MIT APP INVENTOR

SUSTAINABLE BITES

By Jophy Lin

SUMMER APPATHON

OVERVIEW

- **App Name:** Sustainable Bites
- **App Description:** Sustainable Bites is an application geared towards helping reduce carbon emissions from food products. There are 3 roles, where the “Kids” role has a rewarding trivia game, the “Consumer” role has educational pages, a BiteAI to generate eco-friendly recipes, a map to show local farmers markets, and a Barcode/QR Code scanner, and the “Seller” role has a QR Code generator which generates QR Codes with the Eco-Score information for markets to print out and stick onto their products.
- **Track:** Youth Individual
- **Category:** Climate & Sustainability

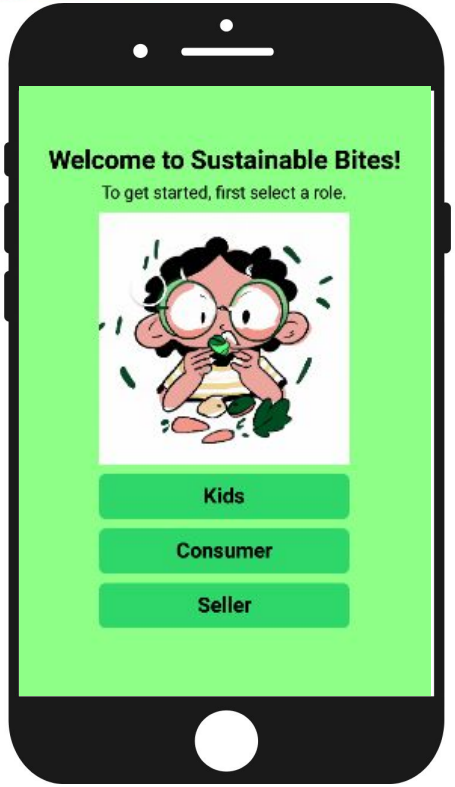
THEME

The food industry is a major contributor to climate change, yet despite it being an integral part of everyone's daily lives, the damage that it causes to the environment is often overlooked. The global livestock industry causes 14.5% of all human-induced GHG emissions and the food system accounts for at least 20% of the global GHG emissions, going from production to transportation and waste. From this, it is evident that there is a need for someone to step in, educate people about the issue, and help save our planet from further damage and harm. Thus, I created Sustainable Bites.

SPECIAL COMPONENTS USED:

1. OpenAI Extension
2. LocationSensor
3. Map (from OpenStreetMap)
4. Navigation API
5. BarcodeScanner
6. Sharing Component
7. QRCodeCreator Extension
8. Clock
9. ListPicker
10. ListView
11. TinyDB

INSTRUCTIONS: WELCOME PAGE



Step 1: This is the welcome page. To navigate, click the “Kids” button if you are a kid, the “Consumer” button if you are a consumer, or the “Seller” button if you are a local market or supermarket selling food products.

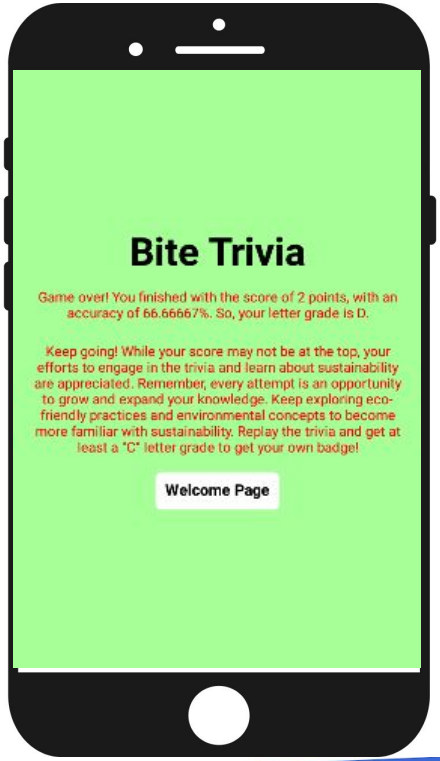
INSTRUCTIONS FOR KIDS PART:

This screen has a trivia game that asks the user (a kid) questions related to the food industry's impact, climate change, and sustainability. It serves to educate the user but also reward them in the end! By educating kids about the issue, we can ensure that the future generation will be well informed and help us in saving our planet!

