How to Use this Template

1. Create a new document, and copy and paste the text from this template into your new document [Select All → Copy → Paste into new document]
2. Name your document file: “**Capstone_Stage1**”
3. Replace the text in green

GitHub Username: d0tus3r

Math Quiz for Kids

Description

Math Quiz for Kids is a fully featured math quiz game. Test your skills in addition, subtraction, multiplication, and division! Complete the weekly challenge questions to test your skills at complex word problems.

Intended User

Children of all ages -- anyone looking to improve their math skills.

Features

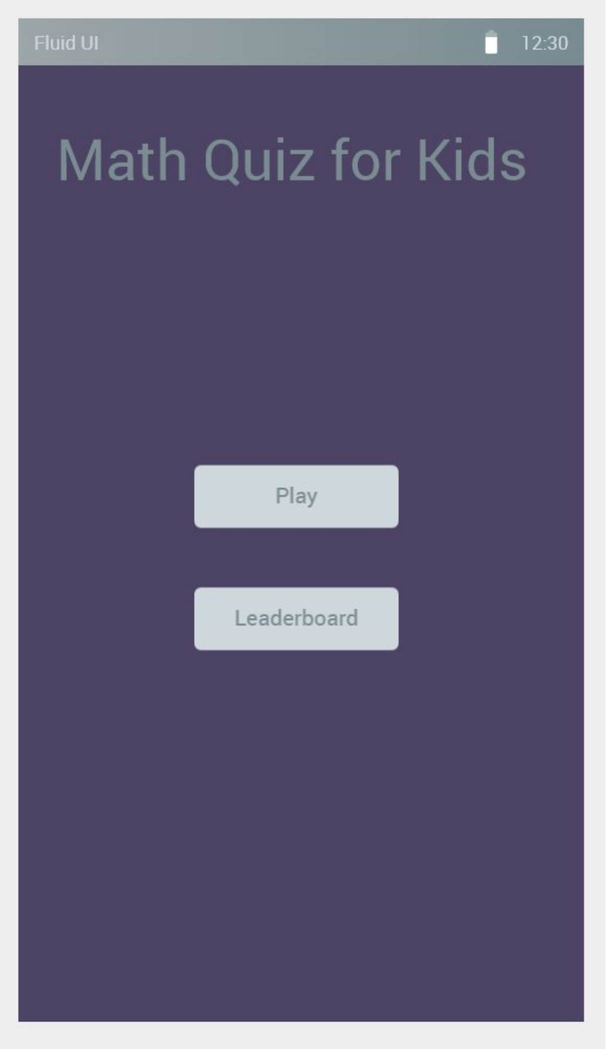
Math Quiz

- Addition
- Subtraction
- Multiplication
- Division
- Word Problems (Pulled via JSON parsing from my website)

User Interface Mocks

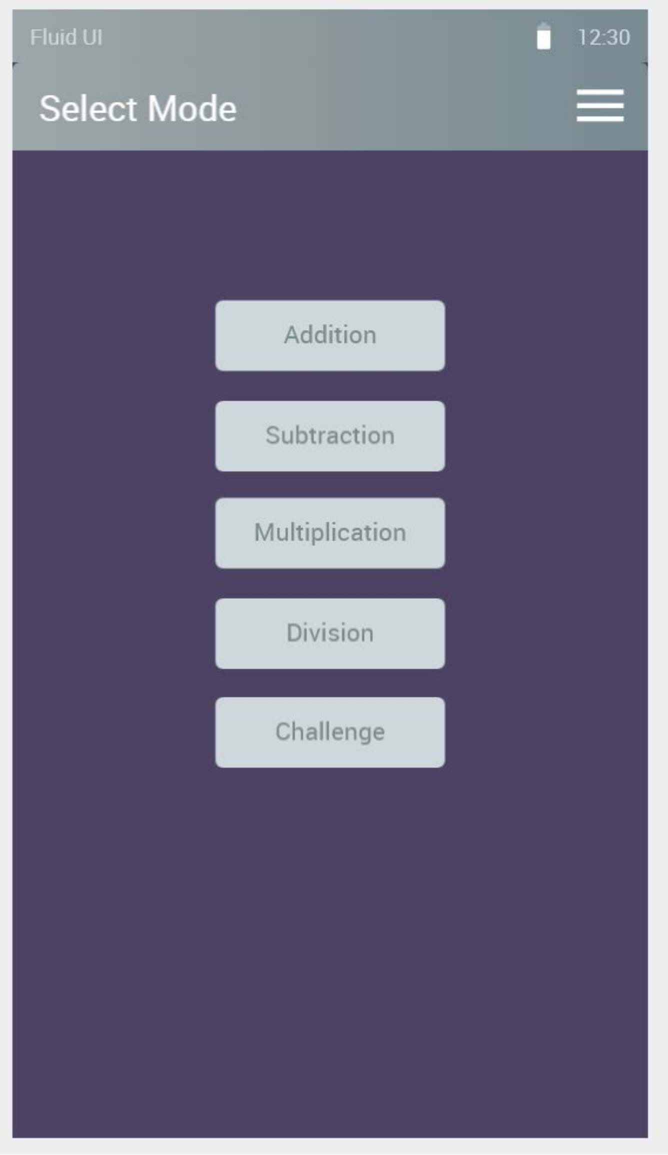
These can be created by hand (take a photo of your drawings and insert them in this flow), or using a program like Google Drawings, www.ninjamock.com, Paper by 53, Photoshop or Balsamiq.

