The Sound of Code

Group 5

Cleaning up the UI/UX

- Picture dimensions were inconsistent and often too large for the page
- Some tabs needed to be separated as they had different purposes
- Cleaned up outdated links/information
- Clarified how to use the application and certain features

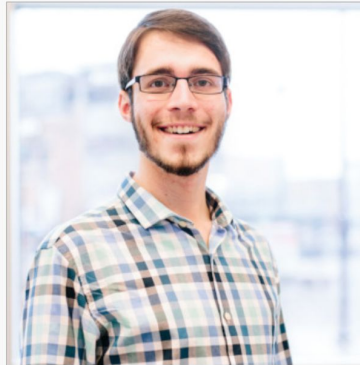# Old About Section

Developers

Collin Victor

Product Manager

Math & Computer Science

Mark Hernandez

Development Manager

Computer Science

Justin Sleep

Developer

Computer Science

Mock Up

About

Paragraph summarizing what the Sound of Code is and its purpose

Project Leaders

Myra
picture

James
picture

Myra
Info

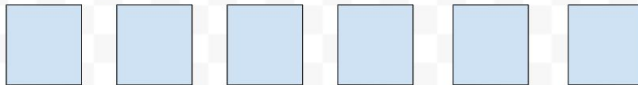James
Info

ISU 2023 developers

Short paragraph about the ISU team's contributions

Name and major of each developer under their picture

UNL 17-18 developers

Short paragraph about the UNL team's contributions
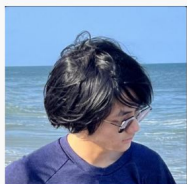
Name and major of each developer under their picture
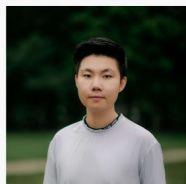
UNL 17-18 managers

Name and role of each manager under their picture

Updated About

ISU 2023 Developers

Alex Yang

Shuwei Chang

Gavin Hyde

Chichang Lin

Yunjie Li

UNL 2017-2018 Developers

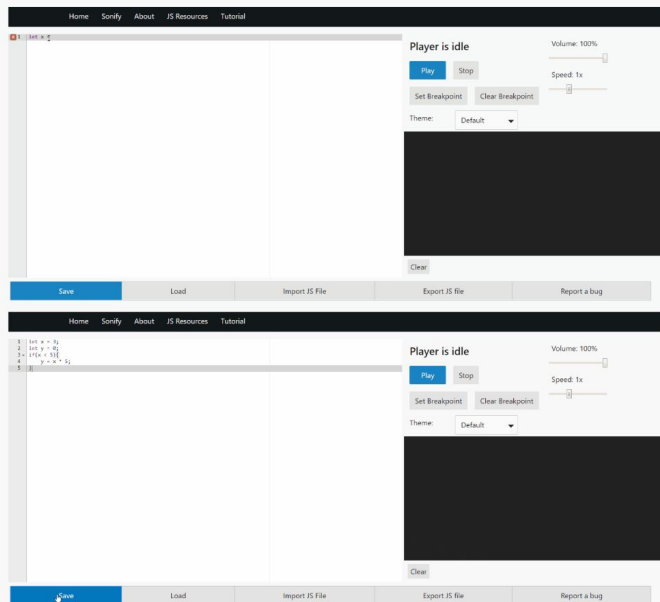Mark Hernandez

Justin Sleep

Phuc Trinh

Derek Waskel

Kenny Waskel

Tutorial Section

Tutorial

1. Start typing your code in the editor section and click 'Play' to sonify your code.

2. Click 'Save' to store your code in the browser's localstorage and click 'Load' to reload them back at anytime.

Tutorial Section

Facebook's Flow Software

A static type checker for Javascript

The goal is to implement Flow to a console on the webpage so users can see when they have a type mismatch

