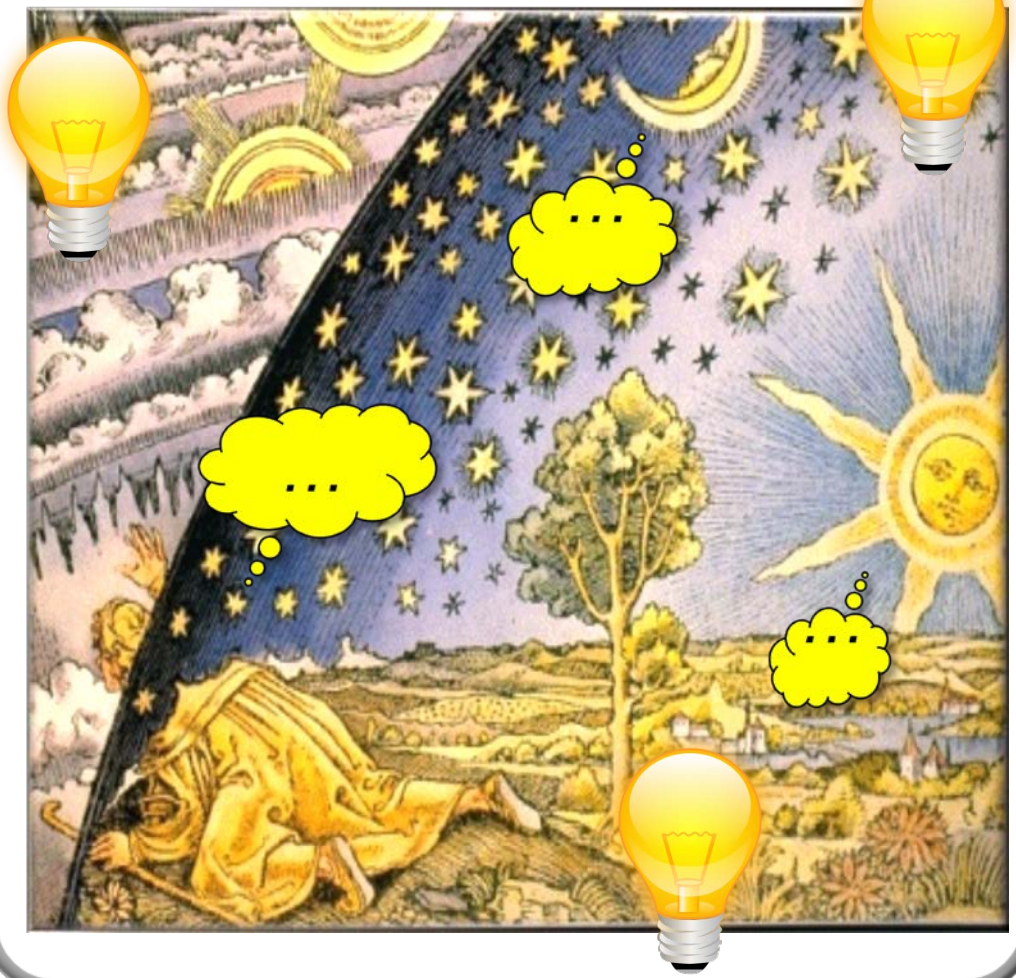
Java for Android: Calculator App



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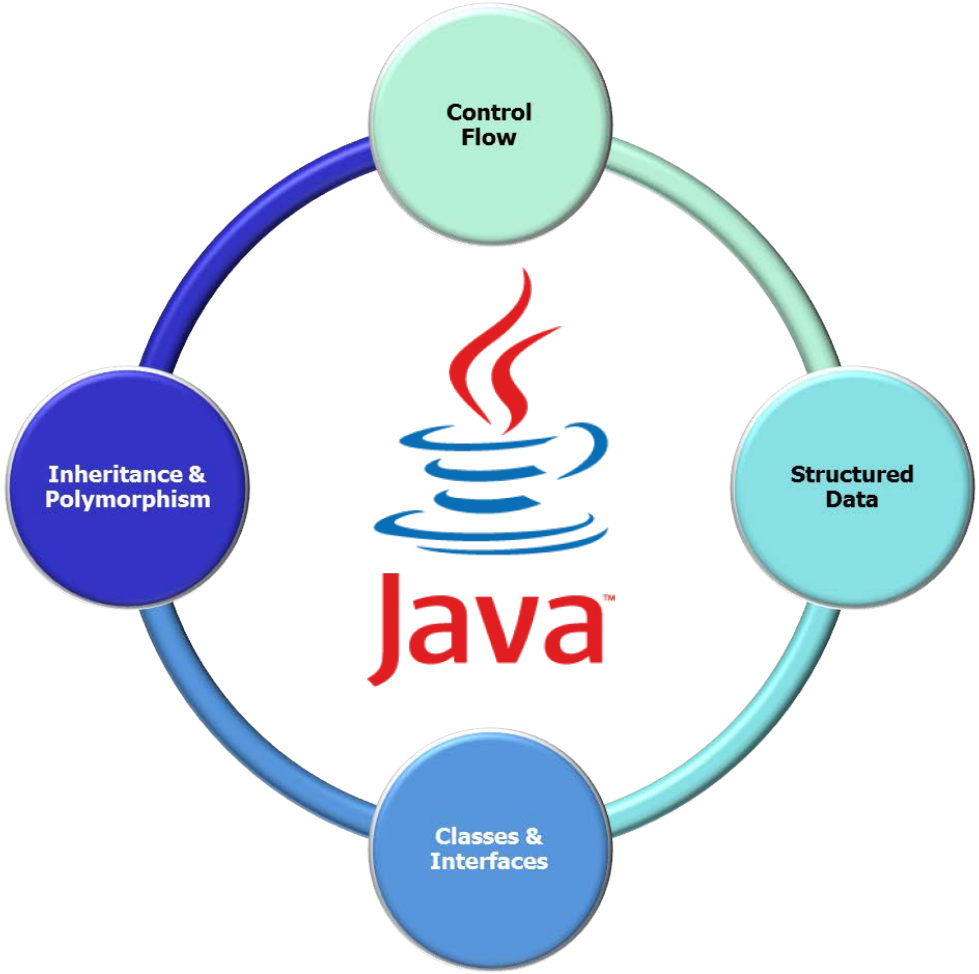

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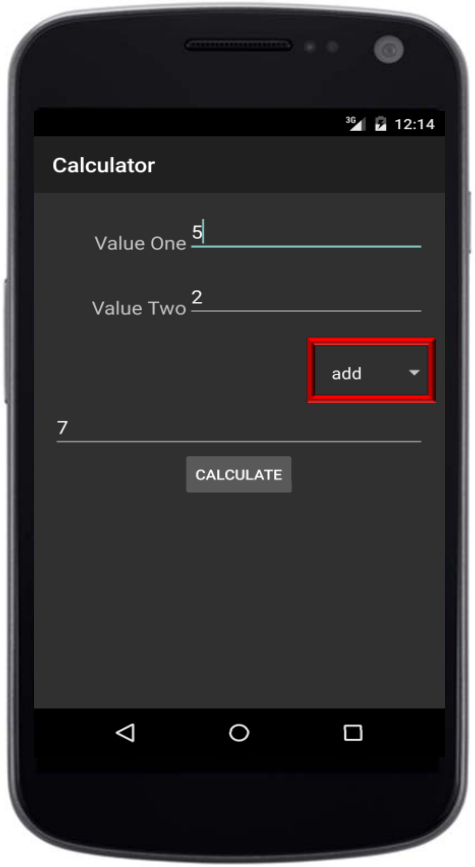

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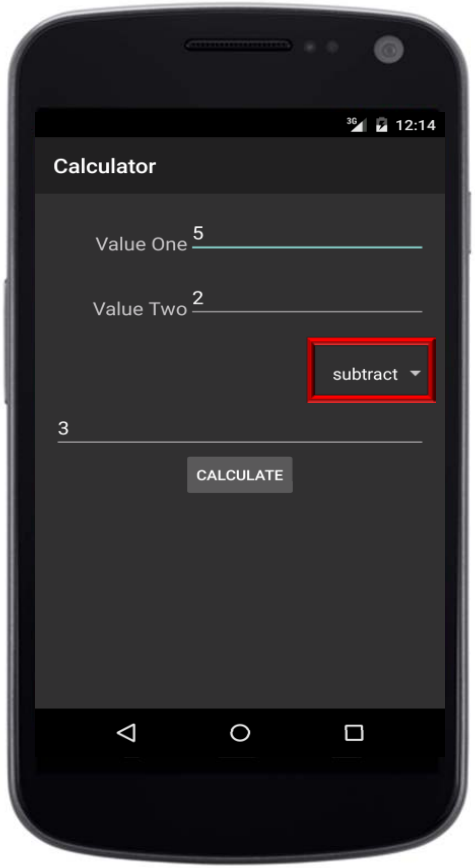

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Learning objectives:

- Understand the requirements of the calculator app
- Know how to download the Android Studio project & files containing the app skeleton
- Be familiar with guidelines for structuring your solution
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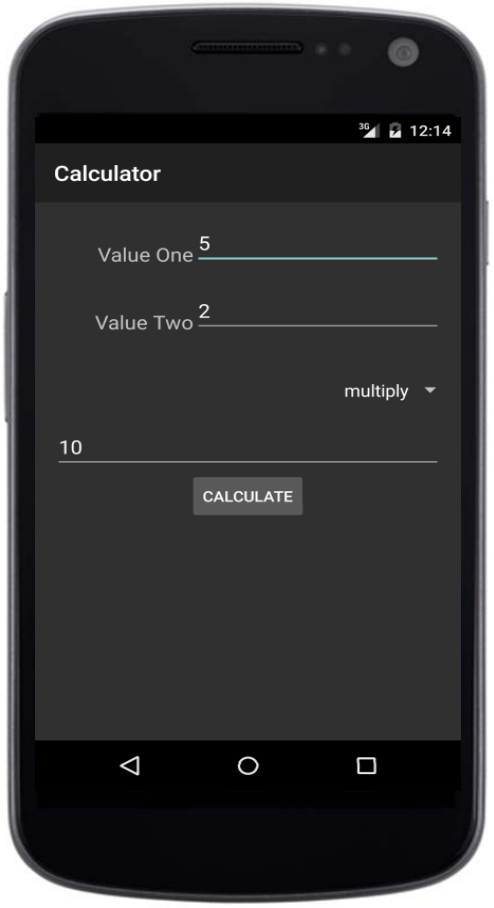

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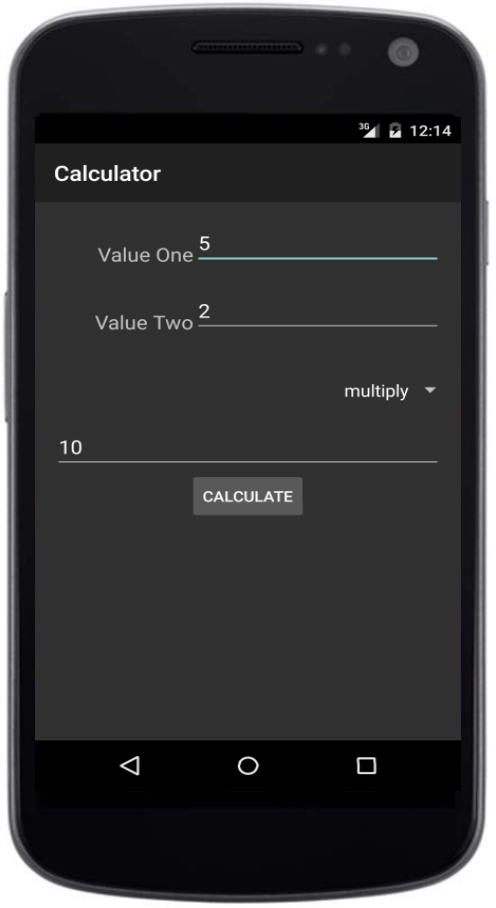

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  - We supply you skeleton code that implements the app's UI in Android

