

Code Blocks

BDM Educational Products

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Mission Statement

*“Building wheels for
the engine of
creation.”*

But First, Some Statistics

In a study of US Students aged 16-23:

- 58% believe in that coding is essential
- >45% are currently coding or learning to code
- > 50% plan on learning to code eventually

But why not more?

The Problem

Large Programs

- Full of text

Coding

- Code can be hard to arrange

Function and Variable Names

- Can be confusing

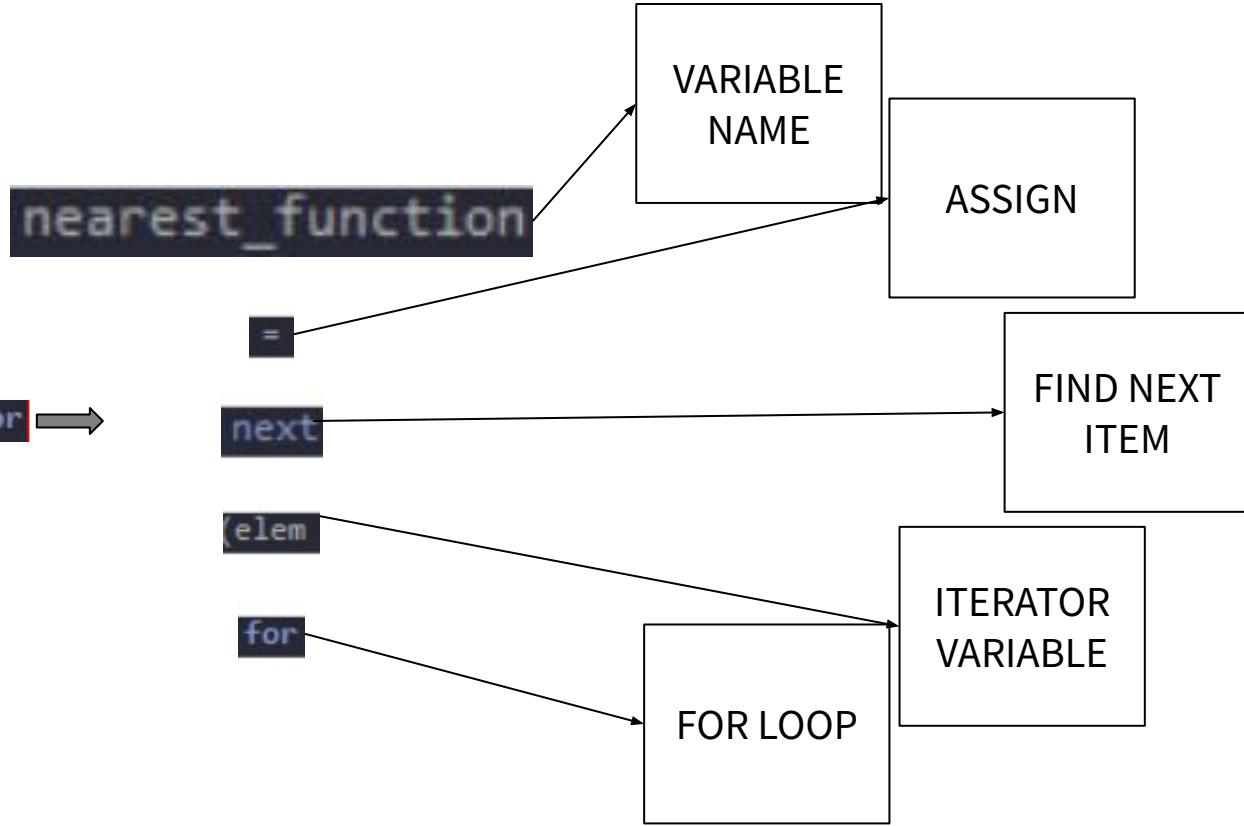
```
# Makes nested functions possible
while set(processed_commands) & function:
    nearest_function = next(elem for elem in
        processed_commands if elem.function)
    near_index = processed_commands.index(nearest_function)
    temporary_function = linemaker_function(
        processed_commands[near_index])
    processed_commands = processed_commands[:near_index] +
        temporary_function +
        processed_commands[near_index + 1:]
    print(temporary_function)
```

