

Summer Internship Report

Sugar Labs, Google Summer of Code 2022

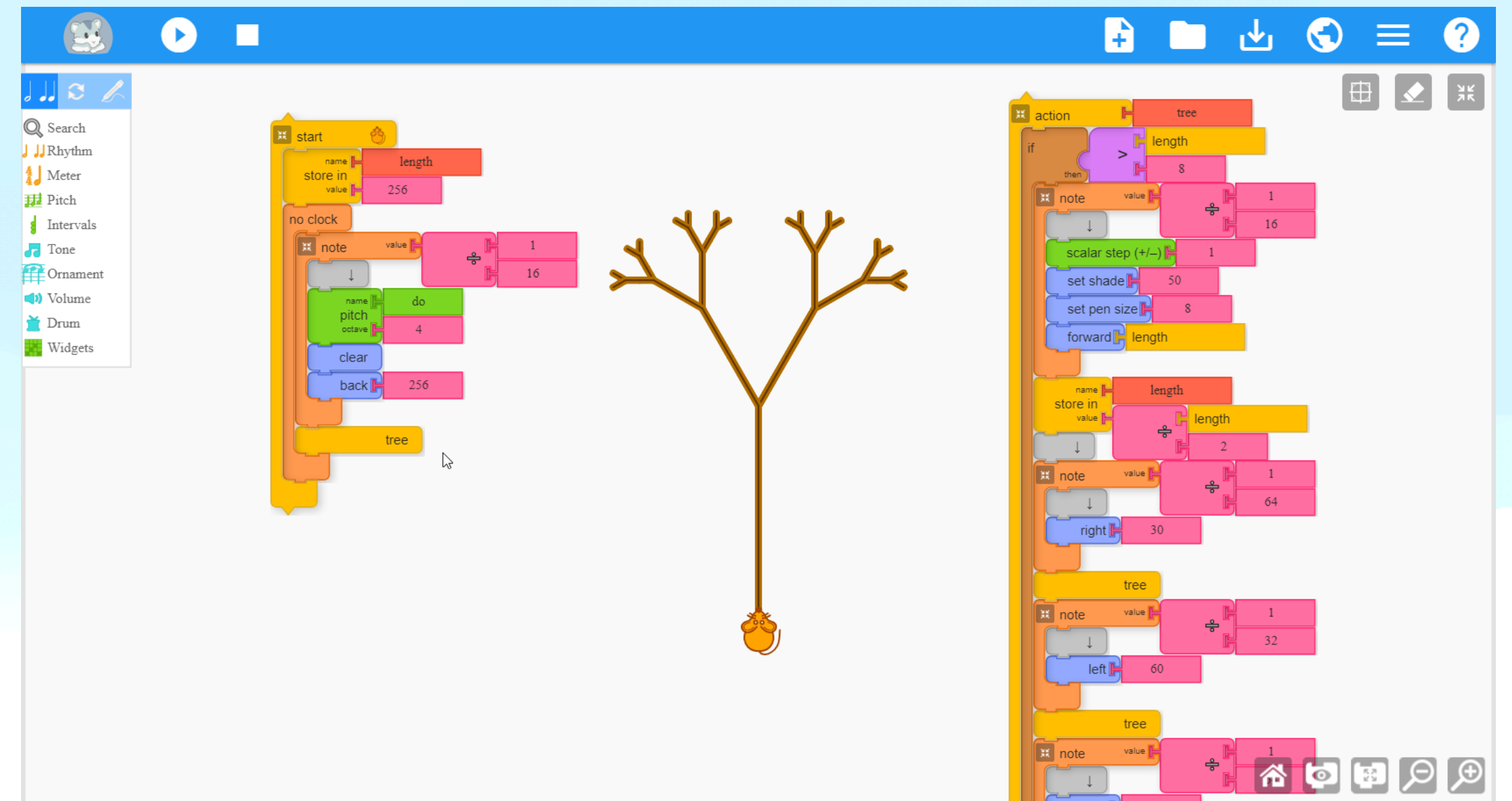
Anik Das, 510819023



Google Summer of Code

Sugar Labs & Musicblocks

Sugar Labs coordinates volunteers around the world who are passionate about providing educational opportunities to children through the Sugar Learning Platform.



