

# Toolchain Setup

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CS 346: Application  
Development

# What to install

- What should be installed manually:

- Git 2.45+
- Java JDK 17 21
- IntelliJ IDEA 2024.2+



- What will be imported automatically:

- Kotlin
- Gradle
- JUnit



# 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.

GUI is optional.

- 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 17 21 LTS (stable long-term release)
  - Make sure you install the correct version for your hardware e.g., ARM for M1.
  - Most important – make sure that you and your team are running the same distribution + version!

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

# IntelliJ IDEA (IDE)

CS 346: Application Development

# 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. Make sure to 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!



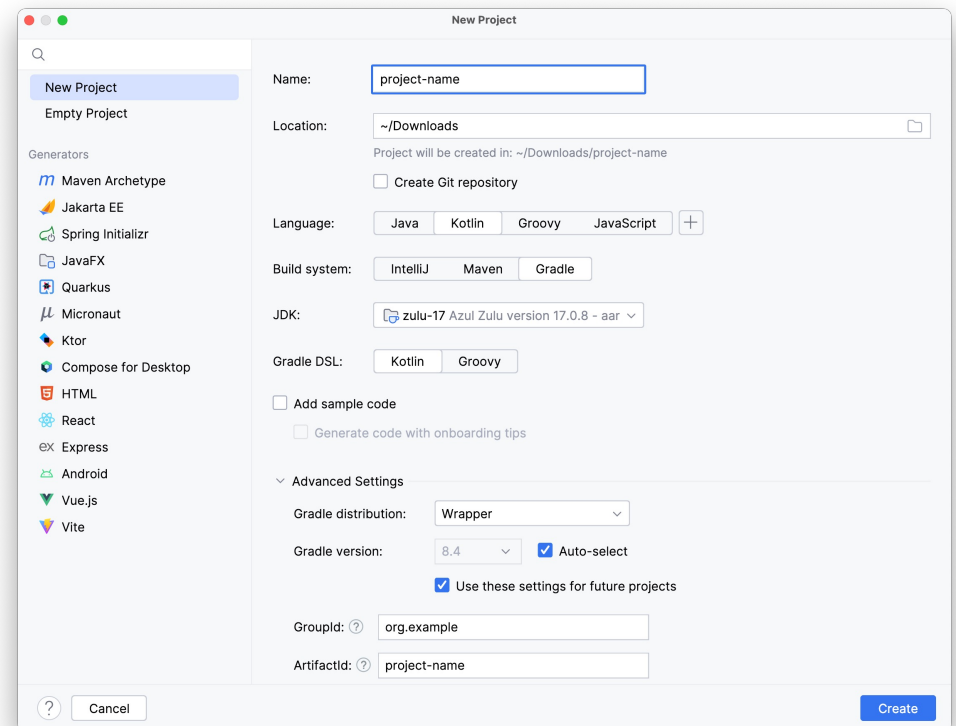
<https://www.jetbrains.com/community/education/#students>

# Creating a new Project

This is desktop. See Android setup later!

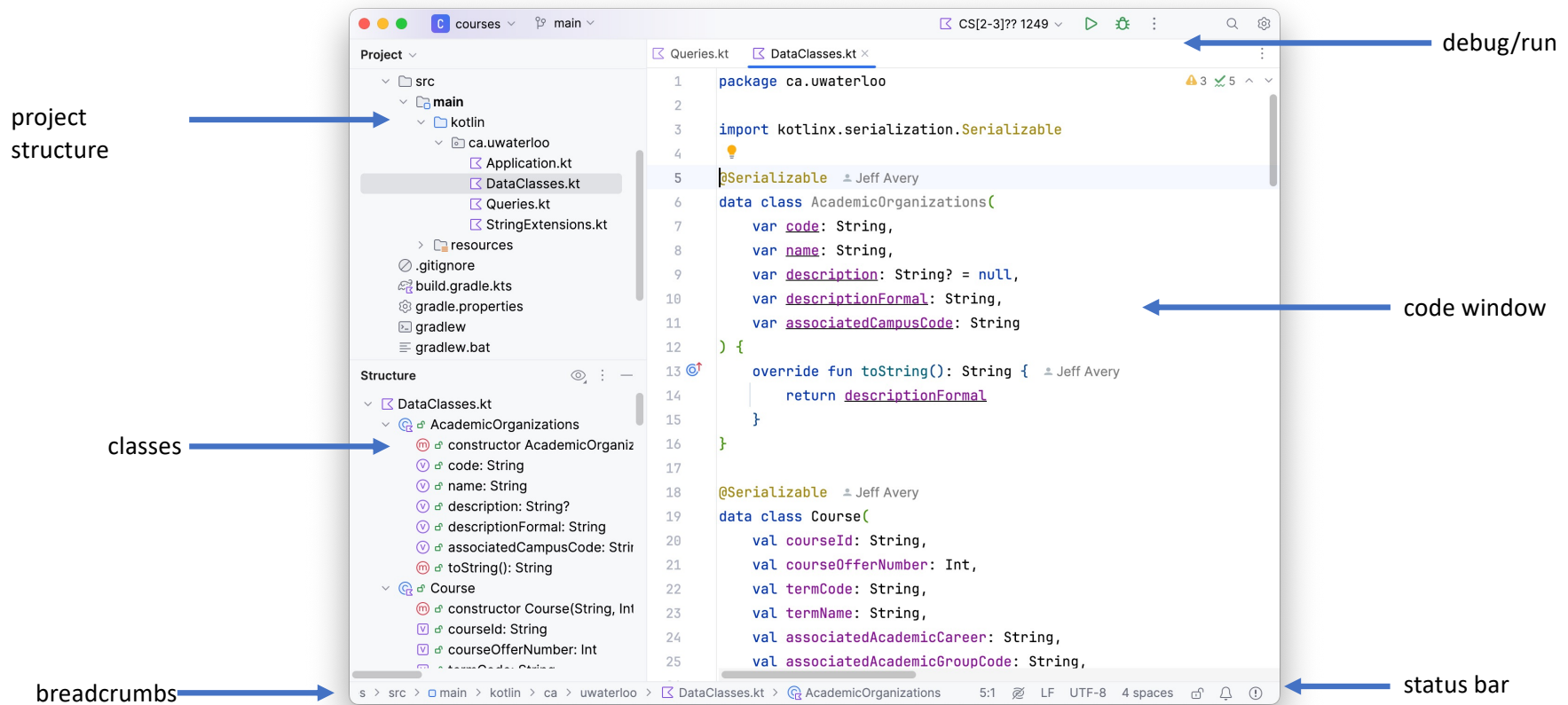
- File > New Project
  - Language: Kotlin
  - Build System: Gradle
  - JDK: 21 (recommended)
  - Gradle DSL: Kotlin
  - Gradle distribution: Wrapper
  - Groupid: ca.uwaterloo
  - Artifactid: <default>

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





# IDE Layout




# Configuration

My settings. I like a minimal UI and use hotkeys. The only thing I strongly recommend is memory settings.

- 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 (!)