
SAGE Parson's Puzzles

Final Presentation

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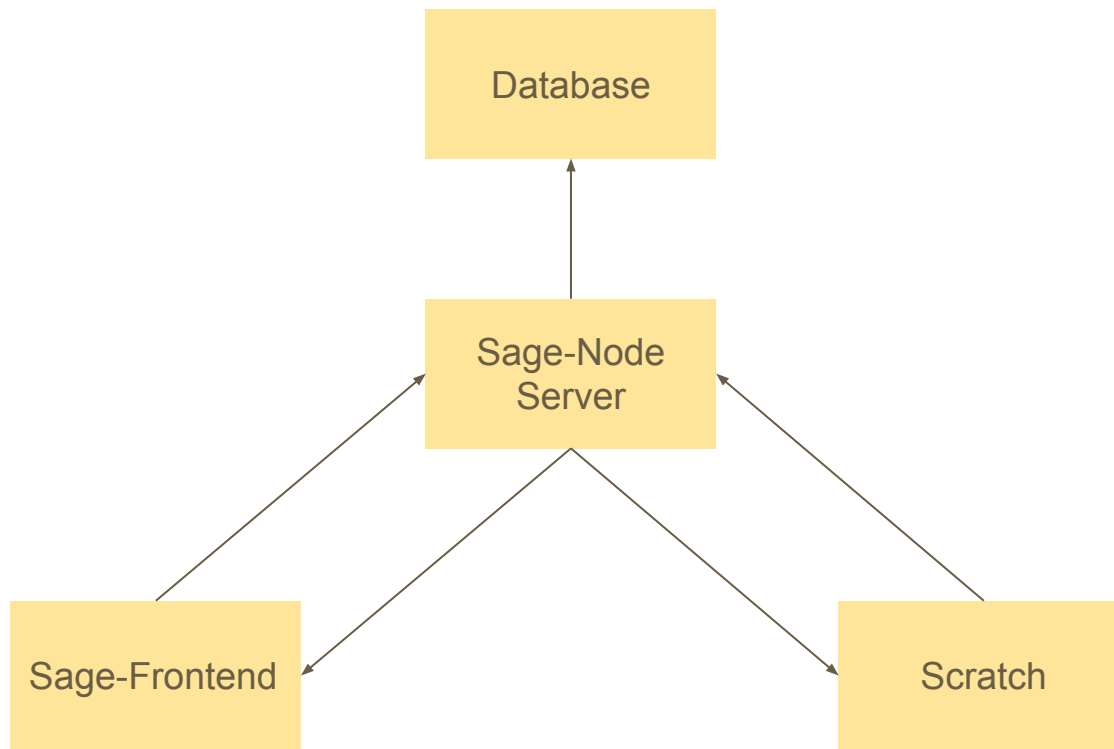
AGENDA

- Abstract
- Structure
- Frontend
 - UI Component
 - API Calls
- Backend
 - Student Submission
 - Saving Game Setting
 - Save/Load Block Point Configuration
- Future Work
- Demo