Mini-Project Overview & Requirements

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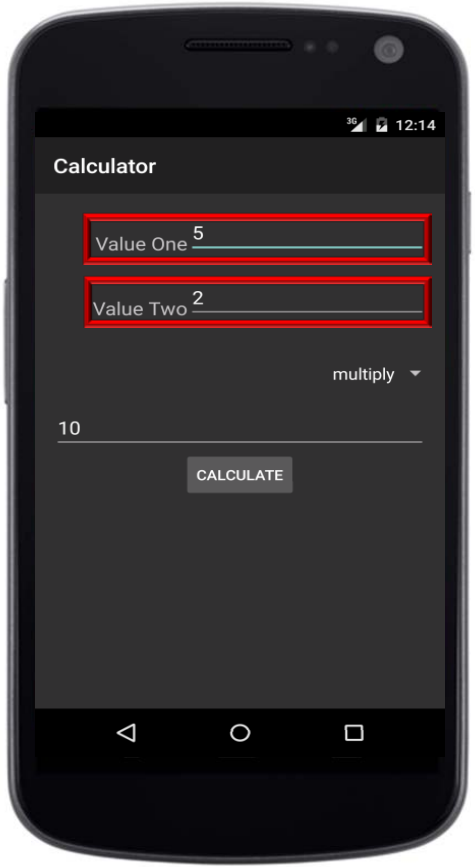
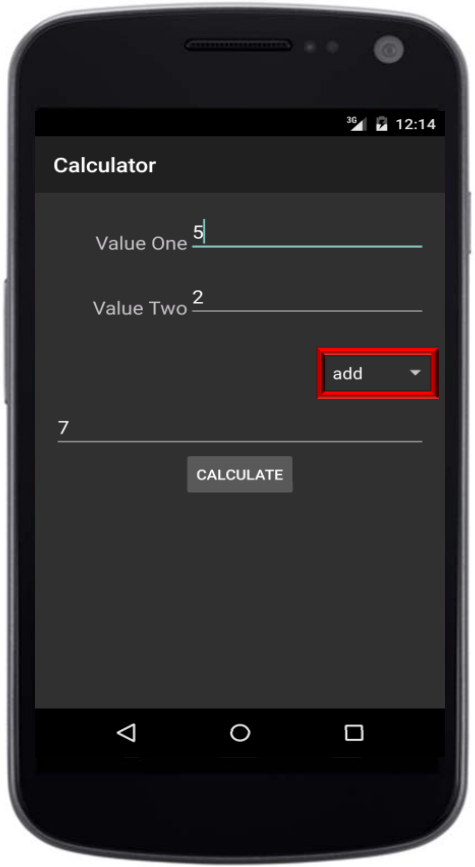
  - The provided UI allows user to enter two integer values & select one of 4 operations



Mini-Project Overview & Requirements

- Your app should meet several requirements
  - The provided UI allows user to enter two integer values & select one of 4 operations
    - Addition



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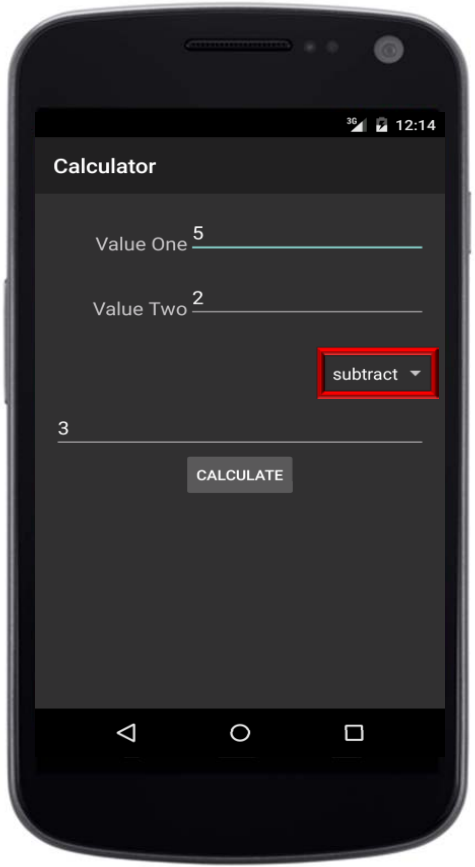

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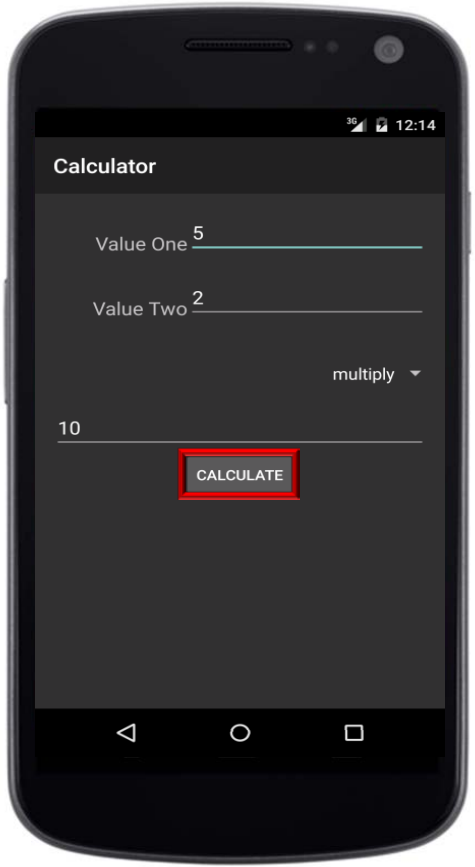

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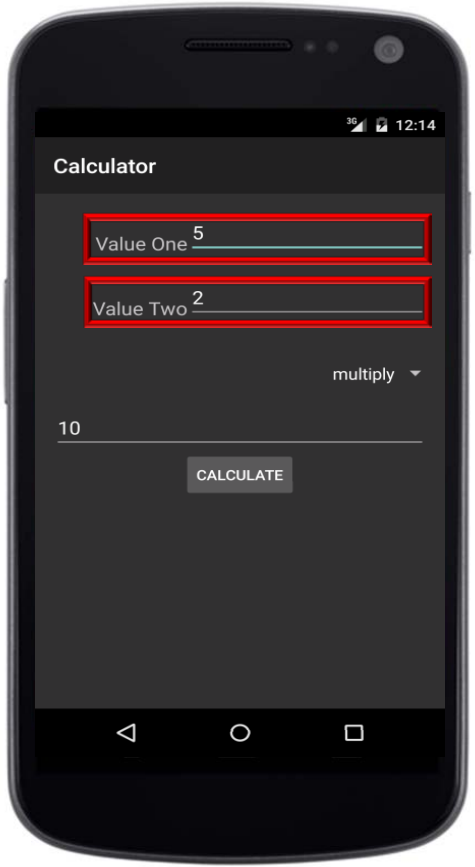

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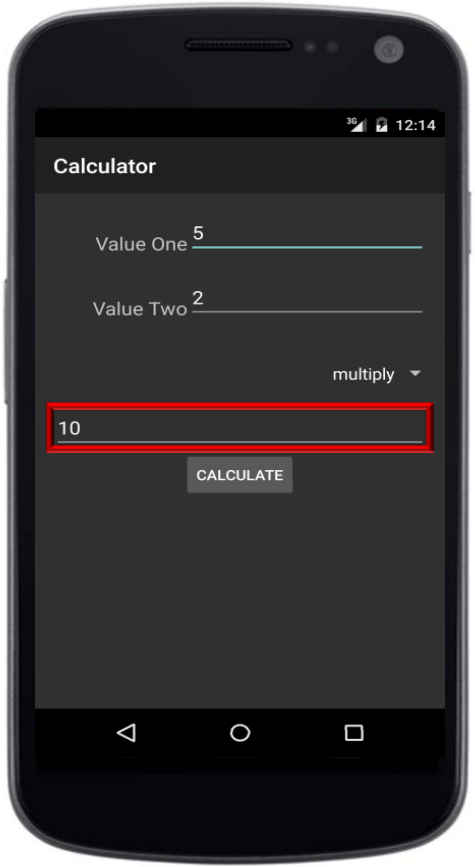

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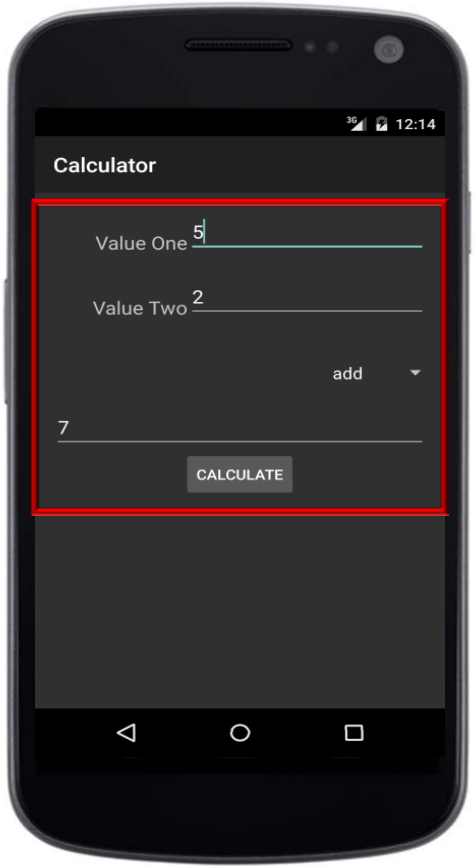

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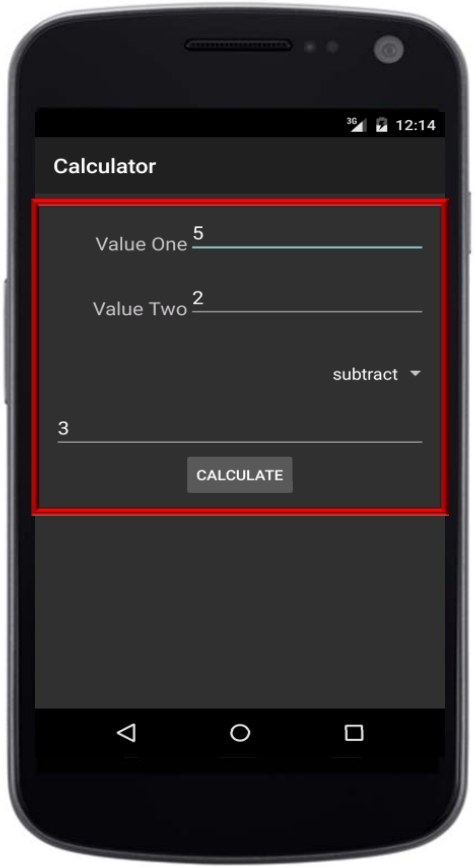

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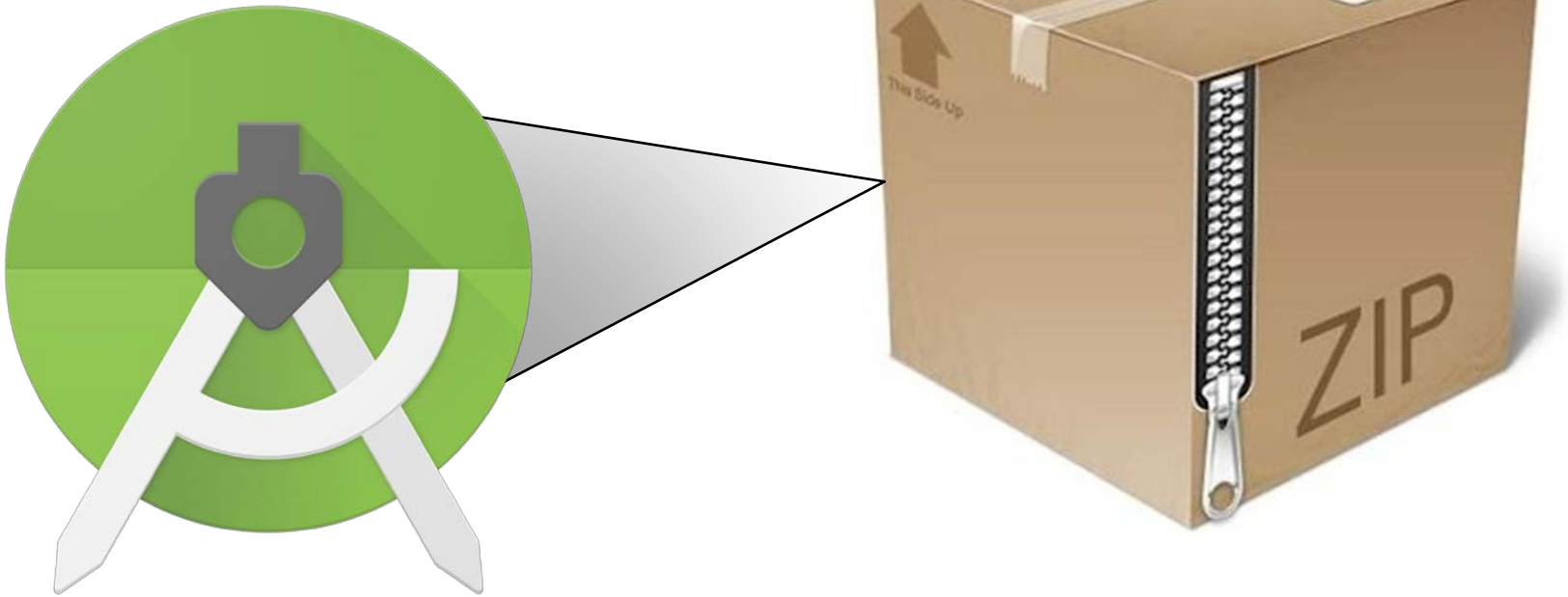
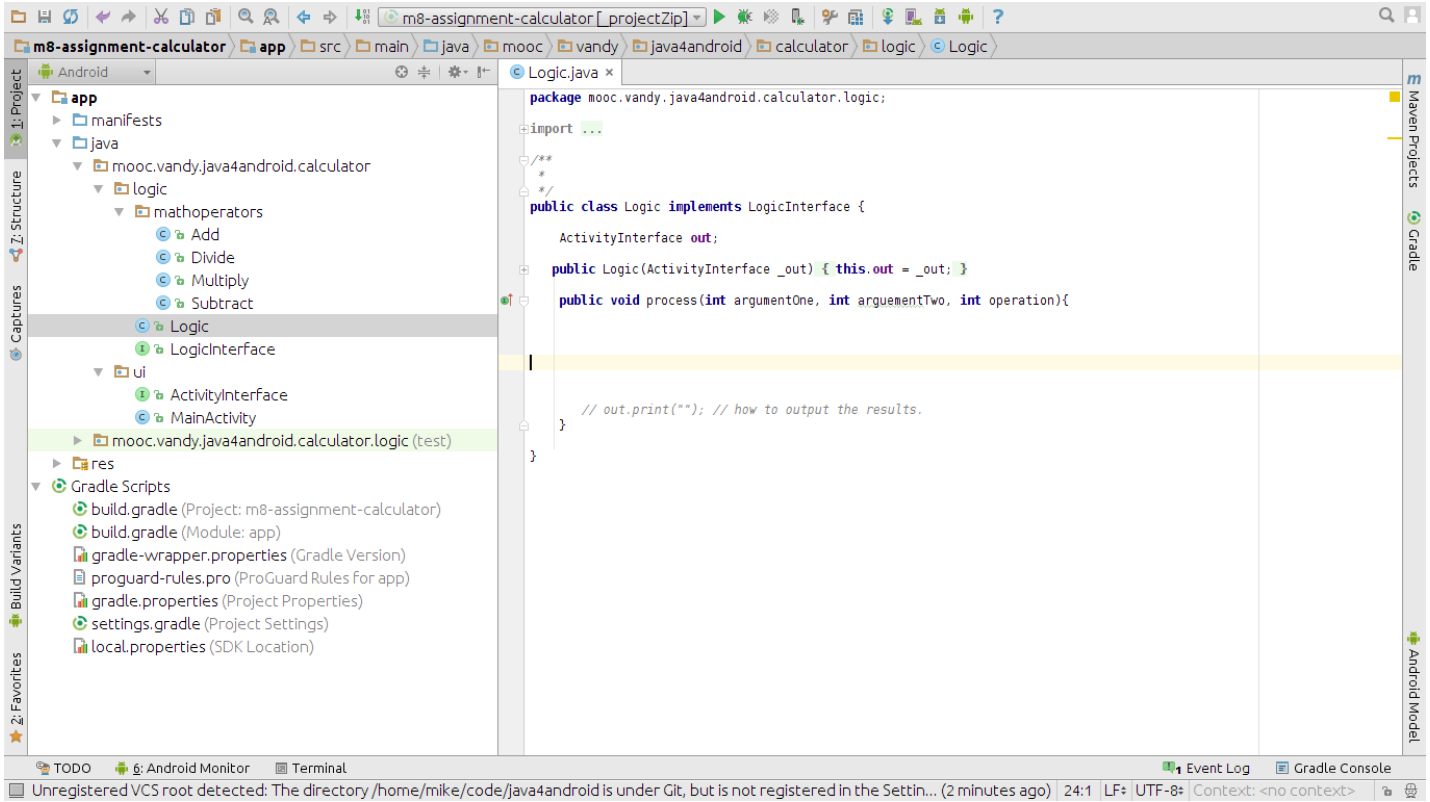


