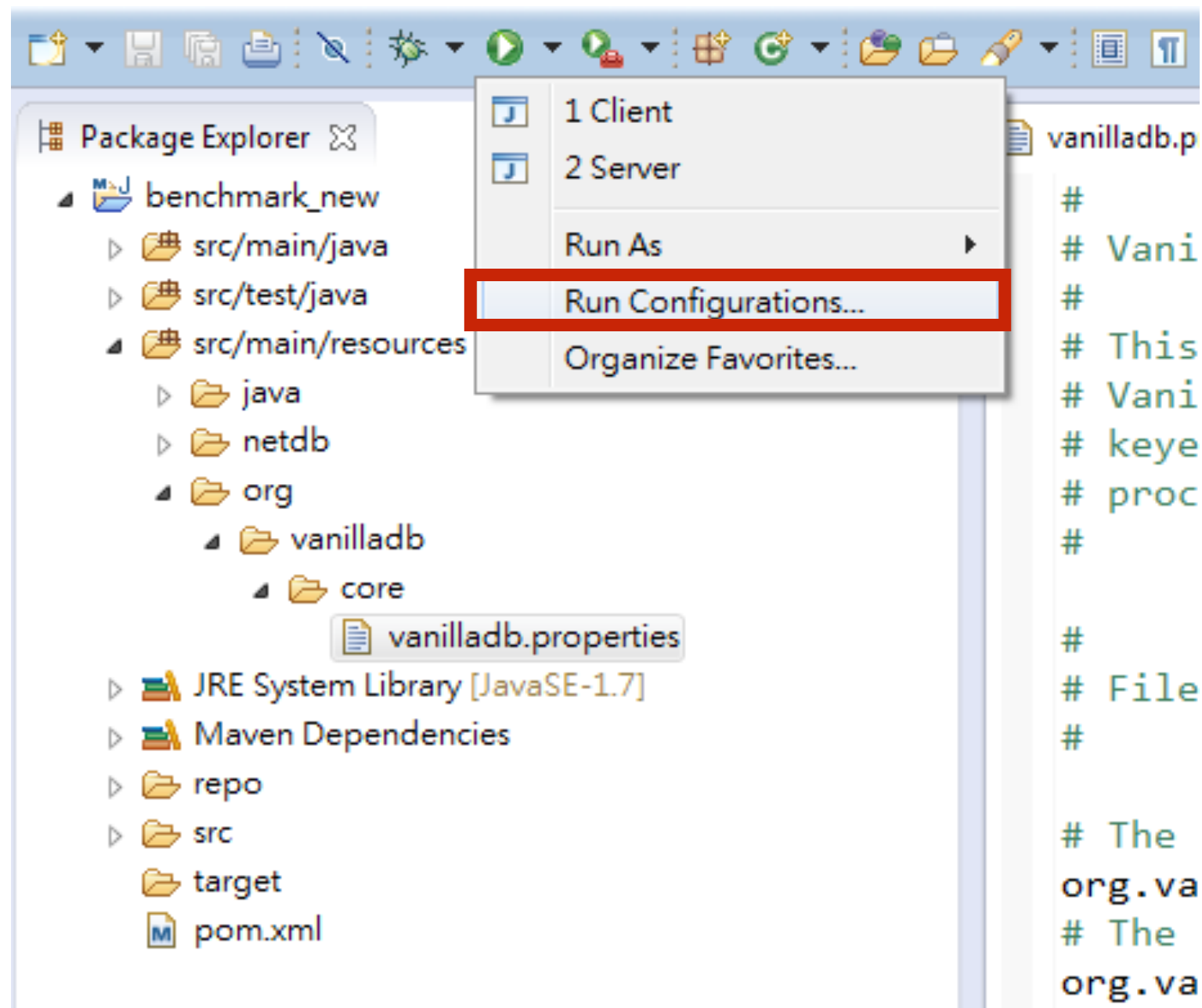
- VanillaCore
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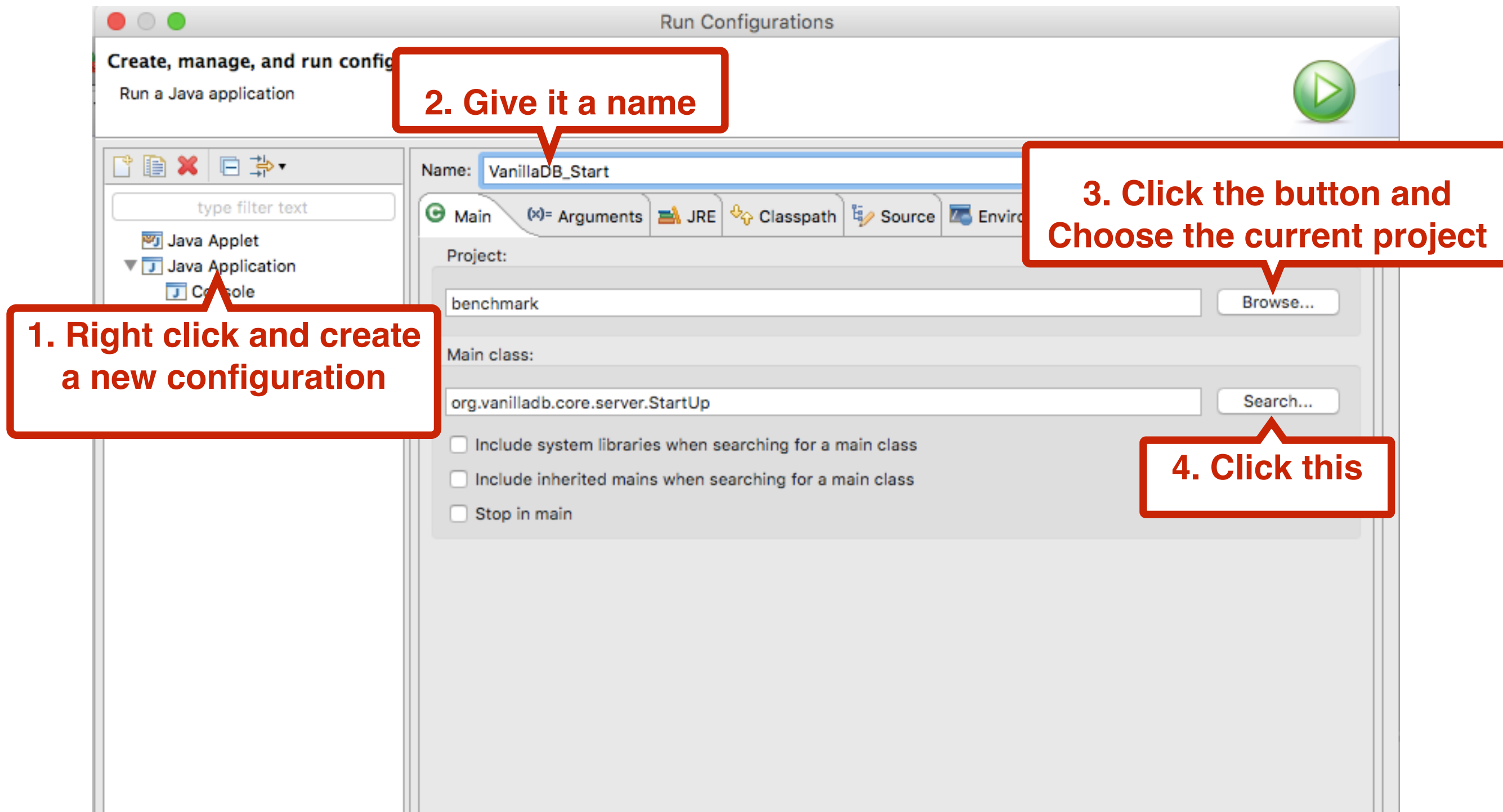
Starting Up VanillaCore