Screen 1



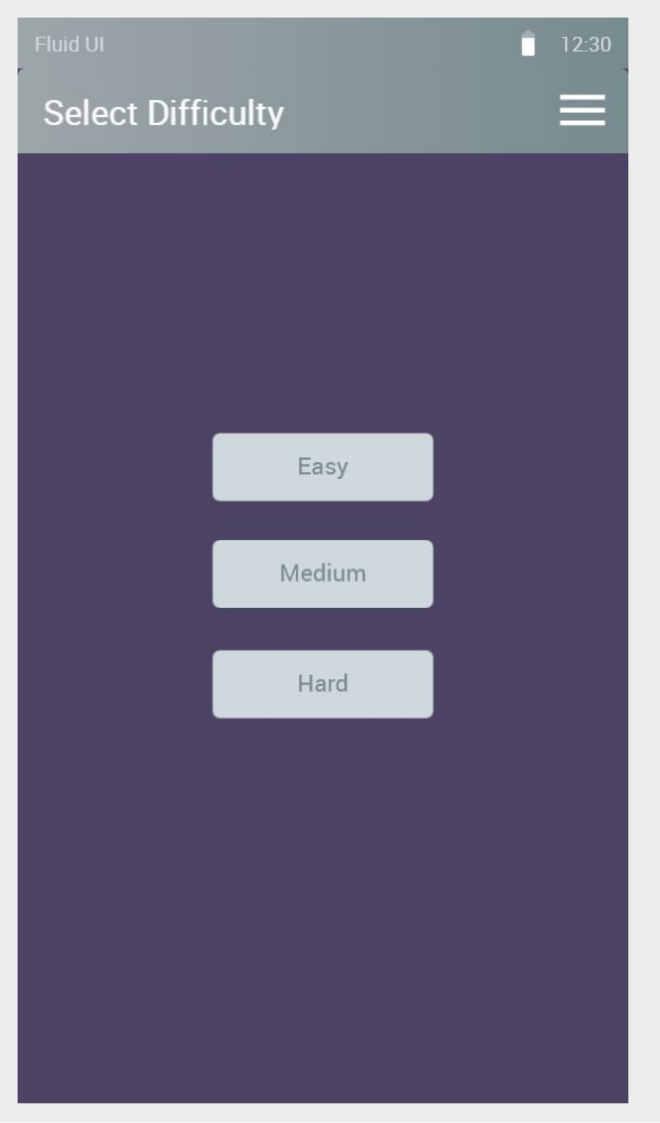
Main Menu - allows for selecting play or leaderboards

