Monu-Mental Math

The Fun Math App!

Version 1.4

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December 13, 2012

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Version History

I) December 6, 2012: Initial Commit

- Math Game Fundamentals created

II) December 7, 2012: Version 1.0

- Mental Math game completed
  - Includes internal documentation
- Created Main Menu
- Added many strings, dimens
- Added backgrounds & other drawables

III) December 8, 2012: Version 1.1

- Fleeting Figures completed
  - Includes internal documentation
- Minor changes to Mental Math
  - Fixed some redundant code
  - Changed some comments
  - Changed styling features
- Main Menu changed to accompany new Fleeting Figures game
- Created some of the Splash Screen

IV) December 9, 2012: Version 1.2

- Game Over activity added
  - Shows the game, difficulty and score the user played/attained
  - Linked to the new endGame() methods added to Mental Math and Fleeting Figures
  - Includes internal documentation
- Added the mechanic to have permitted mistakes in Fleeting Functions as the initial game was too difficult

- Changes to the Main Menu so it doesn't look awful
- Splash Screen activity complete with slide in/out effect and logos

V) December 10, 2012: Version 1.3

- Scores activity added and functional
  - Includes new background
  - Includes internal documentation
- Buttons added to Game Over and Main Menu to link to Scores
- Main Menu changed to add all required buttons and functionality
- Minor comment changes

VI) December 12, 2012: Version 1.4

- Instructions activity added and functional
  - Includes internal documentation
- New backgrounds for activities
  - Main Menu, Instructions
- Wireframes added for activities
- Many changes to comments throughout several activities
- Completed this External Documentation
  - Includes screenshots and wireframes
- Ready to present this application on December 13, 2012

I. Game Overview

Monu-Mental Math is a set of games that deal with numbers. They are generally set against a clock for fast-paced thinking. It's a fun tool to build your mental math skills!

a. Mental Math

Mental Math is a game where you solve simple math equations as quickly as possible. It randomly generates numbers and an operator to create a new set of questions each time you play. First, you will be given the option to choose a difficulty, which affects the range of numbers you will see. Then when you are ready to play, tap the "I'm Ready!" button, and start solving the equations near the top of the screen with the given Numpad. Some answers will require negative values, so click the "Make Negative" checkbox when required. You have 30 seconds to solve as many as you can. Don't worry about getting one wrong, just move on to the next and power through them!

b. Fleeting Figures

Fleeting Figures is a game where you need to remember the numbers and the colour associated with them. There are 4 ovals with the colours red, blue, yellow and green. Be warned, these colours will not appear in the same order for each question! The ovals also contain random numbers. After a few seconds, the ovals will disappear and a question will appear asking what colour oval had a specific number. This number will be one of the numbers that appeared previously. You get 5 seconds to answer. Each time you get one right, you will have less time to remember them. If you get it wrong or the 5 seconds is gone, you lose one attempt out of three. When you're out of attempts, you lose! The difficulty affects the size of the numbers you see, as well as the starting amount of time you have to remember them.

II. Game Play Mechanics

a. Mental Math

Mental Math uses pseudo-random numbers to make each time you play a unique experience. The game timer is also an important mechanic in this game, as the game is based on how many questions you can solve in 30 seconds.

b. Fleeting Figures

Fleeting Figures is dependent on swapping between one set of coloured views to another set in a given time. You only have 5 seconds to answer once the ovals have disappeared. Like Mental Math, Fleeting Figures also uses pseudo-random numbers, but in a much larger range and only positive values. The colour positions are also randomized.