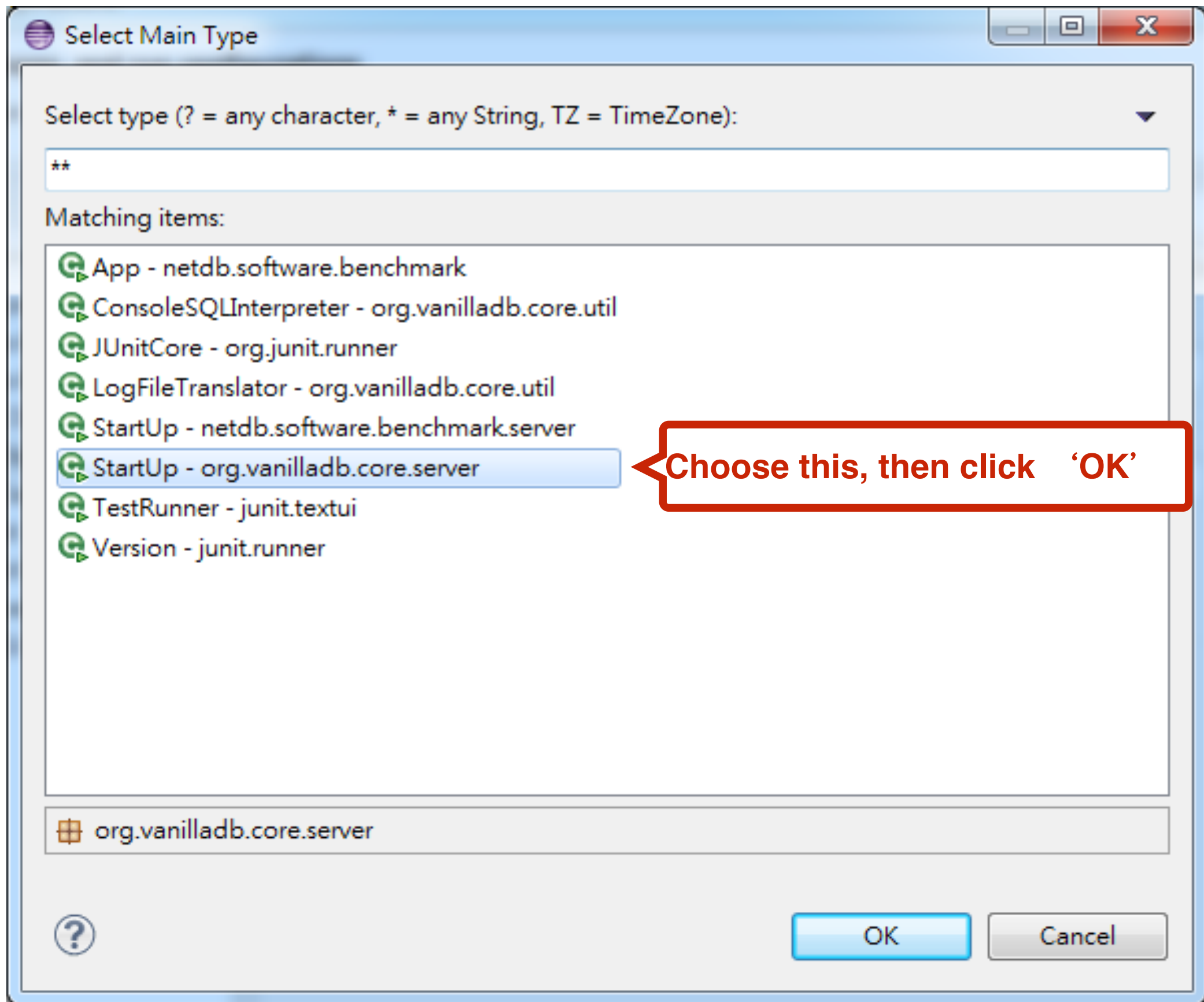


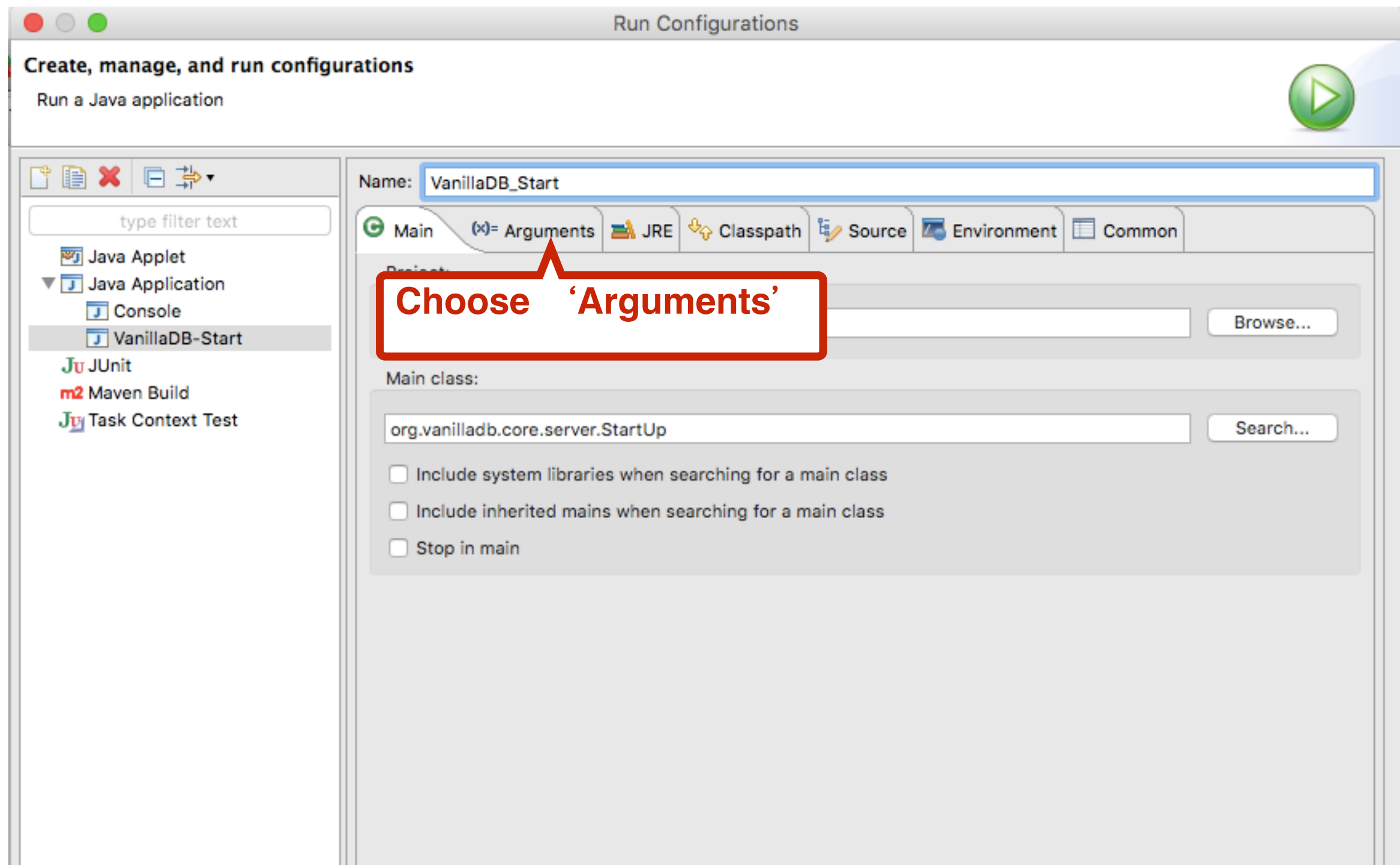
- To start up a VanillaCore server, we have to give it the following arguments
 - Database Directory Name
 - The locations of properties files