Step 1: If you clicked on the "Kids" button, you will be led to this screen. The timer is set to 30 seconds and it'll start counting down when you have opened the screen. To play, answer the questions by reading the questions and clicking an answer option from the ListView. To move onto the next question, click the "Next" button that pops up when you answer a question.

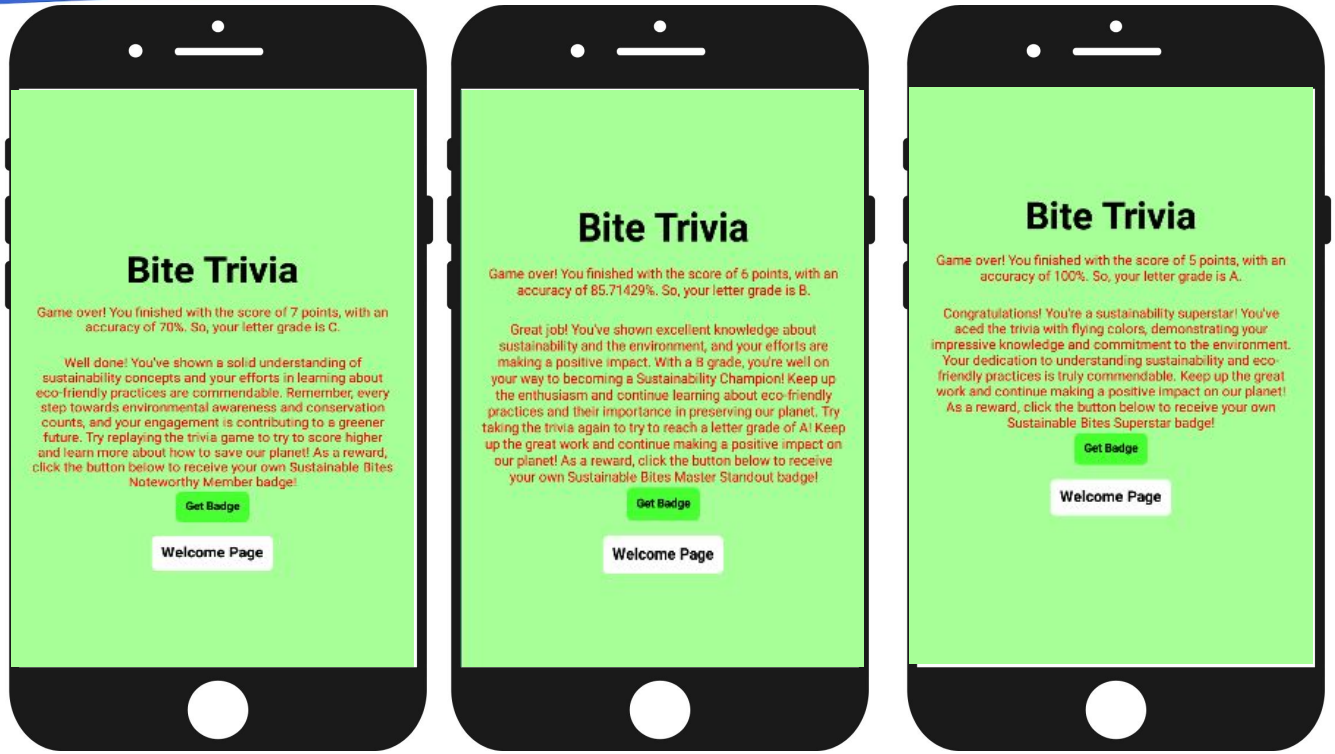
INSTRUCTIONS FOR KIDS PART:

Step 2: When the time is up, a screen will display with the your result and their letter grade. Here's the possible screens that can show up (continued on the next slide):



