Getting Started with IntelliJ

COMSM0086

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Overview

- Downloading and installing IntelliJ IDE
- Dealing with User Agreement and Licensing
- Opening an existing template project
- Installing the Java Development Kit (JDK) (including compiler, runtime and libraries)
- Running your first Java program !

Note: We will skim through these slides quite quickly now
Work through them at your own pace in practical session

Do you need to install ?

You don't HAVE to install IntelliJ on your laptop
The lab machines are fully installed and set up:

```
/opt/idea/2025/bin/idea.sh
```

License Server: http://ls-jetbrains.bris.ac.uk:8080

HOWEVER

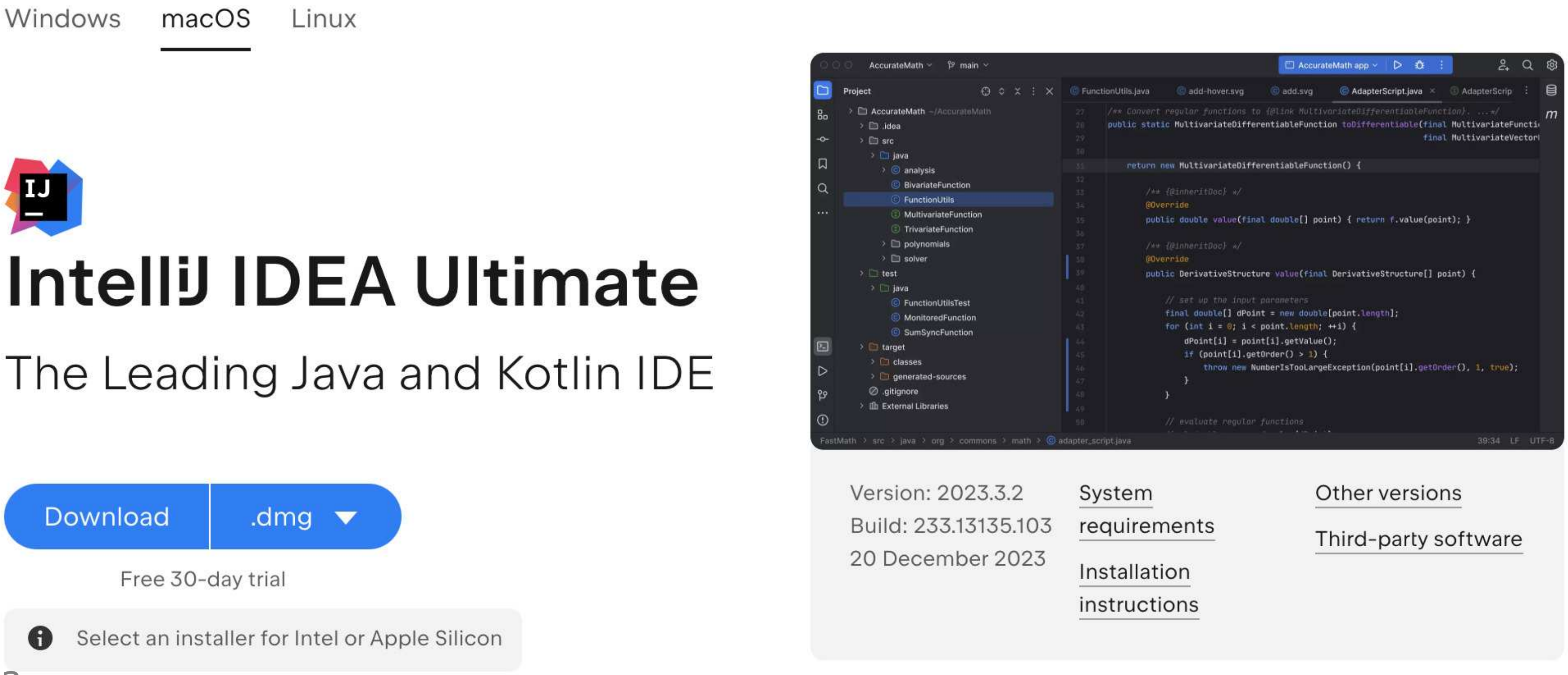
Many people choose to work on their own machines
Just so they can work from home (and at any time)

If you do decide to install, here are a few tips...

Download from JetBrains

Make sure you get the download for your platform !

(Website *should* autodetect to the right version)



Windows macOS Linux

IntelliJ IDEA Ultimate

The Leading Java and Kotlin IDE

Download .dmg

Free 30-day trial

Select an installer for Intel or Apple Silicon

```
/** Convert regular functions to {@link MultivariateDifferentiableFunction}. ...*/
public static MultivariateDifferentiableFunction toDifferentiable(final MultivariateFuncti
                                                                   final MultivariateVector

    return new MultivariateDifferentiableFunction() {

        /** {@inheritDoc} */
        @Override
        public double value(final double[] point) { return f.value(point); }

        /** {@inheritDoc} */
        @Override
        public DerivativeStructure value(final DerivativeStructure[] point) {

            // set up the input parameters
            final double[] dPoint = new double[point.length];
            for (int i = 0; i < point.length; ++i) {
                dPoint[i] = point[i].getValue();
                if (point[i].getOrder() > 1) {
                    throw new NumberIsTooLargeException(point[i].getOrder(), 1, true);
                }
            }

            // evaluate regular functions
```

Version: 2023.3.2
Build: 233.13135.103
20 December 2023

System requirements

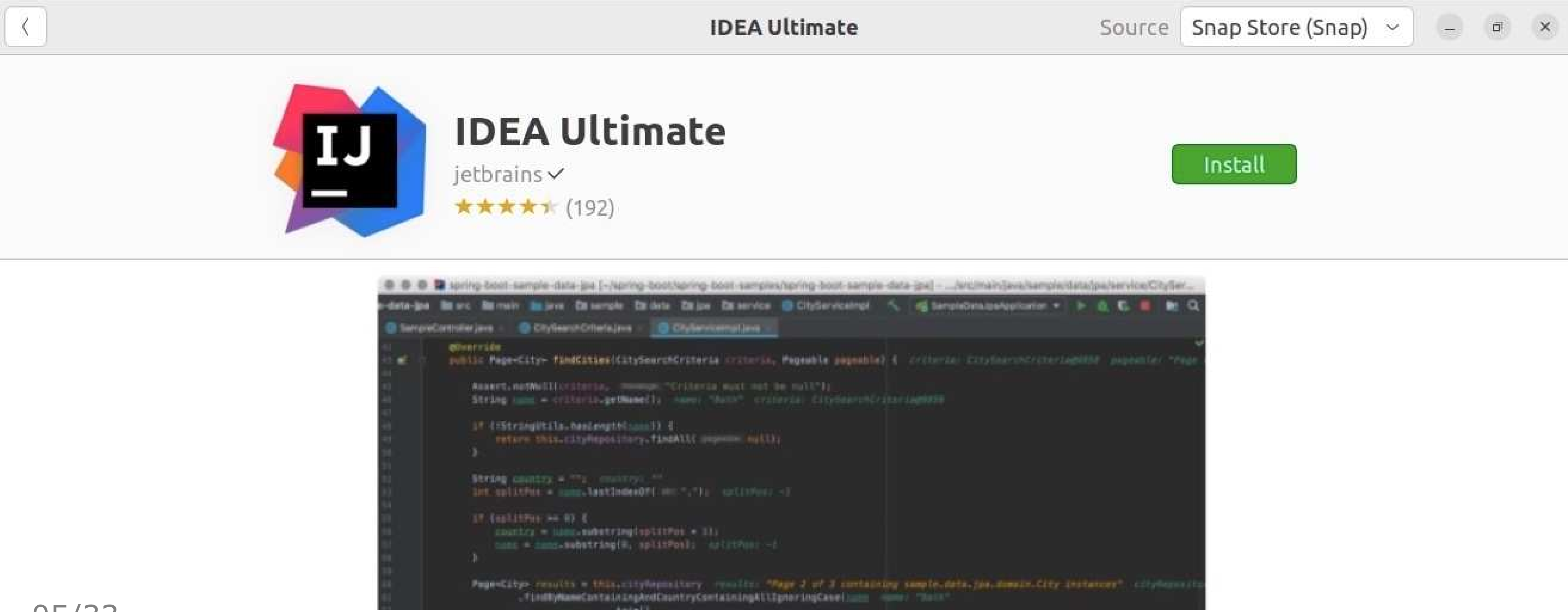
Installation instructions

Other versions

Third-party software

Alternative Approach

IntelliJ might be available through your platform's Package Manager (if it has one !)