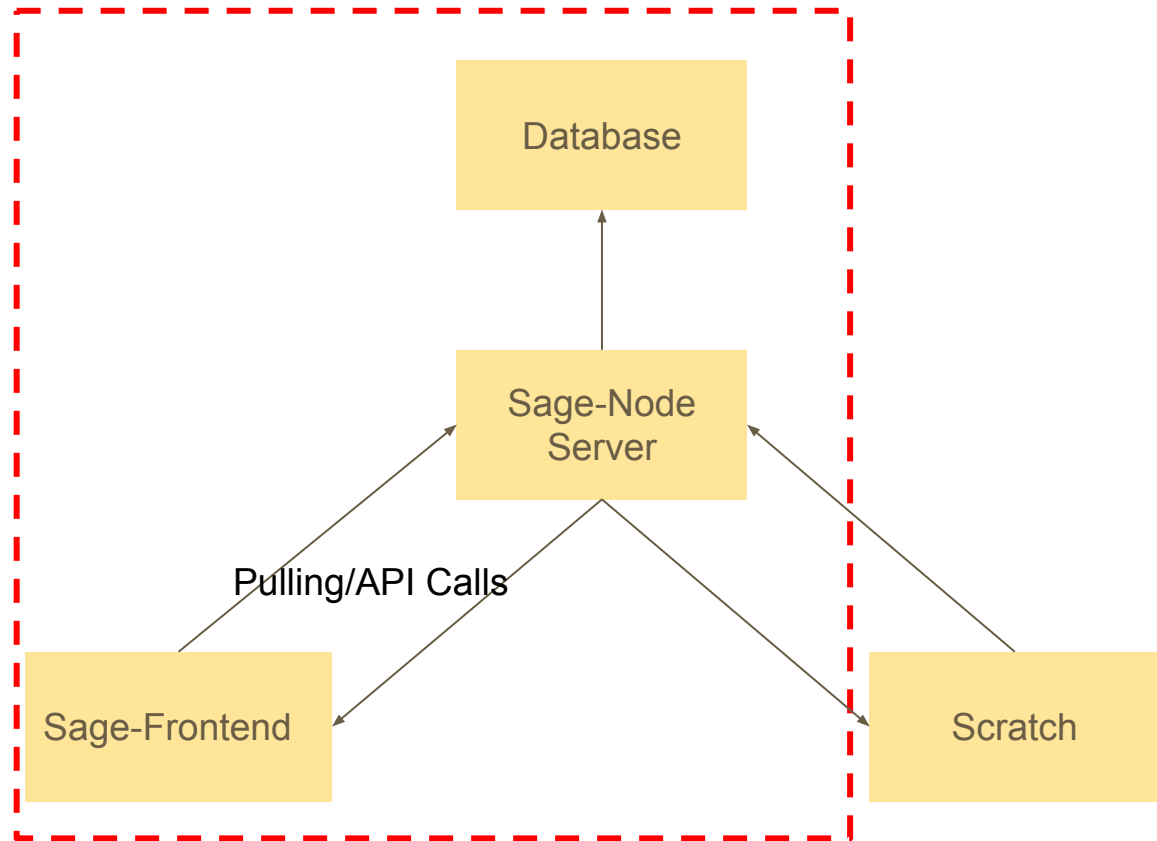
ABSTRACT

- Bring Scratch components to the outer frontend
- Improve UI system
- Introduce self-evaluation from student
- Database schema design and improvement
- Connect Node server with Scratch by using WebSocket
- Improve Scratch user experience
- Local IO -> Cloud IO

STRUCTURE



FRONTEND





Student

Home



Metrics



Missions



Account



Hide / Show



SAGE

File Edit

Hey! Let's start solving!
SAGE Play Mode Points: 0
5c0d7d0f1da8bb164894dce0

Scripts Backdrops Sounds

Motion

Looks Sound Pen Data Events

Control Sensing Operators More Blocks Parsons

Stage selected:
No motion blocks

Sprites

New sprite:

Stage
1 backdrop

New backdrop:



Hello !

Sage Orbs Found

INSTRUCTION

START TIMER

Time Remaining:
10:00



Student

Home



Metrics



Missions



Account



Hide / Show



SAGE

File Edit

Proficient: 0
Developing: 0
Basic: 0

Hey! Let's start solving!
SAGE Play Mode

Points: 0

ScriptsBackdropsSounds

Motion

Looks

Sound

Pen

Data

Events

Control

Sensing

Operators

More Blocks

Parsons

Stage selected:
No motion blocks

Sprites

New sprite:

Stage
1 backdrop

New backdrop:



Hello !

INSTRUCTION

QUESTION

HINT

Level Developing

Score 50

01 46

MINUTES SECONDS

SUBMIT

HINT PANEL



Student


Home

Metrics

Missions

Account

Hide / Show



File Edit

Proficient: 0
Developing: 0
Basic: 0

Hey! Let's start solving!

SAGE Play Mode

Points: 0

Scripts Backdrops Sounds

Motion

Looks

Sound

Pen

Data

Control

Sensing

Operators

More Blocks

Persons

Hint

This is a hint

Sprites

New sprite:

Stage

1 backdrop

New backdrop:

x: 240 y: 180

01 33

MINUTES SECONDS

SUBMIT

INSTRUCTION

QUESTION HINT

Level Developing

Score 50

01 33

MINUTES SECONDS

SUBMIT

Hello !