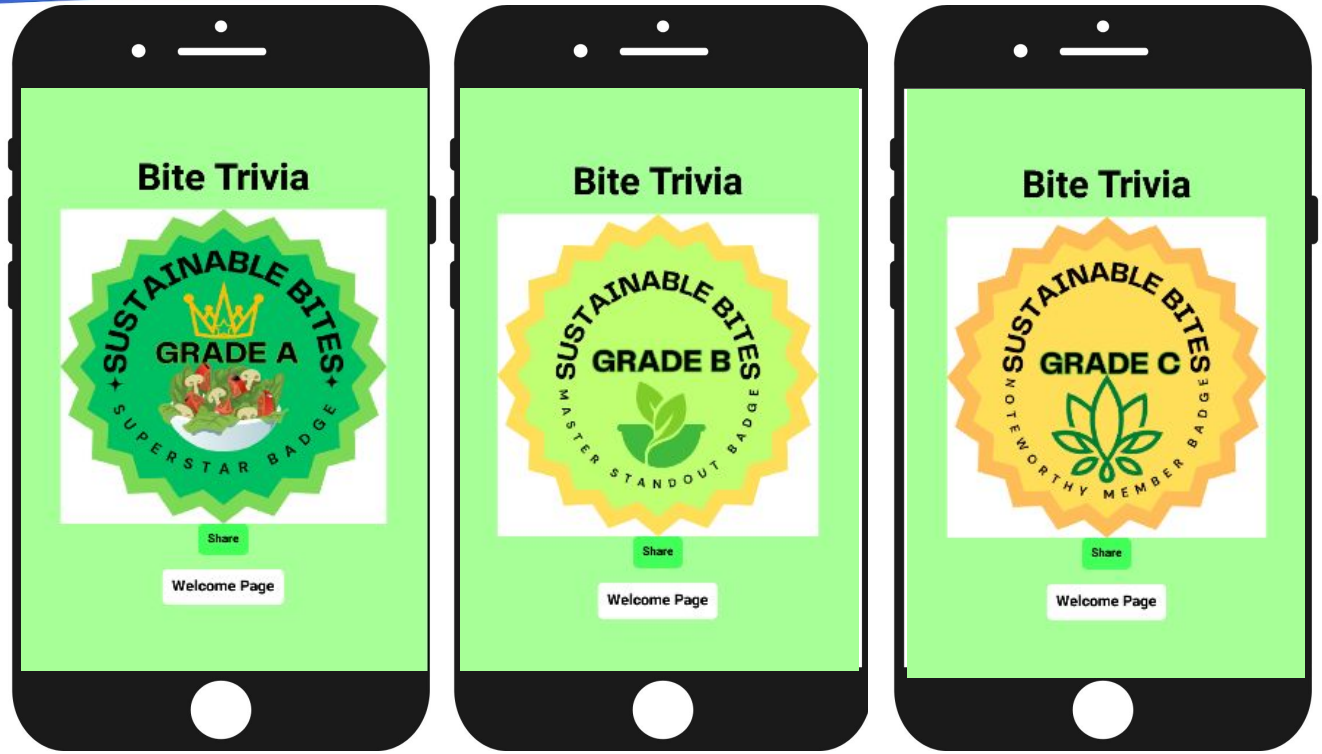
INSTRUCTIONS FOR KIDS PART:

Step 2 (continued from previous slides): If the your letter grade is A, B, or C (as shown here), a button will pop up for you to click on to receive their printable badge!



INSTRUCTIONS FOR KIDS PART:

Step 3: If you clicked on the “Get Badge” button, these possible screens will show up (depending on your letter grade). To print out the badge, click the “Share” button and send it to yourself for later!