Figure 1: Code Snippet

The Solution

One line of code

```
nearest_function = next(elem for
```



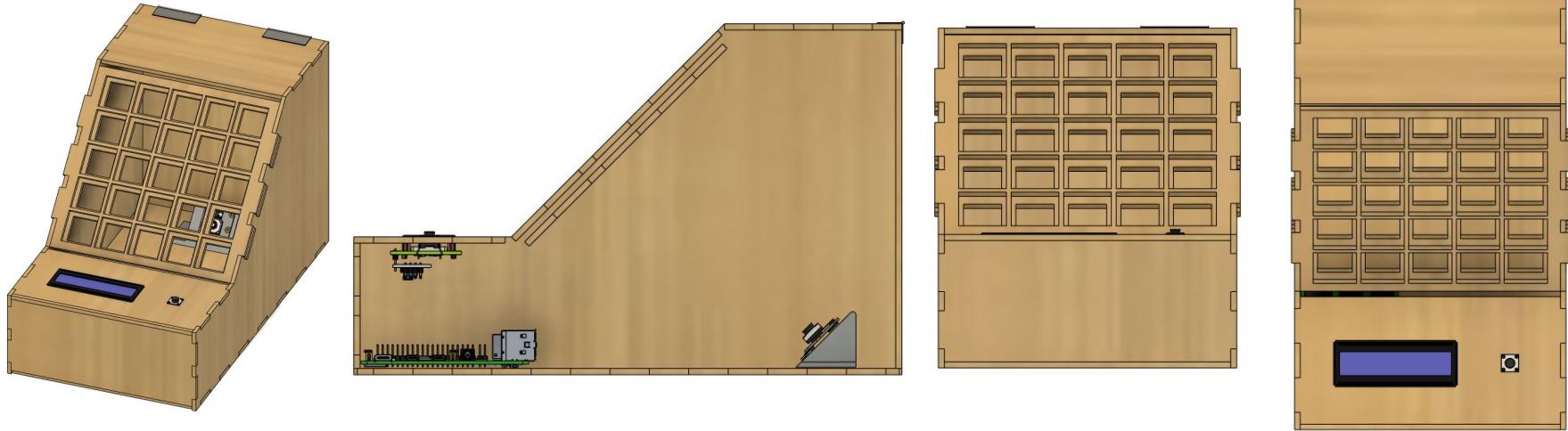
Product Objective



- Aims to teach code by simplifying text into individual blocks
- Turns blocks with QR codes into executable Python programs
- Product helps beginners by teaching ways of reading code
- Highly customizable

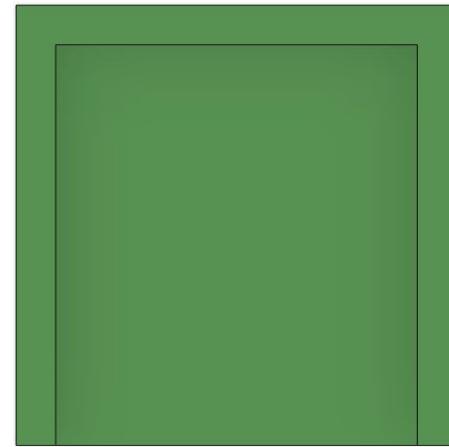
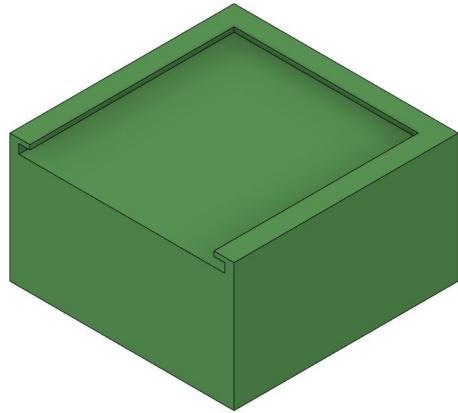
Figure 2: BDM Code Blocks

Product Description



Figures 3-6: Isometric, Side (opened), Front, and Top Views of Product

Product Description



Figures 7-9: Isometric, Front, and Top Views of Block

Product Description

The figure consists of three side-by-side screenshots of a mobile application interface:

- Home Screen:** A purple header bar at the top contains the word "Home". Below it is a white area with the text "WELCOME TO CODE BLOCKS REMOTE!" and two large rectangular buttons: one labeled "CODE HISTORY" and another labeled "CUSTOMIZE BLOCK". At the bottom is a purple footer bar with four small icons (a green square, a blue square, a grey square, and a black square) and the text "Educational Products".
- Customize Block Screen:** A purple header bar at the top contains a back arrow icon and the text "Customize Block". Below it is a white area titled "Current Function" containing five numbered items: 1. print, 2. range, 3. len, 4. print, and 5. print. Each item has a corresponding text input field to its right labeled "Enter New Function...". At the bottom is a purple footer bar with a single "Save" button.
- Code History Screen:** A purple header bar at the top contains a back arrow icon and the text "Code History". Below it is a white area with a dropdown menu showing "Execution1" and a code editor window. The code editor contains the following Python-like pseudocode:

```
print("I can't do this anymore")
var1=10
for var2 in range(var1):
    print()
print("I can't do this anymore")
```

Figure 10-12: Home, Customize Block, and Code History Screen from CODE BLOCKS REMOTE

Product Description

Software Features:

- Arranges decoded QR codes
- Returns error message if something goes wrong
- Google Sheets Integration
- Complementary Mobile App