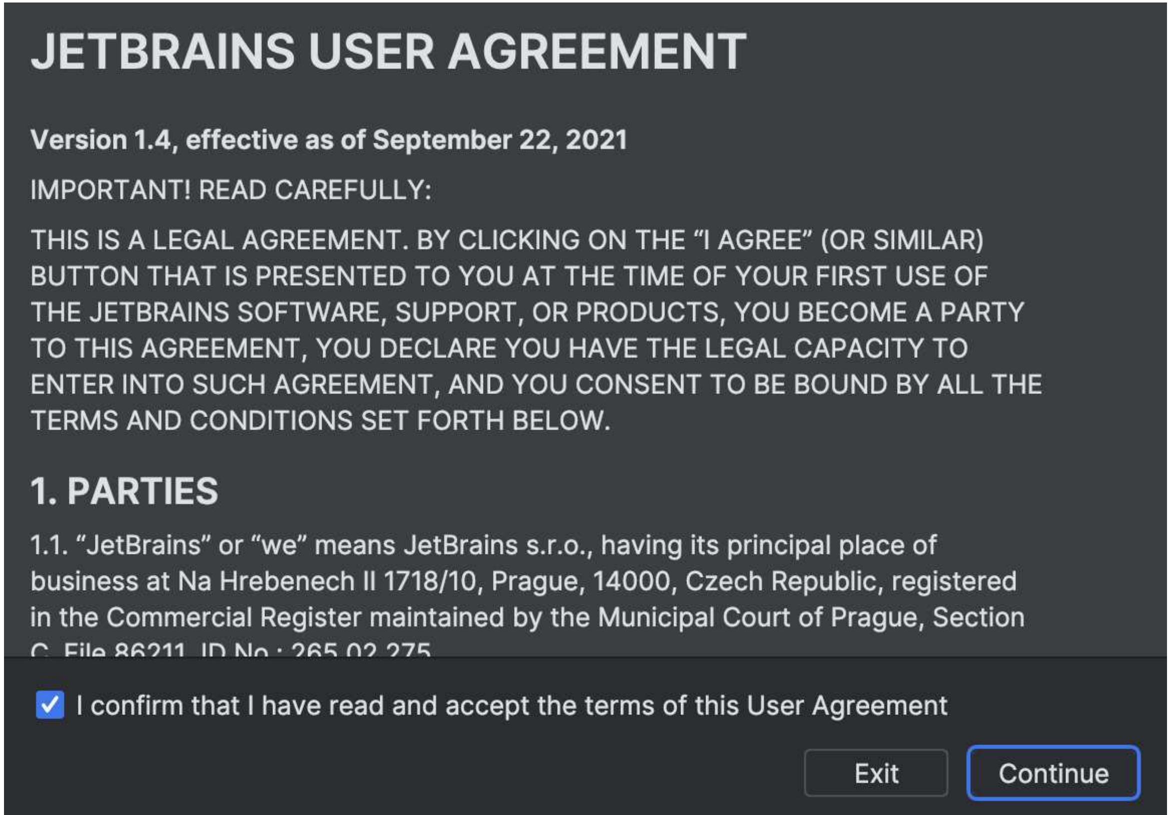
```
@Override
public Page<City> findCities(CitySearchCriteria criteria, Pageable pageable) {  criteria: CitySearchCriteria@6858  pageable: "Page

    Assert.notNull(criteria, message: "Criteria must not be null");
    String name = criteria.getName();  name: "Bath"  criteria: CitySearchCriteria@6858

    if (!StringUtils.hasLength(name)) {
        return this.cityRepository.findAll( pageable: null);
    }

    String country = "";  country: ""
    int splitPos = name.lastIndexOf( str: ",");  splitPos: -1

    if (splitPos >= 0) {
        country = name.substring(splitPos + 1);
        name = name.substring(0, splitPos);  splitPos: -1
    }

    Page<City> results = this.cityRepository  results: "Page 2 of 3 containing sample.data.jpa.domain.City instances"  cityReposito
            .findByNameContainingAndCountryContainingAllIgnoringCase(name,  name: "Bath"
```

Install as normal (for your platform) !

User Agreement

First time you run IntelliJ, you'll see User Agreement

Tick the box and click continue if you are happy !



JETBRAINS USER AGREEMENT

Version 1.4, effective as of September 22, 2021

IMPORTANT! READ CAREFULLY:

THIS IS A LEGAL AGREEMENT. BY CLICKING ON THE “I AGREE” (OR SIMILAR) BUTTON THAT IS PRESENTED TO YOU AT THE TIME OF YOUR FIRST USE OF THE JETBRAINS SOFTWARE, SUPPORT, OR PRODUCTS, YOU BECOME A PARTY TO THIS AGREEMENT, YOU DECLARE YOU HAVE THE LEGAL CAPACITY TO ENTER INTO SUCH AGREEMENT, AND YOU CONSENT TO BE BOUND BY ALL THE TERMS AND CONDITIONS SET FORTH BELOW.

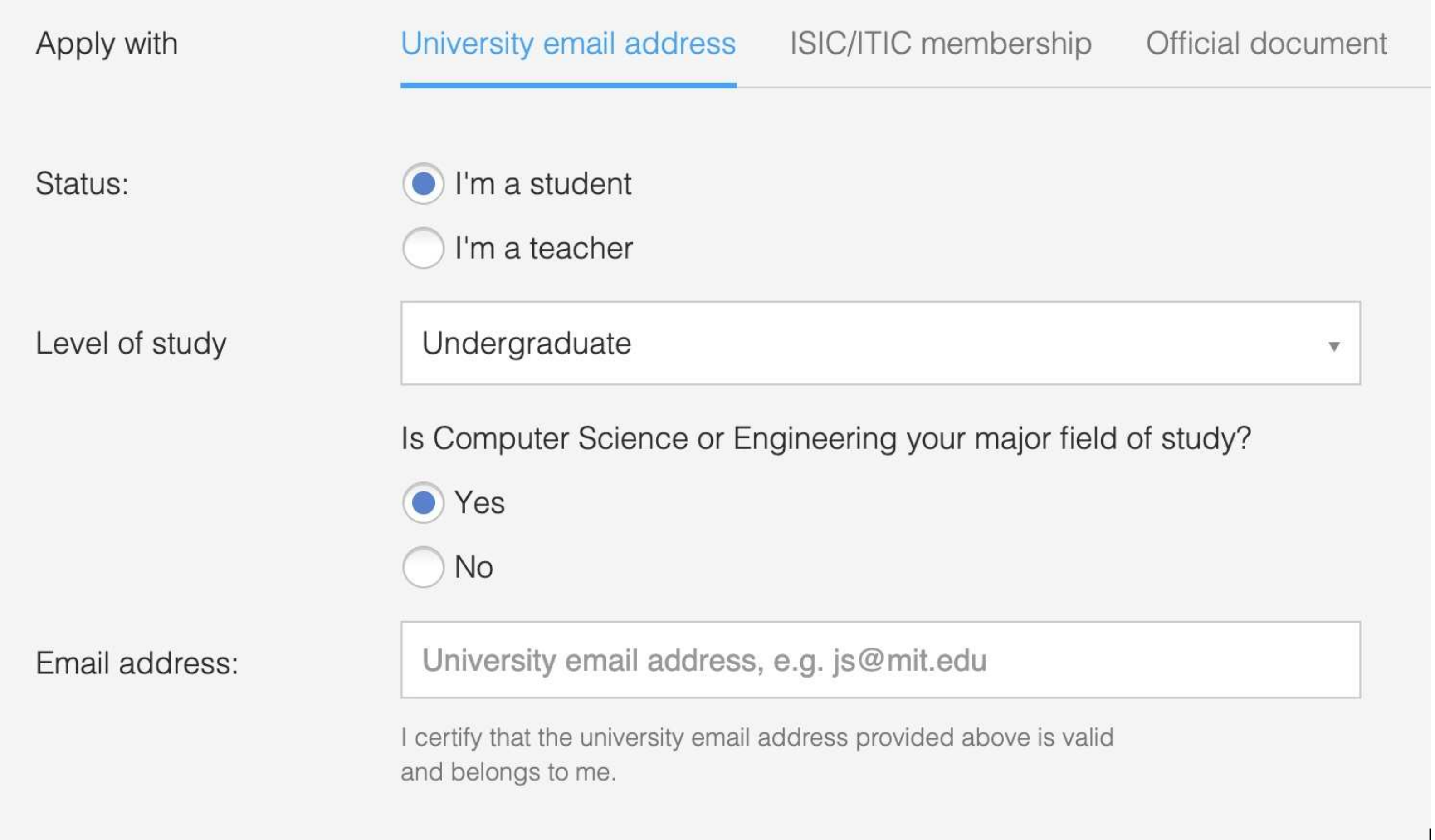
1. PARTIES

1.1. “JetBrains” or “we” means JetBrains s.r.o., having its principal place of business at Na Hrebenech II 1718/10, Prague, 14000, Czech Republic, registered in the Commercial Register maintained by the Municipal Court of Prague, Section C, File 86211, ID No.: 265 02 275

☑ I confirm that I have read and accept the terms of this User Agreement

Register for an Educational License

https://jetbrains.com/community/education/#students



Status: ● I'm a student ○ I'm a teacher

Level of study: Undergraduate ▾

Is Computer Science or Engineering your major field of study?

● Yes

○ No

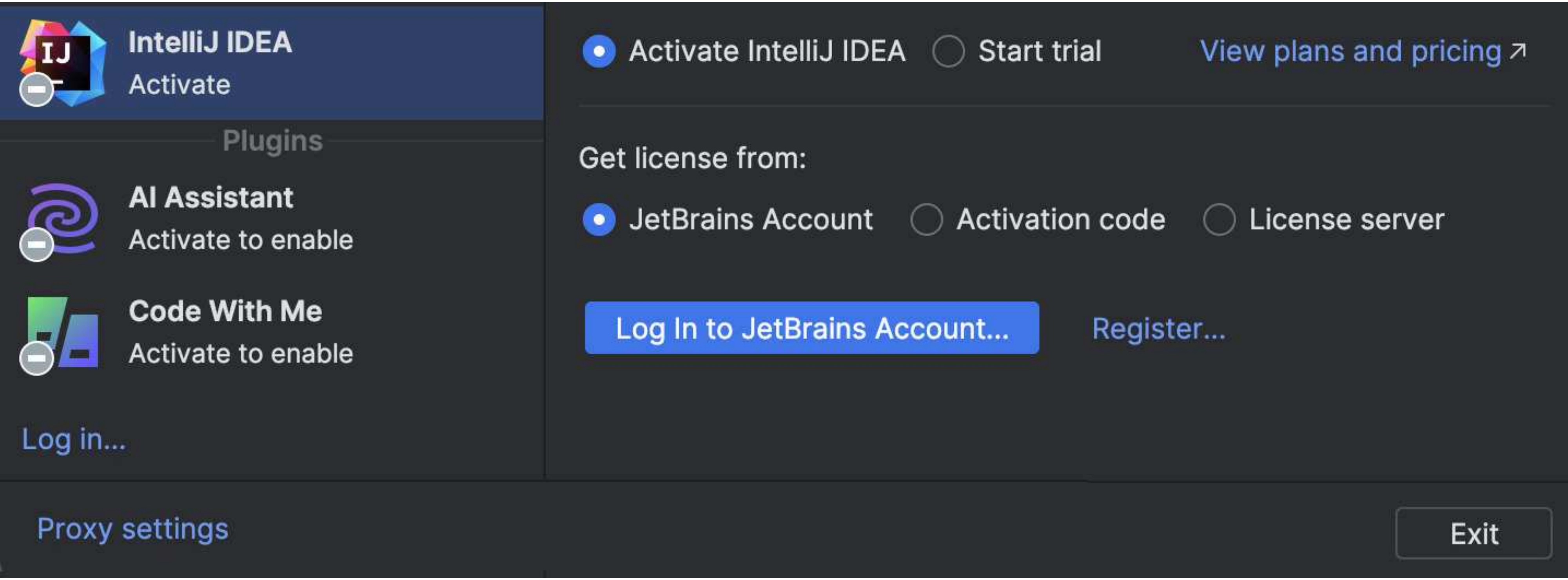
Email address: University email address, e.g. js@mit.edu

I certify that the university email address provided above is valid and belongs to me.