INSTRUCTIONS FOR CONSUMER PART:

Step 1: If you clicked on the “Consumer” button, then you are led to this screen. This is known as the home page. From here, you can click on 4 different buttons to navigate. Here’s what each of the buttons lead to:

1. Educational screens
2. BiteAI
3. Local farmers markets
4. Barcode and QR code scanner

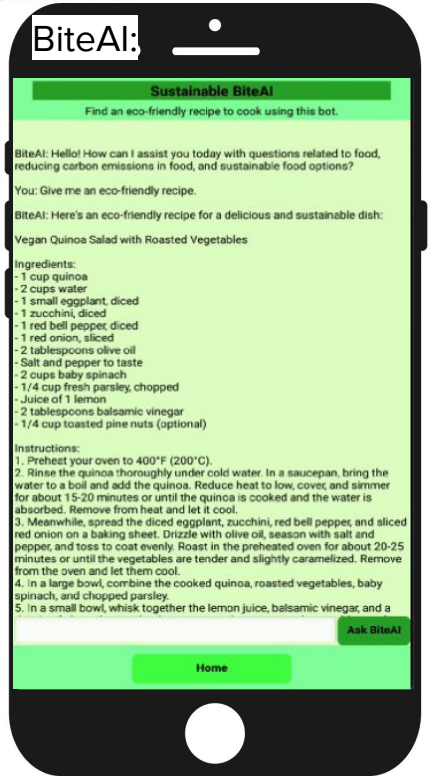
INSTRUCTIONS FOR CONSUMER PART:

Educational screens:

These screens serve to educate the user about the serious impact the food industry has on climate change.

Step 2: Clicking on the first button on the home page leads you to these 3 screens. To navigate, click the “next” and “back to previous screen” buttons. To go back to the home page, click the “home” button.

INSTRUCTIONS FOR CONSUMER PART:



The BiteAI serves to answer all of the user's questions on climate & sustainability and food sustainability. It also gives the user eco-friendly recipes and alternatives to certain food products that aren't as eco-friendly.

Step 3: Clicking on the second button on the home page leads you to this screen. To use, type a question related to eco-friendly recipes, reducing carbon emissions in the food industry, or climate change & sustainability in the textbox. Then, click the "Ask BiteAI" button. The BiteAI will take a while to generate a response.

INSTRUCTIONS FOR CONSUMER PART:

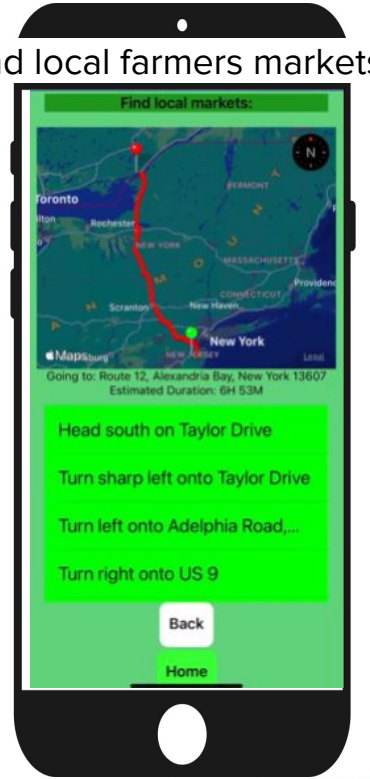
Find local farmers markets:

This screen helps the user find a local farmers market within their state. Shopping at a local farmers market helps contribute to a more sustainable future since there are reduced transportation emissions from the products being sold, more environmentally friendly farming practices, and reduced food waste (buying local produce helps reduce the likelihood of food spoilage during long-distance transportation).

Step 4: Clicking on the third button on the home page leads you to this screen. To use, click on “Select State”. A ListPicker will pop up and you’ll have to choose from the 50 states listed the state you are in. After choosing the state, click on “Select Market”. Another ListPicker will pop up with nearby farmers markets in the state you selected and you’ll have to select a market to go to.

