



Algebra Intelligence

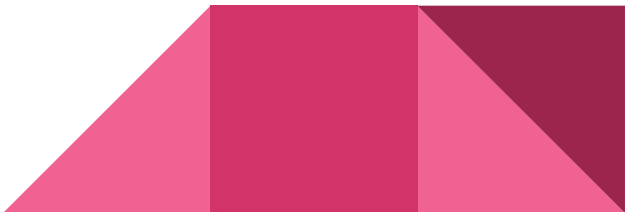
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Agenda

- Algebra Intelligence Overview
 - Languages
 - Database Design
 - Templates
- What we learned
- Updates
- Demo



What is Algebra Intelligence?

- Algebra Quiz Website
 - User login
 - Quizzes with randomly generated numbers for questions
 - No database of predetermined questions
 - Alters difficulty of questions based on skill level.
 - Redirected to a different website for extra help in areas needing improvement.
- 

What is Algebra Intelligence?

- Skill Level
 - 1 (easiest) to 5 (hardest)



- Question Types
 - Evaluate Algebraic Expressions - (Addition and Subtraction)
 - Solving Quadratic Equations
 - Solving Linear Equations



Languages

- IntelliJ IDEA
- JavaScript
 - Node.JS
- HTML
 - Embedded JavaScript Templates
- CSS
 - Bootstrap



Database Design

- MongoDB
 - NoSQL Database uses JSON
- User Database

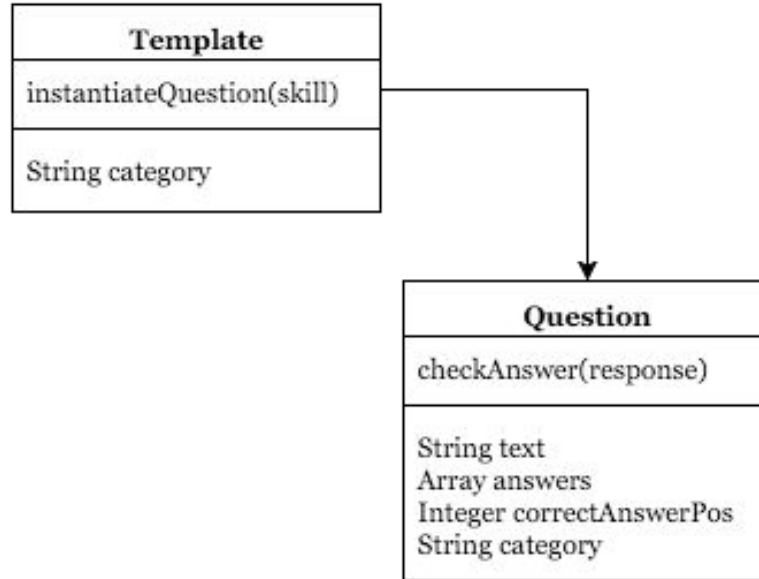
“_id”	“username”	“pass”	“Quadratic Roots”	“Linear Equations”
~~~~~	“tim”	~~~~~	1	5

- Template Database
  - Code gets stored in db along with a category name.

“_id”	“category”	“source”
~~~~~	“Quadratic Roots”	“function Quadr...”



Templates



- Used to generate quiz questions.
- Template parameters (e.g. numbers used) vary based on user skill.

Example: Quadratic Root Template

General Form: What are the roots of $\underline{a}x^2 + \underline{b}x + \underline{c} = 0$?

- Decide Roots (r_1 and r_2)
- Choose values for a , b , and c based on those roots
 $c = r_1 * r_2$, $b = -(r_1 + r_2)$

Level 1

Roots: $-10 \leq r \leq 10$
 $a = 1$

Level 2

Roots: $-15 \leq r \leq -2$,
 $2 \leq r \leq 15$
 $a = 1$

Level 3

Roots: $-20 \leq r \leq -2$,
 $2 \leq r \leq 20$
 $a = 1$

Level 4

Roots: $-25 \leq r \leq -5$,
 $5 \leq r \leq 25$
 $a: -25 \leq r \leq -5, 5 \leq r \leq 25$
 $b: b*a \quad c: c*a$

Level 5

Roots: $-25 \leq r \leq -5$,
 $5 \leq r \leq 25$
(decimals)
 $a: -25 \leq r \leq -5, 5 \leq r \leq 25$
(decimal)
 $b: b*a \quad c: c*a$



What We Learned

- Get started early!
- As if we were not taught this before, understand the specifications first!
- IntelliJ
- Research is key.
- GitHub Shenanigans
- Using server side JavaScript
- Web Design
- Get a faster computer



Future Updates

- More question templates
- Add images to questions
- More question types
- Creating a live version
- Update the user skill system



Demo

- ARE YOU READY? TIME TO TEST YOUR ALGEBRA INTELLIGENCE!



The background is a solid pink color. In the top right corner, there is a decorative arrangement of overlapping squares and triangles in various shades of pink and magenta, creating a geometric pattern.

Any Questions?