# Summer Internship Report

Sugar Labs, Google Summer of Code 2022
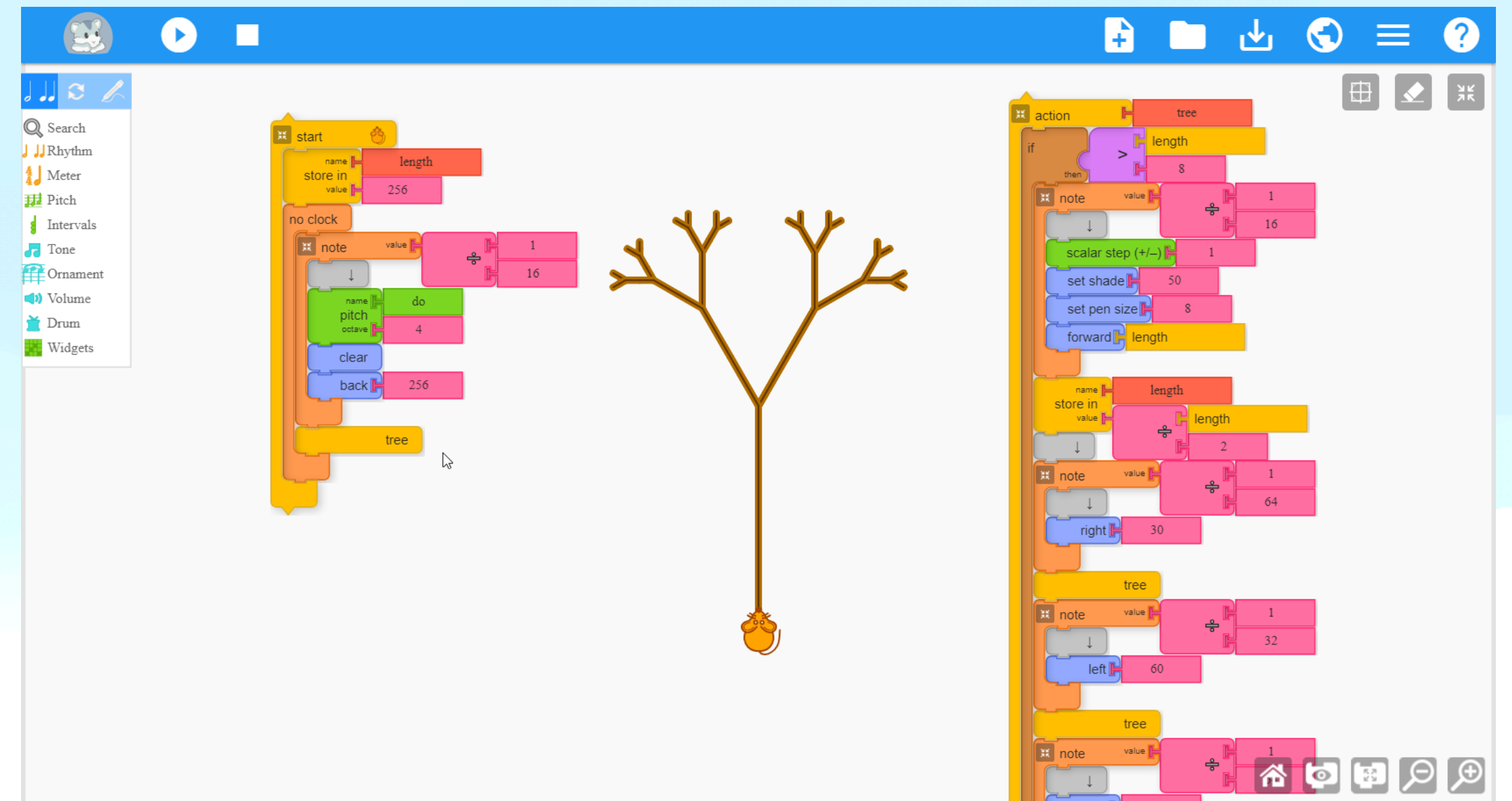
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Google Summer of Code