QUESTION PANEL



Student

Home

Metrics

Missions

Account

Hide / Show

SAGE

File Edit

Proficient: 0 Hey! Let's start solving! Points: 0

Developing: 0 SAGE Play Mode

Basic: 0

Scripts Backdrops Sounds

Motion Control
Looks Sensing
Sound Operators
Pen More Blocks
Data Parsons

Question

This is a question

Sprites

New sprite:

Stage
1 backdrop

New backdrop:

01 47
MINUTES SECONDS

SUBMIT



Student

Home



Metrics



Missions



Account



Hide / Show



SAGE

File Edit

Hey! Let's start solving!
SAGE Play Mode

Points: 0

Scripts Backdrops Sounds

Motion

Looks Sound Pen Data Events

Control Sensing Operators More Blocks Parsons

Stage selected:
No motion blocks

Sprites

New sprite:

Stage
1 backdrop

New backdrop:

x: 240 y: 180



Hello !

INSTRUCTION

QUESTION

HINT

Level Developing

Score 50

01 46

MINUTES SECONDS

SUBMIT

TIME UP SUBMISSION



Student

Home

Metrics

Missions

Account

Hide / Show

File Edit

Proficient: 0 Hey! Let's start solving! Points: 0

Developing: 0 SAGE Play Mode

Basic: 0

Scripts Backdrops Sounds

Motion Control

Looks Sensing

Sound Operators

Pen More Blocks

Code Blocks

Explain how you solved this!

Submit and Go To Main

Stage 1 backdrop

New backdrop:

00 00

MINUTES SECONDS

SUBMIT

SAGE

Time is up!

You've got 50 points!

Level Developing

Score 50

00 00

MINUTES SECONDS

SUBMIT

Stage 1 backdrop

New backdrop:

00 00

MINUTES SECONDS

SUBMIT

STUDENT SUBMISSION



Student


Home

Metrics

Missions

Account

Hide / Show



File Edit

Proficient: 0 Hey! Let's start solving! Points: 0

Developing: 0 SAGE Play Mode

Basic: 0

Scripts Backdrops Sounds

Motion Control Looks Sensing Sound Operators Pen More Blocks Data Parsons


Stage 1 backdrop

New backdrop:

Submit and Go To Main

01 28 MINUTES SECONDS

SUBMIT



Hello !

INSTRUCTION

QUESTION HINT

Level Developing

Score 50

Your Result

You've got **50** points!

Explain how you solved this!

SUBMISSION FROM SCRATCH



Student

Home

Metrics

Missions

Account

Hide / Show

SAGE

File Edit

Proficient: 30
Developing: 10
Basic: 0

Congratulations!
SAGE Play Mode
demo

Points: 30

Scripts Backdrops Sounds

Motion Control
Looks Sensing
Sound Operators
Pen More Blocks
Data Persons

Stage
1 backdrop

New backdrop:

Sprites

Level Proficient
Score 30
00 43
MINUTES SECONDS
SUBMIT


Congratulations!

You've got 30 points!

Explain how you solved this!

Submit and Go To Main

SCORE LOADING



File Edit

Proficient: 0 Hey! Let's start solving!
Developing: 0 **SAGE Play Mode** Points: 0
Basic: 0

Scripts Backdrops Sounds

Motion Looks Sound Pen Data Control Sensing Operators More Blocks Persons

Stage
1 backdrop

New backdrop:

Submit and Go To Main

Student


Home

Metrics

Missions

Account

Hide / Show



Hello !

INSTRUCTION

QUESTION HINT

Level Proficient

Score 0

02 16
MINUTES SECONDS

SUBMIT

SELF-EXPLANATION EMPTY CHECK

The screenshot displays the SAGE Play Mode interface. On the left, a sidebar contains a crown icon and navigation links: Home, Metrics, Missions (highlighted), Account, and Hide / Show. The main workspace shows a stage with a backdrop and a 'Sprites' panel. A central dialog box is overlaid with the text: 'Time is up!', 'You've got 0 points!', and a text area for 'Explain how you solved this!'. Below the text area is a red prompt: 'Please write something above about your thoughts' and a 'Submit and Go To Main' button. The right sidebar features a lion mascot, a 'Hello !' button, and buttons for INSTRUCTION, QUESTION, and HINT. At the bottom right, it shows 'Level Proficient', 'Score 0', a timer at '00 00' (MINUTES SECONDS), and a 'SUBMIT' button.