Screen 2



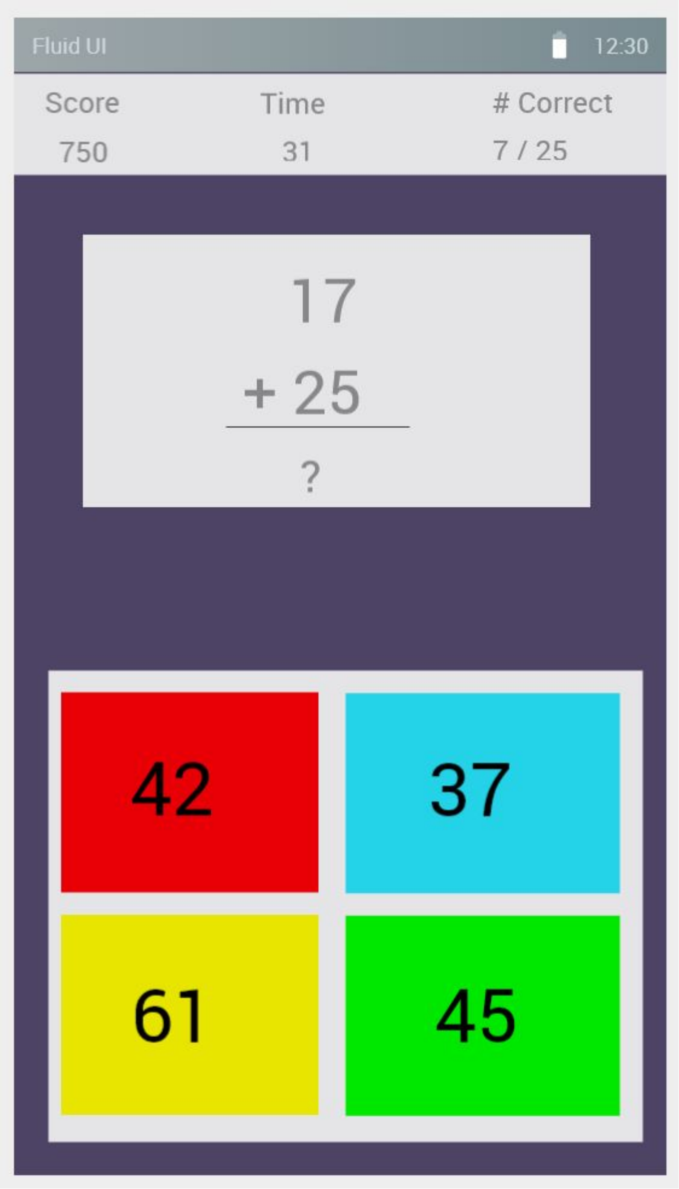
After selecting Play - choose a Quiz Mode.

Screen 3



After selecting a quiz mode, choose difficulty.

Screen 4



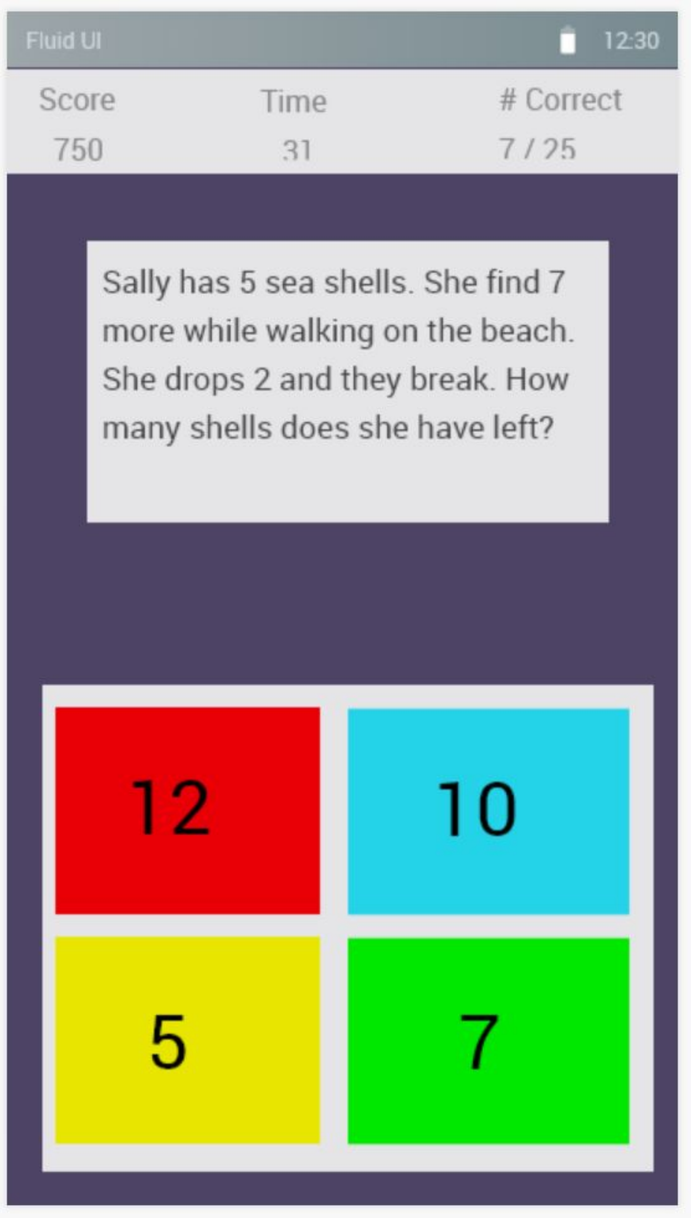
Score	Time	# Correct
750	31	7 / 25

$$\begin{array}{r} 17 \\ +\,25 \\ \hline ? \end{array}$$

Quiz Gameplay Screen

App bar displays score: time elapsed : questions / questions remaining
View for the math questions
4 multiple choice questions