# Sugar Labs & Musicblocks

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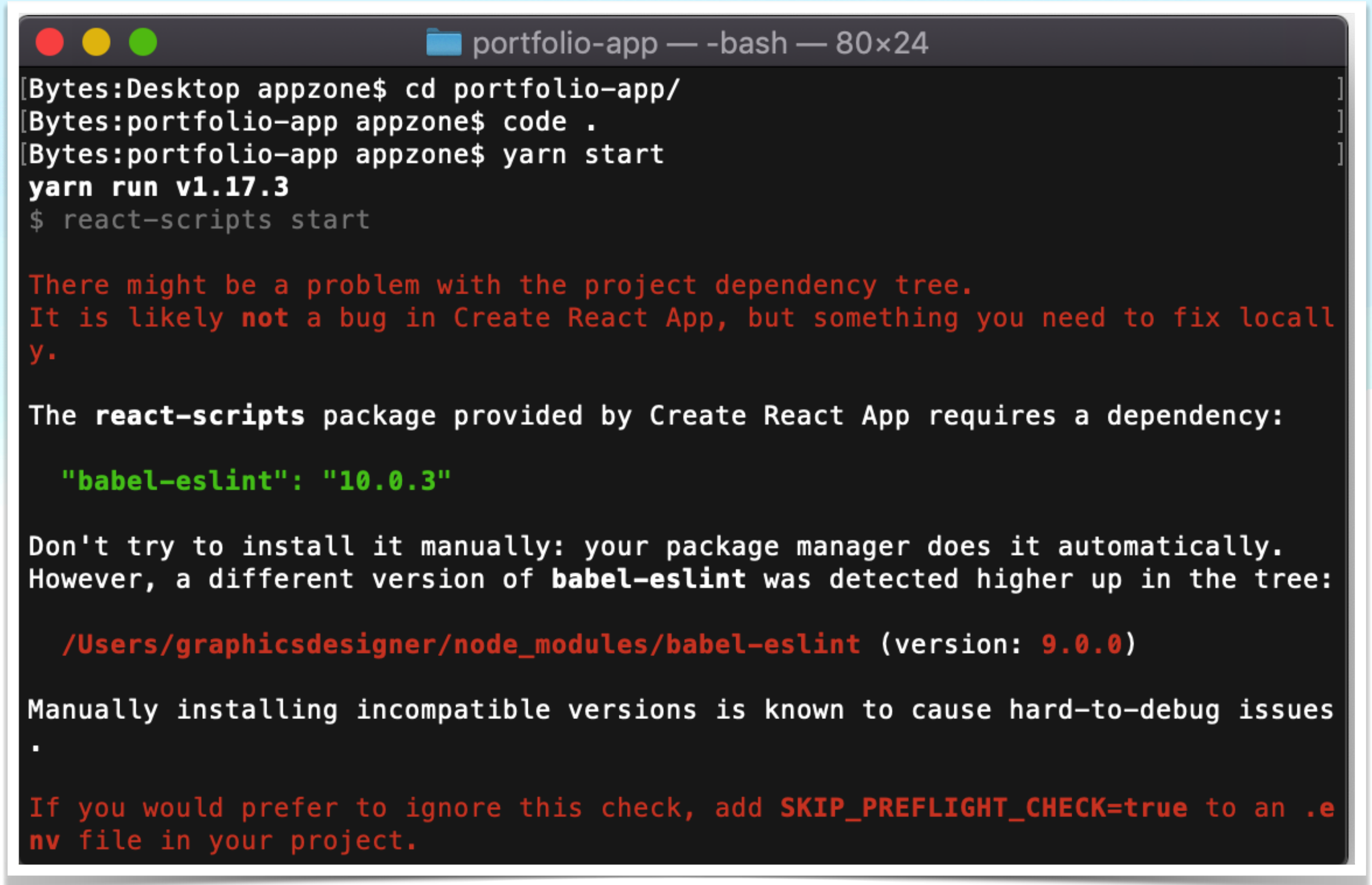


sugar labs

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- Some tools were unreliable due to having outdated dependencies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