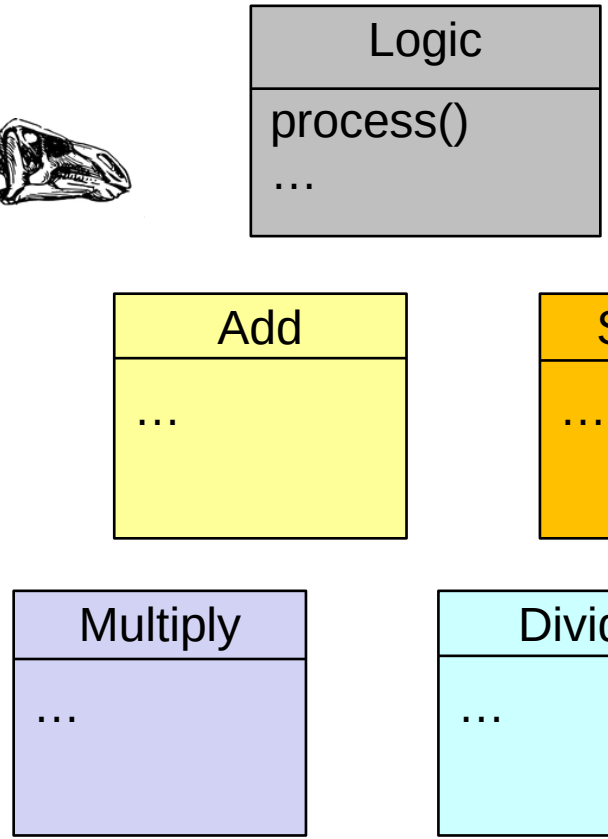
Steps for Getting Started

- Launch Android Studio & load the project



Steps for Getting Started

- This project supplies you with 5 skeleton files containing Java classes



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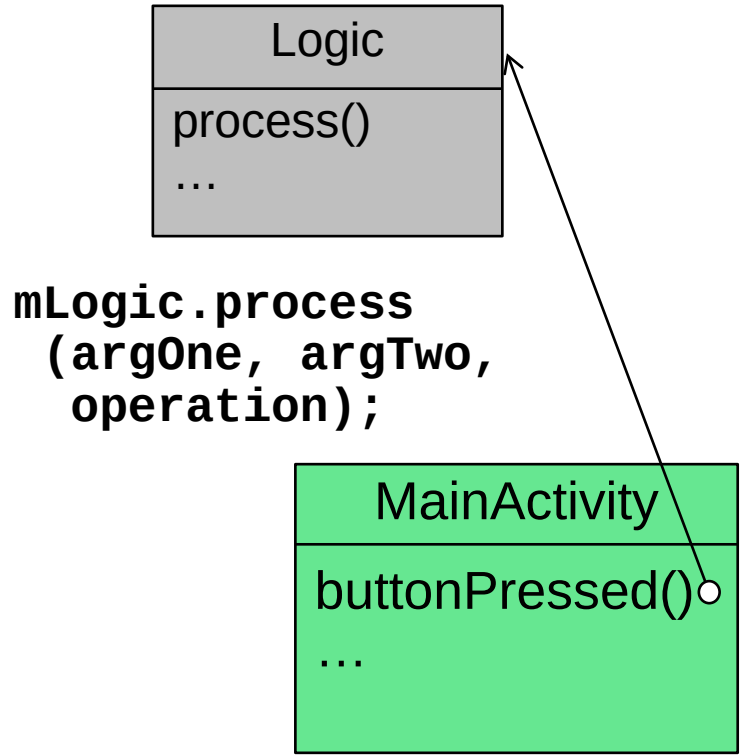

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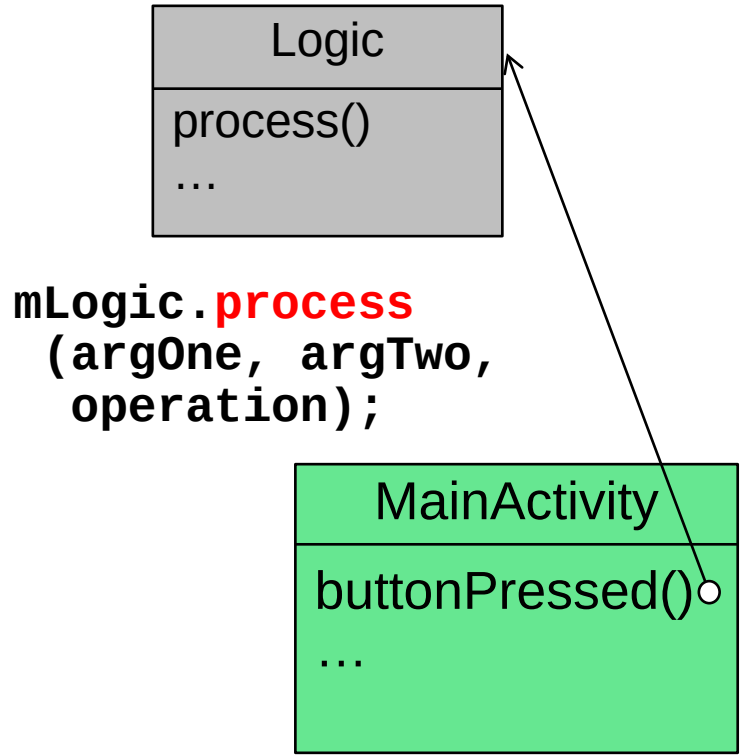

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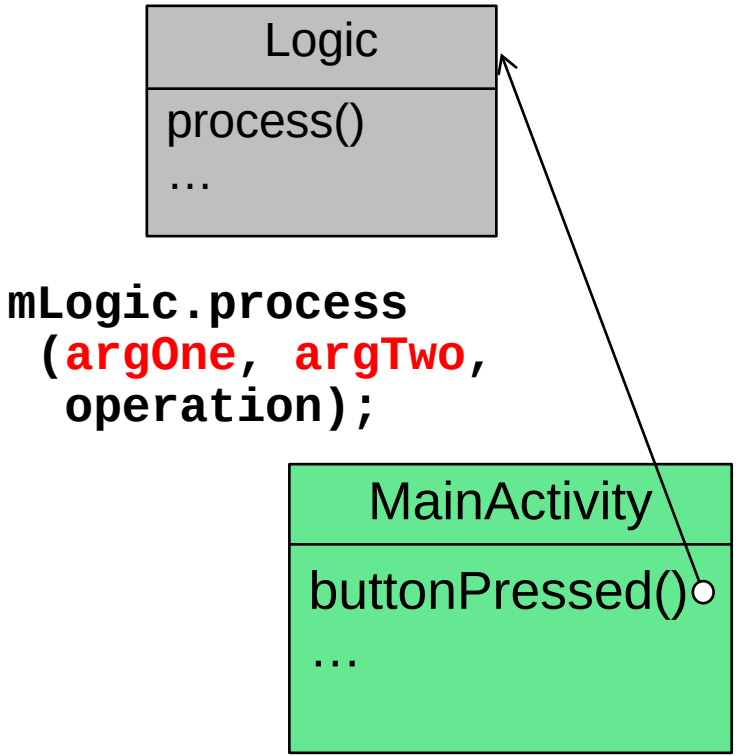
  - Logic.java contains process(), which receives 3 entities passed from UI
    - the two integers upon which to perform the computation



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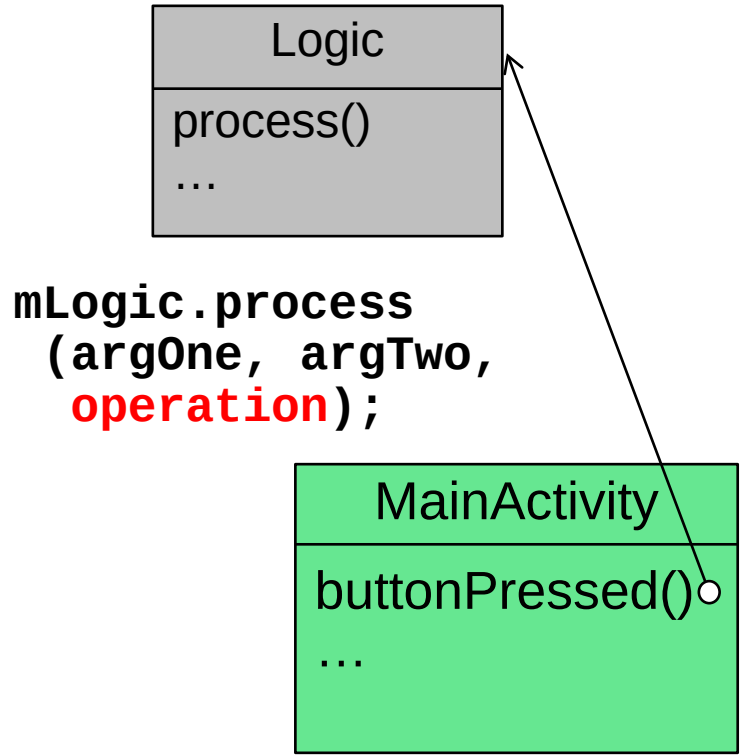

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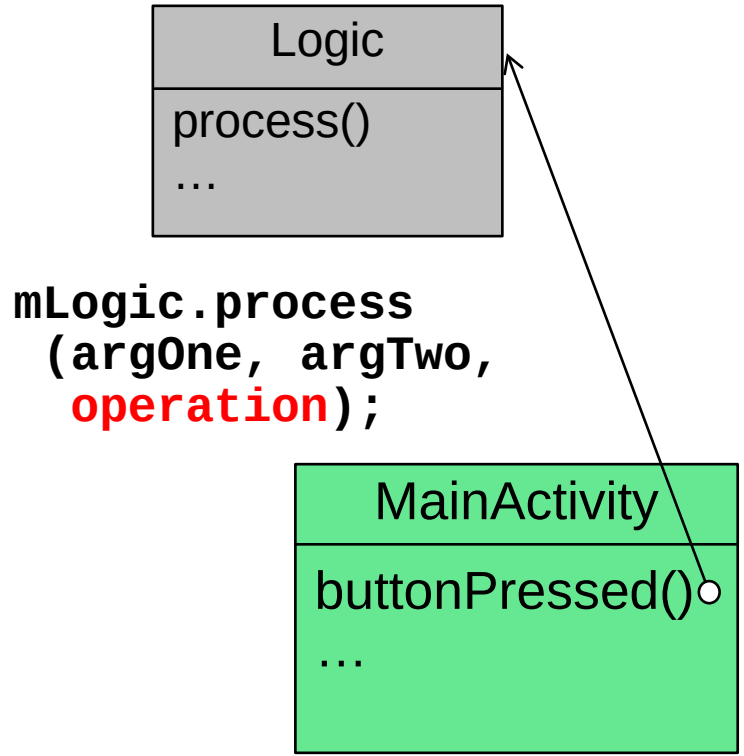
    - the two integers upon which to perform the computation
    - an integer value indicating the operation to perform
      - 1=addition