III. Controls

a. Mental Math

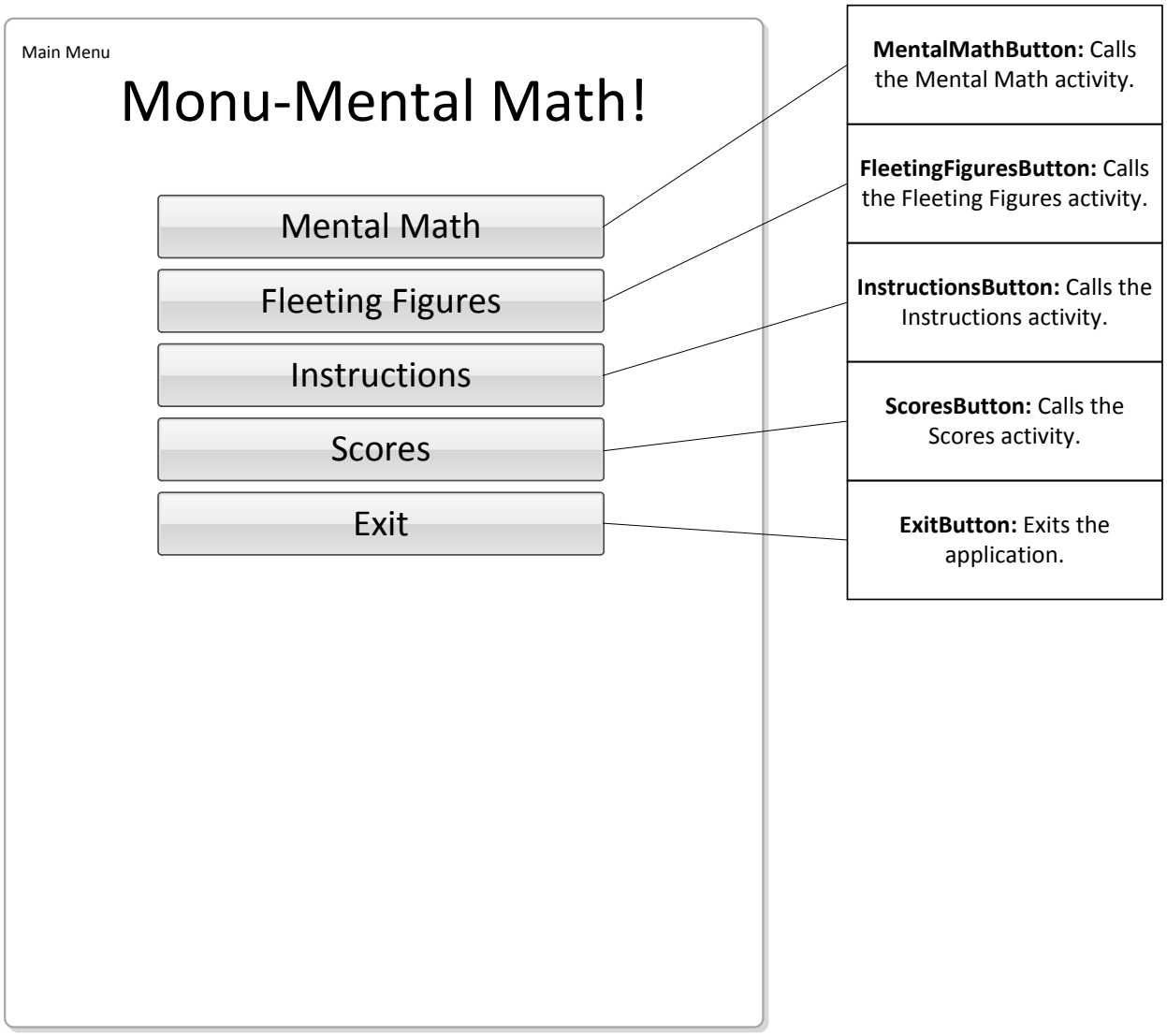
Operation in Mental Math is as simple as tapping the numbers on the given Numpad. If you make a mistake, hit the Clear button. If the answer is negative, check the Make Negative Checkbox.