# Webpack - the module bundler
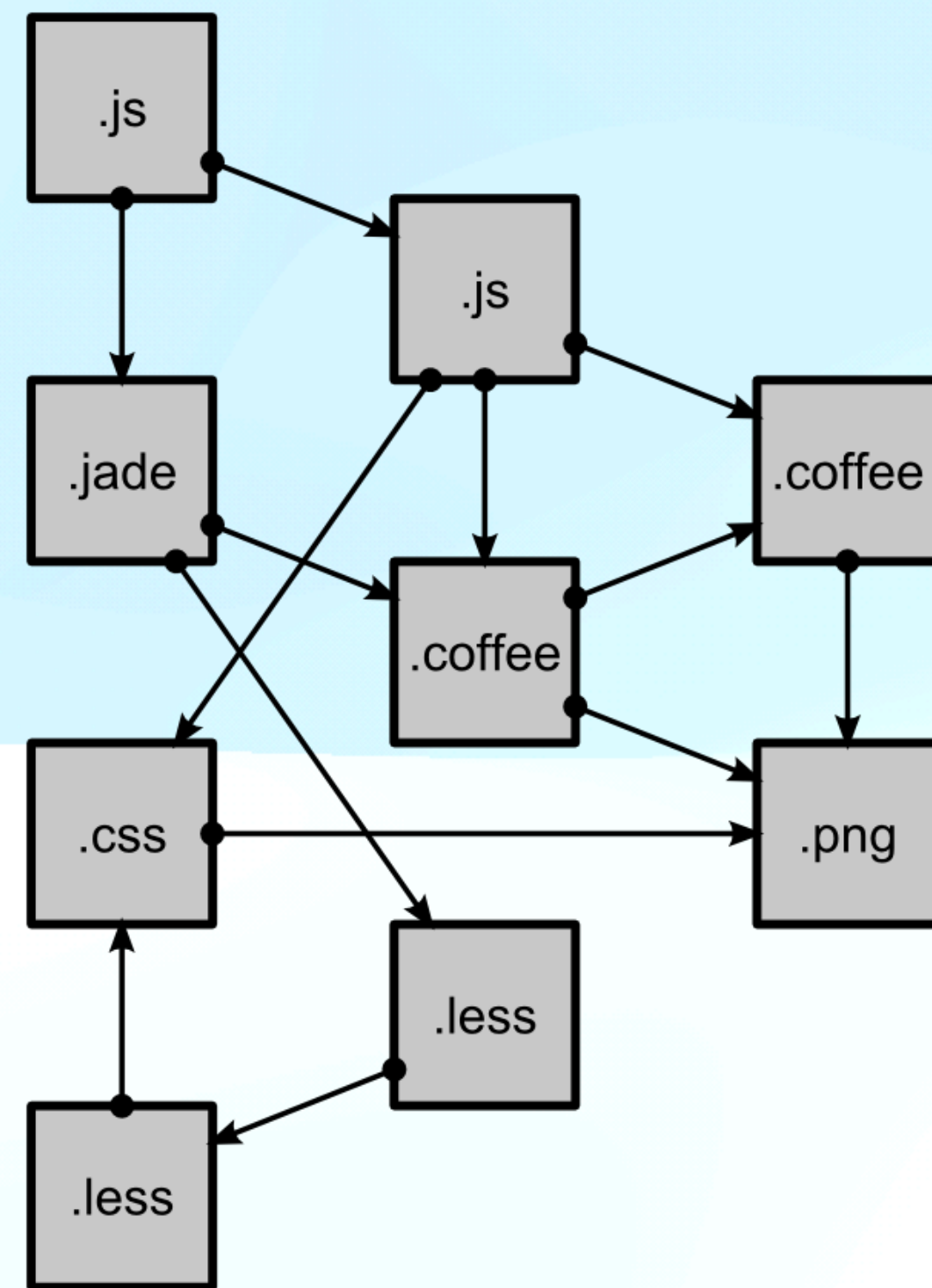