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    - the two integers upon which to perform the computation
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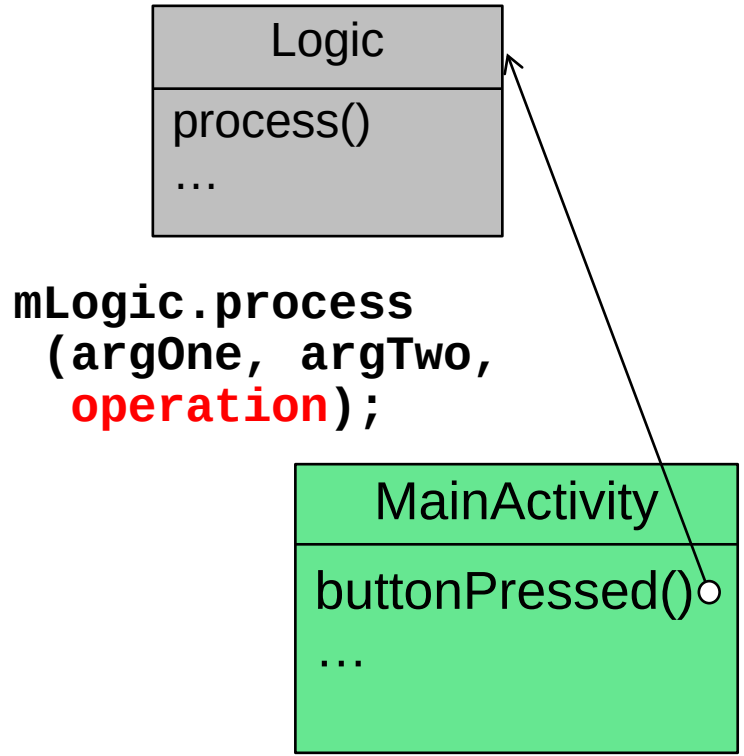
      - 1=addition
      - 2=subtraction



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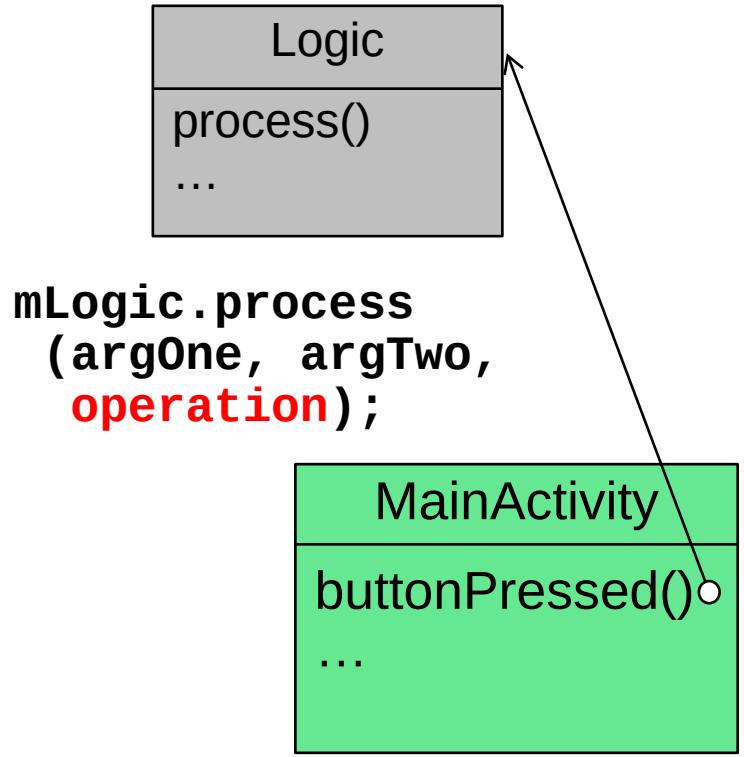

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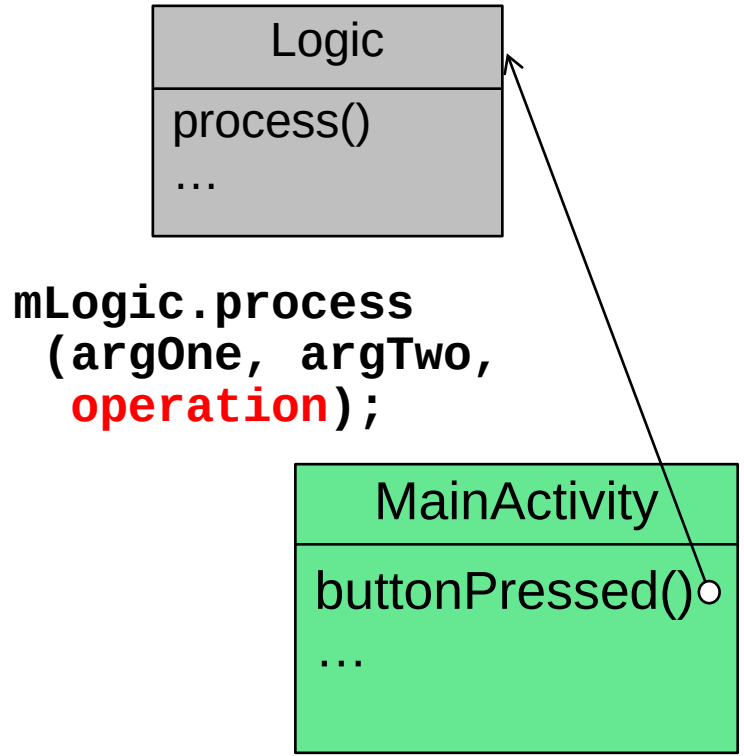
      - 4=division



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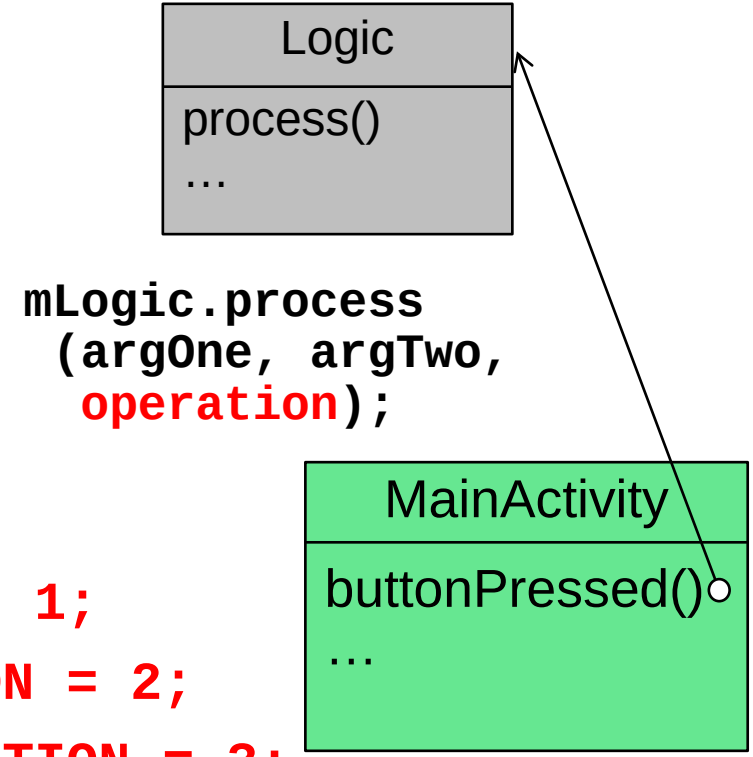
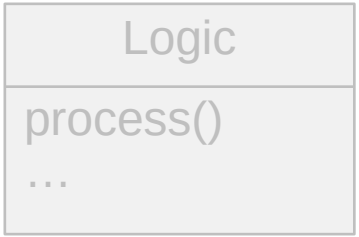
    - the two integers upon which to perform the computation
    - an integer value indicating the operation to perform
      - `static final int ADDITION = 1;`
      - `static final int SUBTRACTION = 2;`
      - `static final int MULTIPLICATION = 3;`
      - `static final int DIVISION = 4;`

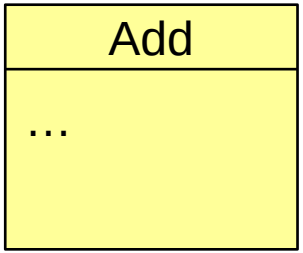


Use symbolic constants for these values, rather than “magic numbers”

Steps for Getting Started

- This project supplies you with 5 skeleton files containing Java classes
  - Logic.java contains process(), which receives 3 entities passed from UI
  - The Add.java file contains an empty class named Add





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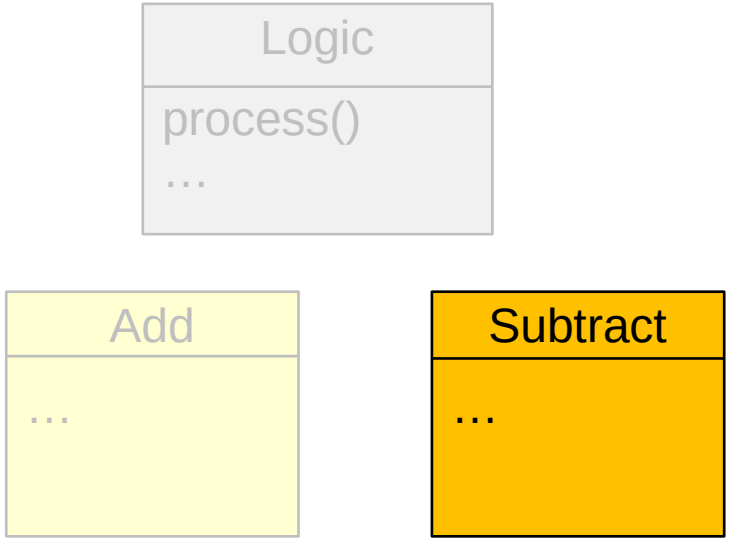

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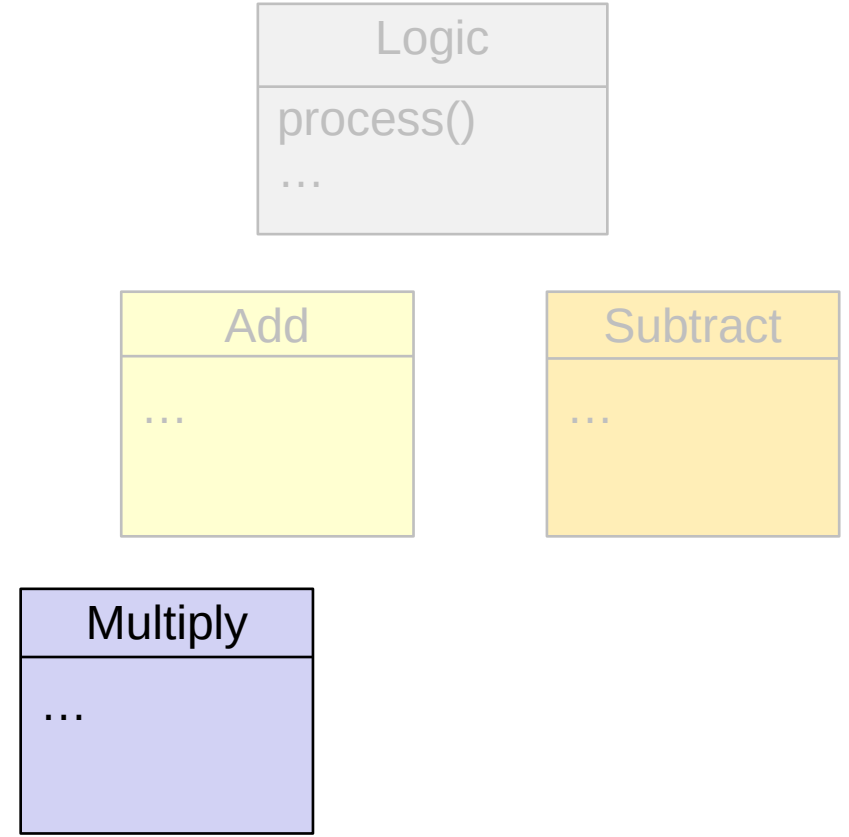
  - The Multiply.java file contains an empty class named Multiply