Setting Run Configuration









Arguments (1/2)

- Program Arguments
 - Format

[Database Directory Name]

- Example

student-db

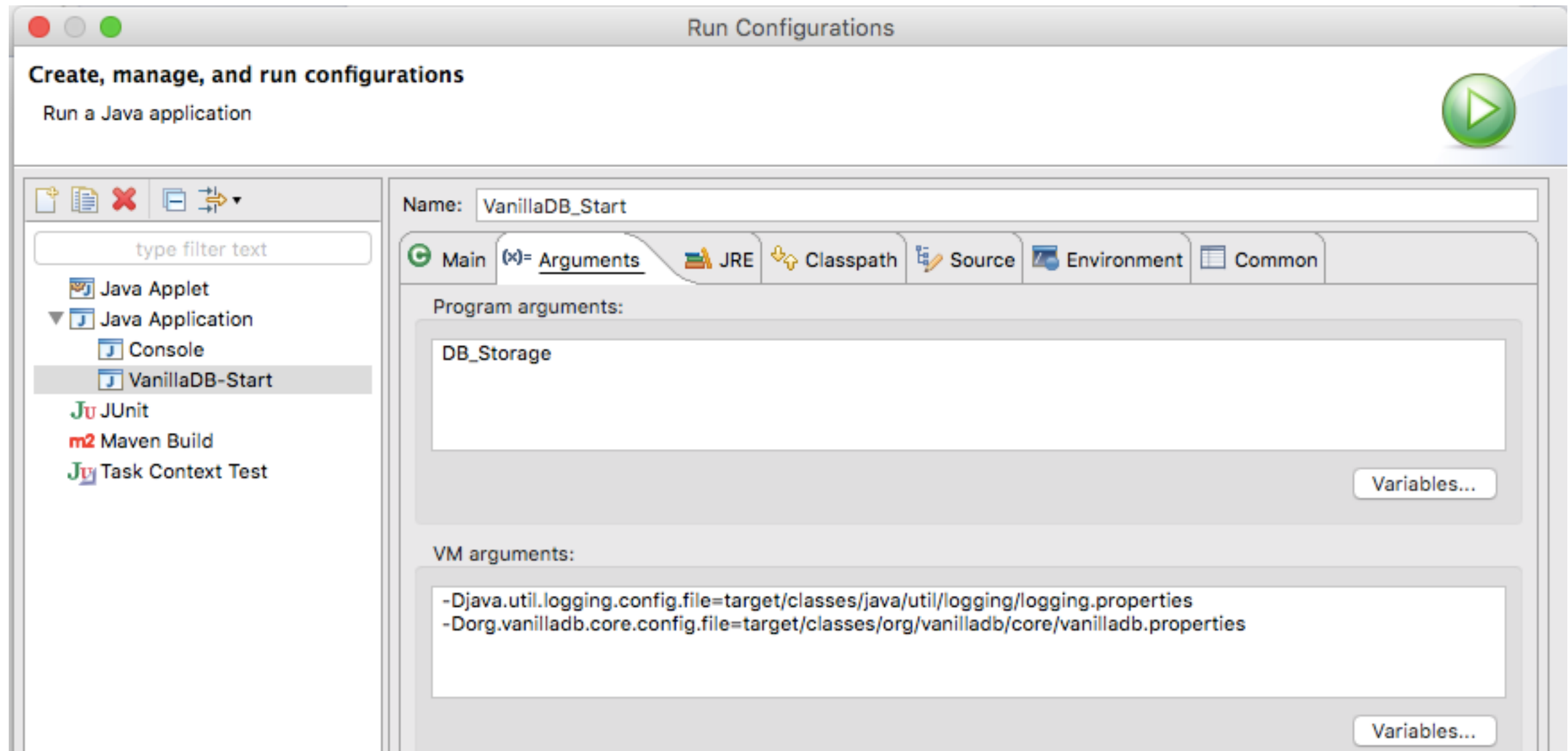
Arguments (2/2)