Trello
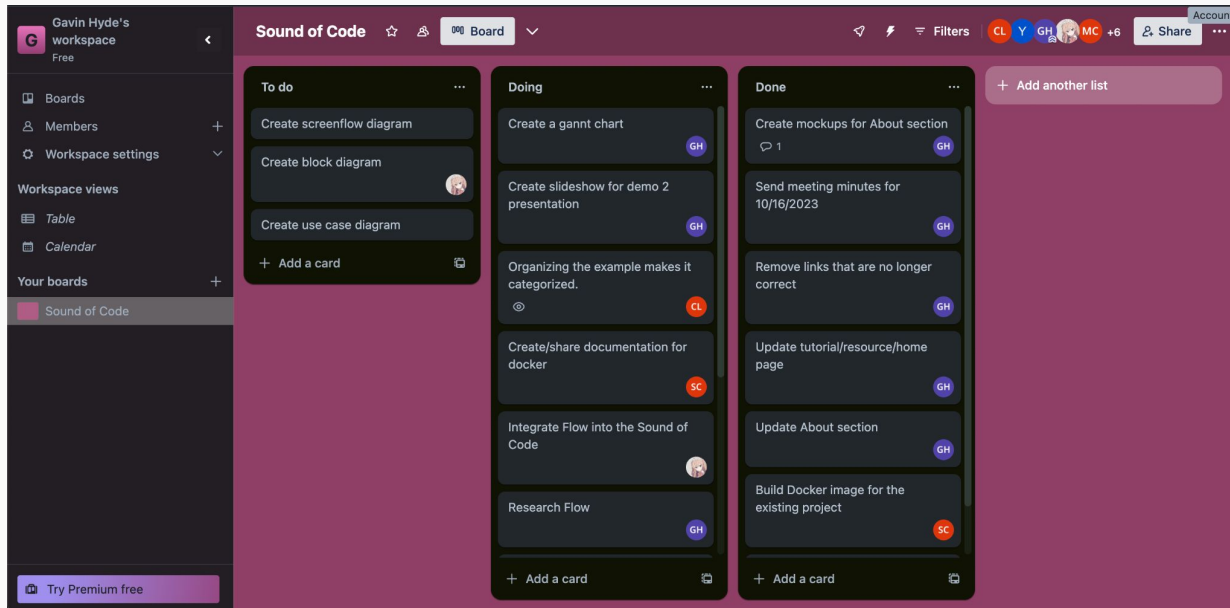
- Use Trello to coordinate
- Organizing the Task
- Straightforward for the current work

Code Example

- Since Education purpose, provide some fundamental data structure will be great idea.
- Organize the example into different categories.
- Adding support for class declaration AST node support.

Docker

Dependency Upgrade: Upgraded container-related dependencies for projects.

Docker Mastery:

1. Enables any team member to efficiently se up and run the project
2. Built a docker image from scratch.
3. Created two version comprehensive documentation with step-by-step instructions and visual aids.

2. Build the Docker Image

Replace `[image_name]` with a name for your Docker image.

```bash
bashCopy code
docker build -t [image_name] .
// tips: the common name is [accountName/image_name] (shuweic/soc_test)
// don't forget the . after image_name
```

3. Run the Docker

1. Run with port 5173
   Docker is gonna create a container for you when you are not run with concrete container

```
docker run -p 5173:5173 -d [image_name]
```

1. Run with container (Optional)

Replace `[container_name]` with a name for your Docker contain

```bash
bashCopy code
docker run -d --name [container_name] [image_name]
```

1. Other common command (Optional)
   ○ Override the default command

```
docker run [image_name] [CMD]
```

```
FROM node:alpine

WORKDIR /app
COPY package.json ./
RUN npm install
COPY ./ ./

# Expose port
EXPOSE 3000
EXPOSE 5173

CMD ["npm", "run", "dev"]
```

Developer Doc

1. Run with port 5173
   Docker is gonna create a container for you when you are not run with concrete container

```
docker run -p 5173:5173 -d [image_name]
```

1. Run with container (Optional)

Replace `[container_name]` with a name for your Docker container.

```
bashCopy code
docker run -d --name [container_name] [image_name]
```

1. Other common command (Optional)
   ◦ Override the default command

```
docker run [image_name] [CMD]
```

   ◦ print out the infomation about all the running docker image

```
docker ps
```

   ◦ print out infomation about givin container

```
docker logs [container_id]
```

   ◦ Override the default command

Using Docker Compose (Optional)

If the project includes a `docker-compose.yml` file, you can use Docker Compose to manage multi-container applications.

