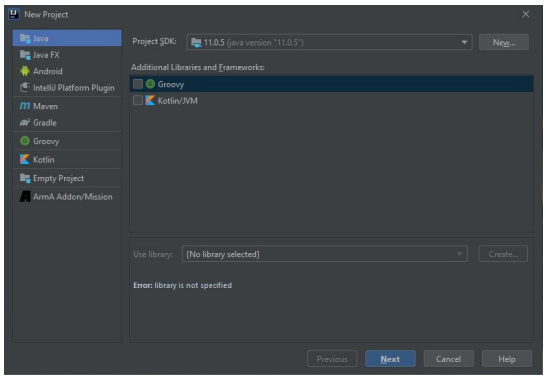
Assignment 1: Minion Tracker

- See website for due date and late penalty info.
- Submit deliverables to CourSys: https://coursys.sfu.ca
- This assignment is to be done **individually**. Do not show another student your code, do not copy code from another person/online. Do not reuse your previous work (even if retaking the course).
- You may use general ideas you find online and from others, but your solution must be your own.
- See the marking guide for details on how each part will be marked.

1. Minion Tracker

The course website has a capture of some sample output showing how the entire application operates.

1.1 Requirements



- In IntelliJ, create a **plain "Java" project** (not Groovy, Gradle, Maven, or Kotlin/JVM). See image on right.
- You must have (at least) the following three classes:
  - A class for holding a **minion:**
    - name may be more than one word (like "Evie the Evil")
    - height, such as 1.5
    - number of evil deeds completed
    - Minion class must correctly implement `toString()`, as discussed in lecture.
  - A class for a **text user interface (UI):**
    - In this class, put all code that interacts with the screen and the keyboard.
    - Be careful not to have much duplicate code in your application! Use functions.
    - Limit the levels of control structures you nest! Your functions should be no more than a screen-full of code.
  - A class to start your application
    - Contains a `main()` method instantiates the text UI and starts the application running.
    - You get to decide where you store the collection of Minions.
- For this assignment, it is fine if all your classes are in one package.
- Hint: Can you think of a way to extract some code out of the text UI into its own class? Doing so will reduce the size of the text UI? For example, what about a general text menu class?
  You could:
  - Have your text UI instantiate your general menu when it needs to do menu things.
  - Put as much *general* functionality in the menu class as you can so that there is good code reuse.
  - This menu class will be part of your UI, so it's OK for it to interact with the screen and the keyboard.

1.2 Text Interface Requirements

- When you prompt the user to choose a menu option, if the user enters an invalid number you must re-ask the user to enter a valid value.
  - You may assume user always enters correct *type* of data: when asked for an `int`, it is OK if the program crashes when the user enters a non-`int` such as 'A'.
  - *Hint (optional):*
    Have a method you can reuse to repeatedly read in a value until it is within the desired range.
- **Main Menu Option: List minions**
  - List the name, height, and number of evil deeds for each minion.
  - Number the minions from 1.
- **Main Menu Option: Add a new minion**
  - Create a new minion.
  - Ask user for required minion info:
    - Name must be 1 or more characters long; may be multiple words
    - Height must be 0 or more; may be like 2.5
- **Main Menu Option: Remove minion**
  - List the minions currently in the system.
  - Allow user to select a minion (by number), or 0 to cancel.
  - Entering an invalid number (like -3) handled by application. Entering invalid data *type* ("hello") need *not* be handled.
- **Main Menu Option: Attribute an evil deed to a minion**
  - Similar to "remove minion", user selects a minion to work with (or 0 to cancel).
  - Increment the number of evil deeds by the selected minion.
- **Main Menu Option: Debug dump of minion details**
  - For each minion in the minion-list, call its `toString()` and print the result to the screen.
- **Main Menu Option: Exit**
  - Exit the application.
- Your text UI need not match the sample *exactly*, but it should be of equal quality.

1.3 Coding Requirements

- Your code must conform to the programming style guide for this course; see course website.
- All classes must have a class-level JavaDoc comment describing the purpose of the class.
- Functions should not be longer than about 30 lines long.
- Lines of code should not be longer than about 120 characters long.
- Code should not be more than 3 control structures deep (ex: `if` in `loop` in an `if`).
- Your class's toString() method may only be printed to the screen as part of the "Debug dump" option; otherwise it should be your UI code that is generating screen output.

1.4 Suggestions

- Think about the design before you start coding.
  - List the classes you expect to create.
  - For each class, decide what its responsibilities will be.
  - Think through some of the required features. How will each of your classes work to implement this feature? Can you think of design alternatives?

2. Deliverables

Submit a ZIP file of your project to CourSys. See course website for directions on creating and testing your ZIP file for submission. All submissions will automatically be compared for cheating.

