

# Matrix: Progress Report

## **Worksheet Generation:** Will, Sean

We sorted worksheet generation classes into packages and created a builder design pattern for equation generation. Currently, the builder only works for bedmas and integer questions, but we have laid the architecture so that we can easily add new values like fractions, decimals as well as new operators like LCM, GCF. Similarly, we've created a very abstract expression tree to hold and solve the equations that we can easily extend. We also added a facade design pattern for worksheet\_maker, allowing UI to access all our code with just one class (worksheetController). Next, we completed PDF generation, by converting equations into strings, into latex, into images and then adding them to a newly created PDF that is downloaded. In the future we hope to add the remaining features (fractions, decimals, LCM, GCF), some of which will be tasked to Kerim and Stan. Additionally we plan on making the worksheet PDF more aesthetic and functional (ex. add the user's name in the top right).

## **User Interface:** Peter, Ethan

In Phase 1, we created an interactive GUI, utilizing JFrames, JPanels, JButtons, JLabels and more. The user is able to create an account, generate worksheets, and access their worksheet history. For reference, a user interface diagram can be seen below. For our next steps, we are looking to have a cleaner and more user friendly layout. For example, we would like to make the text fields look cleaner and increase the font size when the user types in the text field, as well as changing the worksheet history screen to a cleaner table (currently a JScrollPane). In addition, we would like to update the customizable worksheet screen so it will be able to store the user's inputs when they click the back button (it currently stores the worksheet details, but does not display it). In terms of the preview screen, it currently shows the user only one page of the worksheet, and we would like it to display each sheet in Phase 2. Along with that, we would like the download feature to be simpler so the user can easily download the document without typing in the file path (which they may not know). Finally, we will finish implementing the scores feature on the worksheet history screen and save each score into the database. This should be easier to implement once we have changed the JScrollPane that currently displays the history to a cleaner table.

## **User Functionality:** Stanley, Kerim

During Phase 1, Stanley and Kerim polished existing code in the user\_package and worked to iron out any issues connecting the user interface with the user\_package. They made UserController functions easier for the user interface to interact with (no longer needs to input current user's username after login), debugged issues with local data retrieval/storage, and improved testing of data persistence (via UserController tests). Given the user\_package is about done, Stanley and Kerim are now beginning to contribute to the worksheet generation task. Stanley and Kerim were both tasked to add new equation types: lowest common multiple (LCM) and greatest common divisor (GCD), respectively. Separately, Kerim is also tasked to implement new functionality to allow multiple operands to be printed out in an equation (given the current binary expression tree). Meanwhile, Stanley was also tasked to implement the worksheet generation random seed (to be able to reproduce worksheets), and was able to finish it and include it in Phase 1.

## **Open questions your group is struggling with**

- Mac and Windows seem to have different GUIs despite running the exact same code (ex. some of the images don't load properly)

**What has worked well so far with your design**

- The division of labour into discrete roles
- Frequent communication, pull requests, and branching
- The use of various design patterns to simplify code (ex. equation generation)
- The adherence to clean architecture, which makes it really easy to test, extend, and integrate functions