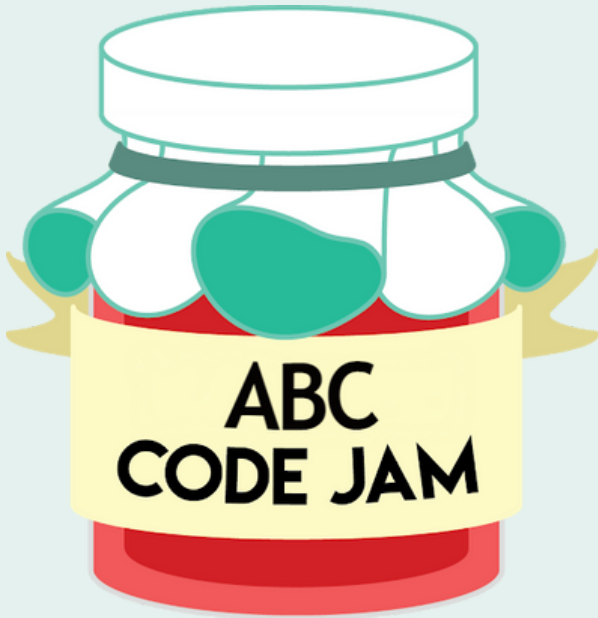ABC CODE JAM
Presents

PROJECT BOOKLET

Welcome Code Jam Hacker!

This is your sample project catalog, which you can use to help develop your projects and create amazing things! Don't know what to make? Check out these different IDEs (Integrated development environments) and the sample projects you can create with them. Click the underlined text to view links. Happy Coding!
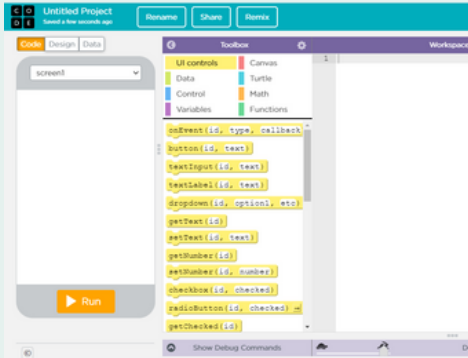
Remember: you may not use these projects as your actual projects for the competition!

Code.org (Game Lab)

Beginner Level

Code.org offers many great ways to create your project. In Game Lab, you can make simple animations and games with objects and characters that interact with each other.

No background required, but skills applicable include:

- Language: JavaScript or Block coding
- Variables, Functions, and conditionals

Sample Project: Turtle Run

Check out a simple endless runner game built with Game Lab! Play the game itself, then take a look at the code and see how it was built!
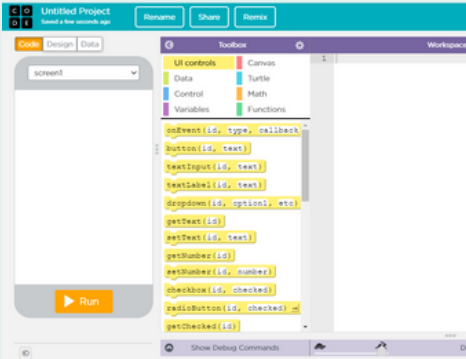
Click Me to View Project File!

Key Points of this Program:

This project uses **global variables** to store data on turtle health and fish count, **functions** and **conditionals** to manage game states and controls, and **parallax graphics** to create an illusion of motion within the game.
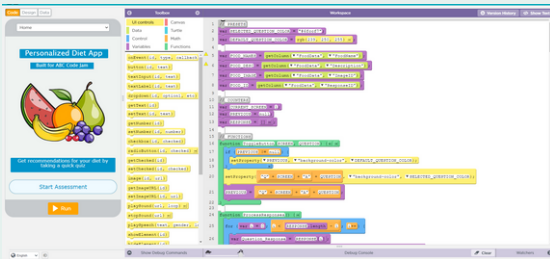
Code.org (App Lab)

Code.org offers many great ways to create your project. Web Lab is a programming environment where you can make simple web pages in seconds. You can create a personal website, a website for a school club, and much more

No background required, but skills applicable include:

- Language: JavaScript
- Skills: Conditionals, String Concatenation, UI programming

Sample Project: Personalized Diet App

Need help fixing your diet, but don't know which source or person to trust online? Well this app is perfect for you as it utilizes a variety of JavaScript conditionals in order to help suggest you a new diet, based on your current habits and physical activity!
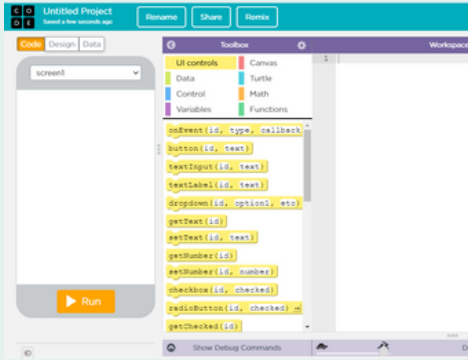
Click me to visit test and check out project source code!