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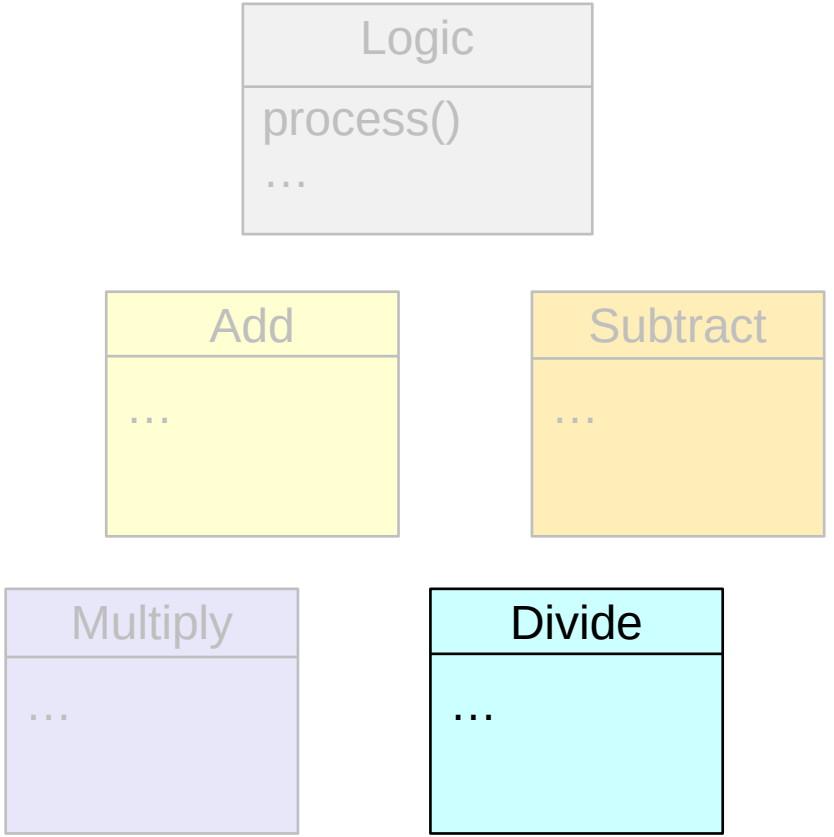
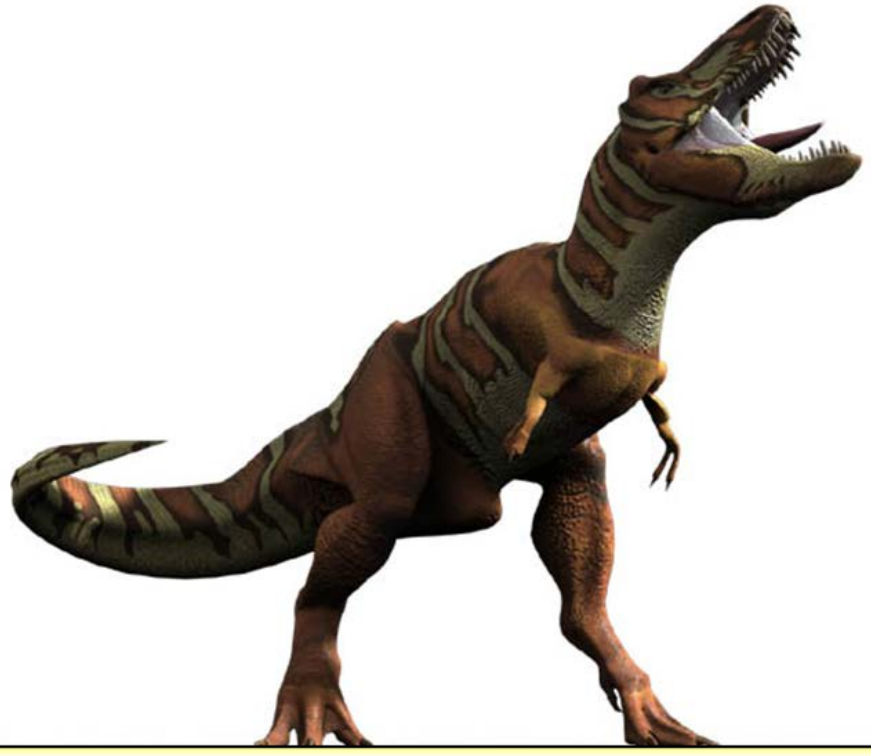
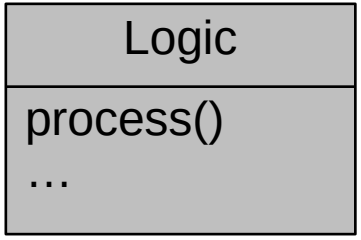
  - The Multiply.java file contains an empty class named Multiply
  - The Divide.java file contains an empty class named Divide

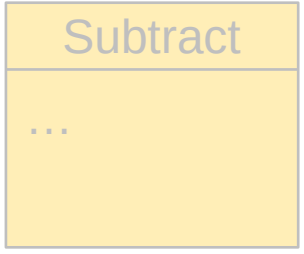


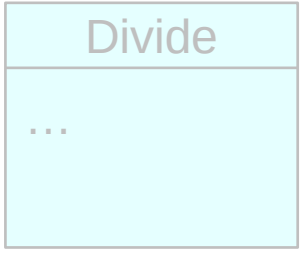
Steps for Getting Started

- You should start by modifying Logic.java









Add your implementation where comment says “TODO – start your code here”

Steps for Getting Started

- You should start by modifying Logic.java
  - Follow similar steps for other *.java files until you're done

Logic

process()

…

Add

…

Subtract

…

Multiply

…

Divide

…

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Logic
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MainActivity
…

Add
…

Subtract
…

Multiply
…

Divide
…

See upcoming lesson on "Mini-Project Assignment Walkthrough"

Guidelines for Structuring Your Solution

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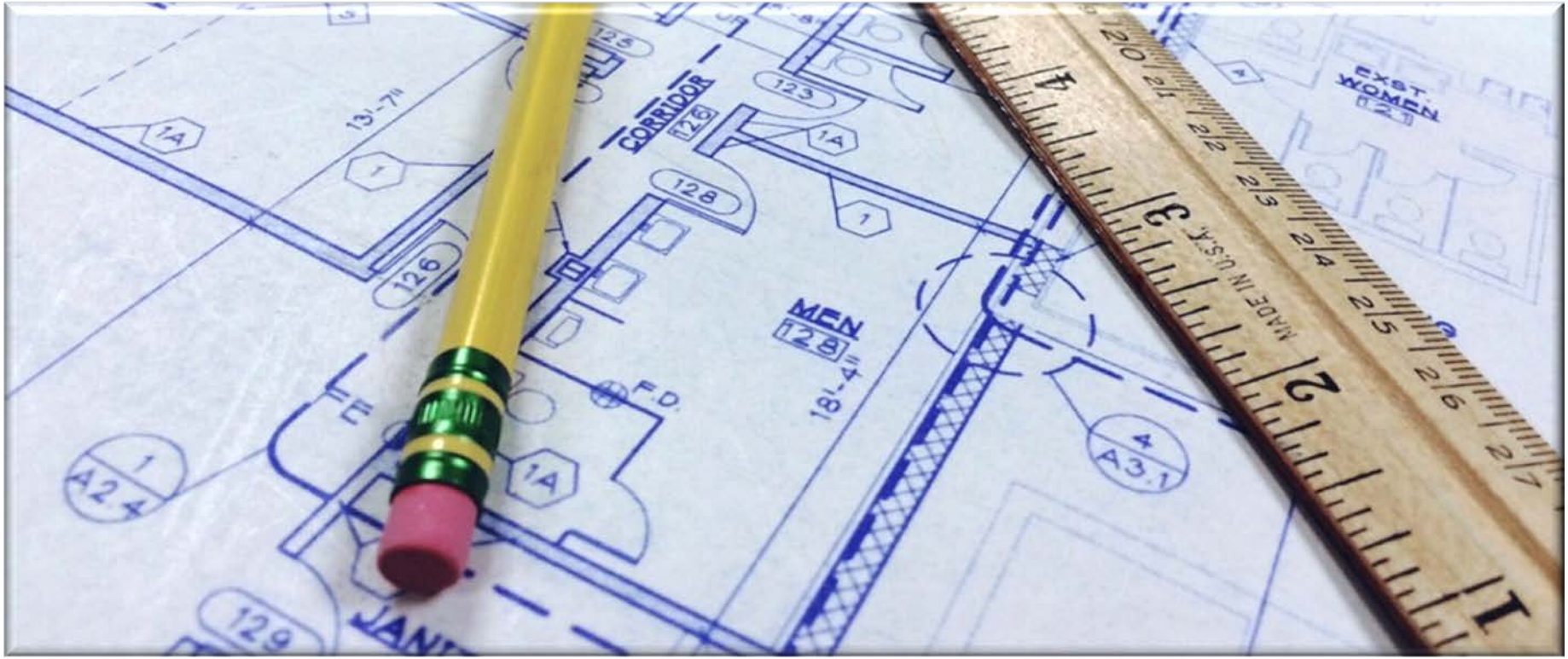
- There are two types of guidelines for structuring your solution



Guidelines for Structuring Your Solution

- *Source code design*

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This design becomes unmanageable for future extensions of the calculator app

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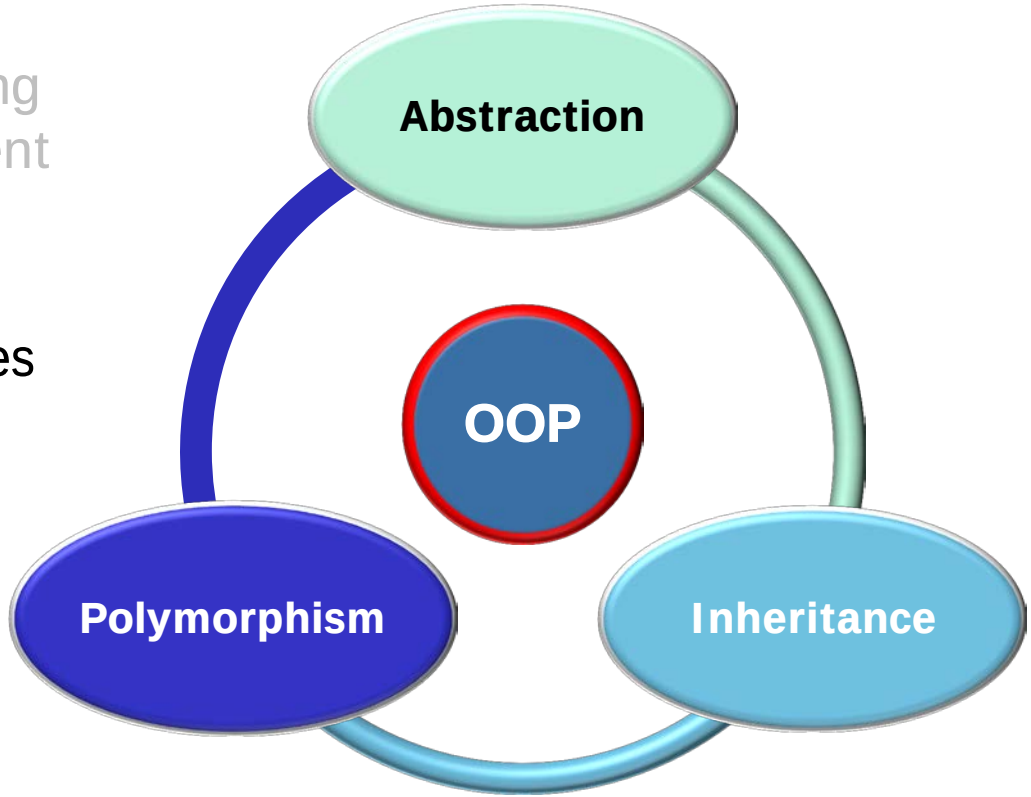
- *Source code design*
  - Don't structure your code using a multi-branch if/else statement in the process() method
  - Instead, create an *object-oriented* solution that simplifies extensibility & refactoring