modules
with dependencies
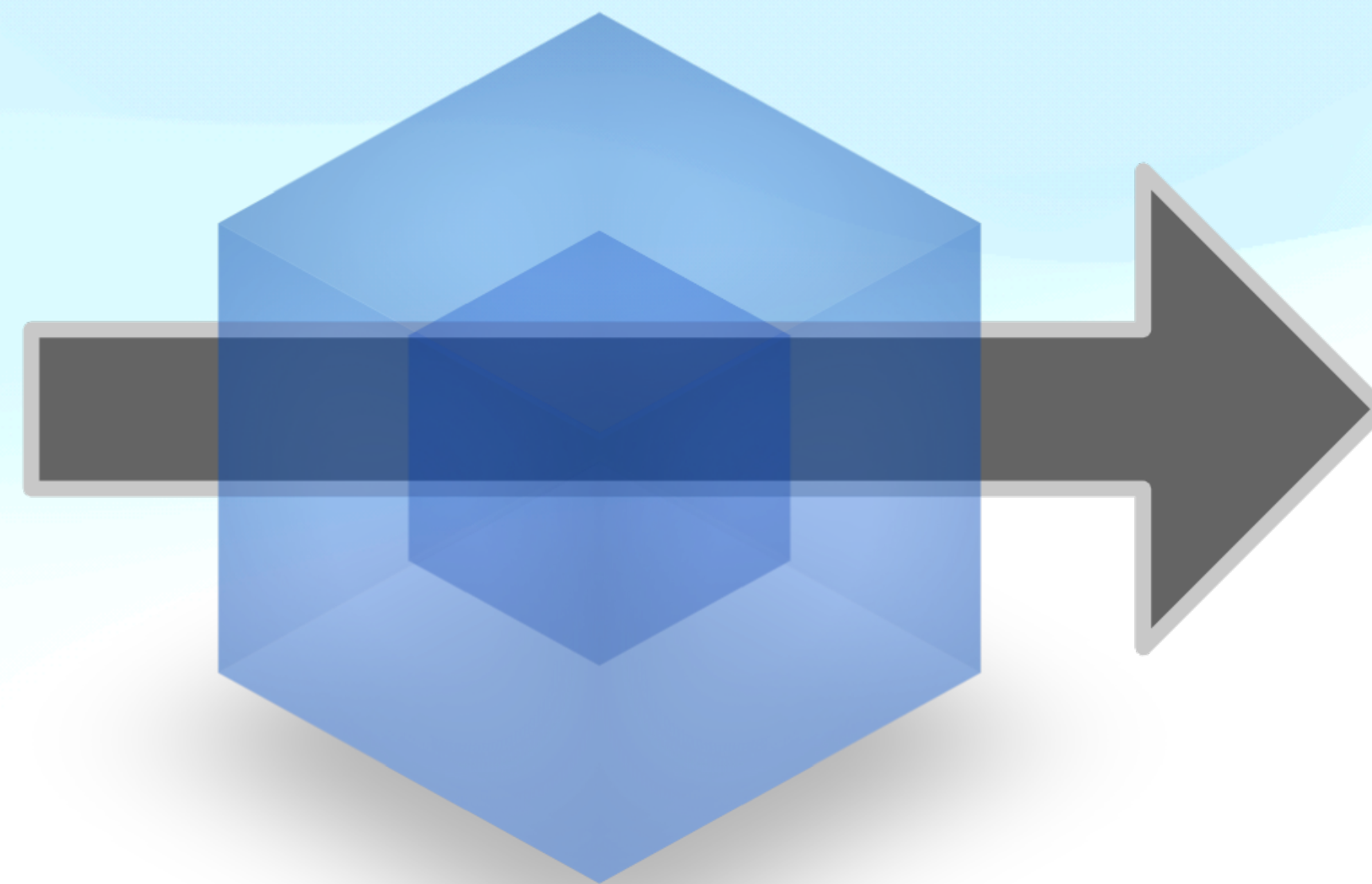
webpack