- VM Arguments
 - For logging properties

```
-  
Djava.util.logging.config.file=target/classes/java/util/logging/logging.properties
```

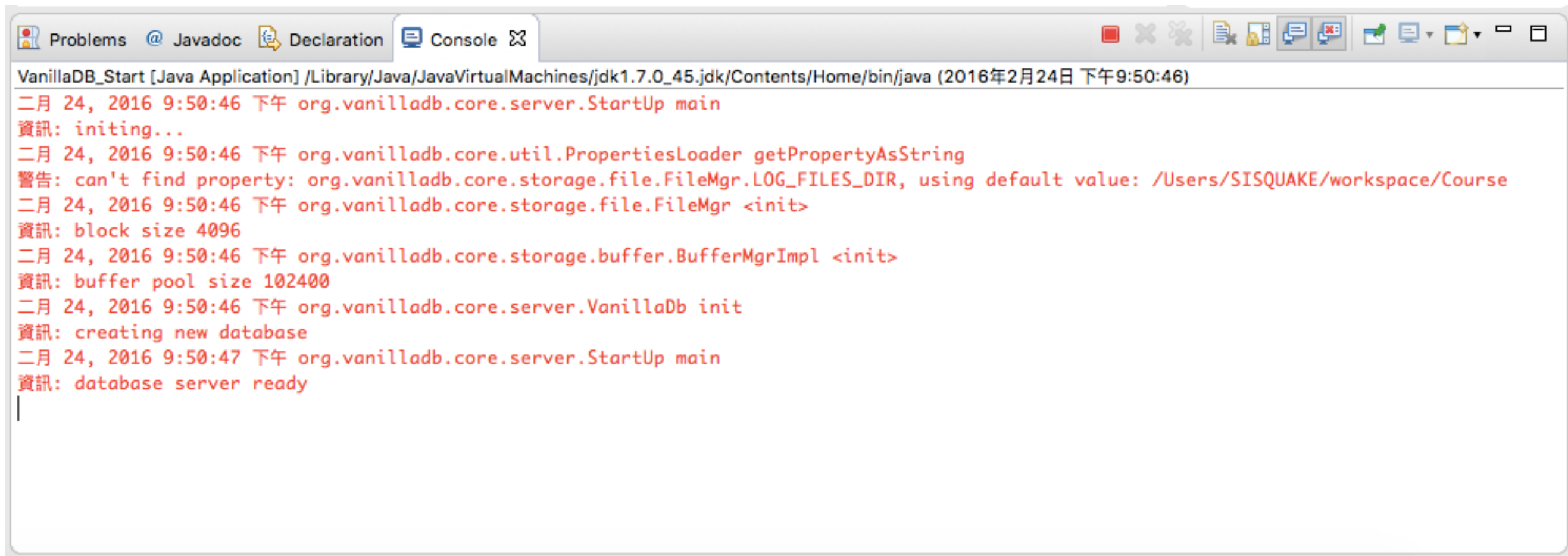
- For VanillaCore properties

```
-  
Dorg.vanilladb.core.config.file=target/classes/org/vanilladb/core/vanilladb.properties
```



You can copy those arguments from [here](#), then click 'Apply' and 'Run'

Server Messages (1/3)