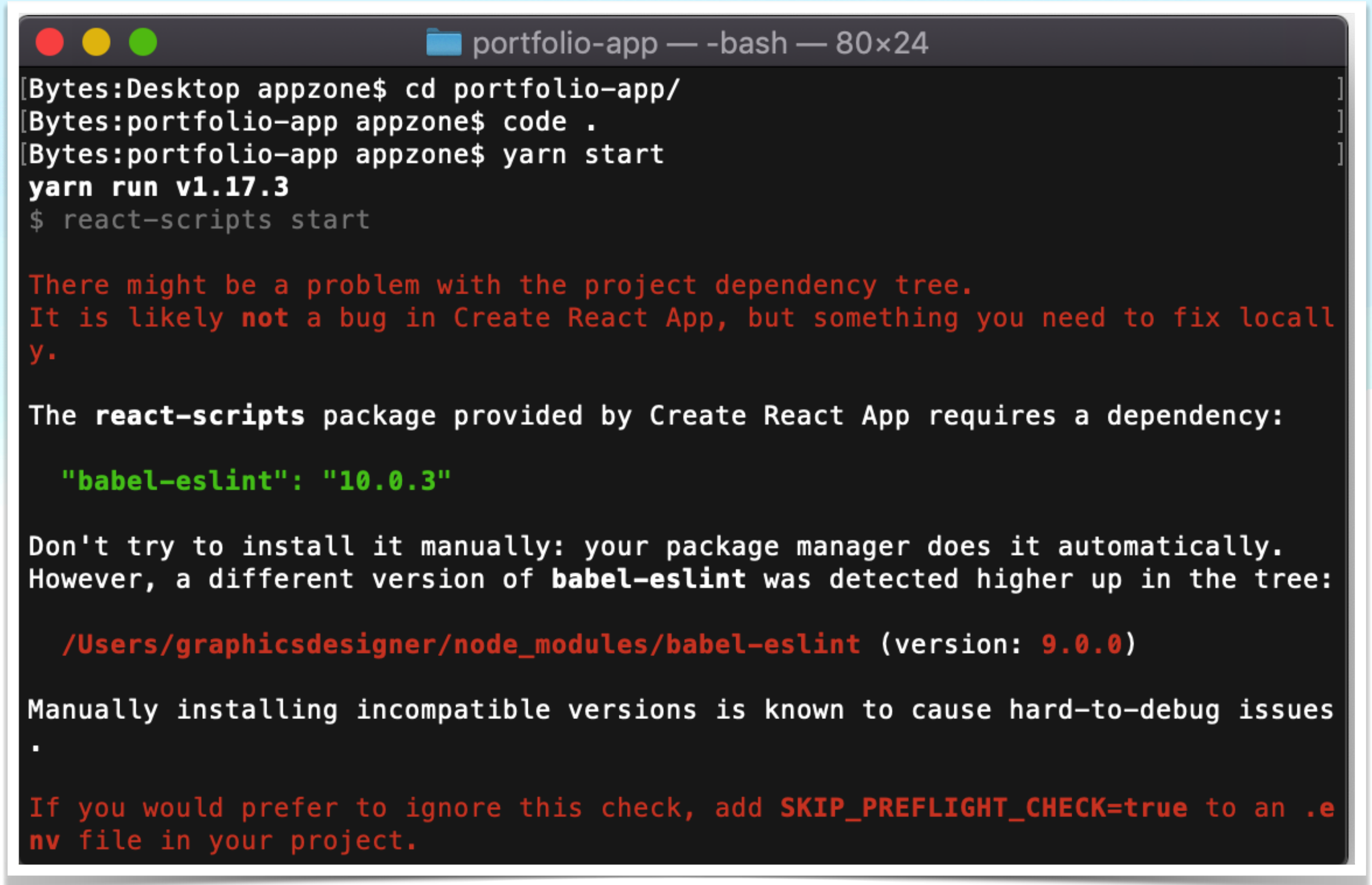
sugar
labs

Music Blocks is a collection of manipulative tools for exploring fundamental musical concepts in an integrative and fun way. It is developed by Sugar Labs.