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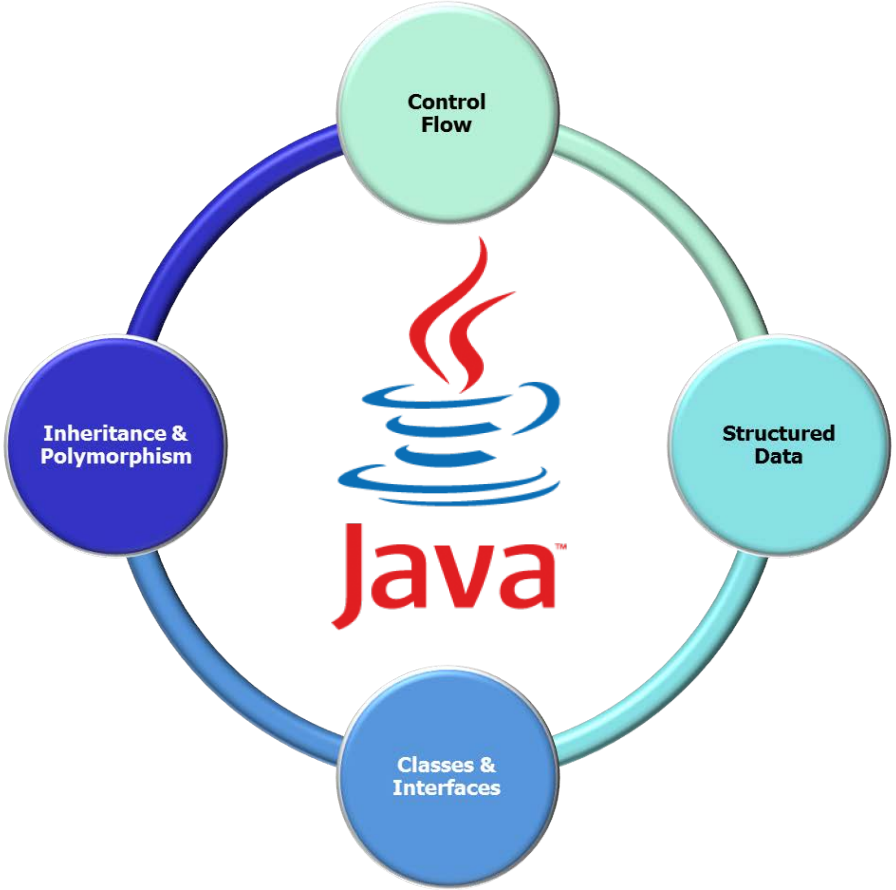
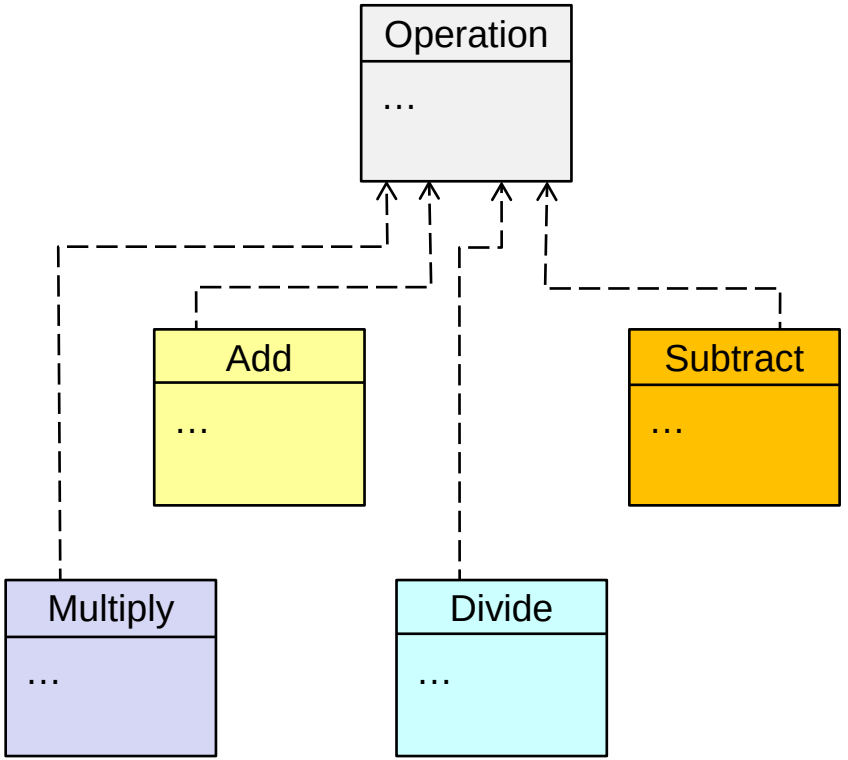
  - To receive full credit, you must apply Java language features taught in recent modules



Guidelines for Structuring Your Solution

- *Source code design*
  - Don't structure your code using a multi-branch if/else statement in the process() method
  - Instead, create an *object-oriented* solution that simplifies extensibility & refactoring
  - To receive full credit, you must apply Java language features taught in recent modules
  - Consider defining a Java interface that these four classes implement



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Steps for Submitting Your Mini-Project Solution

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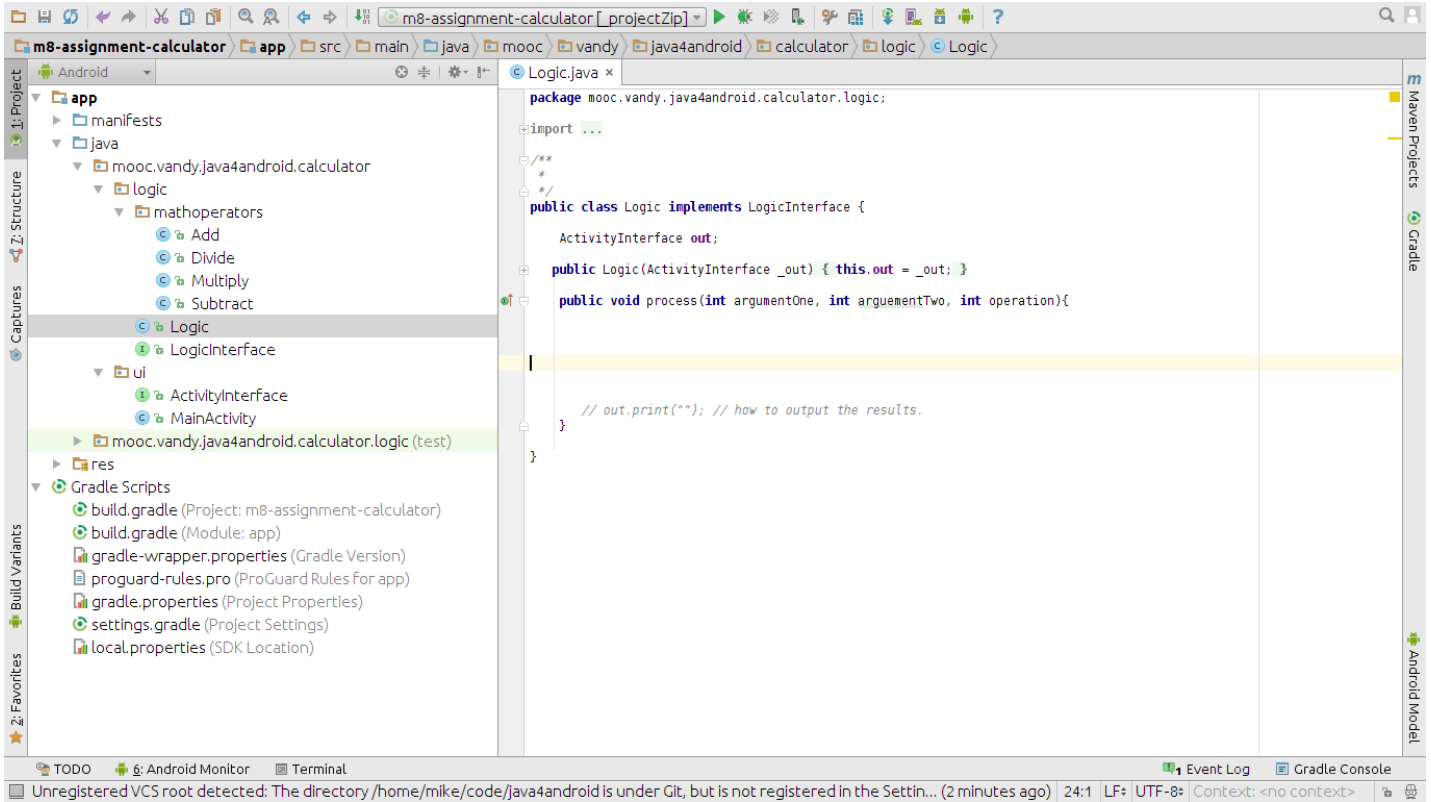
- Submit a zip file with all the necessary Java & Android Studio project files



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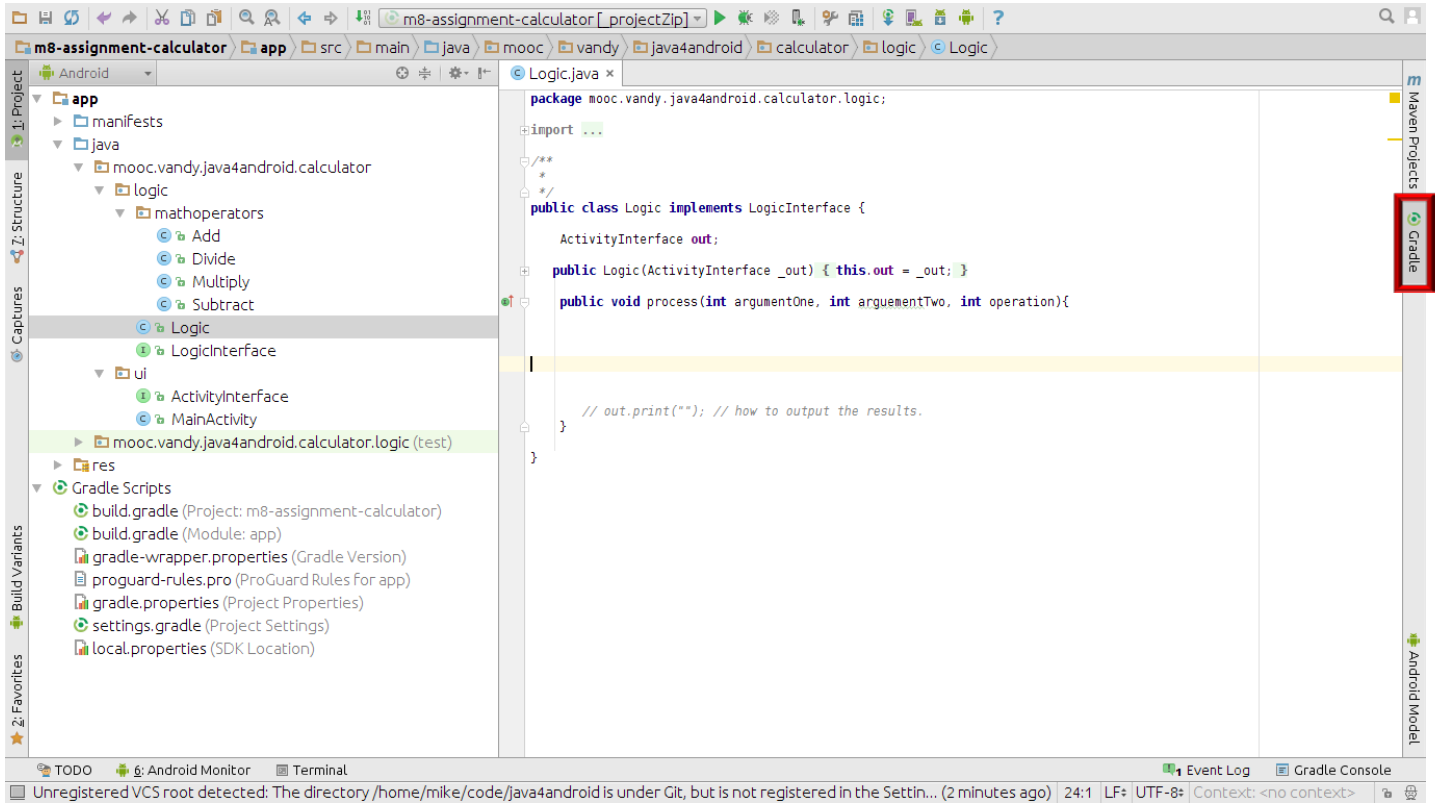

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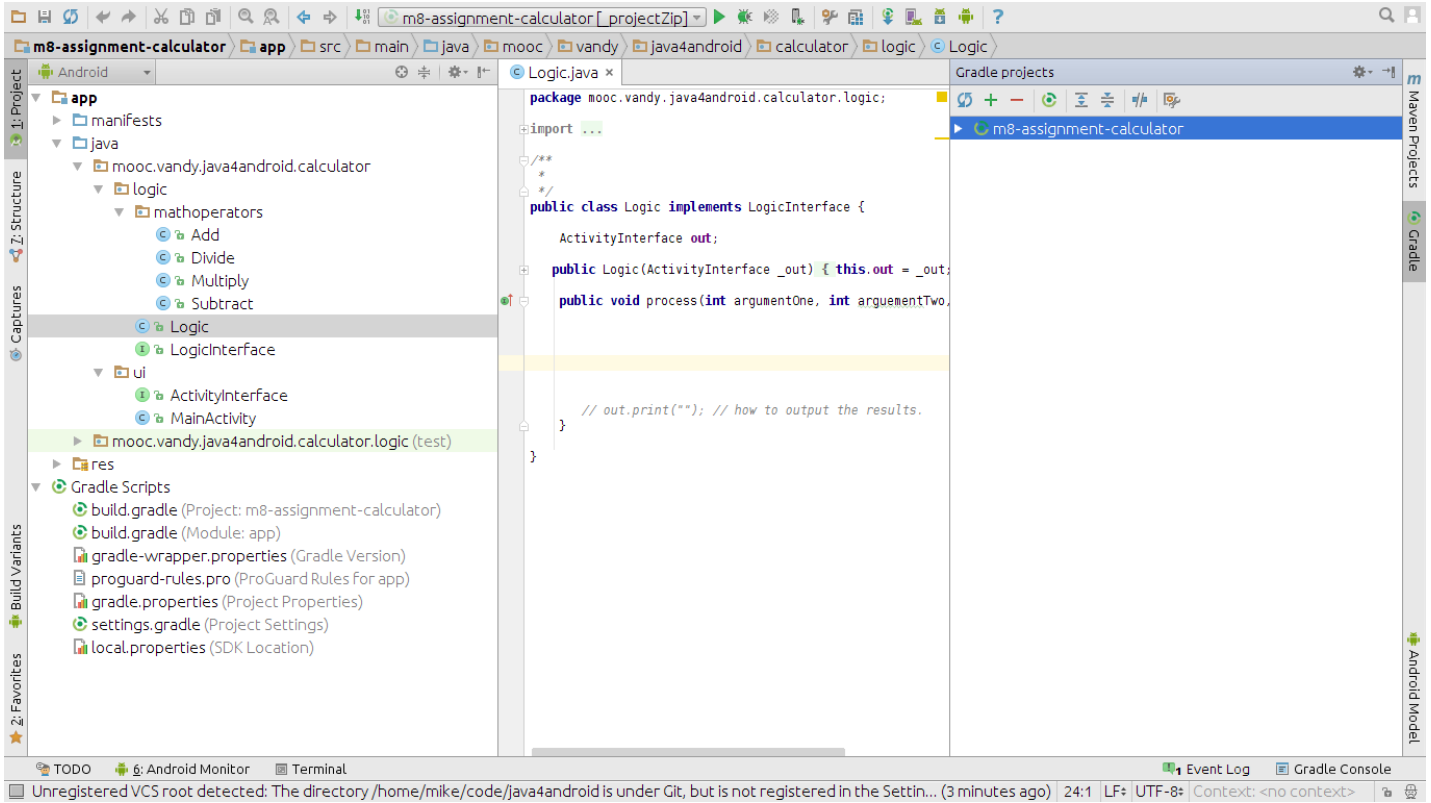