License Settings

"Log In to JetBrains" if you have an educational license

"Start Trial" if you haven't yet registered with JetBrains



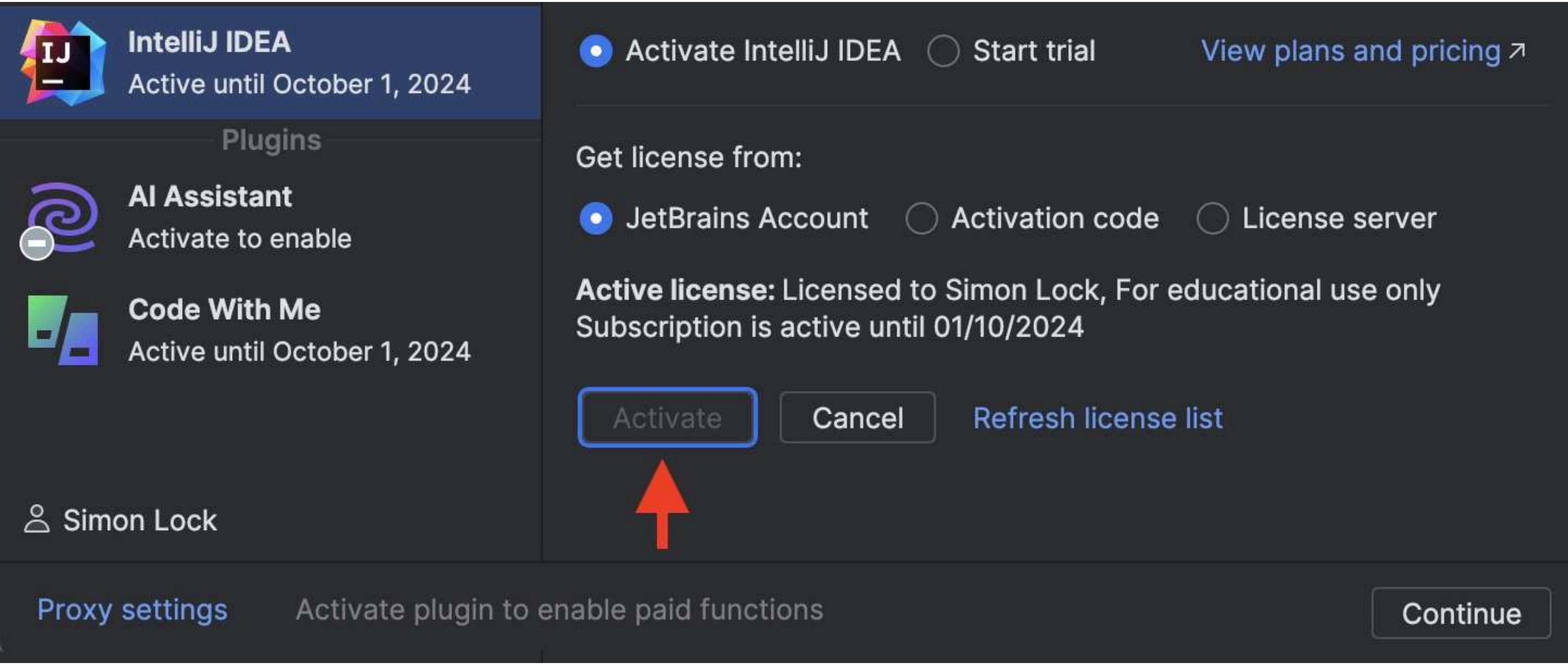
● Activate IntelliJ IDEA ○ Start trial

Get license from:

● JetBrains Account ○ Activation code ○ License server

Final Step for Educational License

Make sure you click the "Activate" button !



IntelliJ IDEA
Active until October 1, 2024

Plugins

AI Assistant
Activate to enable

Code With Me
Active until October 1, 2024

Simon Lock

● Activate IntelliJ IDEA ○ Start trial

View plans and pricing ↗

Get license from:

● JetBrains Account ○ Activation code ○ License server

Active license: Licensed to Simon Lock, For educational use only
Subscription is active until 01/10/2024

And that should provide you with
the same software as on the lab machines

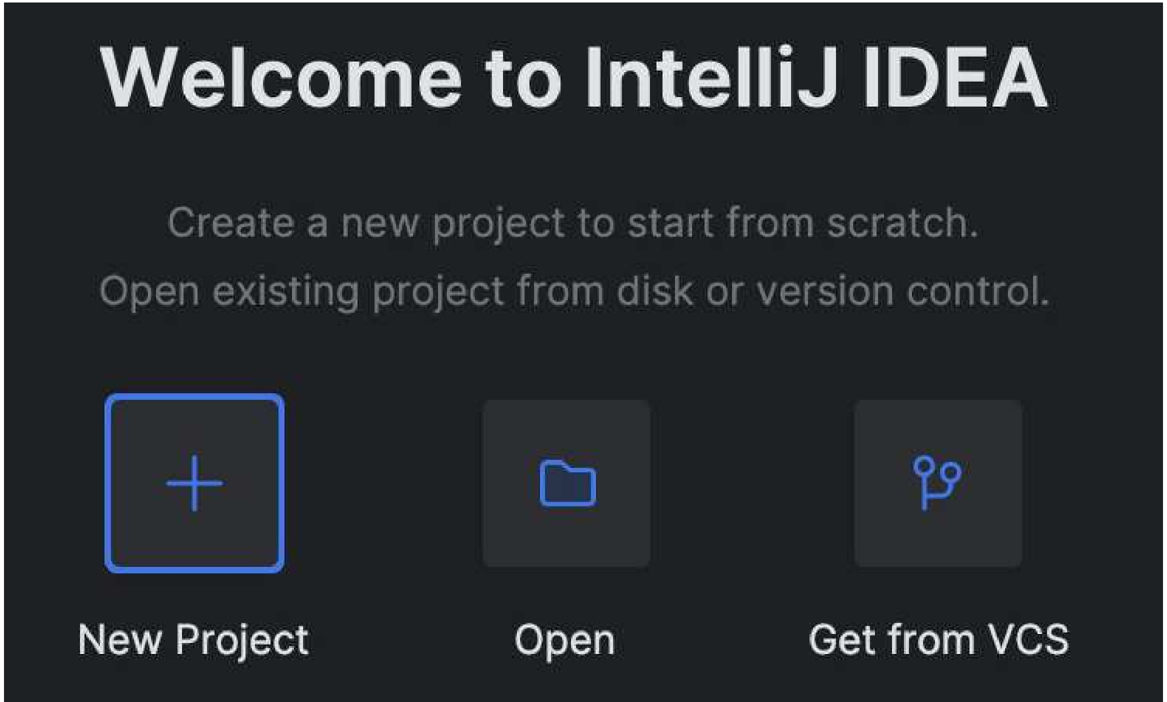
Once you have the IDE installed...
How do we go about compiling and running code ?

Welcome Screen

Most of the time on this unit you'll need "Open"

This is because we provide blank template projects

(Although you do get to practice creating a new project)

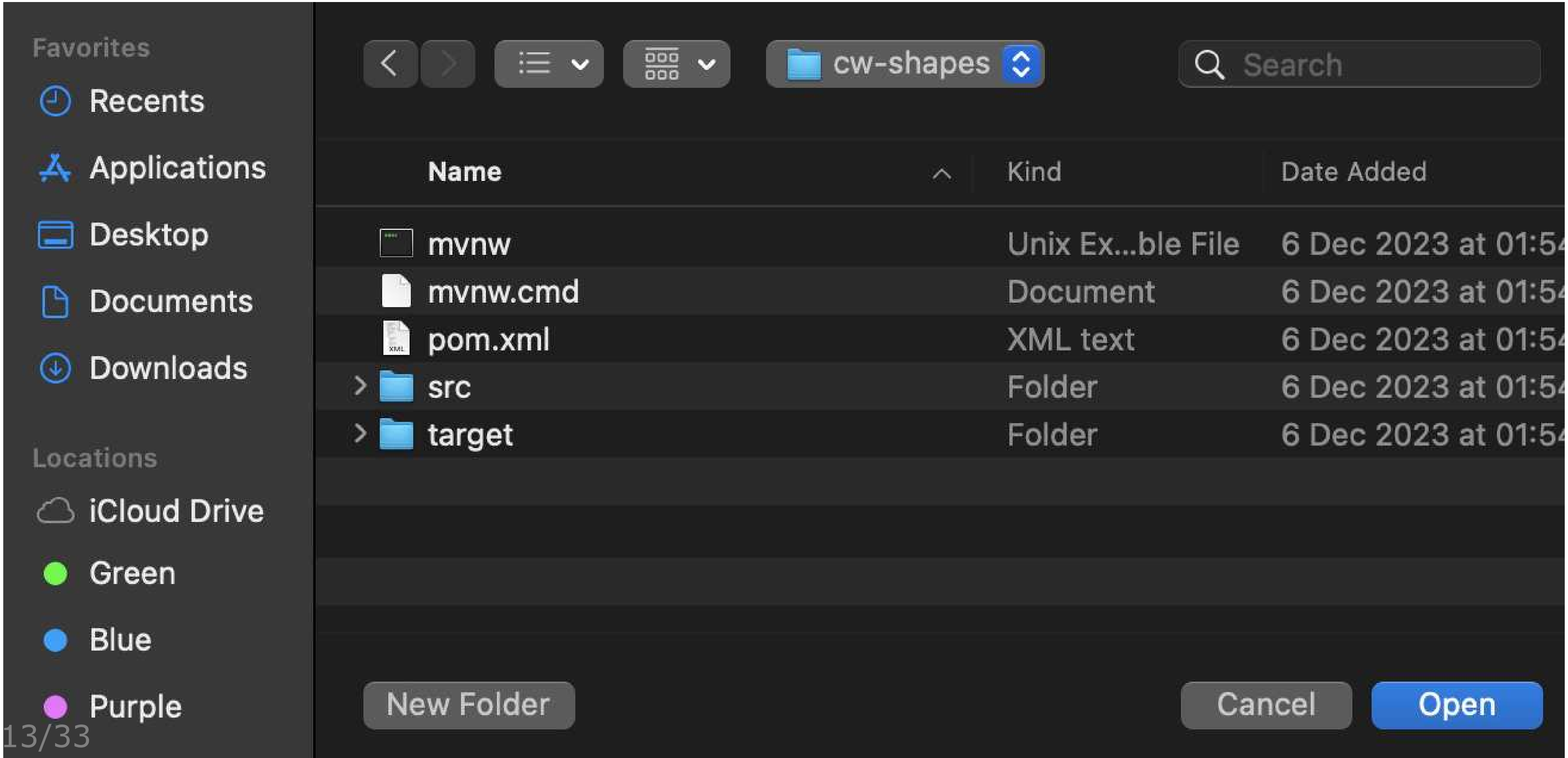


Welcome to IntelliJ IDEA

Create a new project to start from scratch.
Open existing project from disk or version control.