The Project

Development tools were slow and unreliable

- Tools had older versions installed with conflicted with existing packages
- Some tools were unreliable due to having outdated dependencies
- A major tool - Webpack - was lagging a full major version behind

A terminal window titled 'portfolio-app — -bash — 80x24' showing a series of commands and an error message. The commands executed are: 'cd portfolio-app/', 'code .', 'yarn start', and 'yarn run v1.17.3'. The error message, displayed in red text, states: 'There might be a problem with the project dependency tree. It is likely not a bug in Create React App, but something you need to fix locally.' It then specifies that the 'react-scripts' package requires a dependency: '"babel-eslint": "10.0.3"'. The message continues: 'Don't try to install it manually: your package manager does it automatically. However, a different version of babel-eslint was detected higher up in the tree: /Users/graphicsdesigner/node_modules/babel-eslint (version: 9.0.0)'. It warns that manually installing incompatible versions causes hard-to-debug issues and suggests adding 'SKIP_PREFLIGHT_CHECK=true' to a '.env' file to ignore the check.

```
portfolio-app — -bash — 80x24
[Bytes:Desktop appzone$ cd portfolio-app/
[Bytes:portfolio-app appzone$ code .
[Bytes:portfolio-app appzone$ yarn start
yarn run v1.17.3
$ react-scripts start

There might be a problem with the project dependency tree.
It is likely not a bug in Create React App, but something you need to fix locally.

The react-scripts package provided by Create React App requires a dependency:

  "babel-eslint": "10.0.3"

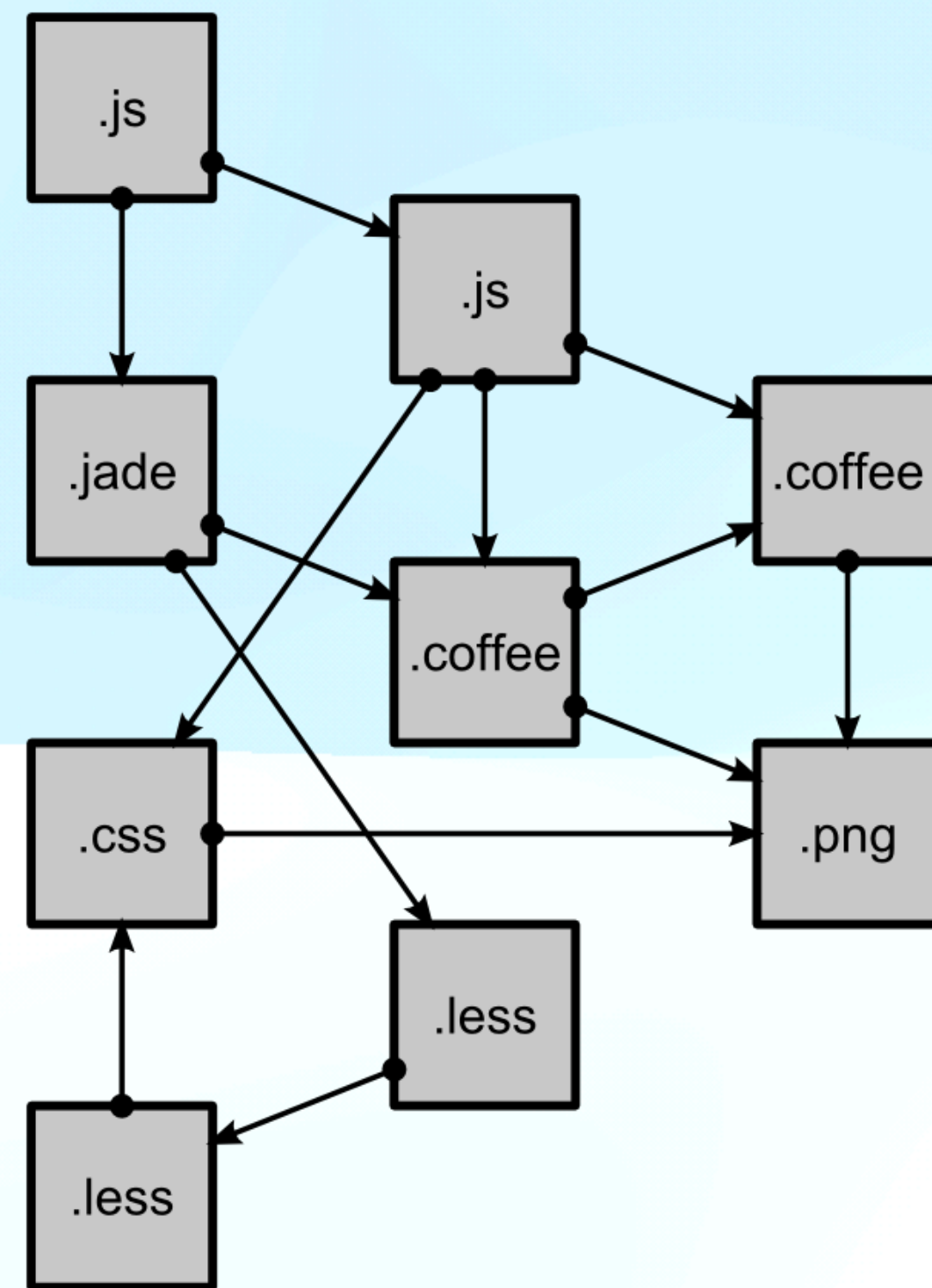
Don't try to install it manually: your package manager does it automatically.
However, a different version of babel-eslint was detected higher up in the tree:

  /Users/graphicsdesigner/node_modules/babel-eslint (version: 9.0.0)

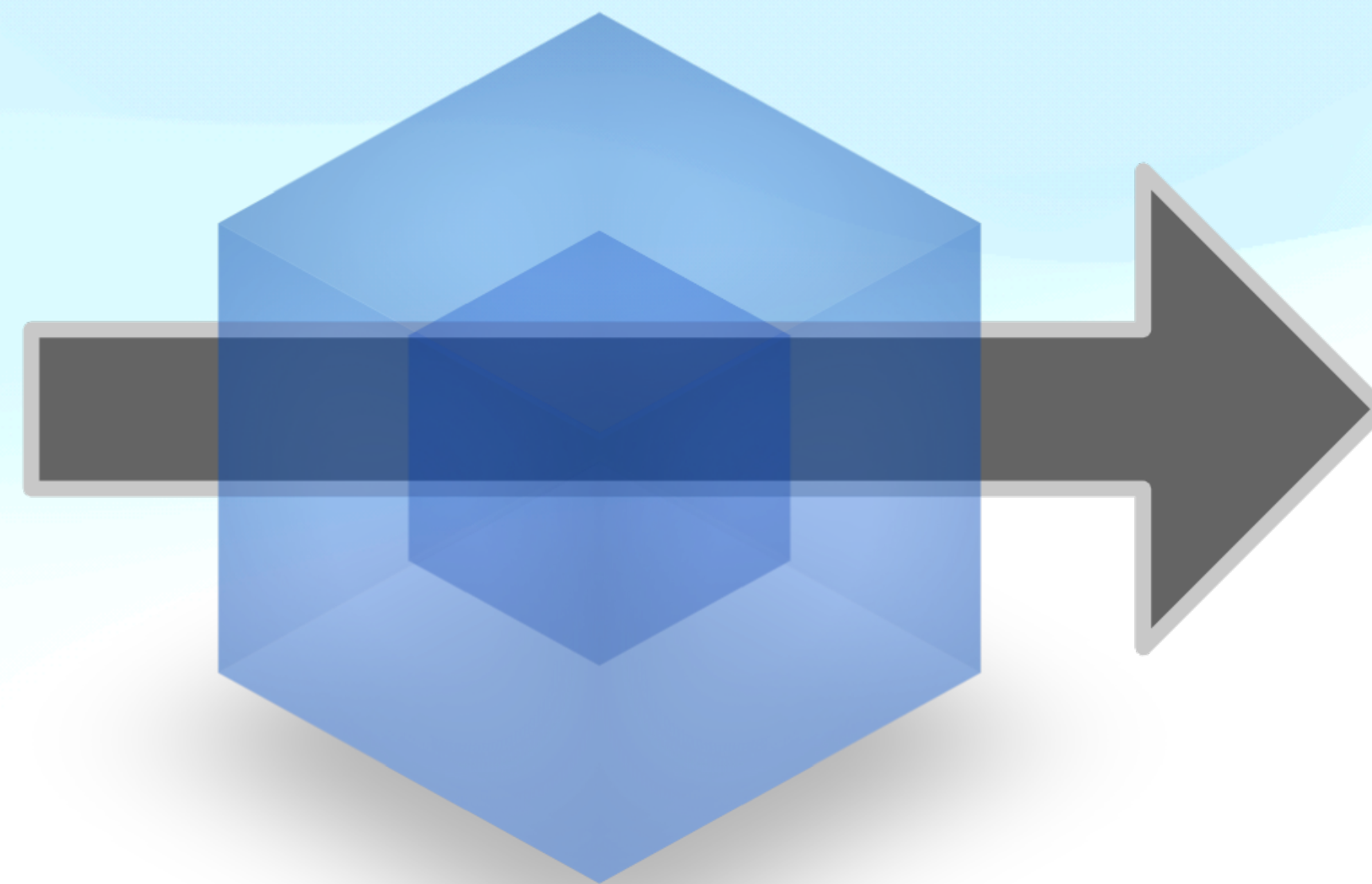
Manually installing incompatible versions is known to cause hard-to-debug issues.

If you would prefer to ignore this check, add SKIP_PREFLIGHT_CHECK=true to an .env
file in your project.
```

