Toolchain Setup

What to install
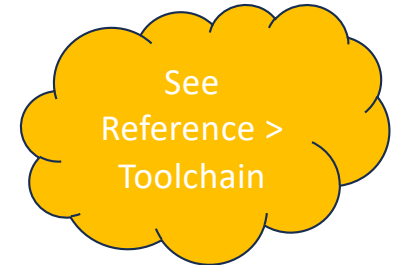
- What should be installed <u>manually</u>:
  - Git 2.45+
  - Java JDK 21
  - IntelliJ IDEA 2024.2+ ✔️

- What will be imported <u>automatically</u>:
  - Kotlin
  - Gradle
  - JUnit ❌

See Reference > Toolchain

Installing Git

Required for working with GitLab & source code.

- Preinstalled on macOS and Linux.

- Needs to be manually installed on Windows.
    - https://git-scm.com/

Command-line is fine for 99% of what you will need to do.

- IntelliJ IDEA has built-in support.

- Some great graphical clients if you prefer.

JDK installation

- You will need the Java JDK installed for building desktop + Android applications.
- Azul has great/stable OpenJDK builds for all platforms.
  - Recommend JDK 21 LTS (stable long-term release)
  - Make sure you install the correct version for your hardware
    - X86 vs ARM

IMPORTANT: Mixing versions of the JDK can results in inconsistent compilation and runtime behaviors. You and your team need to install the same versions of everything!

IntelliJ IDEA (IDE)

The "best" Kotlin IDE.

Why is this even a topic?

An Integrated Development Environment (IDE) is a software development environment. It typically includes a code editor, debugging, testing and profiling tools, and anything else that might be needed.

We strongly recommend a supported IDE. Why?

- **Best language support**: much better than a language server.
- **Debugging**: optimized debugger.
- **Profiling**: support for profiling complex/multi-threaded code.
- **Refactoring**: best-in-industry refactoring tools.

Installing IntelliJ IDEA

I use Ultimate but Community is fine.
Install the latest version.

- **IntelliJ IDEA** can be downloaded from https://www.jetbrains.com/idea
- There are two versions of IntelliJ IDEA:
    - **Community Edition**, which is open source
    - **Ultimate Edition**, which is commercially licensed, but has advanced features.

Free Educational Licenses

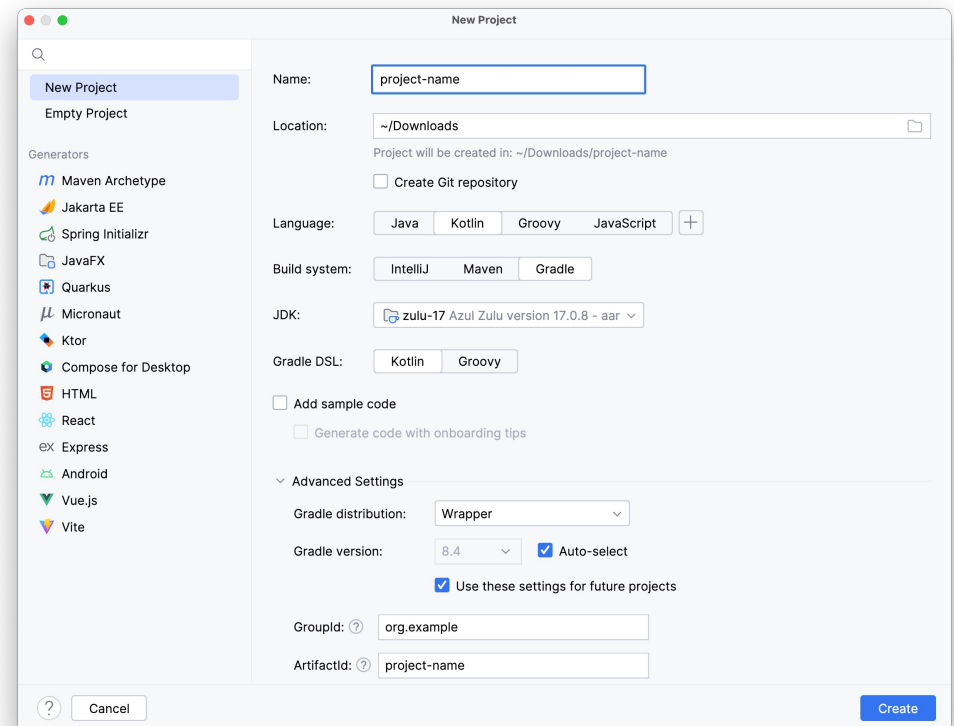Learn or teach coding with best-in-class development tools from JetBrains!