Key Points of this Program:

This project is an excellent example of the code.org App Lab! It's a very simple beginner project that anyone who has little to no programming experience can get started with. Building this app introduces you to **JavaScript**, a popular scripting language used for website building, as well as **conditionals** and intermediate level **UI programming**!
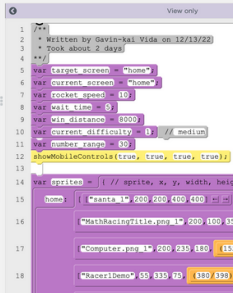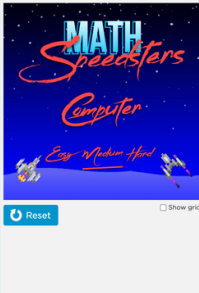
Code.org (Game Lab)

Code.org offers many great ways to create your project. In App Lab, you can create your own app and use block-coding to develop the functionality of your app. It is easy and and plenty of fun!

Background:

- Language: JavaScript or Block coding
- Loops, functions, scope, and built-in methods
- Game design, state management, and asynchronous functions

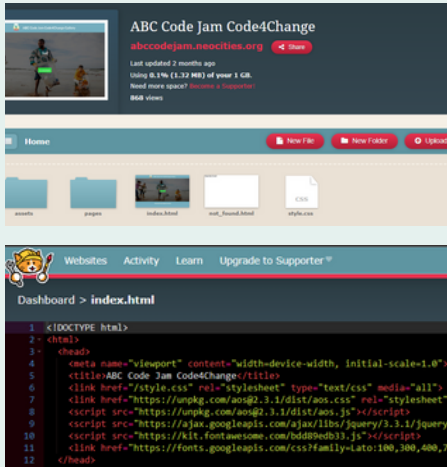## Sample Project: Math Racing

In this sample project, you will see the game, Math Racing. Click the run button to start the project, and test out the game by using the arrow keys to input answers and the mouse to navigate UI.

Click Me to View Project File!

Key Points of this Program:

This app uses **asynchronous functions** for time control and state management, **Java objects/dictionaries** for global data storage between states and screens, **for-loops** for repeated commands, and numerous **functions** and **built-in Java methods** for abstraction and scalability.
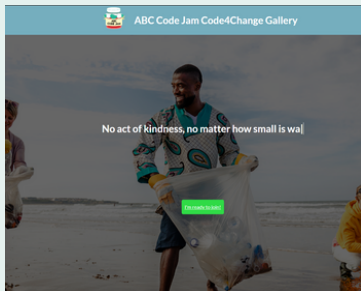
Neocities

Neocities is a quick way to design a web application without having to worry about the deployment factor of websites. By using this site you'll learn the file structure of simple web applications, and learn valuable skills with vanilla Javascript, HTML, and CSS.

Background:

- Language: JavaScript, HTML, and CSS
- Easy way to deploy and share live websites fast!
- No need to install a separate IDE, packages, etc.

Sample Project: Volunteering Page

In this sample project, you will see a responsive volunteer landing page that contains a variety of volunteering opportunities around the SoCal area and volunteer stories from people

Click Me to Download Project File!

Key Points of this Program:

This project contains core web development fundamentals such as website **file structuring**, **vanilla JavaScript**, **HTML / CSS** for website layout and styling! If you want to learn more about the site be sure
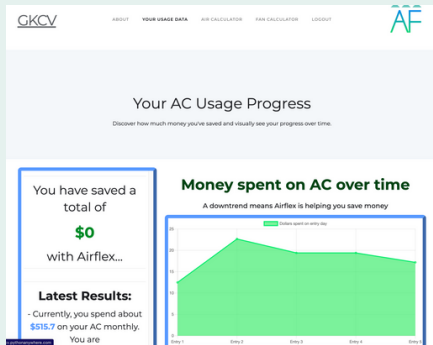
Flask

Flask

<u>Flask</u> is a web framework, it's a Python module that lets you develop web applications easily. It has a small and easy-to-extend core as well as many cool features like url routing and a template engine.