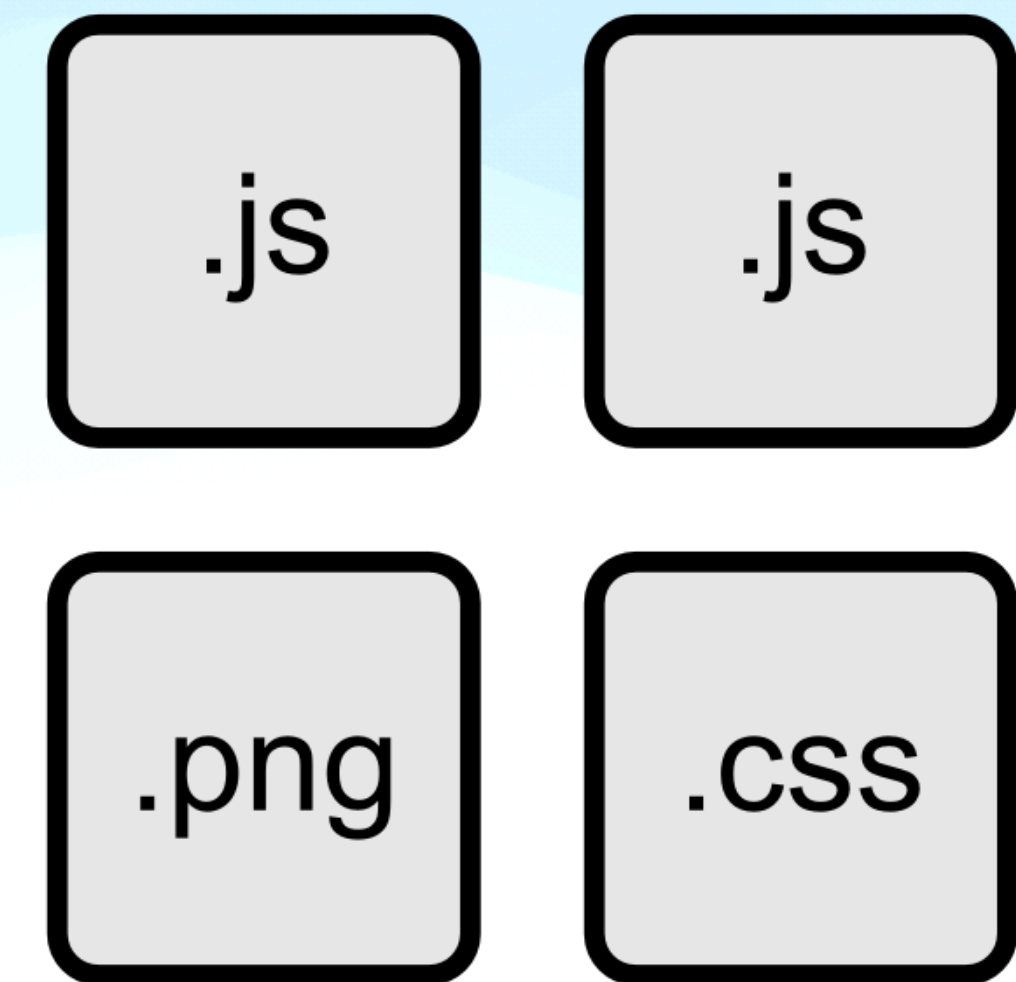

Webpack - the module bundler



modules
with dependencies



webpack
MODULE BUNDLER



static
assets

Project Scope

- Migrate Webpack to newer version, along with all the incompatible code and plugins
- Improve performance of production site using compression mechanisms
- Setup Continuous Integration and Continuous Delivery system on GitHub actions to automatically deploy a preview branch during feature development