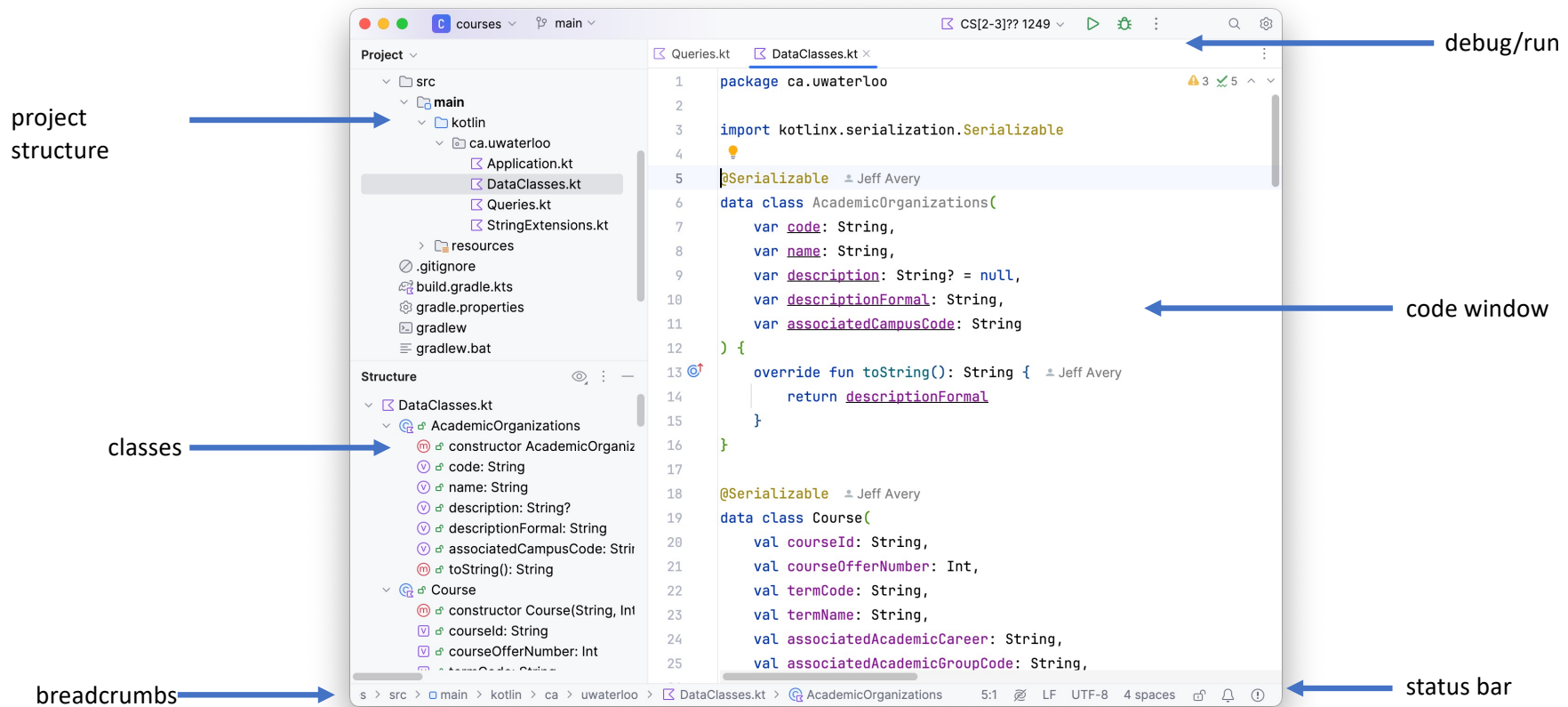https://www.jetbrains.com/community/education/#students

Creating a new Project

- File > New Project
  - Language: Kotlin
  - Build System: Gradle
  - JDK: 21 (recommended)
  - Gradle DSL: Kotlin
  - Gradle distribution: Wrapper
  - Groupid: ca.uwaterloo
  - Artifactid: <default>

You can mostly pick defaults.
You can modify your project configuration as the course progresses.

IDE Layout

project
structure →

classes →

breadcrumbs →

debug/run ←

code window ←

status bar ←

Configuration

- IDE settings (stored in .idea) and project settings (stored in config files).
    - Put `.idea` in your `.gitignore` so that you don't wreck your teammates config (!).

Settings
- Help > Change Memory Settings > 4096 MB ⭐
- View > Appearance > Compact Mode
- View > Appearance > Tool Window Bars OFF
- View > Appearance > Navigation Bar > In Status Bar

Plugins
- Mermaid // for rendering diagrams in markdown
- Rainbow Brackets // for highlighting matching brackets
- IdeaVim // for Vim keybindings in IntelliJ (!)