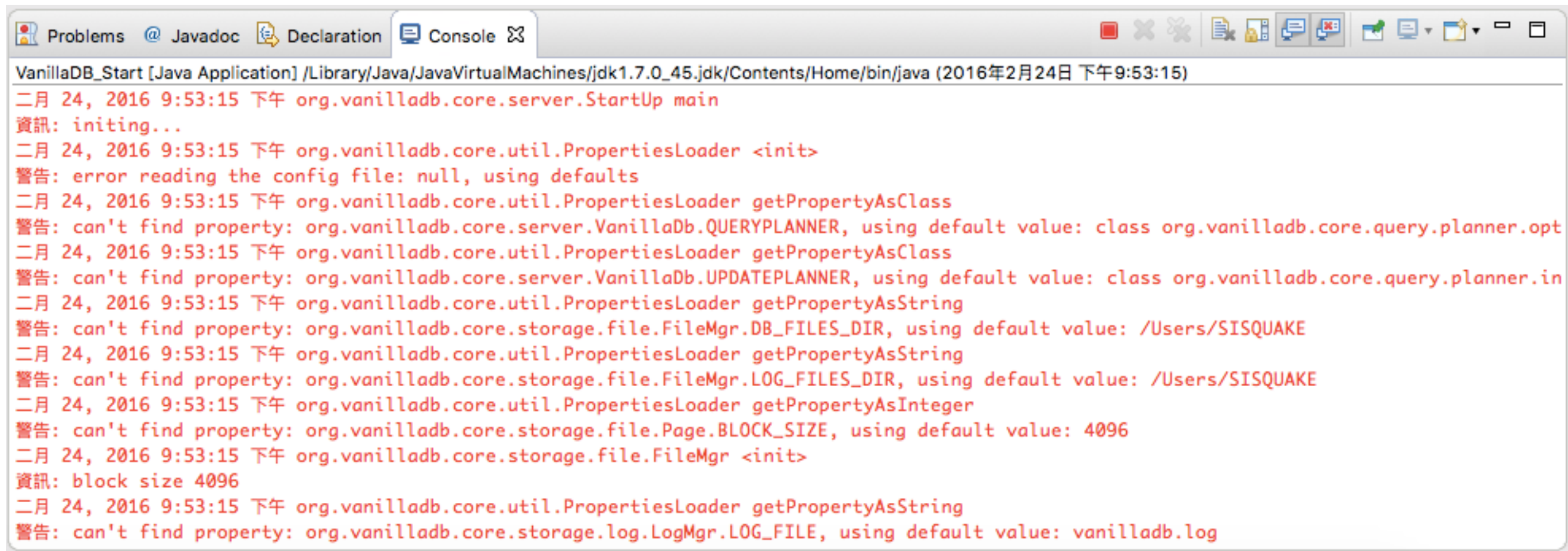


The screenshot shows an IDE console window with the following tabs: Problems, Javadoc, Declaration, and Console. The console output is as follows:

```
VanillaDB_Start [Java Application] /Library/Java/JavaVirtualMachines/jdk1.7.0_45.jdk/Contents/Home/bin/java (2016年2月24日 下午9:50:46)
二月 24, 2016 9:50:46 下午 org.vanilladb.core.server.Startup main
資訊: initing...
二月 24, 2016 9:50:46 下午 org.vanilladb.core.util.PropertiesLoader getPropertyAsString
警告: can't find property: org.vanilladb.core.storage.file.FileMgr.LOG_FILES_DIR, using default value: /Users/SISQUAKE/workspace/Course
二月 24, 2016 9:50:46 下午 org.vanilladb.core.storage.file.FileMgr <init>
資訊: block size 4096
二月 24, 2016 9:50:46 下午 org.vanilladb.core.storage.buffer.BufferMgrImpl <init>
資訊: buffer pool size 102400
二月 24, 2016 9:50:46 下午 org.vanilladb.core.server.VanillaDb init
資訊: creating new database
二月 24, 2016 9:50:47 下午 org.vanilladb.core.server.Startup main
資訊: database server ready
|
```

You should see this if there is nothing wrong.

Server Messages (2/3)



The screenshot shows an IDE console window with the following content:

```
VanillaDB_Start [Java Application] /Library/Java/JavaVirtualMachines/jdk1.7.0_45.jdk/Contents/Home/bin/java (2016年2月24日 下午9:53:15)
二月 24, 2016 9:53:15 下午 org.vanilladb.core.server.Startup main
資訊: initing...
二月 24, 2016 9:53:15 下午 org.vanilladb.core.util.PropertiesLoader <init>
警告: error reading the config file: null, using defaults
二月 24, 2016 9:53:15 下午 org.vanilladb.core.util.PropertiesLoader getPropertyAsClass
警告: can't find property: org.vanilladb.core.server.VanillaDb.QUERYPLANNER, using default value: class org.vanilladb.core.query.planner.opt
二月 24, 2016 9:53:15 下午 org.vanilladb.core.util.PropertiesLoader getPropertyAsClass
警告: can't find property: org.vanilladb.core.server.VanillaDb.UPDATEPLANNER, using default value: class org.vanilladb.core.query.planner.in
二月 24, 2016 9:53:15 下午 org.vanilladb.core.util.PropertiesLoader getPropertyAsString
警告: can't find property: org.vanilladb.core.storage.file.FileMgr.DB_FILES_DIR, using default value: /Users/SISQUAKE
二月 24, 2016 9:53:15 下午 org.vanilladb.core.util.PropertiesLoader getPropertyAsString
警告: can't find property: org.vanilladb.core.storage.file.FileMgr.LOG_FILES_DIR, using default value: /Users/SISQUAKE
二月 24, 2016 9:53:15 下午 org.vanilladb.core.util.PropertiesLoader getPropertyAsInteger
警告: can't find property: org.vanilladb.core.storage.file.Page.BLOCK_SIZE, using default value: 4096
二月 24, 2016 9:53:15 下午 org.vanilladb.core.storage.file.FileMgr <init>
資訊: block size 4096
二月 24, 2016 9:53:15 下午 org.vanilladb.core.util.PropertiesLoader getPropertyAsString
警告: can't find property: org.vanilladb.core.storage.log.LogMgr.LOG_FILE, using default value: vanilladb.log
```

If you saw any ‘Warning’ message,
you should check it carefully.