4 → 5

Compression of Production Build

Setup gzip compression to compress files above 50KB resulting in over 50% savings of the compressed files

```
musicblocks-v4 on ʘ sadn1ck/week-4+ [!] via ʘ v16.14.2 took 15s
> ls -lahS build/*.gz
-rw-r--r--. 1 anik anik 197K Jul 22 11:24 build/35.2072516ba3b0e45f562b.js.gz
-rw-r--r--. 1 anik anik  49K Jul 22 11:24 build/423.cf2af27283347702d516.js.gz
-rw-r--r--. 1 anik anik  42K Jul 22 11:24 build/589.9843b9b21df47147740e.js.gz
-rw-r--r--. 1 anik anik  14K Jul 22 11:24 build/572.aecdfef377f3c890d0f3.js.gz

musicblocks-v4 on ʘ sadn1ck/week-4+ [!] via ʘ v16.14.2
> ls -lahS build/{35,423,589,572}*.js
-rw-r--r--. 1 anik anik 801K Jul 22 11:24 build/35.2072516ba3b0e45f562b.js
-rw-r--r--. 1 anik anik 200K Jul 22 11:24 build/423.cf2af27283347702d516.js
-rw-r--r--. 1 anik anik 128K Jul 22 11:24 build/589.9843b9b21df47147740e.js
-rw-r--r--. 1 anik anik  54K Jul 22 11:24 build/572.aecdfef377f3c890d0f3.js
```


Linting and development errors

```
NO ERRORS FOUND
ERROR in ./src/App.tsx:8:5
TS2322: Type 'string' is not assignable to type 'number'.
   6 |     const user: Sample = {
   7 |       name: "me",
>  8 |       age: "21",
     |         ~~~
   9 |     };
  10 |     console.log(user);
  11 |     return (

Found 1 error in 103 ms.
[]
```

```
NO ERRORS FOUND
ERROR in
/home/anik/Work/sugarlabs/poc/wp5/src/App.tsx
  10:1  error  Expected indentation of 2 spaces but found 4  indent

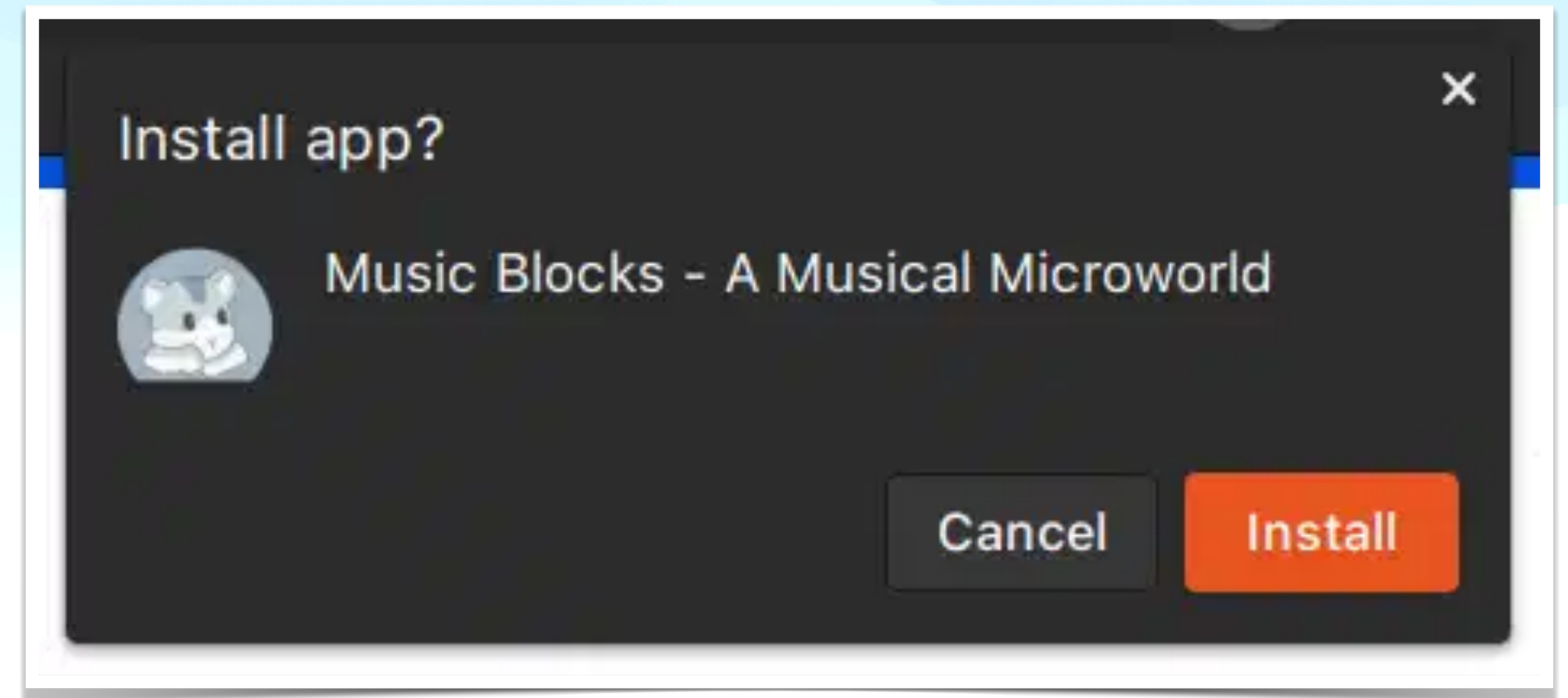
* 1 problem (1 error, 0 warnings)
  1 error and 0 warnings potentially fixable with the `--fix` option.

webpack compiled with 1 error
```