INSTRUCTIONS FOR CONSUMER PART:

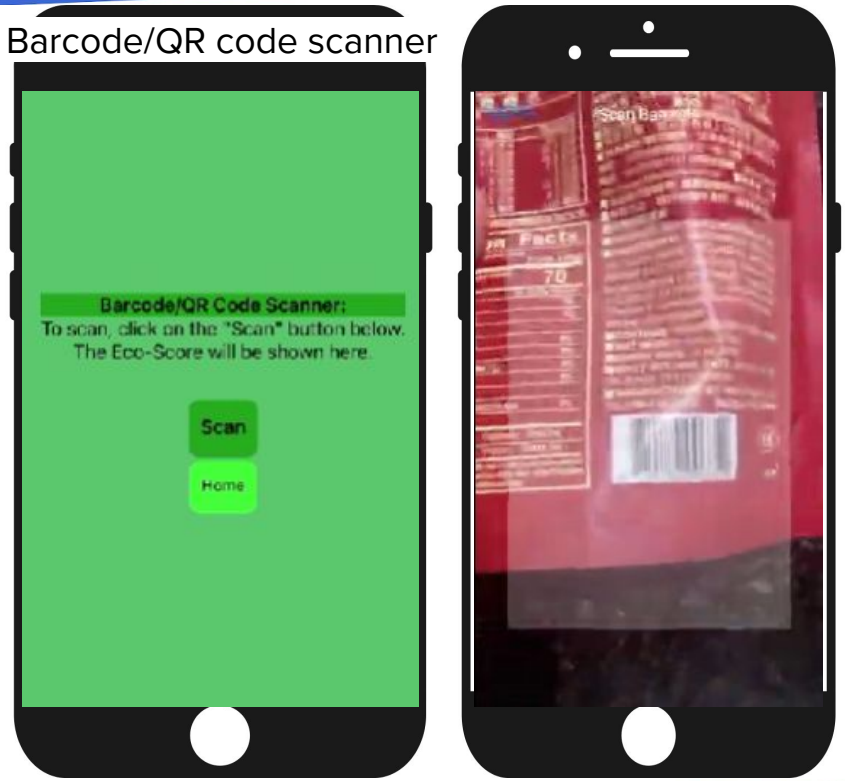
Find local farmers markets:



Step 5: After finding the market you want to go to, you will be able to see the possible route you can take to get there. There will be a ListView at the bottom that shows you the driving directions of the route shown on the map, and you'll be able to see the estimated duration of the drive.

INSTRUCTIONS FOR CONSUMER PART:

Barcode/QR code scanner



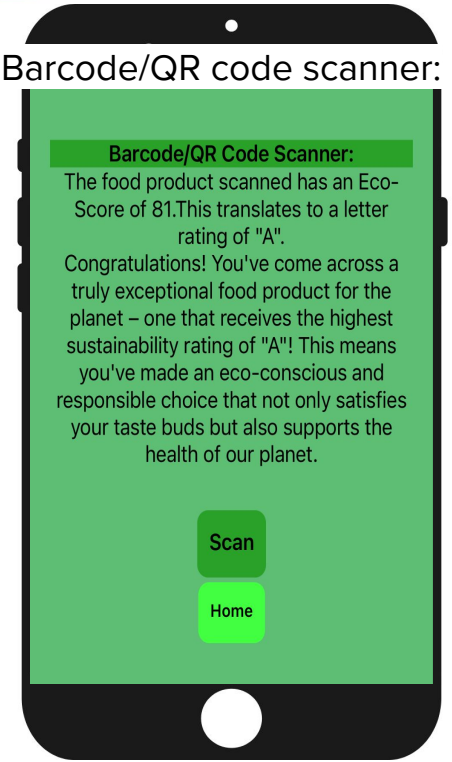
This screen shows the user the carbon impact of the food product that they scan. The user can use this when grocery shopping and they can also use this scanner to scan the QR codes that the “sellers” used Sustainable Bites to make. By informing the user about the amount of environmental damage that their food product could have, it can cause users to take a step forward in helping us save our planet and switch to a better and more eco-friendly food alternative.