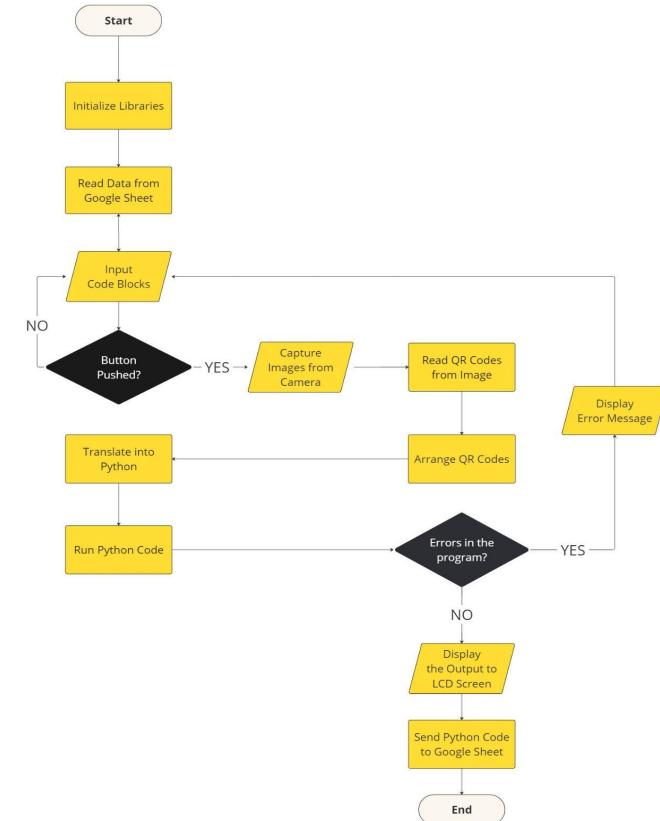


Figure 13: Code Flowchart

Product Description

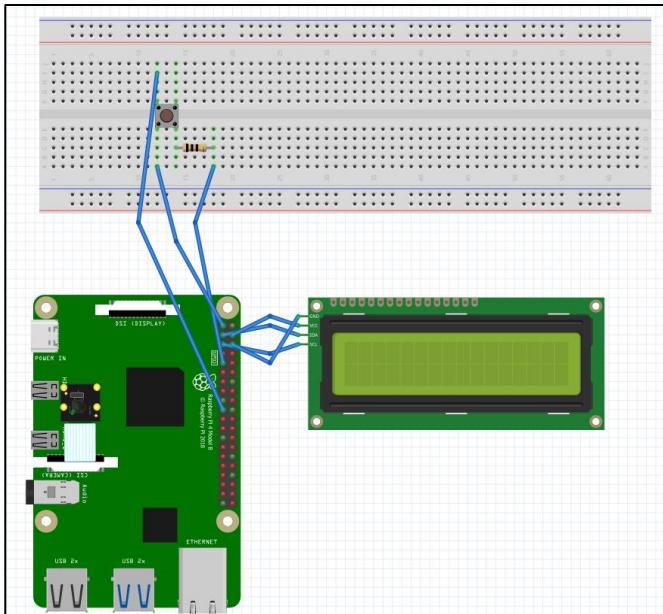


Figure 14: Circuit Diagram

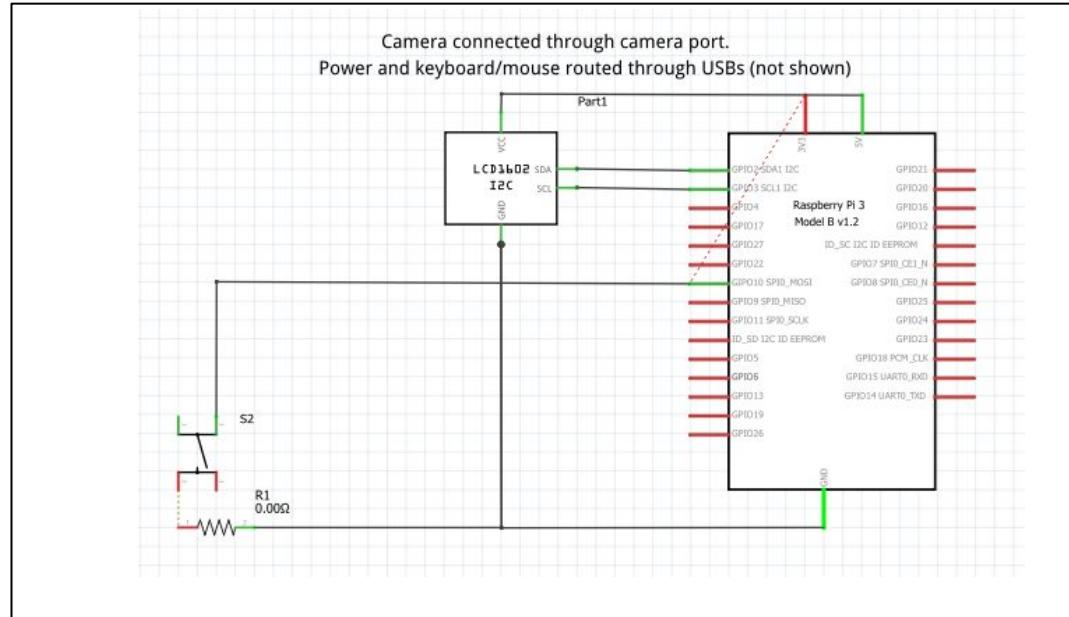


Figure 15: Schematic Diagram

Product Purpose & Features

- Designed to assist novice coders
- Reads blocks and returns executable Python code
- Easy to read & manipulate
- Complementary Mobile App, “Code Blocks Remote”

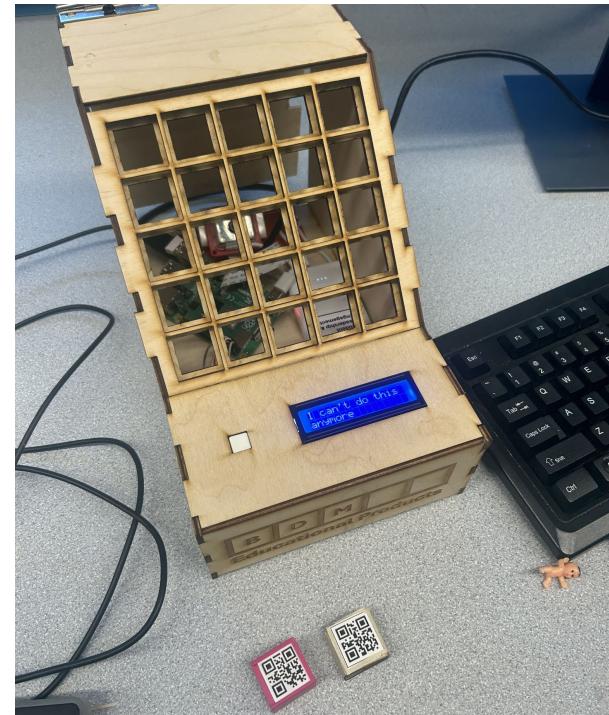


Figure 17: Physical Prototype

Future Goals

- Cut Production Cost
- Add Additional Functionality:
 - Add new Python features such as methods and imports
 - Increase size of grid and display
- Improve Our Mobile App, “Code Block Mobile”
 - Improve user interface designs
 - Execute code from device on Mobile App