Typical Project Template

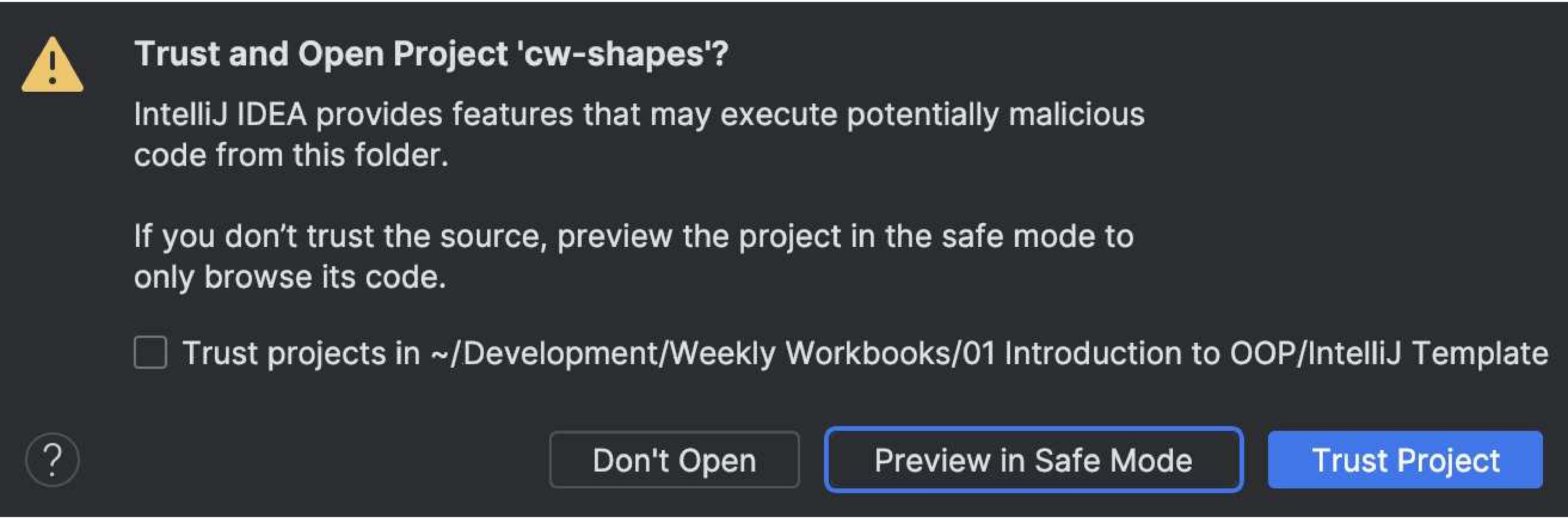
Find and open the FOLDER containing the pom.xml file



Name	Kind	Date Added
mvnw	Unix Ex...ble File	6 Dec 2023 at 01:54
mvnw.cmd	Document	6 Dec 2023 at 01:54
pom.xml	XML text	6 Dec 2023 at 01:54
src	Folder	6 Dec 2023 at 01:54
target	Folder	6 Dec 2023 at 01:54

Do You Trust Us ?

Be careful with projects from other sources !



Trust and Open Project 'cw-shapes'?

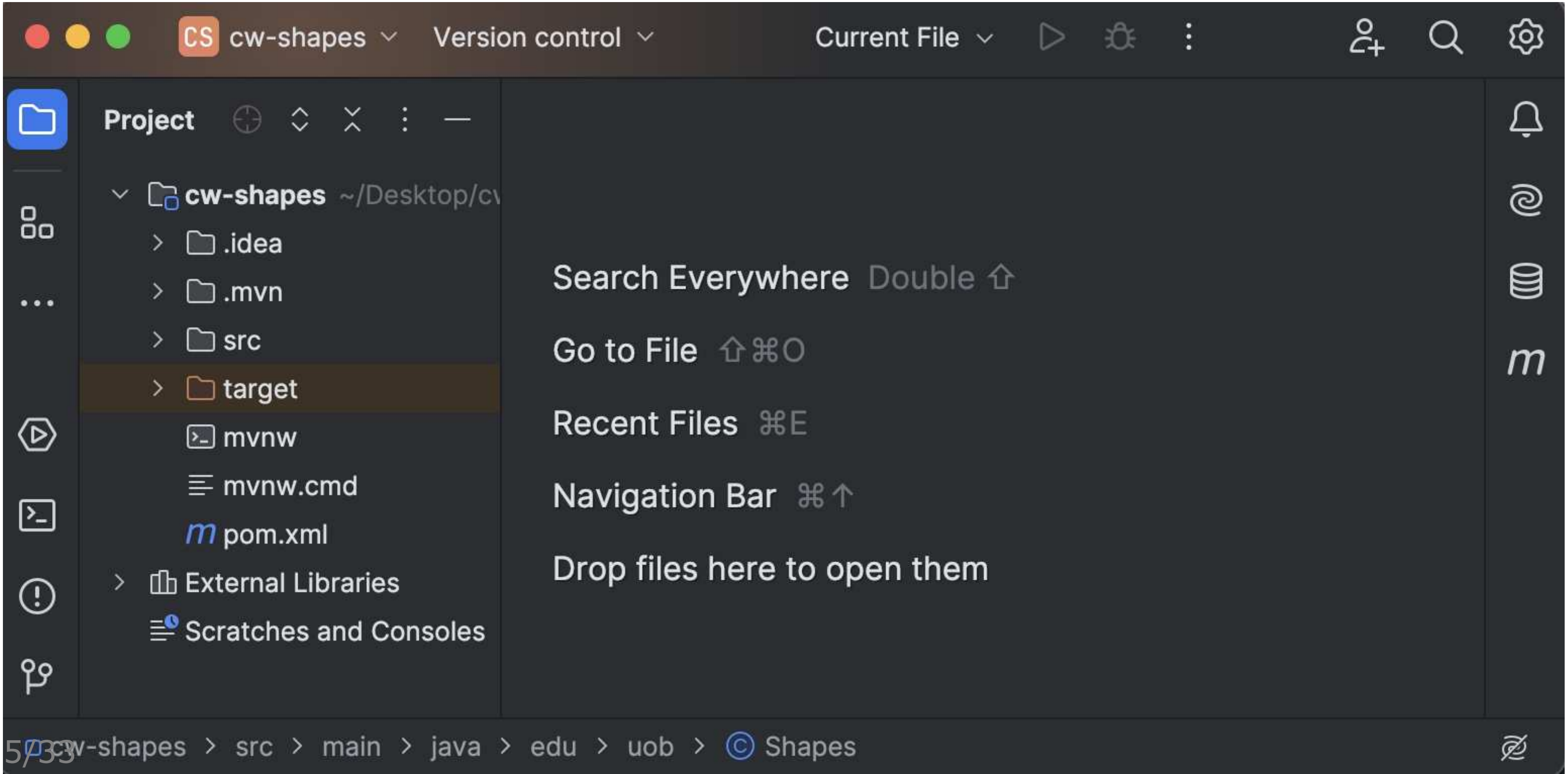
IntelliJ IDEA provides features that may execute potentially malicious code from this folder.

If you don’t trust the source, preview the project in the safe mode to only browse its code.