1. Start Services

```
bashCopy code
docker-compose up -d
```

2. Stop Services

```
bashCopy code
docker-compose down
```

Common Docker Commands

- **View running containers**: `docker ps`
- **Stop a container**: `docker stop [container_name or container_id]`
- **Remove a container**: `docker rm [container_name or container_id]`
- **View local images**: `docker images`
- **Remove an image**: `docker rmi [image_name or image_id]`

Troubleshooting

Client Doc (copy paste command)

3. Build the Docker Image

docker build -t shuweic227/soc_ .

// don't forget the . at last

(Note: Common format is `[accountName/image_name]`)

4. Run the Docker Container
- Standard Run (Port 5173):

docker run -p 5173:5173 -d shuweic227/soc_client

6. How to stop Container
   a. Print out all container info

Docker ps

   b. Find the CONTAINER ID that our project is using

Docker stop [ContainerID]

It should return the id itself which means successfully stopped.

For more detail instruction or other condition not list above please check the
dockerInstruction.md under **docs** folder. Feel free to email Shuwei: cuicoms@iastate.edu

Containerization (k8s)

Kubernetes from Scratch:

1. Learned and built Kubernetes setups for both development and services.
2. Drafted YAML scripts for streamlined deployment.
3. This offers scalable, resilient, and manageable application deployment.

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: client-depl          shuwei, 10/9/23, 1:05
spec:
  replicas: 1
  selector:
    matchLabels:
      app: client
  template:
    metadata:
      labels:
        app: client
    spec:
      containers:
        - name: client
          image: shuweic227/client:latest
```

```yaml
apiVersion: v1
kind: Service
metadata:              shuwei, 10/9/23, 1:0
  name: client-srv
spec:
  selector:
    app: client
  ports:
    - name: client
      protocol: TCP
      port: 5173
      targetPort: 5173
```

Apply k8s script

```
→  sound_of_code_2.0 git:(shuwei/HandOnDoc) cd infra
→  infra git:(shuwei/HandOnDoc) cd k8s
→  k8s git:(shuwei/HandOnDoc) kubectl apply -f client-depl.yaml
deployment.apps/client-depl unchanged
service/client-srv configured
→  k8s git:(shuwei/HandOnDoc)
```

```
// step 1: build infra/k8s/posts.yaml
// we should put all configuration file in this infra folder

kubectl apply -f [fileName].yaml
// process a config file "pod/[fileName] created"

kubectl get pods
// list info of pods
```

```
apiVersion: v1
kind: Pod
metadata:
  name: posts
spec:
  containers:
    - name: posts
      image: shuweic227/posts:0.0.1
```

Updating the Image Used By a Deployment

1. the deployment must be using the 'latest' tag in the pod spec section
2. make an update to your code
3. build the image
4. push the image to docker hub
5. run the command

```
3. docker build -t [dockerName/serviceName]
4. docker push [tagName]
5. kubectl rollout restart deployment [depl_name]

kubectl get deployments
// check the age

kubectl get pods
// check the name of the new pods

kubectl logs [name of pod]
// print out the service detail
```

What's next

Deployment:

- Exploring AWS free tier deployment as per client's request.
- Objective: Cost-efficient, scalable, and reliable service

Kubernetes Clustering:

- Ensure compatibility of our Docker image with a Kubernetes cluster.
- Provide in-depth, user-friendly documentation to assist those unfamiliar with containerization.

New Features:

- Add Skaffold (k8s runner)
- Collaborate with the client to understand and prioritize upcoming feature developments based on given assignments.

```yaml
apiVersion: skaffold/v2alpha3
kind: Config
deploy:
  kubectl:
    manifests:
      - ./infra/k8s/*
build:
  local:
    push: false
  artifacts:         shuwei, 10/9/23, 2.
    - image: shuweic227/client
      context: client
      docker:
        dockerfile: Dockerfile
      sync:
        manual:
          - src: 'src/**/*.*'
            dest: .
```

TypeScript Refactor

Previously use JSDoc, you have to write the type manually and won't throw error in the building time.

Now we use typescript, it can check the code if error when development and building time.