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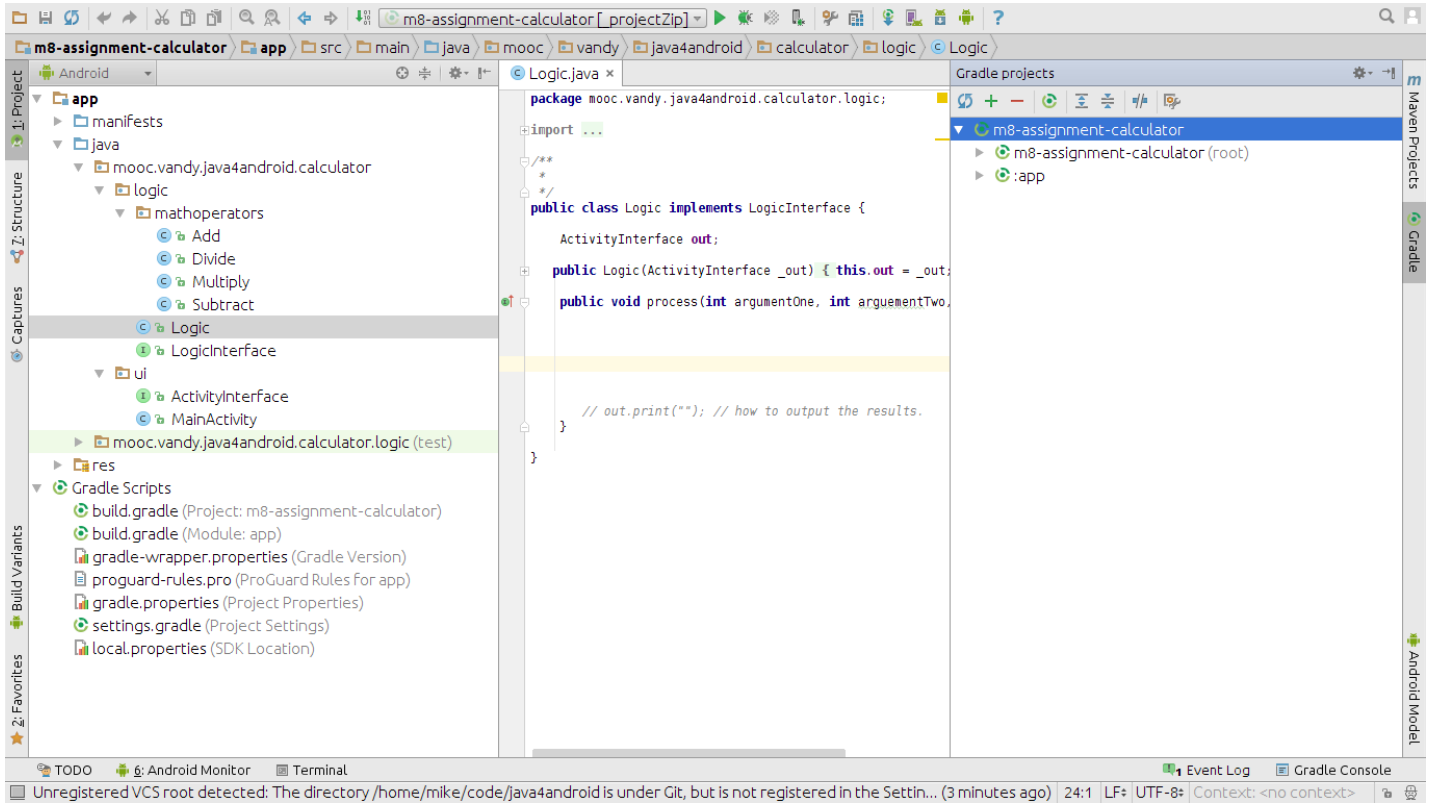

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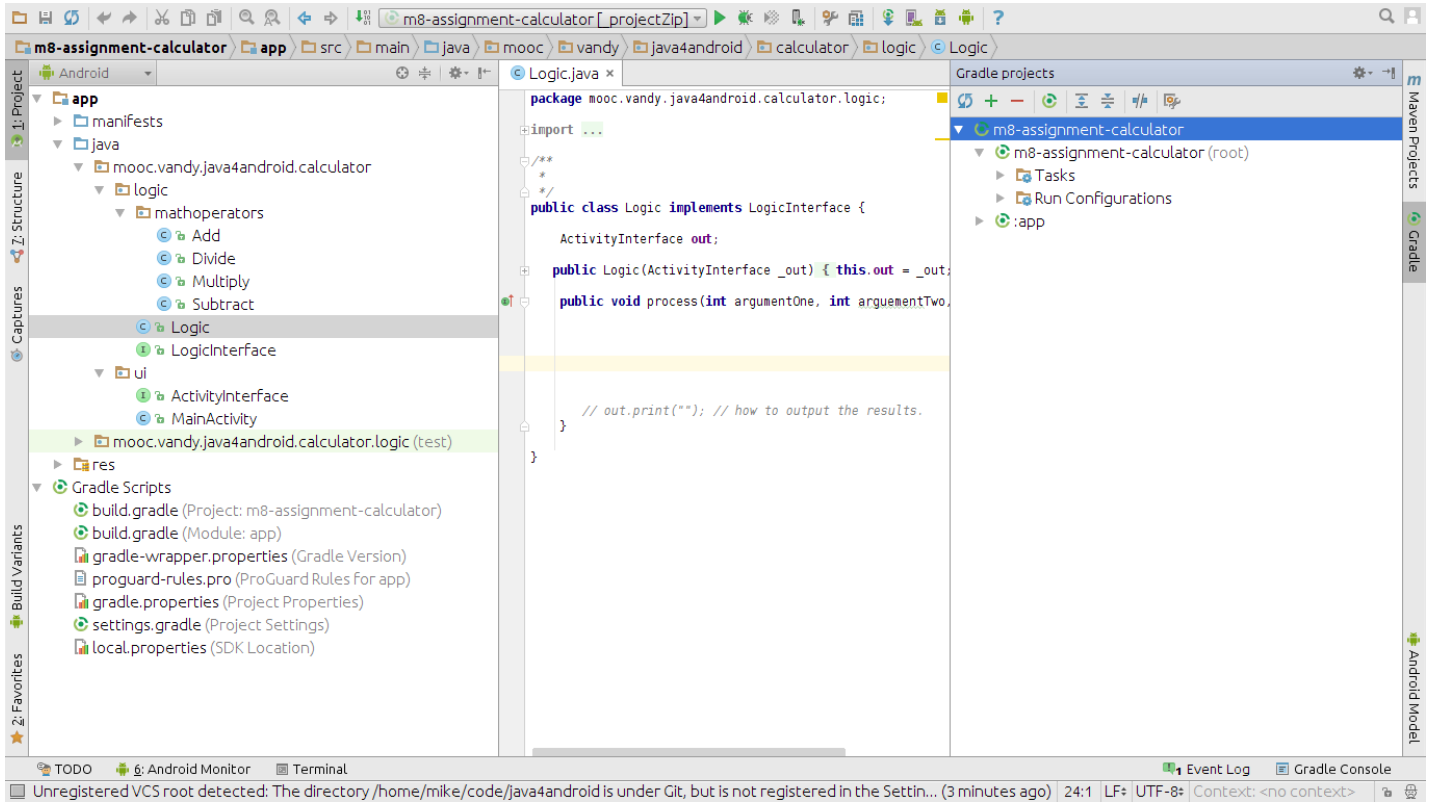

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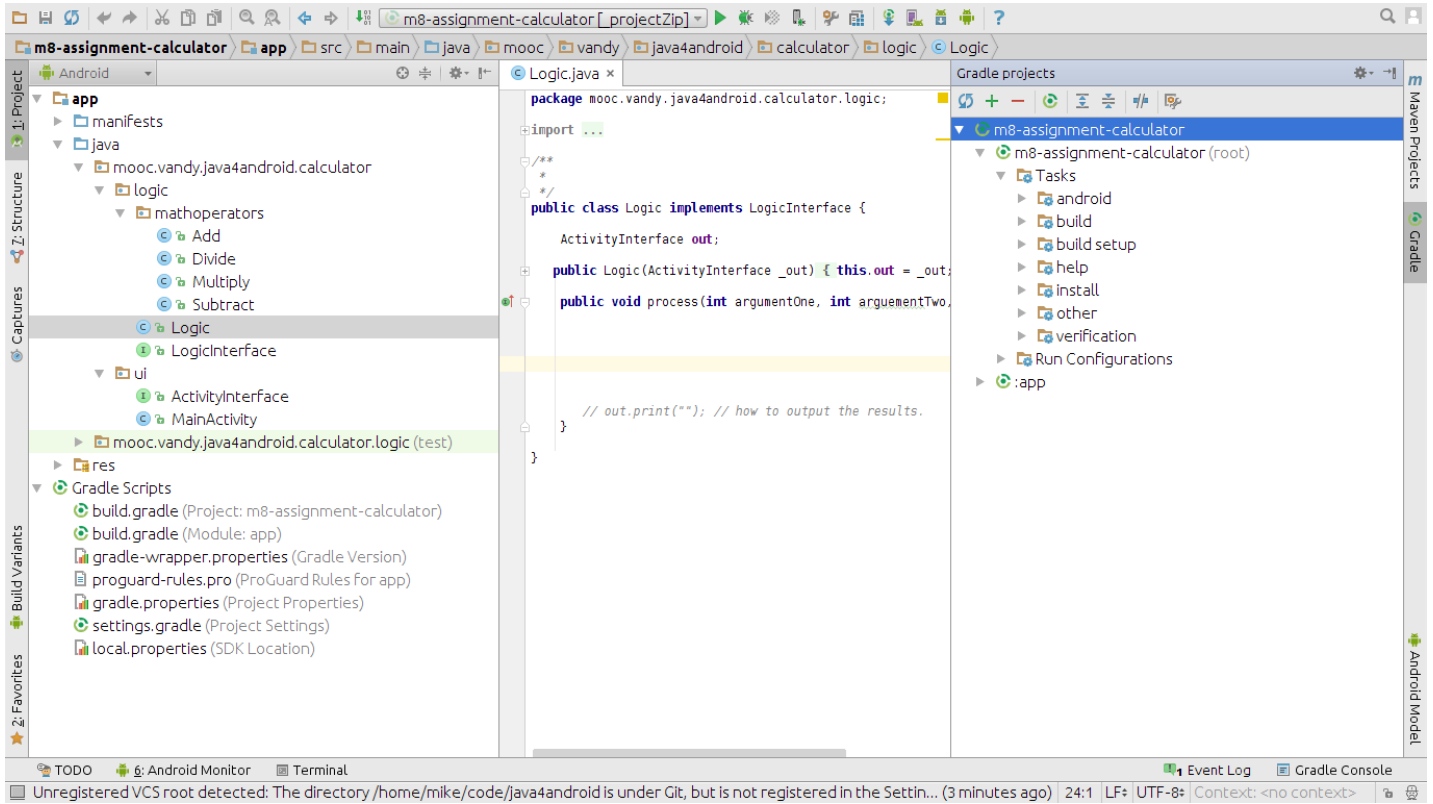