Server Messages (3/3)

- “error reading config file, using default “
 - It usually happens when you give a wrong location for a properties file
- “can’ t find property:, using default: ...”
 - It means that there is a property missing in your properties file

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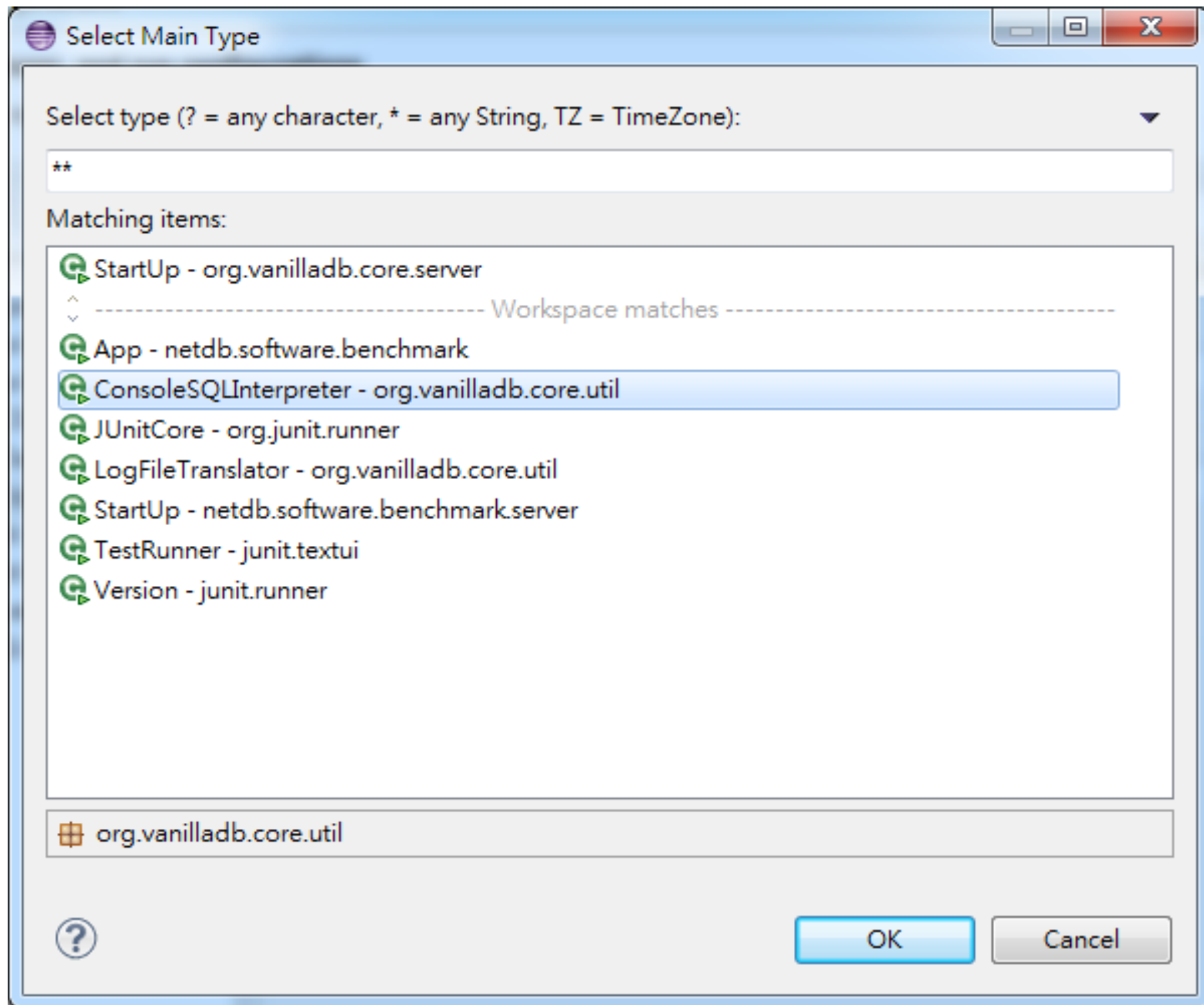
Console SQL Interpreter