b. Fleeting Figures

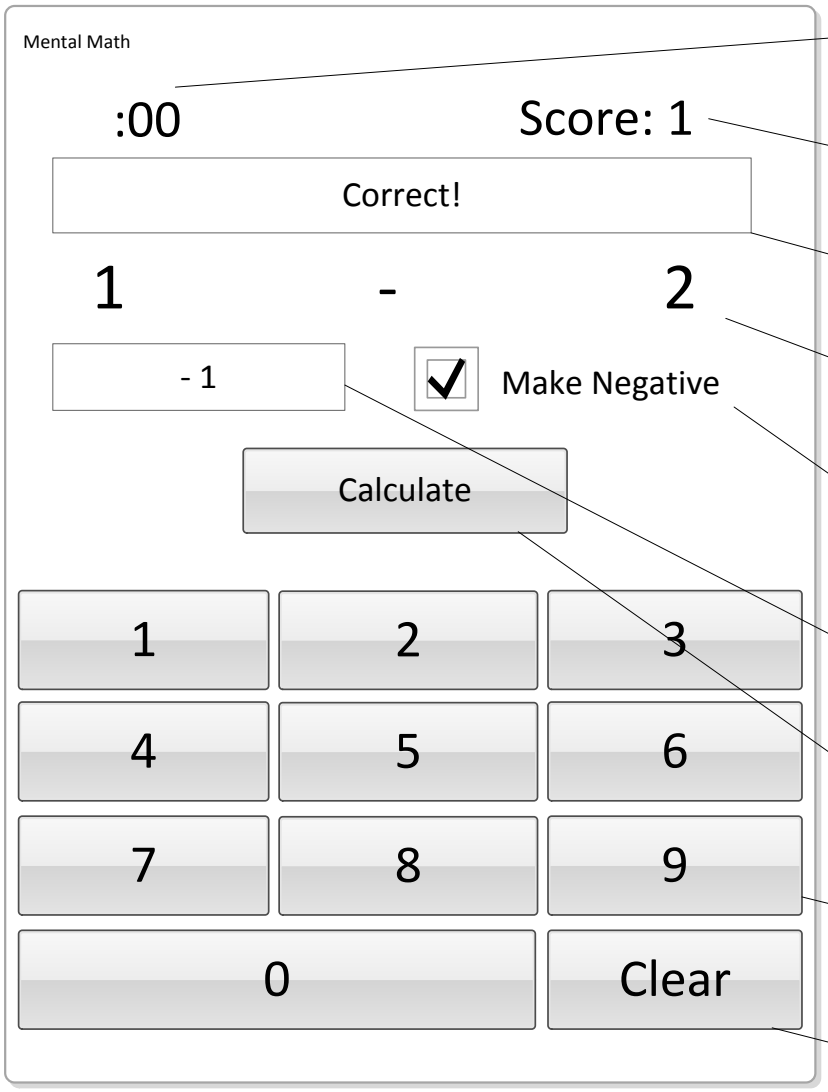
Fleeting Figures only requires you to hit one of four buttons during gameplay, each with a specific colour. They always appear in the order of Red, Blue, Yellow, and Green, unlike the ovals at the top of the screen which are random!

IV. Interface Wireframes and Descriptions

Main Menu



Mental Math



TimerTextView: Displays the time remaining.

ScoreTextView: Displays the player's score.

InfoTextView: Shows if the player is correct or not.

NumberTextViews & OperatorTextView: Displays the current equation.

MakeNegativeCheckBox: Determines whether the current answer is negative.