□ Trust projects in ~/Development/Weekly Workbooks/01 Introduction to OOP/IntelliJ Template

Project Structure

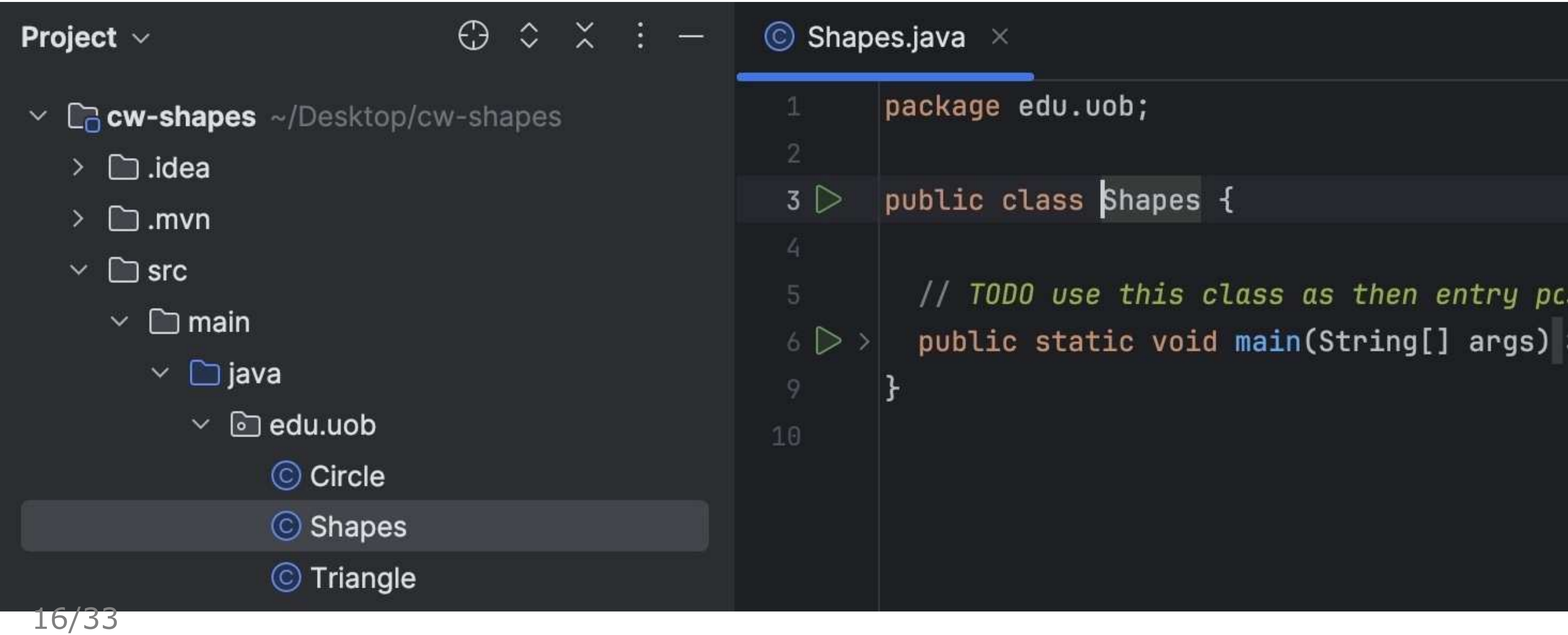
A successfully opened project looks something like this:



Open the Main Class

Let's explore the project view to find the main class

In this project, the main class is a file called 'Shapes'



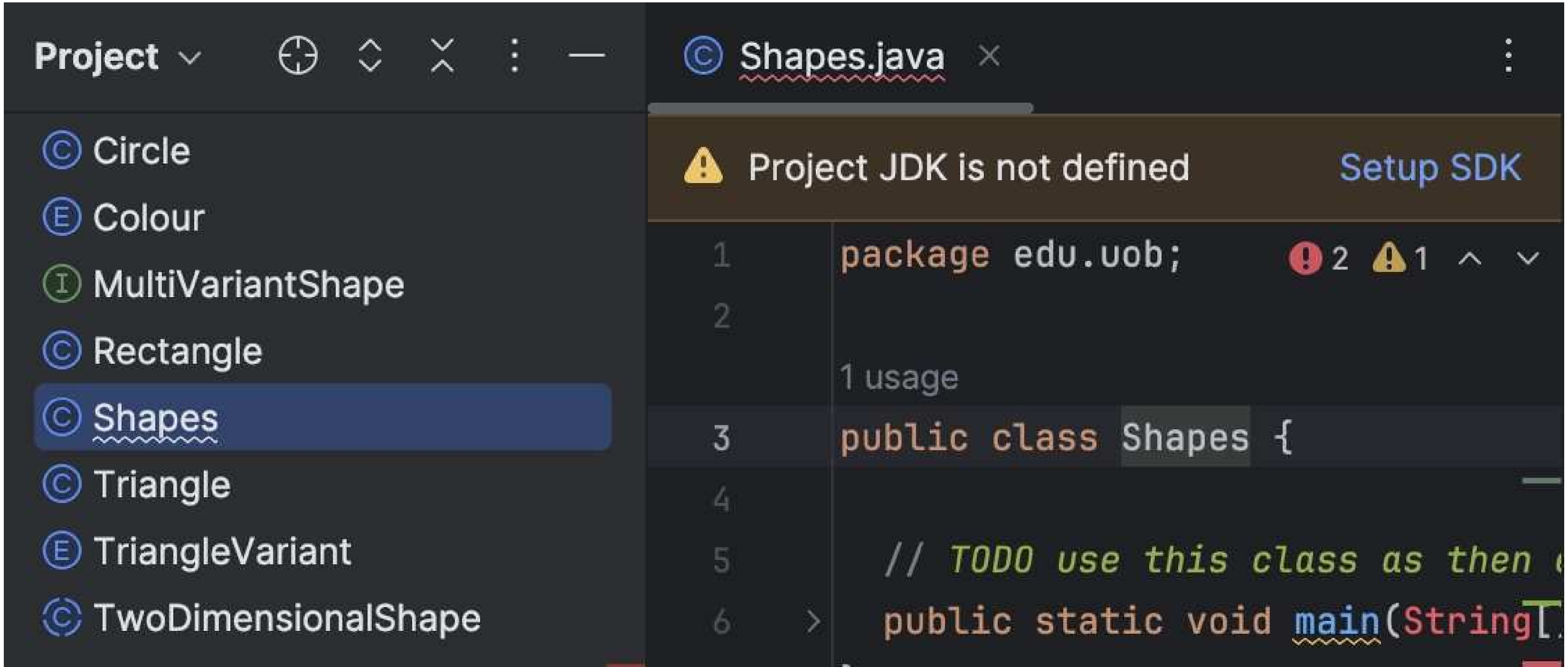
```
package edu.uob;

public class Shapes {

    // TODO use this class as then entry po
    public static void main(String[] args)
}

```

"Project JDK is not defined"

IntelliJ is just an IDE - is has no built-in compiler !

Lab machines have Java Development Kit installed

If working on your own laptop, YOU must install it



Project JDK is not defined

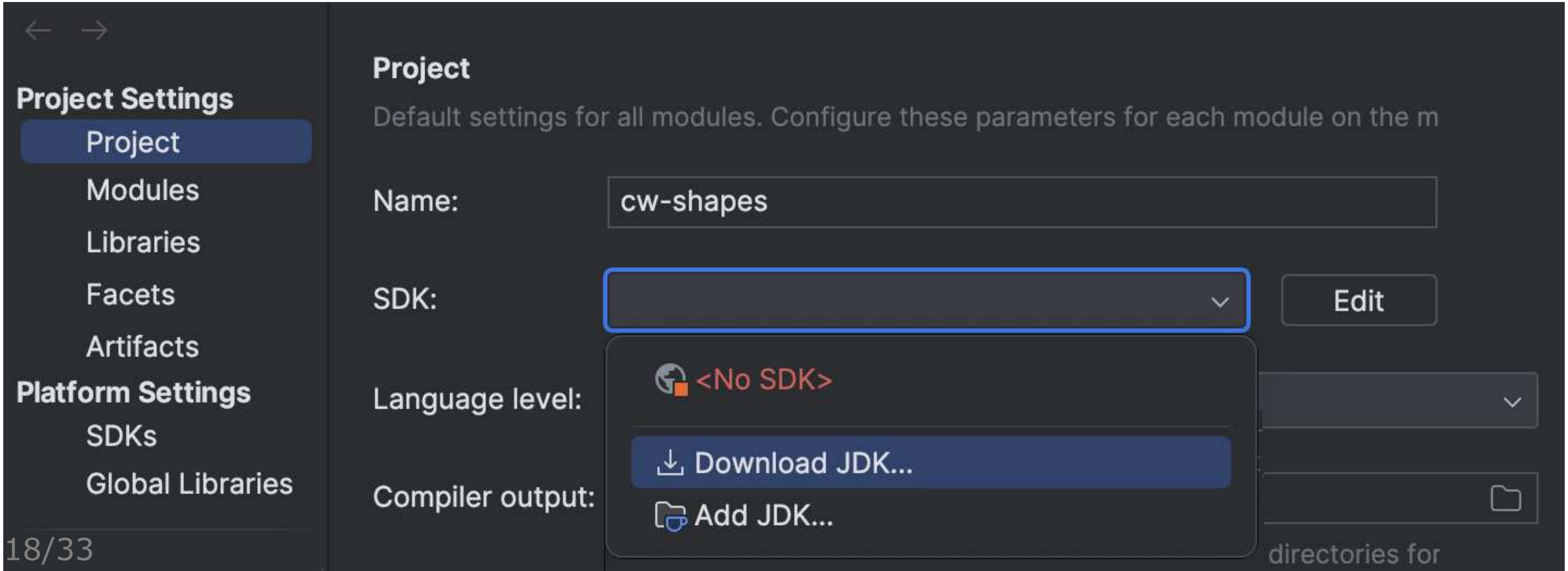
```
package edu.uob;

1 usage
public class Shapes {

  // TODO use this class as then
  public static void main(String[
```

Project Settings (File > Project Structure !!!)

Need to select a JDK to use to compile & run project

Could use an existing JDK (if you have one installed)

Or download a new one from list of those available...