Setup [eslint](#) and [typechecking](#) whenever a file is saved - which warns us immediately if we did something invalid

Conversion to Progressive Web App

Allows the ability to install as a **native app** on all **major operating systems**, and to be **used offline** as well, which allows it to be used in areas with bad internet



Continuous Integration

Automatically **build and push latest changes** on every merge request to a staging server for immediate validation.

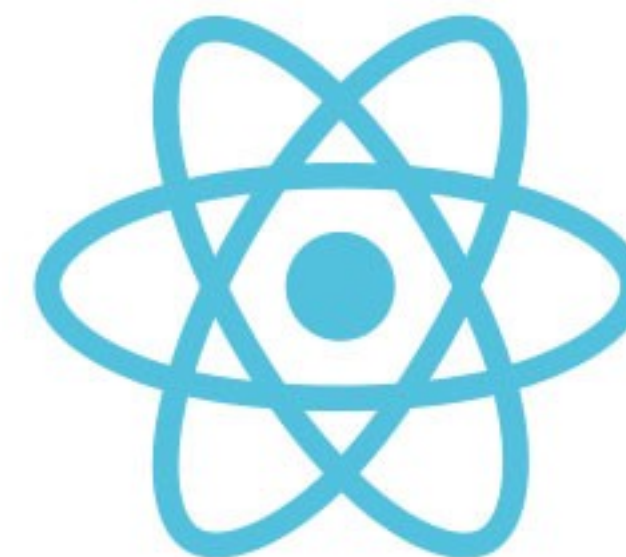
The screenshot displays a GitHub Actions workflow run interface. At the top, the workflow is titled "setup unit + e2e testing, and ci for running in github actions" with a status of "Continuous" and a dropdown for "Latest #2". Below the title, the job "Integration #1" is shown. The left sidebar contains a "Summary" tab and a "Jobs" section with a single job, "Run Unit and E2E Tests", marked as successful. The main panel shows the details of this job, titled "Run Unit and E2E Tests", which "succeeded 7 days ago in 2m 20s". A search bar for logs is present. The job steps are listed as follows:

| Step | Duration |
|----------------------------------|----------|
| > ✓ Set up job | 1s |
| > ✓ Checkout the code base | 2s |
| > ✓ Setup Node.js 16.x | 0s |
| > ✓ Install Cypress dependencies | 15s |
| > ✓ Install dependencies | 42s |
| > ✓ Run Unit Tests | 9s |
| > ✓ Cypress run | 1m 8s |
| > ✓ Post Setup Node.js 16.x | 0s |
| > ✓ Post Checkout the code base | 0s |
| > ✓ Complete job | 0s |

Key Learnings

fin

- Learnt Typescript and React, and learnt the basics of how Webpack works to optimise it
- Incrementally upgrade dependencies in a codebase while maintaining its stability
- Upgrade breaking dependencies and related code to avoid mismatch in used imports later





Thank you!