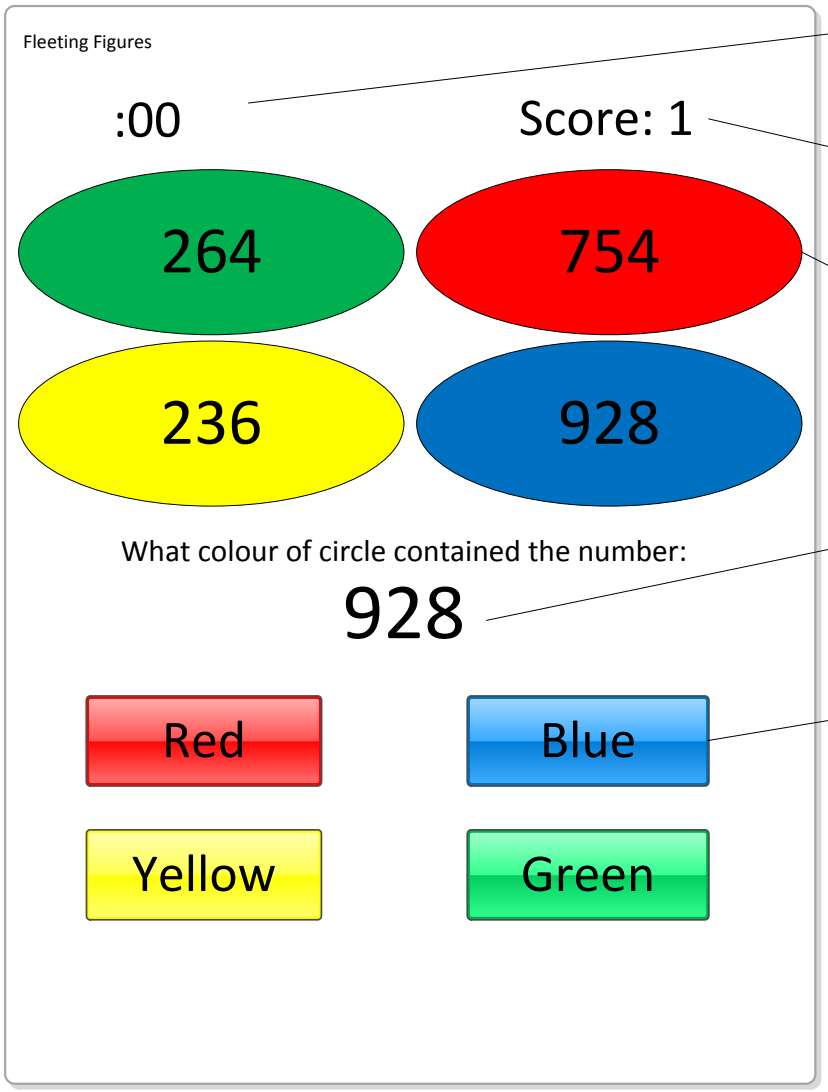
AnswerEditText: Records the numbers the player types on the Numpad.

CalculateButton: Submits the player's answer.

Numpad [NumButtons]: Built-in number pad that places numbers in the AnswerEditText.

ClearButton: Clears the AnswerEditText and the MakeNegativeCheckBox.

Fleeting Figures



TimerTextView: Displays the time remaining for the question.

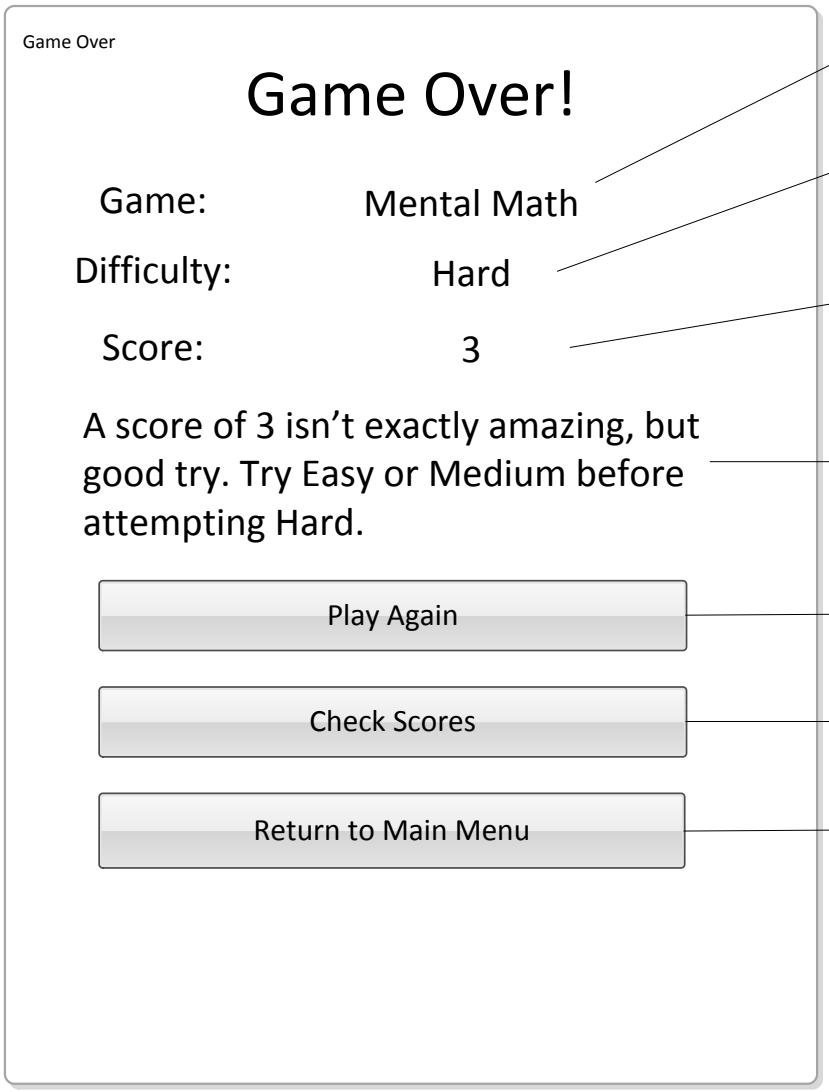
ScoreTextView: Displays the player's score.