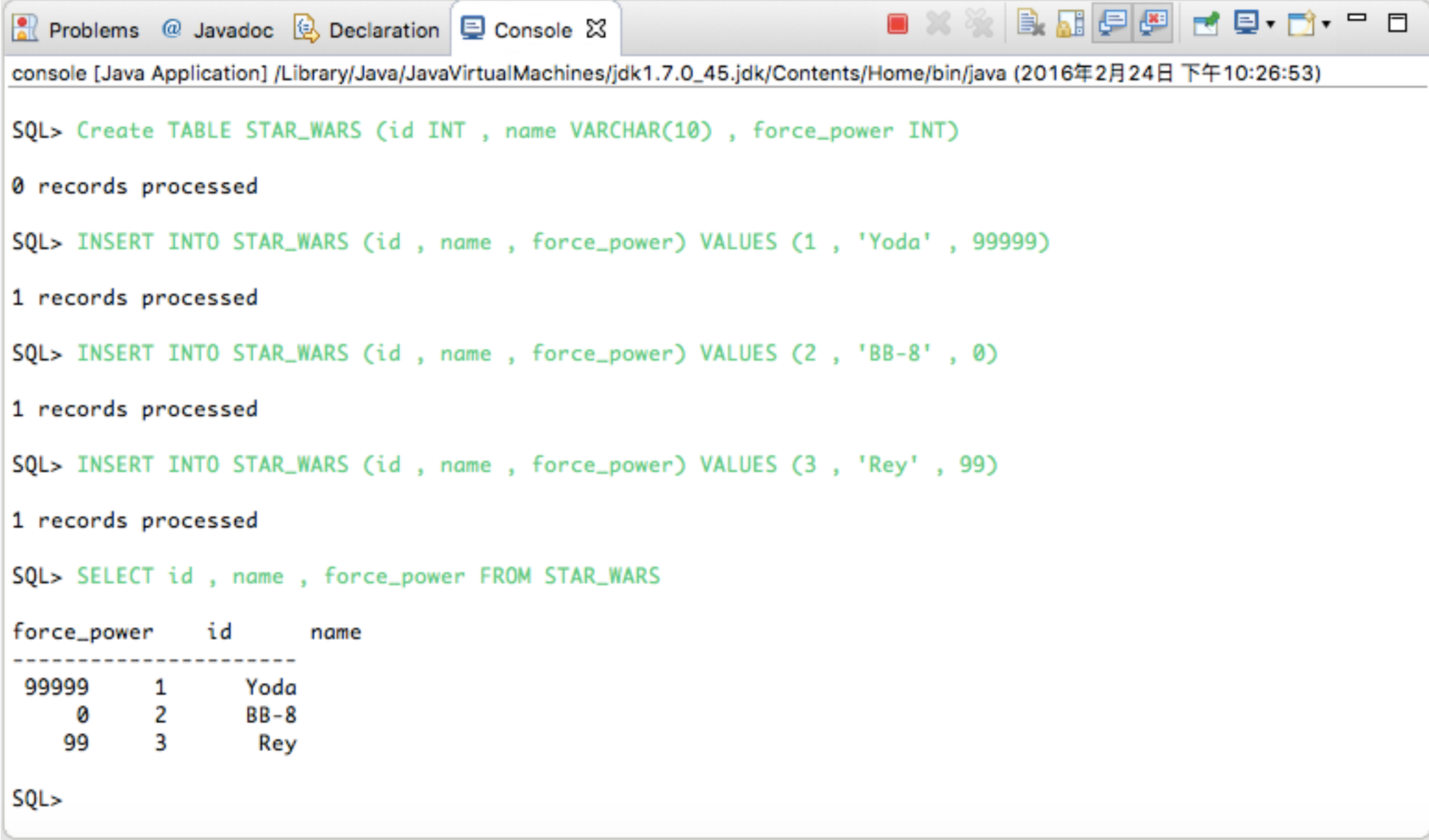
- You can use Console SQL Interpreter we provide in VanillaCore to connect with server

Console SQL Interpreter

- To use Console SQL Interpreter, just follow these steps
 1. Create a new run configuration
 2. Give it a name and choose your project
 3. Choose “**ConsoleSQLInterpreter**” for “Main Class”
 4. **No VM Argument is required**
 5. Run it



Try it !



The screenshot shows a Java IDE's console window with the following content:

```
console [Java Application] /Library/Java/JavaVirtualMachines/jdk1.7.0_45.jdk/Contents/Home/bin/java (2016年2月24日 下午10:26:53)

SQL> Create TABLE STAR_WARS (id INT , name VARCHAR(10) , force_power INT)
0 records processed

SQL> INSERT INTO STAR_WARS (id , name , force_power) VALUES (1 , 'Yoda' , 99999)
1 records processed

SQL> INSERT INTO STAR_WARS (id , name , force_power) VALUES (2 , 'BB-8' , 0)
1 records processed

SQL> INSERT INTO STAR_WARS (id , name , force_power) VALUES (3 , 'Rey' , 99)
1 records processed

SQL> SELECT id , name , force_power FROM STAR_WARS
```

force_power	id	name
99999	1	Yoda
0	2	BB-8
99	3	Rey

```
SQL>
```

Q&A

- To see what exactly queries you can use, please check here
 - https://shwu10.cs.nthu.edu.tw/courses/databases/2021-spring/faq/blob/master/Vanilladb_Sql.md
- If you got any problem, you can check here first
 - <https://shwu10.cs.nthu.edu.tw/courses/databases/2021-spring/faq>
- If your problem was very unique, just send a email let us know