Student

Home

Metrics

Missions

Account

Hide / Show

SAGE

File Edit

Proficient: 0 Hey! Let's start solving! Points: 0

Developing: 0 SAGE Play Mode

Basic: 0

Scripts Backdrops Sounds

Motion Control Looks Sensing Sound Operators Pen More Blocks Data Persons

Time is up!

You've got 0 points!

Explain how you solved this!

Please write something above about your thoughts

Submit and Go To Main

Stage 1 backdrop

New backdrop:

Level Proficient

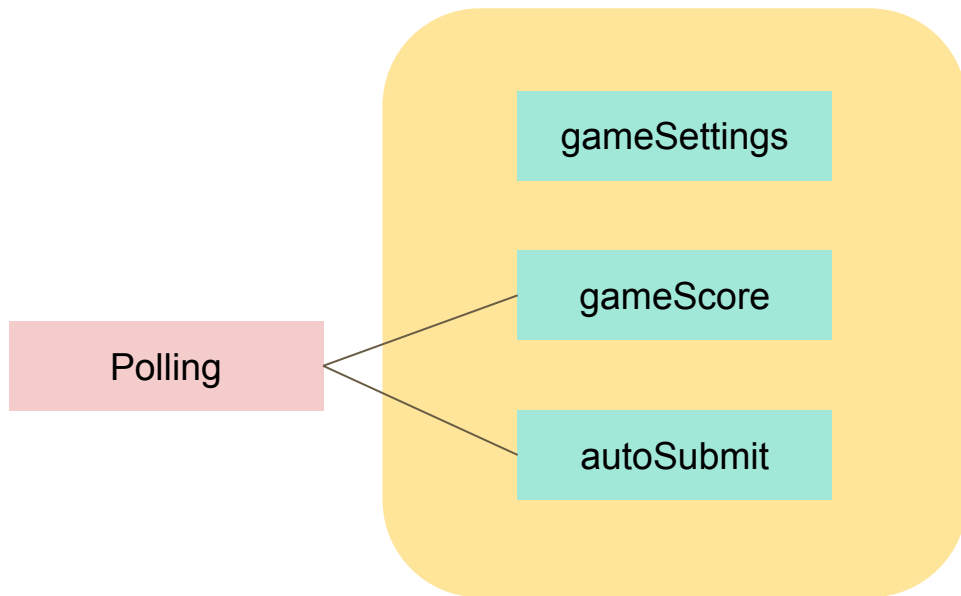
Score 0

00 00 MINUTES SECONDS

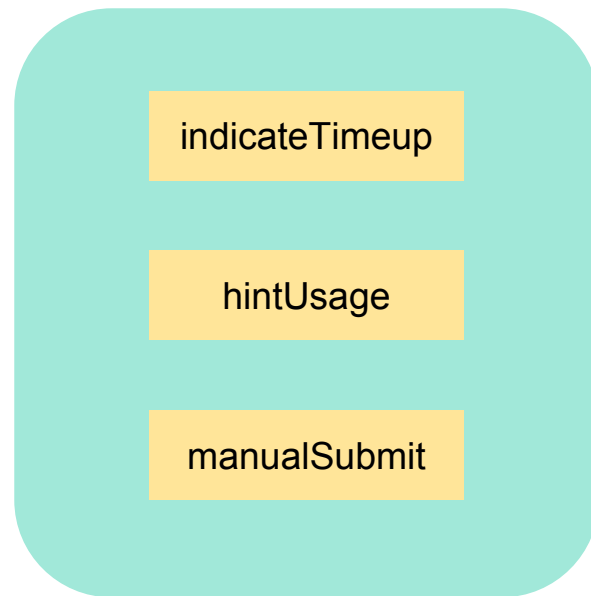
SUBMIT

FRONTEND API CALLS

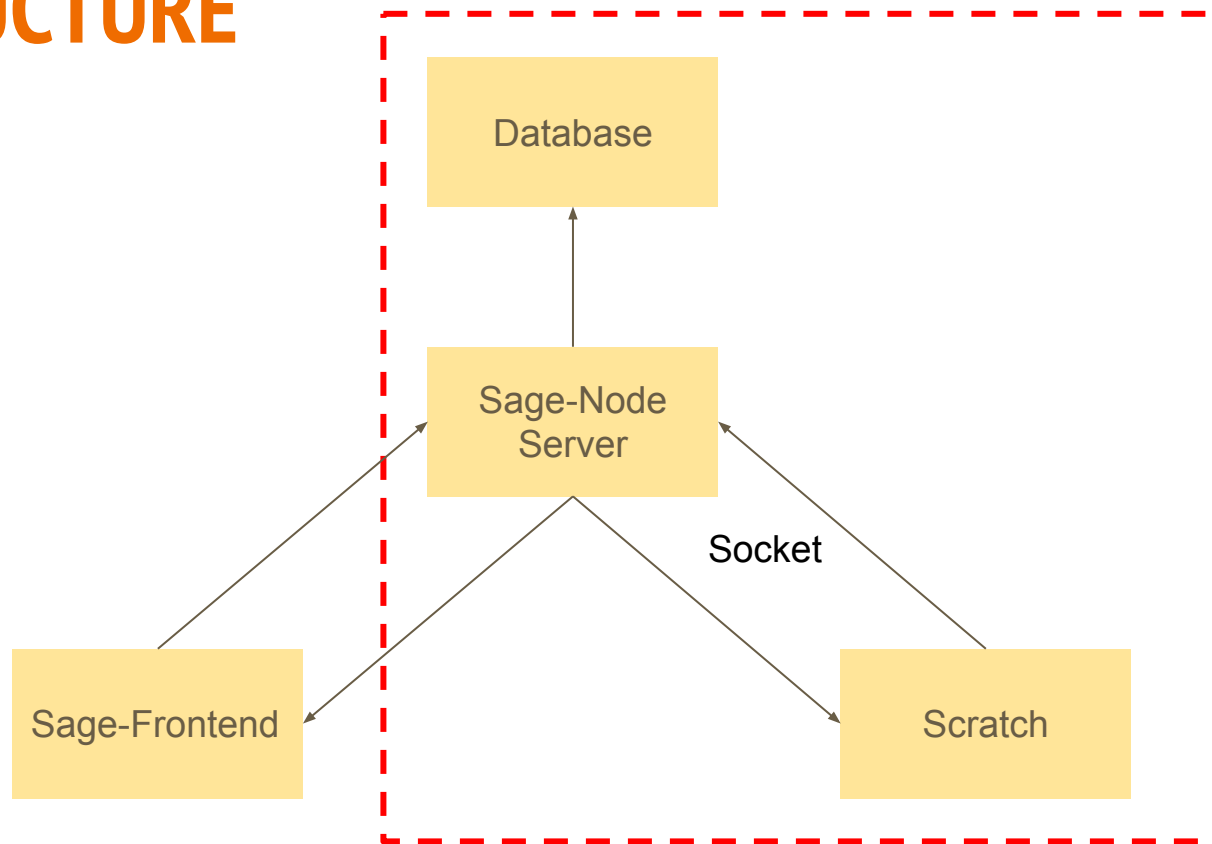
GET



POST



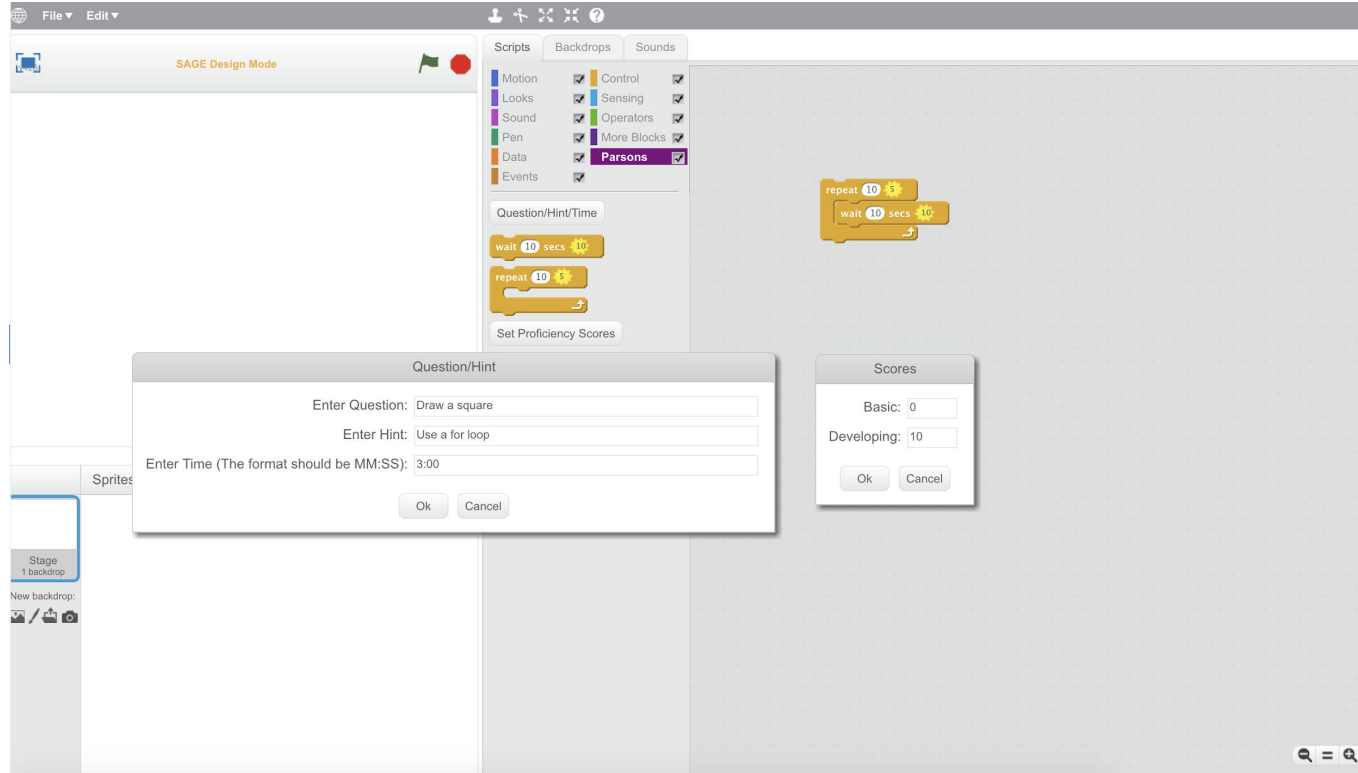
BACKEND STRUCTURE



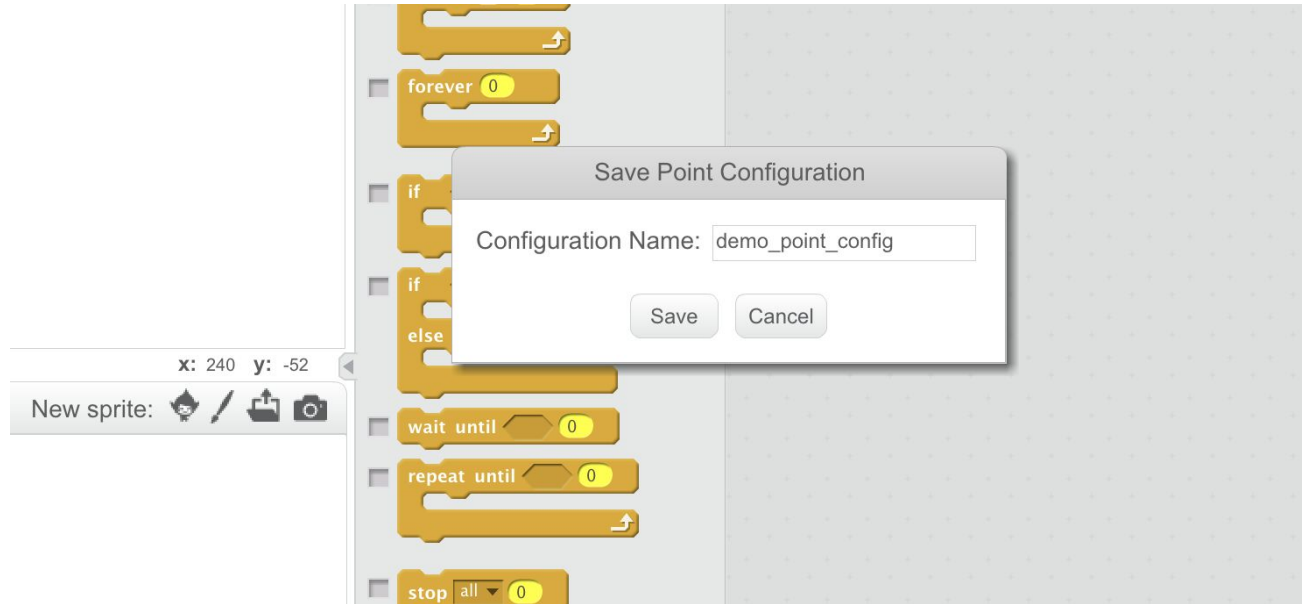
DATABASE

- Some information (i.e. .sb2 files and assignment point configs) are stored in the cloud.