```typescript
export type StructureTypes<T> = {
  BinaryExpression: T;
  BreakStatement: T;
  ContinueStatement: T;
  DoWhileStatement: T;
  ForInStatement: T;
  ForStatement: T;
  IfStatement: T;
  SwitchCase: T;
  SwitchStatement: T;
  TernaryStatement: T;
  WhileStatement: T;
};

export type DebugTypes<T> = {
  BadStatement: T;
  default: T;
  Ending: T;
  RuntimeError: T;
  TypeChange: T;
};
```

Build tools speedup

22s -> 3s!


```
~/Code/sound_of_code_2.0 git:(master) ±1 (3.813s)
npm run build

> sound-of-code@1.5.0 build
> vite build

vite v4.4.9 building for production...
node_modules/babel-standalone/babel.js (61389:2) Use of eval in "node_moc
inification.
✓ 205 modules transformed.
dist/index.html                              0.39 kB │ gzip:   0.27 kB
dist/assets/question-ef00ef34.css            0.41 kB │ gzip:   0.24 kB
dist/assets/index-f3673ae5.css              47.60 kB │ gzip:   8.51 kB
dist/assets/question-111834b5.js             0.77 kB │ gzip:   0.50 kB
dist/assets/preferences-a29f54f6.js          1.42 kB │ gzip:   0.63 kB
dist/assets/index-e9913287.js                1.66 kB │ gzip:   0.74 kB
dist/assets/eclipse-15da5e45.js              2.11 kB │ gzip:   0.79 kB
dist/assets/resources-17bc7bb7.js            3.94 kB │ gzip:   1.04 kB
dist/assets/about-cf15dba1.js                5.56 kB │ gzip:   1.04 kB
dist/assets/PlaybackControls-d6098651.js     5.89 kB │ gzip:   2.10 kB
dist/assets/index-c00ad038.js               29.88 kB │ gzip:  11.94 kB
dist/assets/howler-765893e3.js              35.44 kB │ gzip:   9.70 kB
dist/assets/sonify-697fdb71.js             125.54 kB │ gzip:  38.23 kB
dist/assets/index-ce5eddfb.js              237.33 kB │ gzip:  76.62 kB
dist/assets/javascript-37e88b50.js         243.55 kB │ gzip:  63.84 kB
dist/assets/index-c0714c4f.js              369.28 kB │ gzip: 105.93 kB
dist/assets/babel-0e2aade0.js              787.06 kB │ gzip: 232.03 kB
✓ built in 2.64s
```

```
~/Code/sound_of_code_2.0 git:(yunjie) ±4 (24.436s)
npm run build

> sound-of-code@1.5.0 build /Users/himself65/Code/sound_of_code_2.0
> webpack --config webpack.prod.js