Screen 5

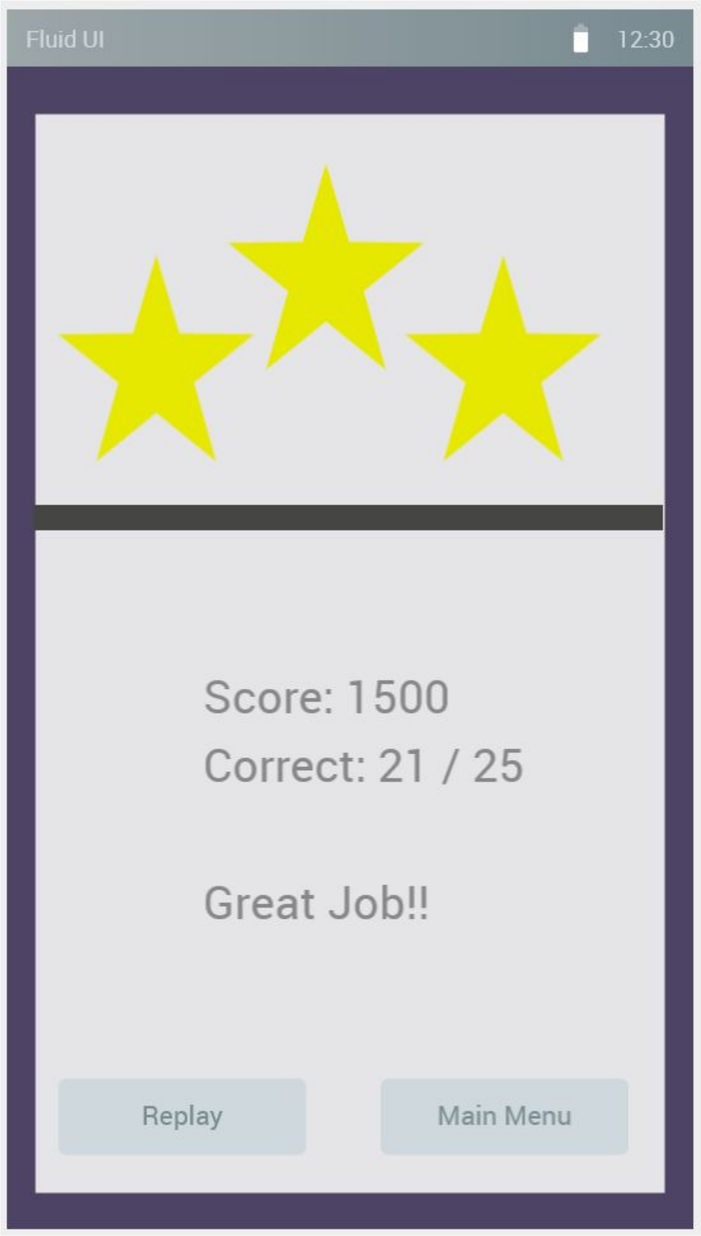


Score	Time	# Correct
750	31	7 / 25

Sally has 5 sea shells. She find 7 more while walking on the beach. She drops 2 and they break. How many shells does she have left?

Challenge Question Screen
Word questions retrieved from my website as json. Stored on phone using room.

