Matrix Walkthrough

Logging in/Viewing/Updating user-specific information

Upon opening the app, a UserController is created. This loads a UserManager that will check if any Users are stored on the device. In addition, UserContoller creates a UserManagerViewer and UserManagerUpdater (for viewing and updating User-related information respectively). Upon entering a username, the UserController calls the UserManagerViewer to verify. If an account with the specified username is present, the user is logged in. Otherwise, the user can register a new account, where they will store some personal details (UserController will instruct UserManagerUpdater to create and store a new User object in UserManager). When 'logged in', the current username is stored in UserController. In the main menu, the user can click 'Create a new worksheet' (paragraph below), 'User profile' or 'User history'. If 'User profile' is chosen, it displays the user information and user's reported scores on specific topics (UserController asks the UserManagerViewer for details and a map of scores for the current User for UI to display). If 'User history' is chosen, it shows previously generated worksheets chronologically (since for each worksheet generated, time created, number of questions, difficulty, etc. will be stored in the User's history). Finally, the user can record a worksheet's score or delete it from history. Recording scores will cause the UserController to instruct the UserManagerUpdater to update the User's score record.

Generating worksheets

The user has pressed 'Create a new worksheet' and is currently on the topic select screen. Through a series of screens, buttons, and fields, the user requests the generation of 10 'addition', 'standard', 'medium' difficulty questions with font size of 16, 'horizontal' equation format, and "Test addition worksheet" as the title. Upon filling in these parameters, 'Generate worksheet' is pressable. This triggers 3 key actions. First, it calls on WorksheetGenerator to generate multiple equations by repeatedly calling EquationGenerator. In response, EquationGenerator generates BedmasEquations (subclass of Equation) that adheres to the specified parameters (addition, standard, medium) and returns a string representation of these BedmasEquations (as {question, answer}) to WorksheetGenerator. WorksheetGenerator then packages these string representations of BedmasEquations into an array and stores them in a Worksheet instance. Secondly, it calls on PDFPresenter to create 2 PDFs (with and without answers) by applying the font size and equation format to the worksheet equations, and stores these PDFs into Worksheet. Finally, the user is redirected to a new page with a view of the PDF and has their worksheet details stored in their history using UserController (1st paragraph). The user can then press 'Download PDF' which calls on PDFPresenter to download the PDF onto the phone. They may also press 'Delete PDF', which sends the user back to the previous screen and removes the worksheet details from the User's history.

Supplementary information

Horizontal question format: 34 + 21 = __

Vertical question format:

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  34
+ 21
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Standard question type = integers only

Fraction question type = fractions only