Hash: c27e81f1d5c26511634a
Version: webpack 4.41.2
Time: 22479ms
Built at: 2023-10-31 12:04:31
                         Asset      Size  Chunks             Chunk Names
                       about.js  6.06 KiB       1  [emitted]  about
                   about.js.map  9.07 KiB       1  [emitted] [dev]  about
               about/index.html  369 bytes          [emitted]
                        app.css  38.2 KiB       2  [emitted]  app
                    app.css.map  56.4 KiB       2  [emitted] [dev]  app
                         app.js   243 KiB       2  [emitted]  app
                     app.js.map   722 KiB       2  [emitted] [dev]  app
          brace-theme-eclipse.js  2.19 KiB       3  [emitted]  brace-theme-eclipse
      brace-theme-eclipse.js.map  2.96 KiB       3  [emitted] [dev]  brace-theme-eclipse
                examples/Bad.js  159 bytes          [emitted]
              examples/Basic.js  158 bytes          [emitted]
       examples/Bubblesort.js  331 bytes          [emitted]
             examples/Change.js   31 bytes          [emitted]
 examples/DuplicateDeclaration.js  163 bytes        [emitted]
        examples/ElseCondition.js  118 bytes        [emitted]
     examples/ForMultiplication.js  85 bytes        [emitted]
        examples/ForSubtraction.js  82 bytes        [emitted]
           examples/Functions.js  176 bytes          [emitted]
         examples/Hello_World.js  120 bytes          [emitted]
           examples/Mergesort.js  1.27 KiB          [emitted]
         examples/NoStructure.js   88 bytes          [emitted]
          examples/StringTest.js   83 bytes          [emitted]
      examples/SwitchNoCascade.js  245 bytes        [emitted]
        examples/WhileAddition.js   90 bytes          [emitted]
                        home.js  1.82 KiB       4  [emitted]  home
                    home.js.map  2.56 KiB       4  [emitted] [dev]  home
             img/about/christy.jpg   242 KiB          [emitted]
              img/about/collin.jpg  65.9 KiB          [emitted]
               img/about/derek.jpg  1.88 MiB          [emitted] [big]
              img/about/justin.jpg  36.4 KiB          [emitted]
               img/about/kenny.jpg  1.89 MiB          [emitted] [big]
                img/about/mark.jpg   622 KiB          [emitted] [big]
                img/about/myra.jpg  71.1 KiB          [emitted]
              img/about/nathan.jpg   884 KiB          [emitted] [big]
               img/about/phuc.jpg  35.3 KiB          [emitted]
            img/about/pierobon.jpg  35.3 KiB          [emitted]
                img/tutorial/1.gif   254 KiB          [emitted] [big]
                img/tutorial/2.gif   401 KiB          [emitted] [big]
```
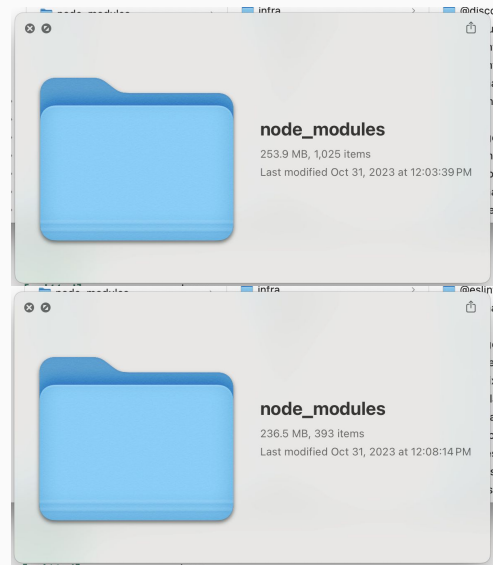
Codespace improvement

1. Remove 20 unused dev dependencies.
2. Test case coverage

What's the next?

1. Improve UI in the project like skeleton in the loading.
2. Improve the sound of code parser to support class syntax and more.
3. Add E2E test case using playwright.

New Function

Code Question Page

I created a question interface. Users can ask questions by sending emails to our email addresses through the question interface.

Code Question Page

Do you have a coding question to ask?

Please enter your code issue here...

Submit a question

Unfinished New Features

"Sonify" interface:

- Code Breakpoints and Sounds: Allows users to set breakpoints in code and pause sounds there so they can focus on a specific part of the sound.
- Syntax highlighting: Although the current interface already has syntax highlighting, it can further provide the function of customizing colors to help users better distinguish different parts of the code.
- Error and suggestion pop-up windows: When an error occurs in the code, or the system has suggestions, a pop-up window can be used to prompt the user, so that the user can know more clearly what happened.

Unfinished New Features

"Preferences" interface:

- Custom Sounds: Allows users to upload their own sound effects or choose a different sound theme to customize the code's sounds.
- Night mode: Considering that many developers like to code at night, providing a night mode might be a good option.

Unfinished New Features

maybe new page:

- Newbie Wizard: For first-time users of the software, a short novice wizard can be provided to guide them on how to use the tool.
- Interactive community: Consider adding a community or discussion section where users can share their code, sound experiences, and suggestions.