

# Mathercise App

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# Description

The original Mathercise is an incentive program for 1st graders at my son's school to master the automaticity of all addition and subtraction facts with sums to 20. The program was almost entirely run offline/manually with paper-based materials. This application is an online version of Mathercise. The objective is to help run the program more efficiently and more accurately with fewer resources.



# Features

- Level management: Users can Create, Read, Update, and Delete levels
- Flash Card management: Users can Create, Read, Update, and Delete flash cards
- Fitness Test management: Create, Read, Update, and Delete Fitness Test for each level
- Fitness Test: Users can conduct Fitness Test to assess students



# Planning - User Stories

- Users can manage Levels, Flash Cards, and Fitness Tests
- Users can conduct Fitness Test to assess students

Web-based Fitness Test eliminates the need of installing Fitness Test slides onto every student's iPad. It checks students' answers and calculates scores correctly and automatically. It requires less time to assess a student, hence more students could take a test within the time allocated for Fitness Test assessment each week.



# Planning - Database

Model classes / tables

- Level: linked to Card and Test in a one-to-many relationship
- Card: linked to TestQuestion in a one-to-many relationship
- Test: linked to TestQuestion in a one-to-many relationship
- TestQuestion



# Technology Stack

- Java
- Spring Boot
- Thymeleaf
- MySQL
- MAMP
- Javascript
- Bootstrap



# Demo



# What I Learned

- How to build constraining queries in Spring Data repository
- Javascript
  - Input formatting check
  - Page refresh with new content and time interval





# What's Next

- Features for Admin
  - Admin user login
  - Student management: Set up student profiles to track progress
  - Progress monitoring

Online version tracks data such as test date, answers, scores, current level, how often students did Daily Exercise and how often they had Fitness Test. It can flag students who are tested less often than others, which is one of the examples of what are not monitored with the original Mathercise.



# What's Next

- Features for Students
  - Student user login
  - Daily Exercise

Students can practice flash cards independently without a "coach".