Screen 6

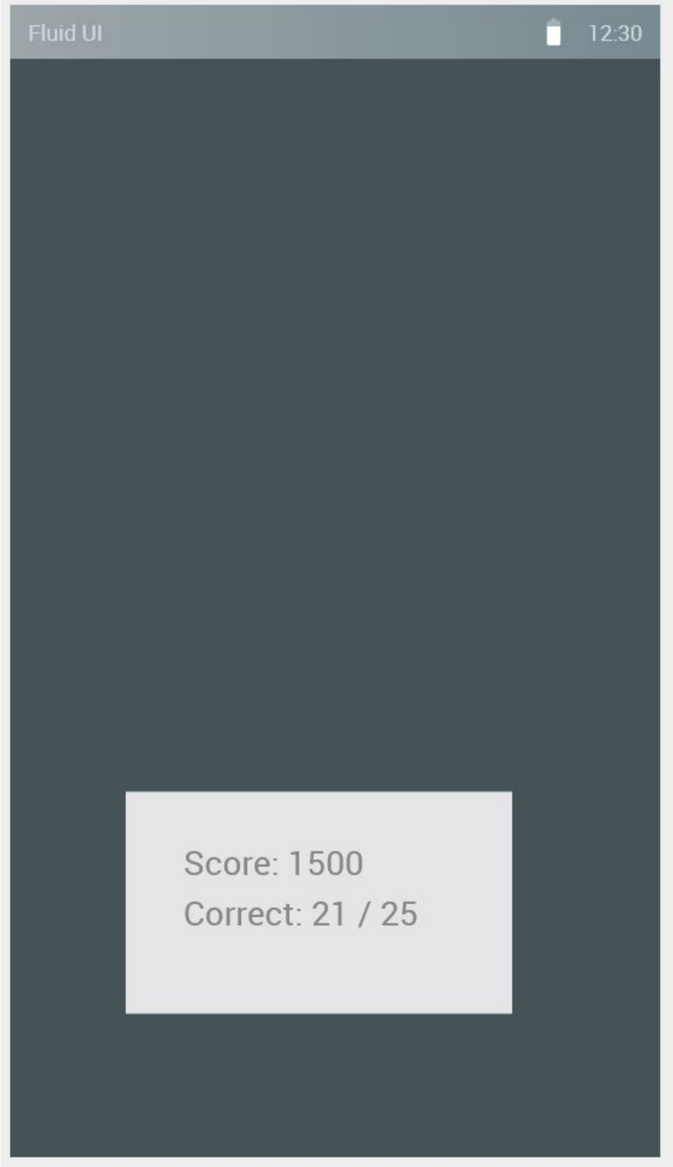


Score: 1500
Correct: 21 / 25

Great Job!!

End of round summary screen
Dynamically generated stars based on total score
Automatically submits score to google play services leaderboards if signed in (prompts if not)
Displays an interstitial ad every 3 rounds.
Buttons to return to main menu or replay round.

Screen 7



Score: 1500
Correct: 21 / 25

Widget
Press to launch game
Displays last round’s score & questions correctly answered total
Grey box is widget - online fluid UI was a little confusing to make a ‘home screen display’ so have to use imagination.

Key Considerations

How will your app handle data persistence?

Weekly challenge questions will be parsed from Json and stored with room.

Describe any edge or corner cases in the UX.

Once the user is in a round (series of math questions) there will be a pause menu where the user can return to main menu.

Describe any libraries you’ll be using and share your reasoning for including them.

Retrofit	v2.4.0	easy retrieving and parsing of json data from remote source.
Room		easy database solution for pojo data models
Picasso	v2.71828	ease of use for image displaying
Gson	v2.8.5	for converting data to and from json.

Describe how you will implement Google Play Services or other external services.

Google Mobile Ads (admob) : will be displayed after every few rounds of gameplay.

Google Play Game Services : will keep track of high scores from gameplay via Leaderboard.

Next Steps: Required Tasks

This is the section where you can take the main features of your app (declared above) and break them down into tangible technical tasks that you can complete one at a time until you have a finished app.

Task 1: Project Setup

Written solely in Java language.
Draft the activities
Create data models for questions / answers

Task 2: Quiz Gameplay setup

- Setup question generation
- Setup answer generation
- Setup score persistence between ‘question / answer rotation’

Task 3: Implement UI for Each Activity and Fragment

- Build UI for MainActivity
- Build UI for the quiz gameplay
- Build UI for end of round summary

Task 4: Implement Admob

- Use my admob account to create ad units for the end of round summary screen interstitial ad
- Implement ad on end of round summary screen

Task 5: Implement google play game services

- Have the score from a successfully completed round post to google play game services leaderboard, assuming user signs in to google play game services.

Task 6: Setup Room and pojo question models

- Make sure CRUD and version control is implemented. Properly overwrites data when new questions are retrieved.

Task 7: Setup async task for challenge questions retrieval

- Make sure internet connection permissions are added
- Make sure app prevents crashes from null values retrieved.
- Challenge questions will be retrieved on app launch on a background thread (from main activity).

Task 8: Widget

- Implement widget for displaying last score + # of questions answered correctly on home screen.
- Setup intent for launching app when pressed

Task 9: Accessibility and Cleanup

- Go back through and confirm all hardcoded strings are moved to the strings.xml file.
- Look into adding a few common language translations for more accessibility.
- Make sure RTL layout switching is implemented properly for accessibility.

Submission Instructions

- After you've completed all the sections, download this document as a PDF [File → Download as PDF]
  - Make sure the PDF is named "**Capstone_Stage1.pdf**"
- Submit the PDF as a zip or in a GitHub project repo using the project submission portal

If using GitHub:

- Create a new GitHub repo for the capstone. Name it "**Capstone Project**"
- Add this document to your repo. Make sure it's named "**Capstone_Stage1.pdf**"