- When a student is finishing an assignment, some score changing information is stored in the database in the certain collections.
- Most collection modifications are made by using Mongoose through RESTful APIs and WebSocket connection.
- The current database is still *sage-login*. Collection migration need to be done. But some concerns need to be taken into consideration.

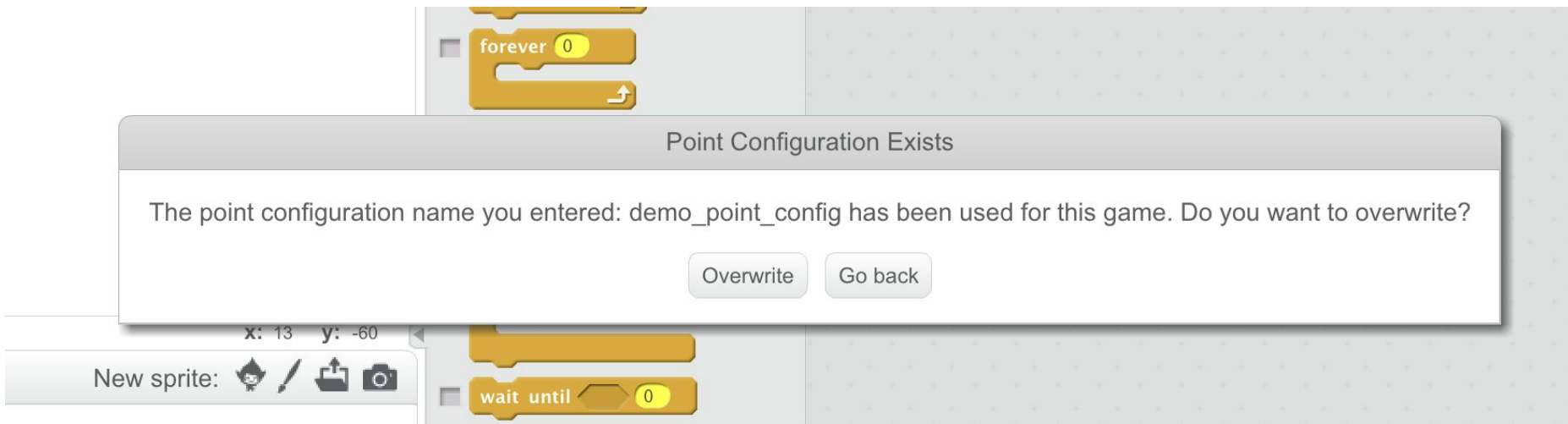
INSTRUCTOR GAME SETTING



BLOCK POINT CONFIGURATION



BLOCK POINT CONFIGURATION



BLOCK POINT CONFIGURATION



FUTURE WORK

- Add score metrics for the student upon submission
- Display feedbacks on frontend
- Update frontend framework (i.e. AngularJS)
- Allow Instructor to configure feedbacks and load preset feedbacks
- Layer Connection Consistency
- Security issues

DEMO

THANK

YOU!

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