MODULE BUNDLER
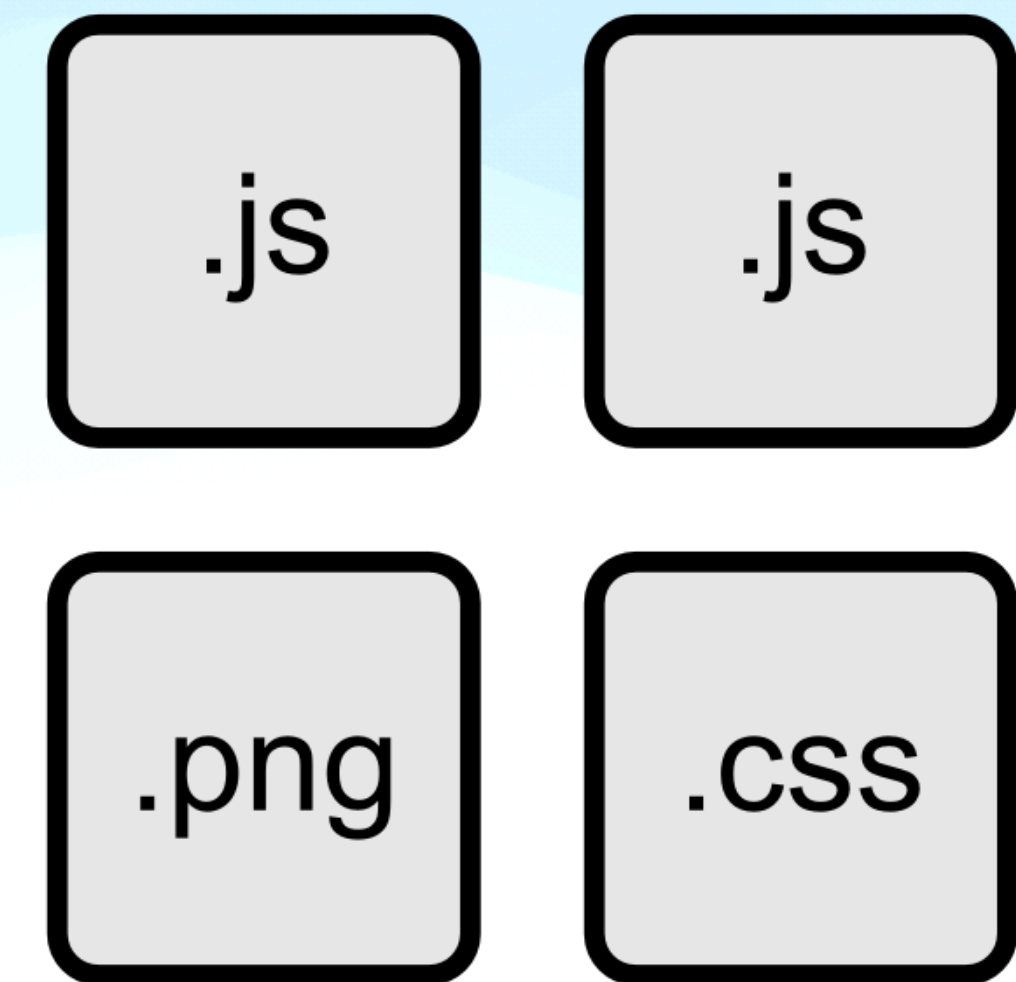
static
assets