Background:

- Languages: Python, Javascript, HTML, CSS
- Flask and Jinja2
- Full-stack web development

Sample Project: Airflex

In this sample project, you will see the website, AirFlex. Navigate the website, create an account, and explore its features. Use inspect element to better understand the code behind the project.

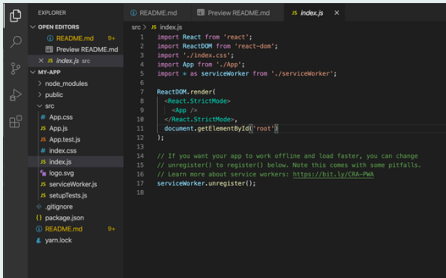[Click Me to View Project File!](#)

Key Points of this Program:

This app utilizes the web framework **Flask** to create and manage a **multi-page website**, the popular HTML library **bootstrap** for simple yet elegant UI design, and **Jinja** for easy **back-end implementation**.
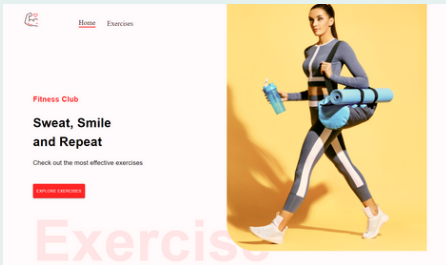
React

React is one of the most popular JavaScript interfaces for building websites apps. There are thousands of unique packages from the react community that allow you to quickly build and deploy your application.

Background:

- Language: JSX, TypeScript, HTML/CSS
- Full-Stack Web Development + API calls
- Thousands of amazing packages to install to help speed up development (Material UI, Firebase, etc.)

Sample Project: Gold Gym

In this sample project, you will be able to view thousands of workouts and tutorials from the Rapid API Exercise Database. This website fetches workout data and YouTube search data in order to give tutorials, gifs, and related videos on workouts!

[Click Me to View Project File!](#)
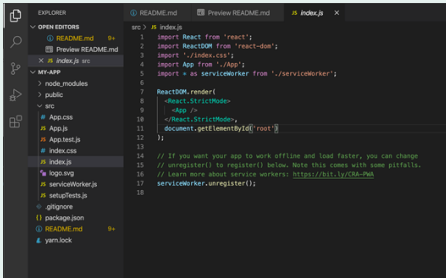
Key Points of this Program:

This app utilizes popular frontend frameworks such as **Material UI**'s Box, Stack, and Typography components in order to scale the application for mobile devices and computers in a clean way. This app also utilizes APIs from **RapidAPI** such as the "**ExerciseDB** " and the **YouTube search API** in order to pull live YouTube videos, gifs, and info about each exercise to display on your application!
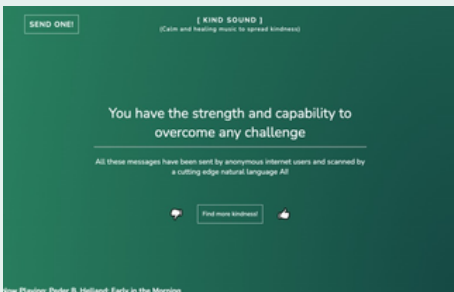
React + NodeJS

React is one of the most popular JavaScript interfaces for building websites apps. Paired up with NodeJS a popular back-end JavaScript runtime environment, you can create a powerful and responsive web application!

Background:

- Language: JSX,, TypeScript, HTML/CSS, JavaScript, ExpressJS
- Full-Stack Web Development + Server side fetching and databases
- Use cloud database services such as Firebase and AWS to connect your web application

Sample Project: KindSound

This project uploads user inputted kind words into a **Firebase** database, and uses a JavaScript library known as **Axios** in order to quickly fetch and pass data to the **React** frontend! Users can "find" random kindness quotes sent by other anonymous users to brighten up their day!

[Click Me to View Project File!](#)

Key Points of this Program:

This app utilizes **Firebase** as a cloud database in order to send kind quotes to the web as well an **OpenAI API** as a sentiment checker before sending. **Axios**, a popular JavaScript library is used to fetch quotes, and **React** is used along with HTML/CSS in order to build a clean and responsive frontend. We even added a particle system in the background that utilizes **P5 and Perlin Noise.**

Happy Coding Code Jam Hacker!

There are endless possibilities of creations you can make with code and using computer science concepts. You are not limited to make projects based solely what is in this booklet.
Explore, learn as you go, and have fun!