Project

Default settings for all modules. Configure these parameters for each module on the m

Name: cw-shapes

SDK:

Language level:

Compiler output:

directories for

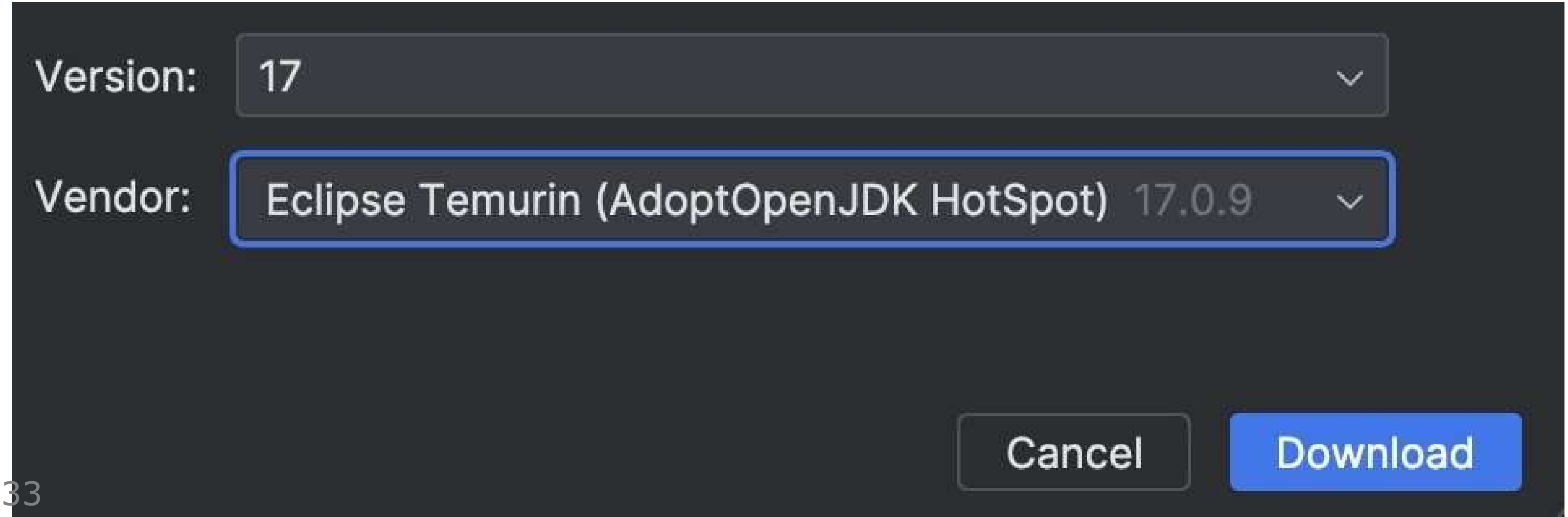
Download JDK

Select JDK to automatically download & install

Lowest Common Denominator: Lab has Java 17

(That's where we are going to mark your code !)

Best to choose: Eclipse Temurin (AdoptOpenJDK)



Version: 17

Vendor: Eclipse Temurin (AdoptOpenJDK HotSpot) 17.0.9

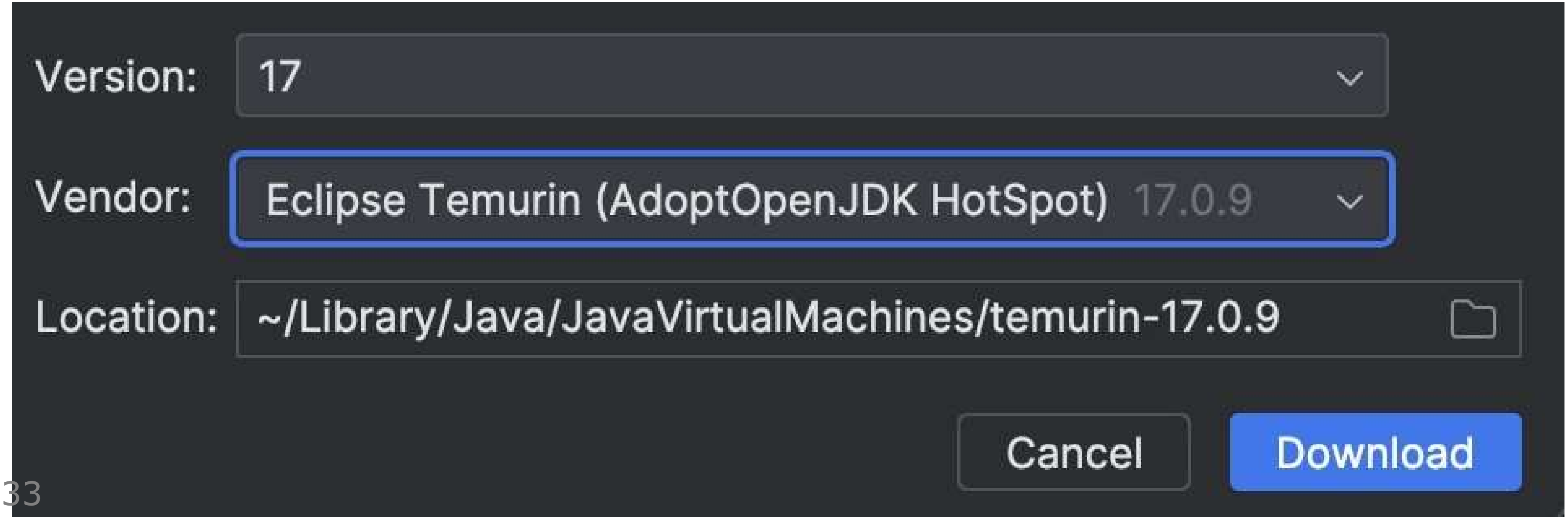
Installation Location

Keep a note of location where IntelliJ will install JDK

You'll need this later (to compile on command line)

On Mac OSX the location will be something like:

```
~/Library/Java/JavaVirtualMachines/temurin-17.0.9
```



Version: 17

Vendor: Eclipse Temurin (AdoptOpenJDK HotSpot) 17.0.9

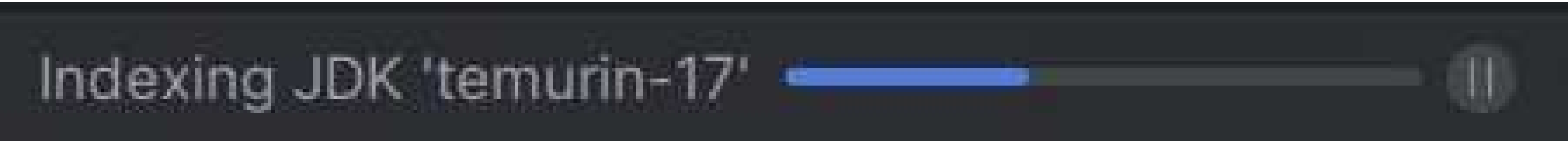
Location: ~/Library/Java/JavaVirtualMachines/temurin-17.0.9

Be Patient !

It takes a while for the JDK to download and install

Don't worry, only happens once (when you first install)

Keep an eye on how things are going on progress bar:



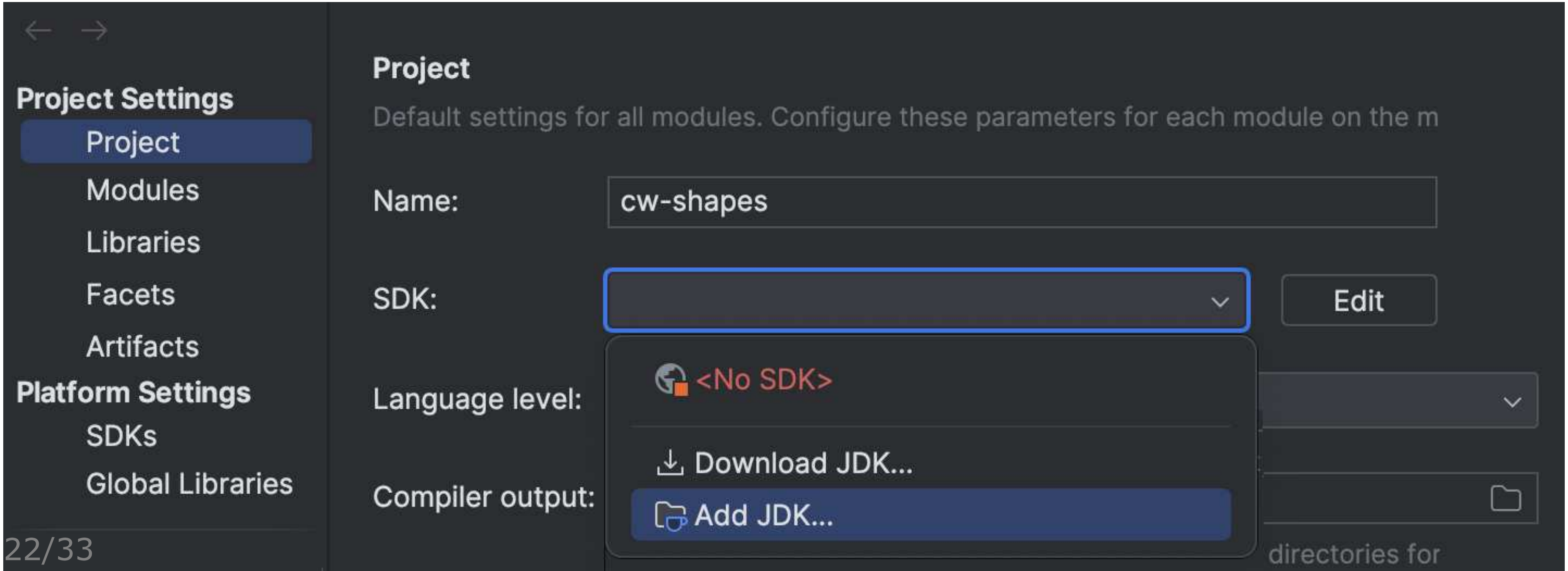
Indexing JDK 'temurin-17'

Using an Existing JDK

If you already have a JDK installed, you can use that

This will save you having multiple versions installed

It *might* be listed in dropdown, if not click "Add JDK"



Project Settings
- Project
- Modules
- Libraries
- Facets
- Artifacts

Platform Settings
- SDKs
- Global Libraries

Project

Default settings for all modules. Configure these parameters for each module on the m

Name: cw-shapes

SDK:

Edit

Language level:

Compiler output:

<No SDK>

Download JDK...