# 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

$$4 \rightarrow 5$$

# Compression of Production Build

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

```
musicblocks-v4 on  sadn1ck/week-4+ [!] via  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.aecdfeb377f3c890d0f3.js.gz

musicblocks-v4 on  sadn1ck/week-4+ [!] via  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.aecdfeb377f3c890d0f3.js
```

# Linting and development errors



```
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.
```

```
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
```
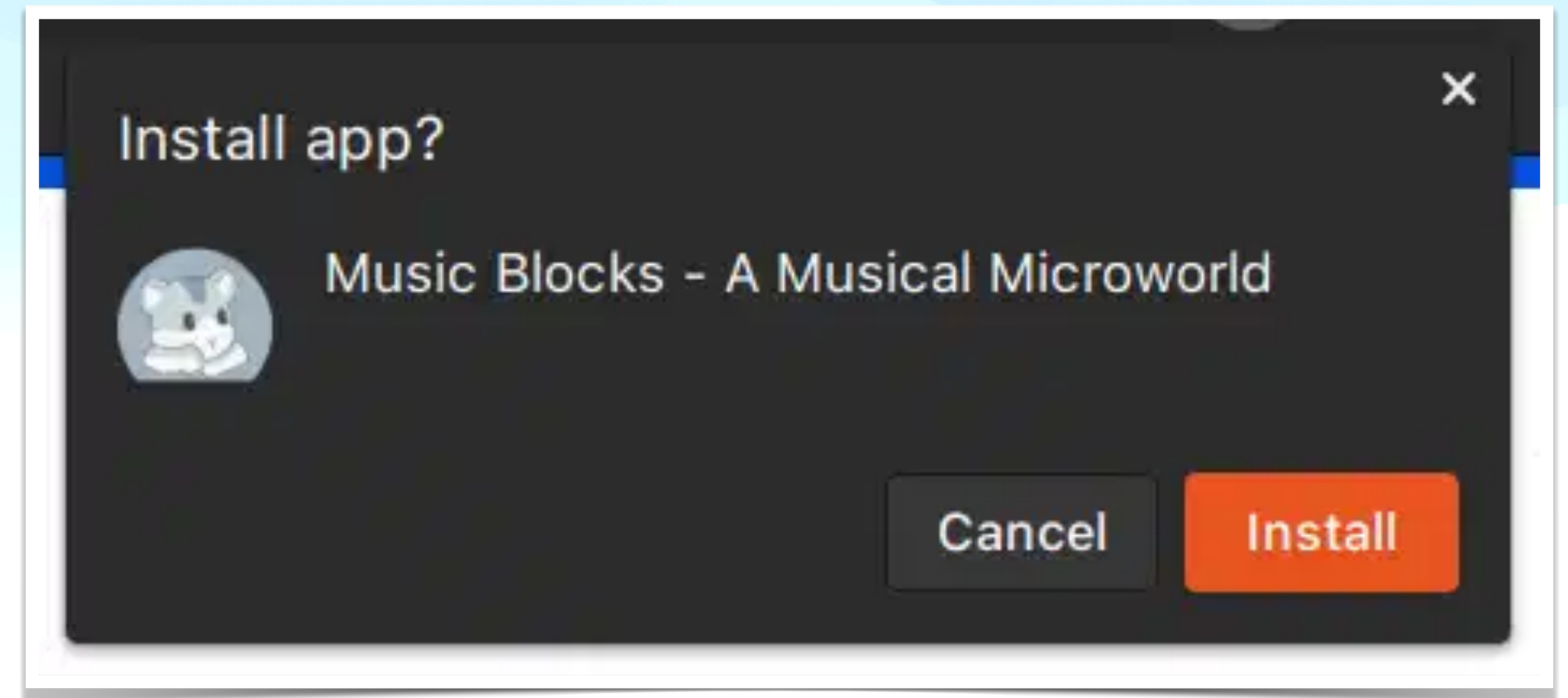
Setup eslint and typechecking whenever a file is saved - which warns us immediately if we did something invalid

# Convertion 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

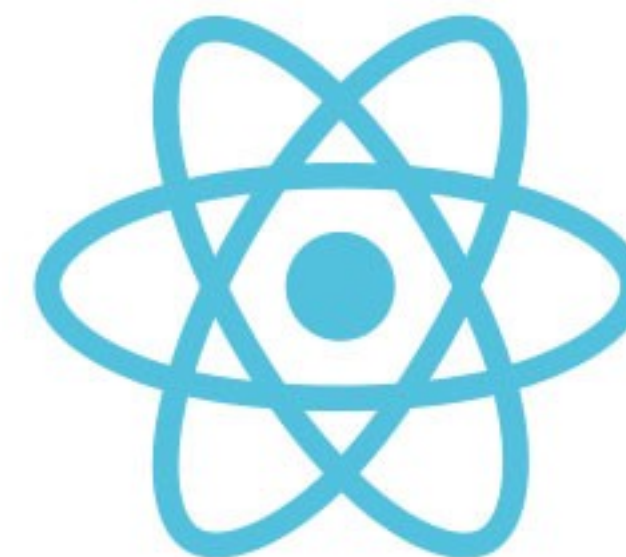Automatically build and push latest changes on every merge request to a staging server for immediate validation.

# Key Learnings

- 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!