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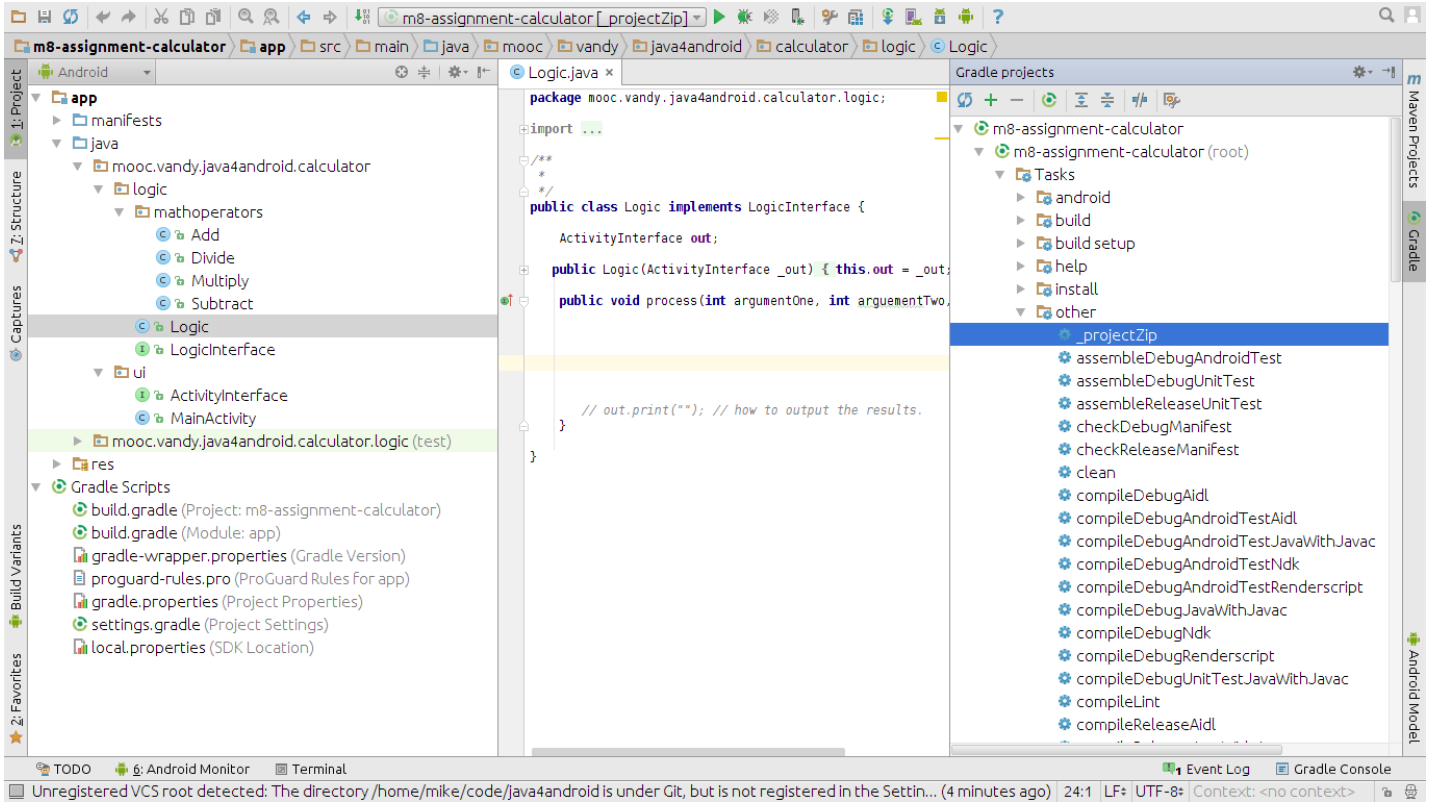

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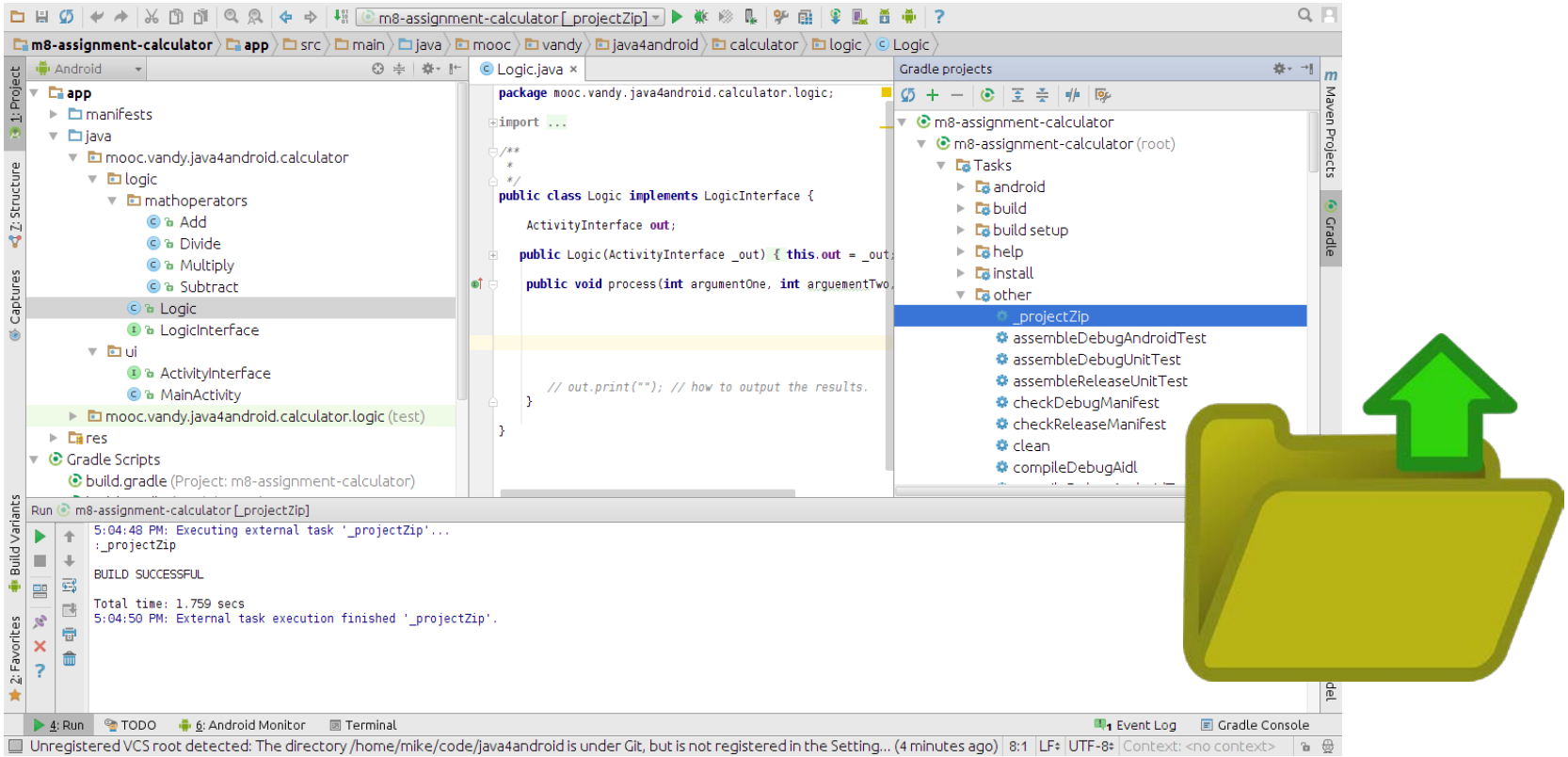

Steps for Assessing Peer Solutions

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- This mini-project will be purely peer assessed

See learner.coursera.help/hc/en-us/articles/201893769-Peer-Review-Assignments

Steps for Assessing Peer Solutions

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  1. Submit your assignment as discussed earlier

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     - At which point you'll get a video of our solution

See conditional release video on "Mini-Project Solution Walkthrough"

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     - Using the grading rubric that we supply

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- Your final grade on the mini-project uses median scores you receive from peers

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- Your final grade on the mini-project uses median scores you receive from peers
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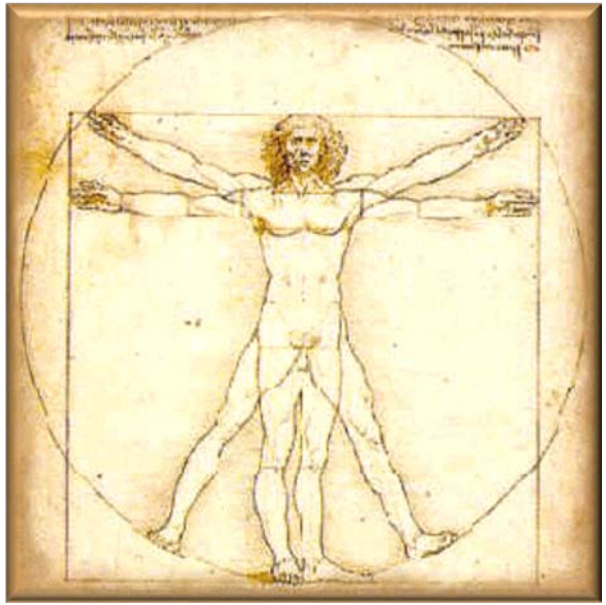
- Keep an open mind & focus on the positive in your peer evaluations



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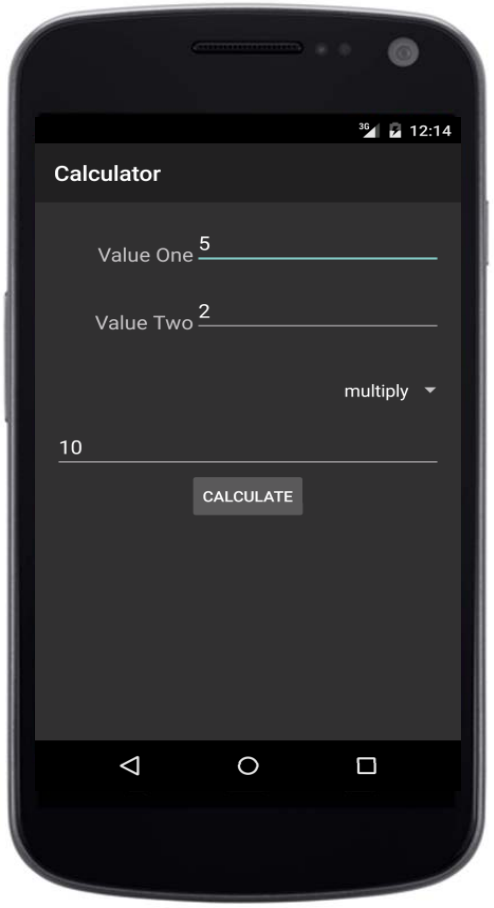
- Keep an open mind & focus on the positive in your peer evaluations
  - The goal is *not* to find every way to deduct points
  - Look for ways to give points when it's clear the submitter has given a good faith effort
  - Error on the side of giving too many points, rather than giving too few

Java for Android: Calculator App



Java for Android: Calculator App

Learning objectives:

- Understand the requirements of the calculator app
- Know how to download the Android Studio project & files containing the app skeleton
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Doug Schmidt

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Mike Walker

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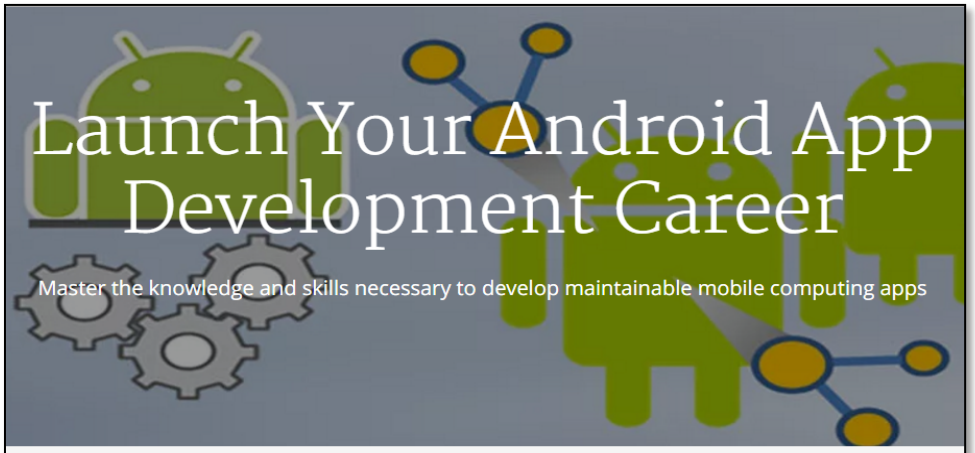

About This Specialization

This Specialization enables learners to successfully apply core Java programming languages features & software patterns needed to develop maintainable mobile apps comprised of core Android components, as well as fundamental Java I/O & persistence mechanisms. Learners who successfully complete this Specialization will be well-prepared to master the more advanced material in the subsequent "Mobile Cloud Computing with Android" Specialization.

The Capstone project will integrate the material from throughout the Specialization to exercise and assess the ability of learners to create an interesting Android app by applying knowledge and skills learned in previous MOOCs, including Java programming features, Android Studio tools, Android Activity components, Material Design, file I/O and data persistence, unit testing, and software patterns. The project itself will be similar in design goals to previous assignments, however it will provide less of the skeleton code than earlier MOOCs provide to enable more creativity to learners and greater opportunity for learners to customize the app.

Created by: VANDERBILT UNIVERSITY