Add JDK...

directories for

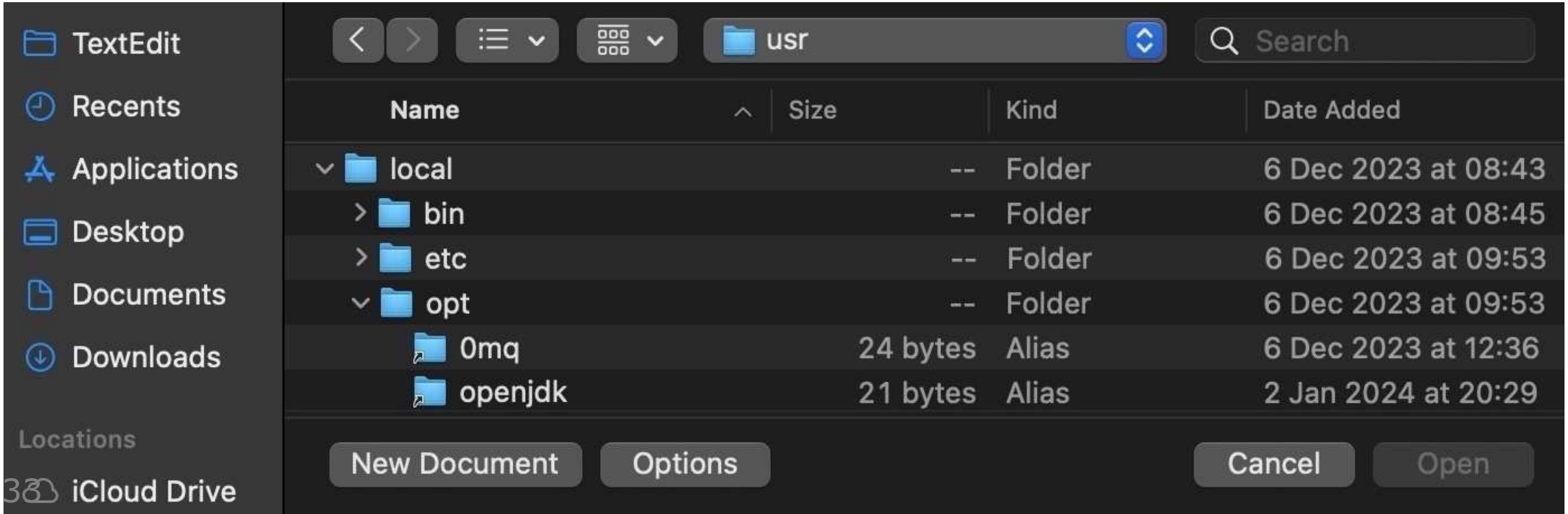
Hunting down Existing JDK

IntelliJ is clever and will usually find installed JDKs

I installed JDK using 'Homebrew' package manager

Homebrew is good at hiding installed software ;o)

So I needed to manually hunt around to find the JDK



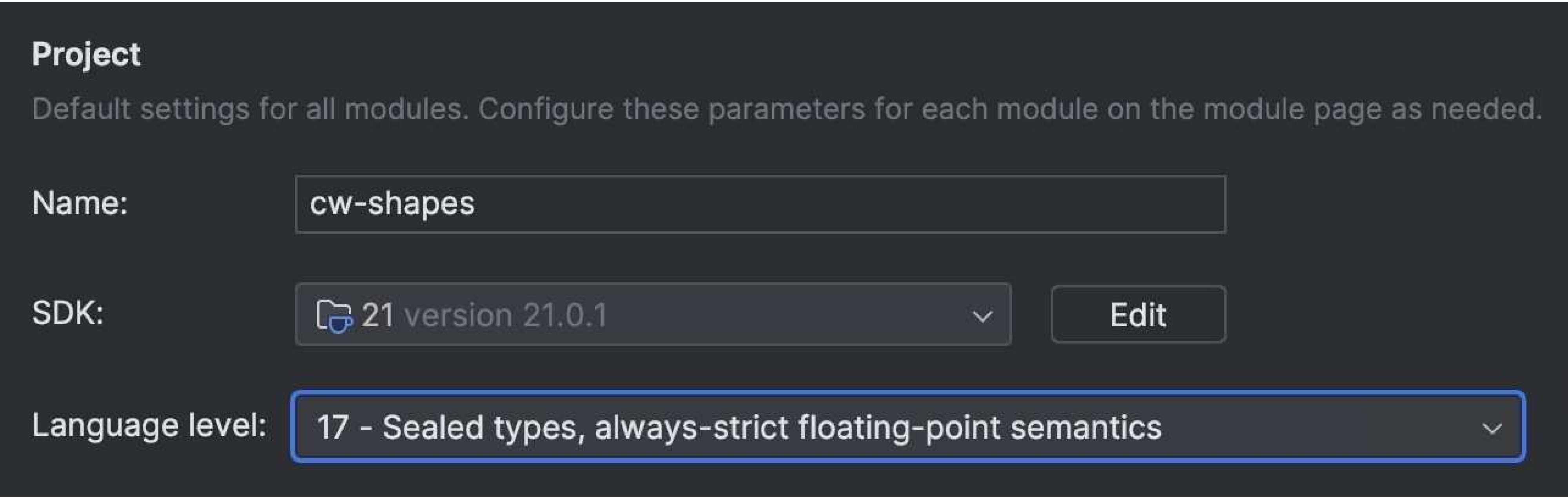
Name	Size	Kind	Date Added
local	--	Folder	6 Dec 2023 at 08:43
bin	--	Folder	6 Dec 2023 at 08:45
etc	--	Folder	6 Dec 2023 at 09:53
opt	--	Folder	6 Dec 2023 at 09:53
0mq	24 bytes	Alias	6 Dec 2023 at 12:36
openjdk	21 bytes	Alias	2 Jan 2024 at 20:29

JDK Version

The version I have installed is more recent than 17

However, we can limit language features used to 17

Prevents use of newer features that won't work in lab



Project

Default settings for all modules. Configure these parameters for each module on the module page as needed.

Name: cw-shapes

SDK: 21 version 21.0.1

Language level: 17 - Sealed types, always-strict floating-point semantics

REMEMBER

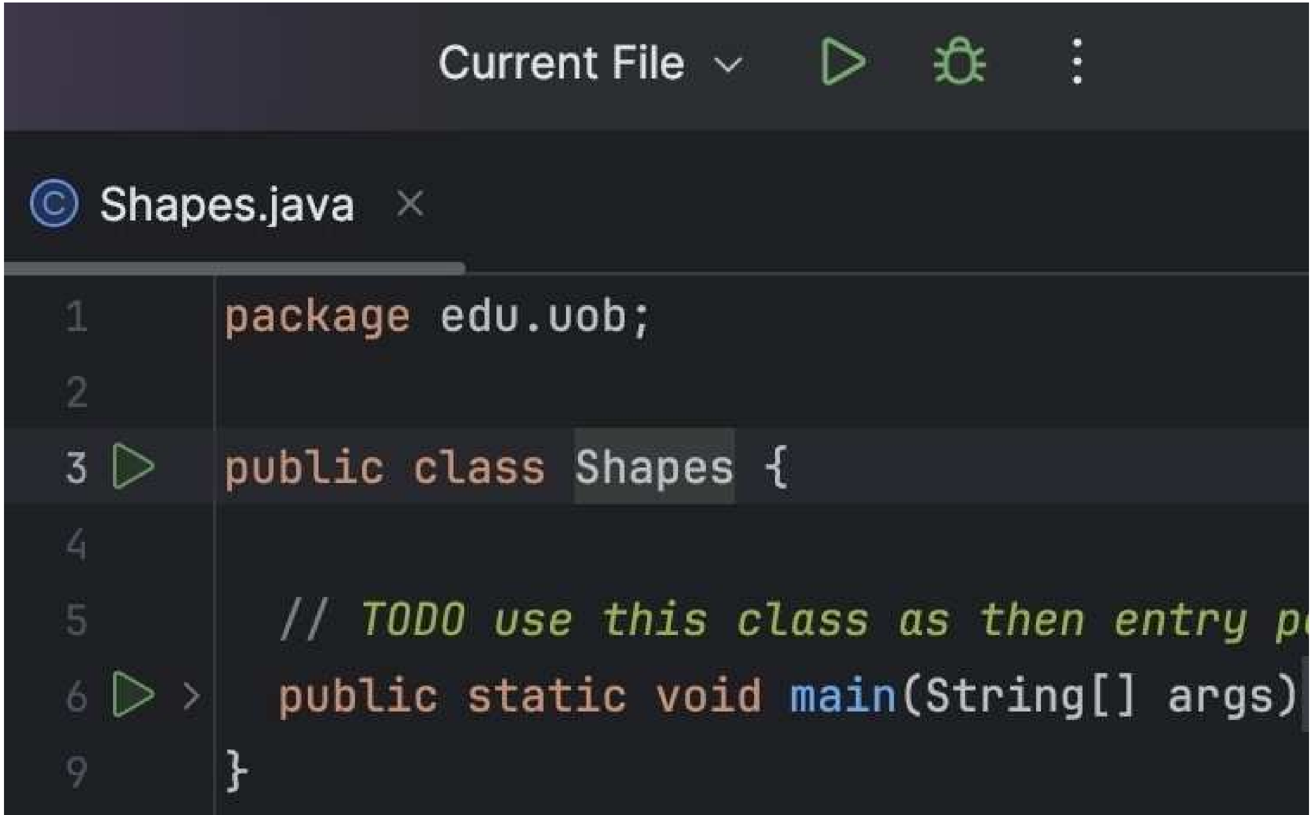
Labs machines ALREADY have a JDK installed
(so you won't need to follow the previous steps)
You only need to install JDK on your OWN laptop

Back to the Project...

Ready to Run !

With the main class open in the editing panel...