Oval Buttons: Displays the random numbers used for the question.

QuestionNumberTextView: Displays the chosen random number for the player to associate with a colour.

AnswerButtons: Buttons for the player to tap to choose their answer.

Game Over



GameTextView: Displays the name of the game the player was previously playing.

DifficultyTextView: Displays the difficulty of the game the player tried.

ScoreTextView: Displays the score player attained.

DescriptionTextView: Displays a custom message for the player depending on their performance.

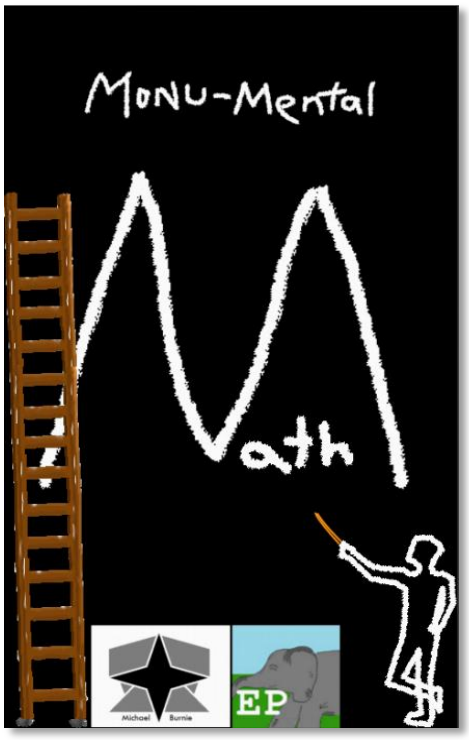
PlayAgainButton: Allows the player replay the game they tried by re-launching the activity.

CheckScoreButton: Launches the Scores activity so the player can check the recent scores.

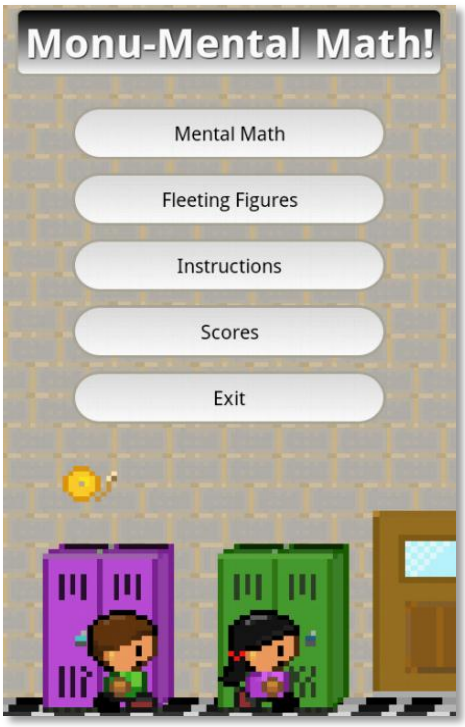
ReturnToMainMenuButton: Returns the user to the main menu by returning to that activity.