You should now see the green "run" button at the top



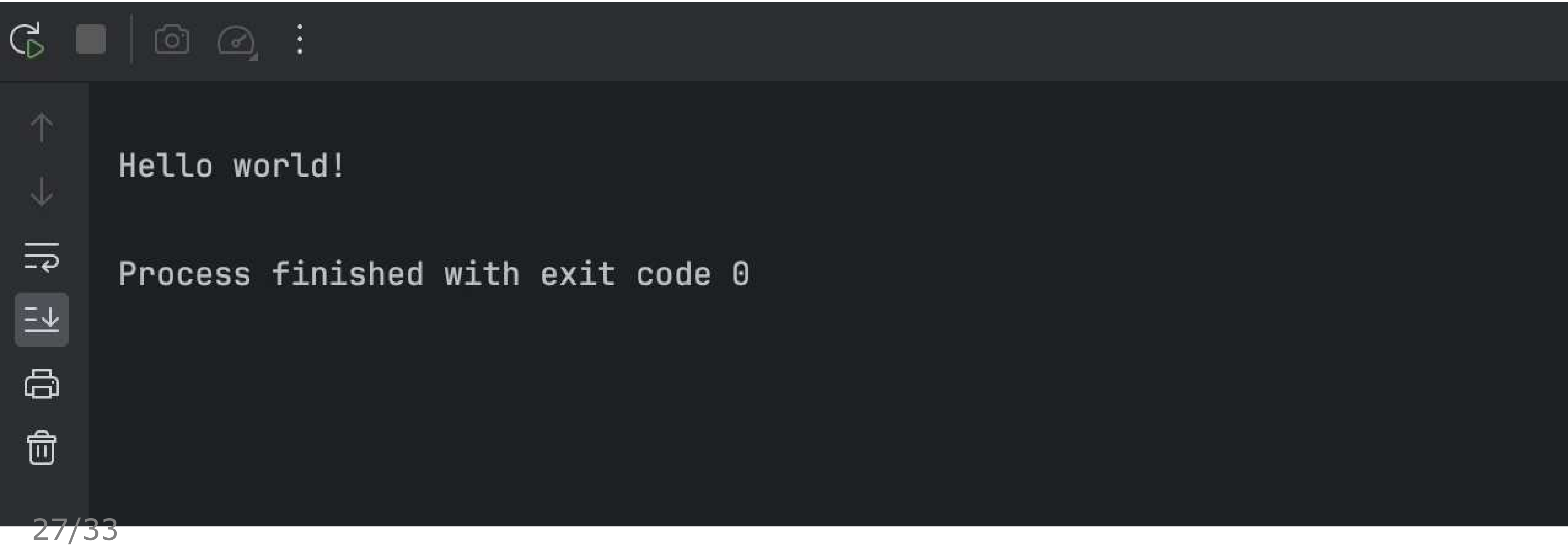
```
package edu.uob;

public class Shapes {

    // TODO use this class as then entry p
    public static void main(String[] args)
}
```

Success !

Might take a while for IntelliJ to compile & run the code

It has to build a lot of files the first time around

If everything worked OK, you should see...



```
Hello world!

Process finished with exit code 0
```

Command Line

Although we will be using IntelliJ *most* of the time
It is useful to also be able to use the command line

Coursework will be marked on the command line
It's essential that you check your code runs there !

In order to be able to compile and run your code
You must tell command line where to find the JDK...

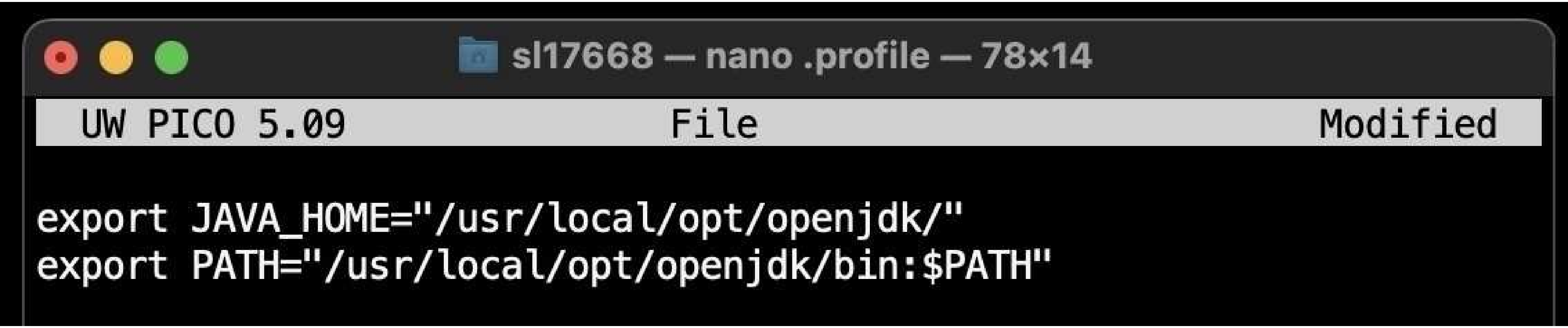
OSX and Linux Environment Variables

Add two environment variables to your shell config file

(~/.profile on OSX or ~/.bashrc on linux)

JAVA_HOME must point to your installed JDK folder

You must also prepend the JDK *bin* folder to $PATH



```
  UW PICO 5.09                      File                          Modified

export JAVA_HOME="/usr/local/opt/openjdk/"
export PATH="/usr/local/opt/openjdk/bin:$PATH"
```

Please note that:

`/usr/local/opt/openjdk/`

Is the location of MY installation of the JDK

YOURS is going to be somewhere different !

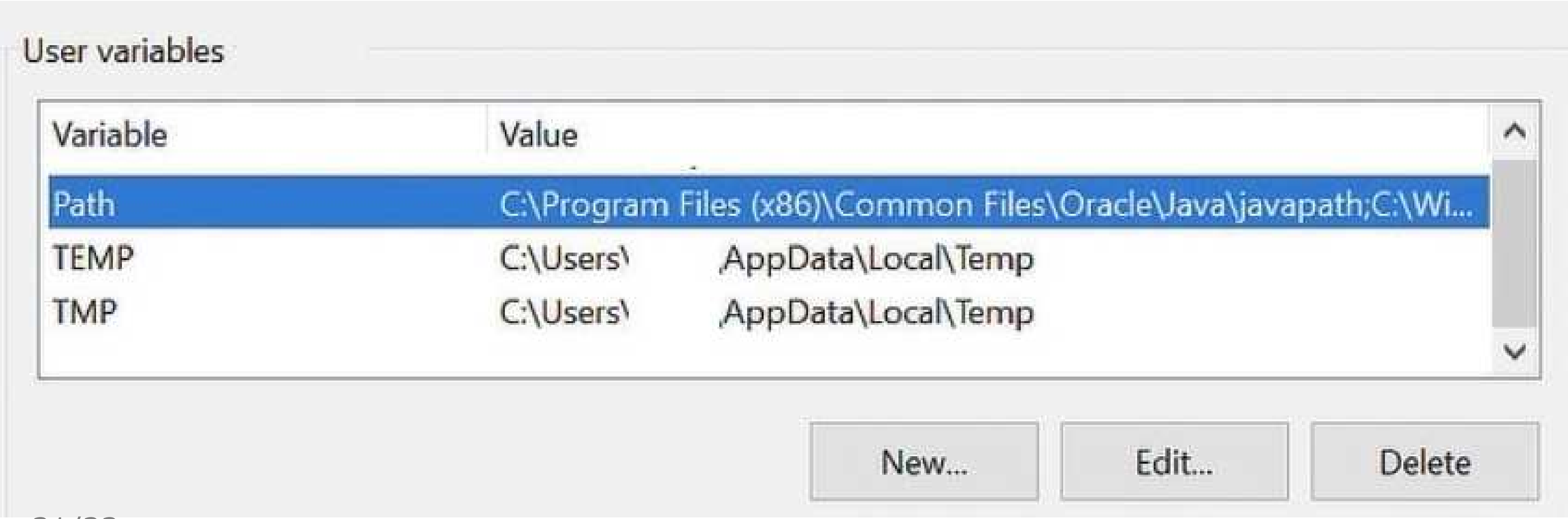
(wherever IntelliJ said it was going to put it)

Windows Environment Variables

Environment Variables in Windows are set differently

Using a graphical interface in "System Preferences"

See separate guide to setting up JDK on windows



User variables

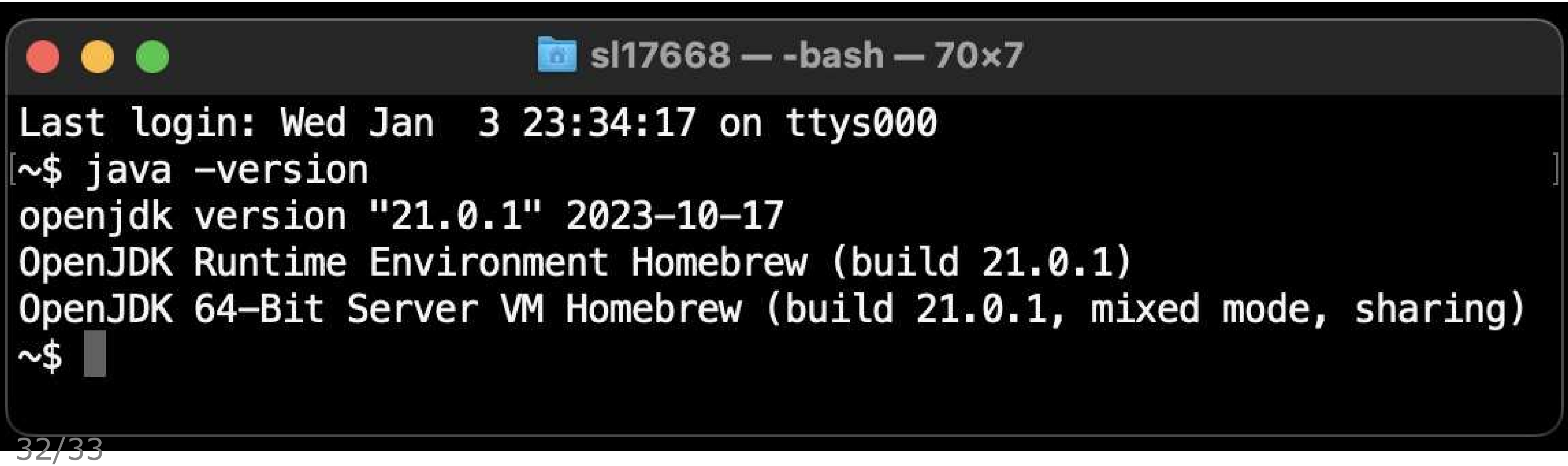
Variable	Value
Path	C:\Program Files (x86)\Common Files\Oracle\Java\javapath;C:\Wi...
TEMP	C:\Users\ AppData\Local\Temp
TMP	C:\Users\ AppData\Local\Temp

Testing Your Environment

Open a fresh terminal or command prompt and type:

```
java -version
```

If everything worked, you'll see something like:



```
Last login: Wed Jan  3 23:34:17 on ttys000
~$ java -version
openjdk version "21.0.1" 2023-10-17
OpenJDK Runtime Environment Homebrew (build 21.0.1)
OpenJDK 64-Bit Server VM Homebrew (build 21.0.1, mixed mode, sharing)
~$
```

And now to work !