V. Game and Menu Screenshots

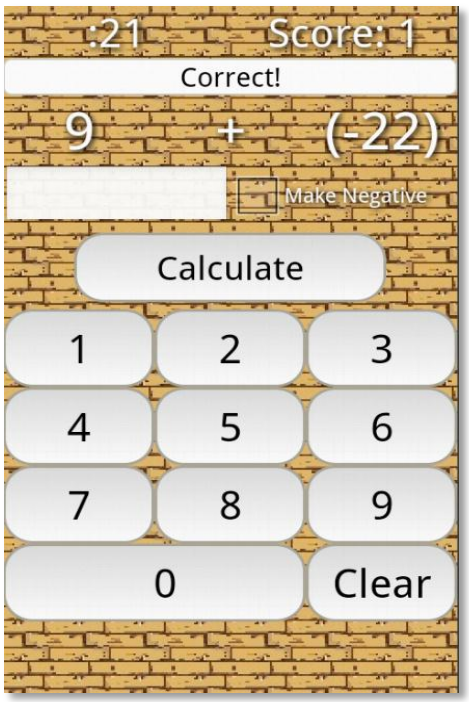
Splash Screen



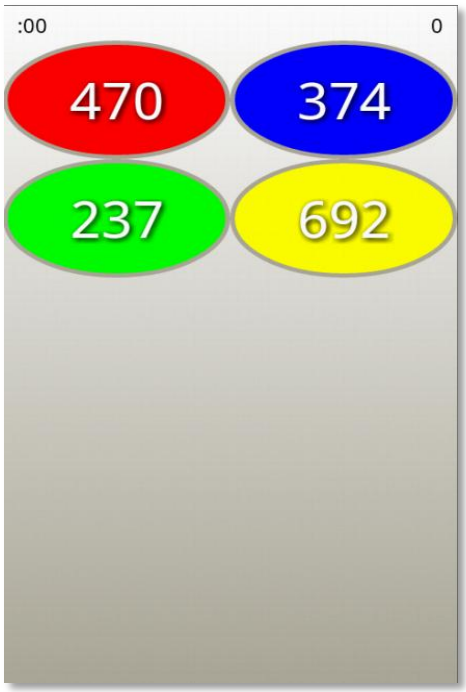
Main Menu



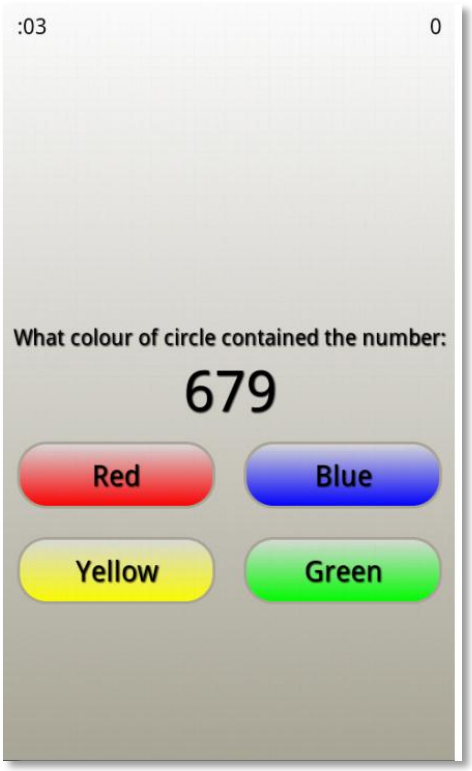
Mental Math Gameplay



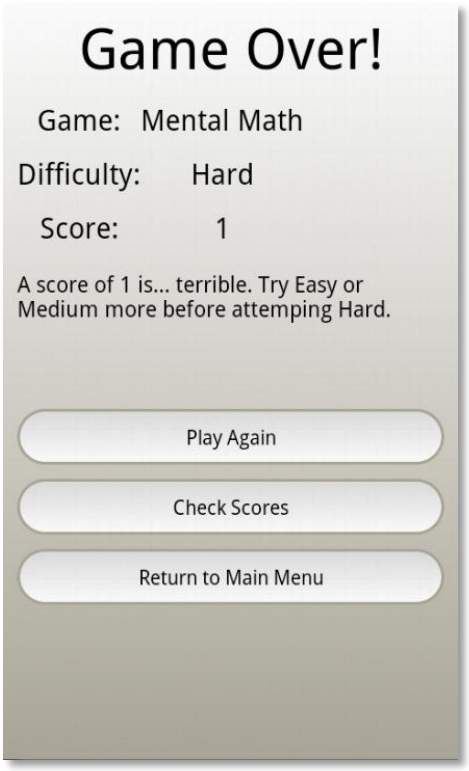
Fleeting Figures Gameplay 1



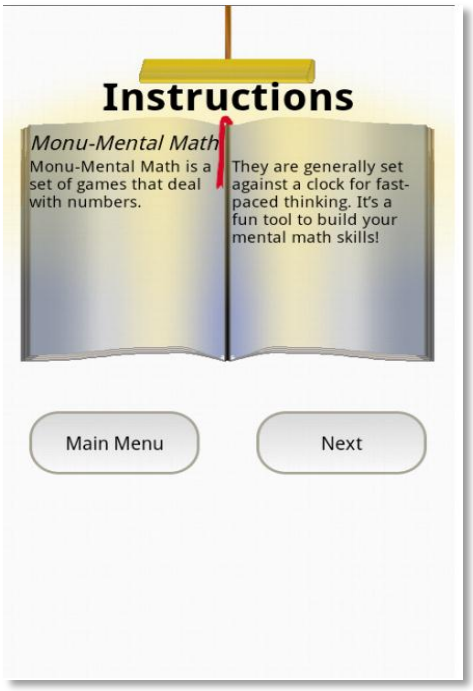
Fleeting Figures Gameplay 2



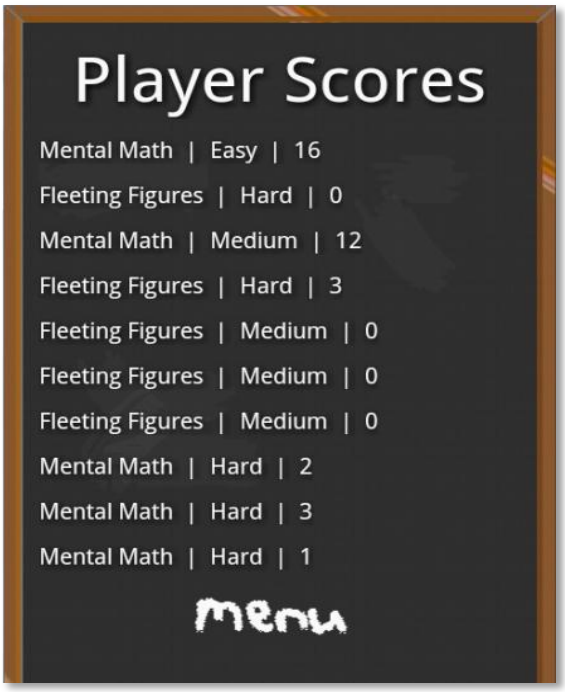
Game Over



Scores



Instructions



VI. Difficulty

Each game in Monu-Mental Math allows the player to select between three difficulties: Easy, Medium, and Hard. Changes to the difficulty are easy for each game, so as balance patches come, the challenges may change.

a. Mental Math

In Mental Math, the difficulty simply changes the numbers you deal with; on Easy, the numbers before and after the operator range from 0 to 10. When you try Medium, you will also have to deal with negative values down to -10. Finally, on Hard, the numbers range from -25 to 25.

b. Fleeting Figures

Fleeting Figures is affected by difficulty in a couple different ways. First of all, the digits are increased for each difficulty level; on Easy, there are only two-digit numbers. Medium and Hard bring that number up to 3 and 4, respectively. On top of that, the amount of time given to memorize the numbers decreases for each difficulty level; on Easy, you are given 8 seconds. Medium and Hard decrease the timer to 7 seconds and 6 seconds, respectively, making it even more difficult as the delay is decreased for each correct response. Note that the number of permitted mistakes remains at 3 throughout all difficulties.

VII. Scoring

Both games offer one point to the player for each correct response. After each game has been concluded, either the player runs out of time in Mental Math or they run out of permitted mistakes in Fleeting Figures, a Game Over screen is shown. On this screen, the player can review his/her score on the difficulty they chose. They are also given a custom message depending on their performance, often giving suggestions on what difficulty to play on. Finally, their score is automatically updated on the Scores activity, which they can view by tapping the Scores button on the Game Over or Main Menu activities.

VIII. Future Features

- *Soundtrack*
- *Sound clips for button clicks and other actions*
- *Player Bonuses*
- *Animations*
- *More games*