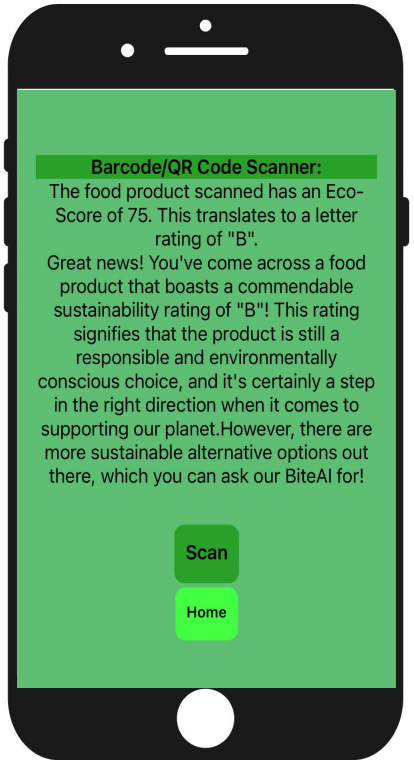
Step 6: Clicking on the last button on the home page leads you to this screen. To begin, click the “Scan” button. A page will pop up where you can scan the barcode/QR code.

INSTRUCTIONS FOR CONSUMER PART:

Step 7: After scanning, there can be many results that can be displayed about your product. Here are all the possible results (continued on the next slide):

Barcode/QR code scanner:

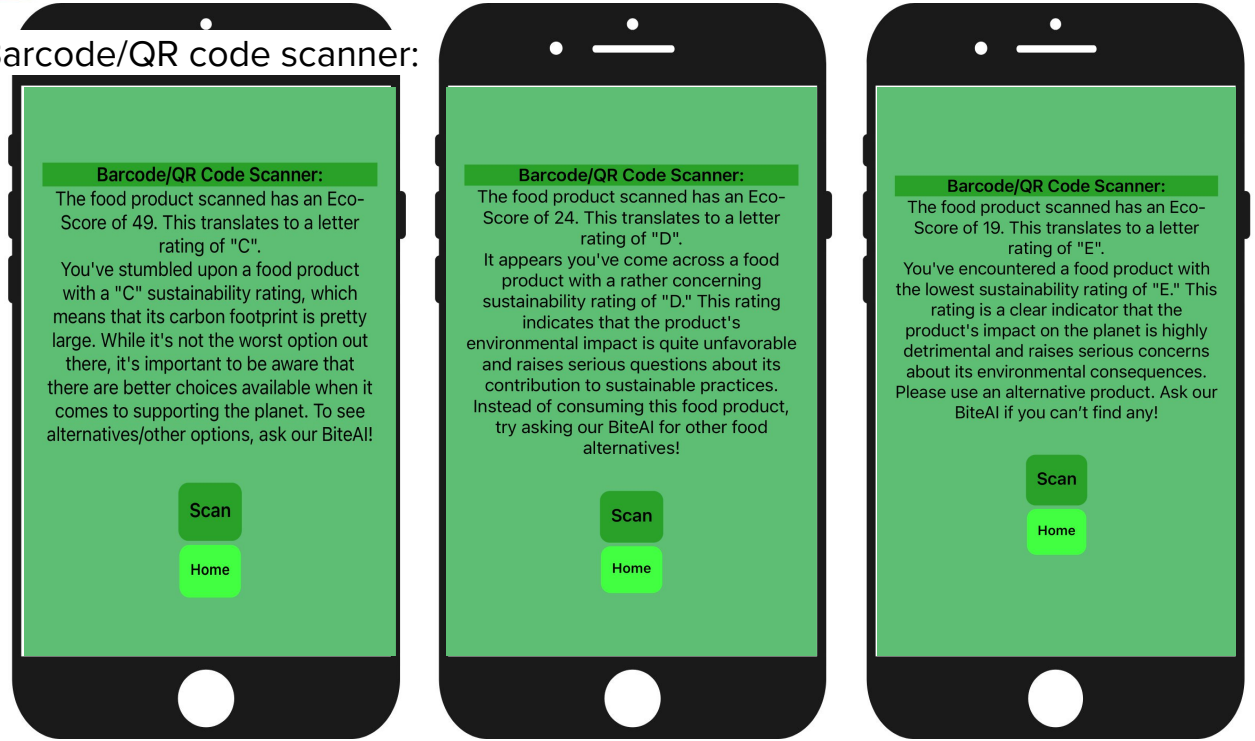




INSTRUCTIONS FOR CONSUMER PART:

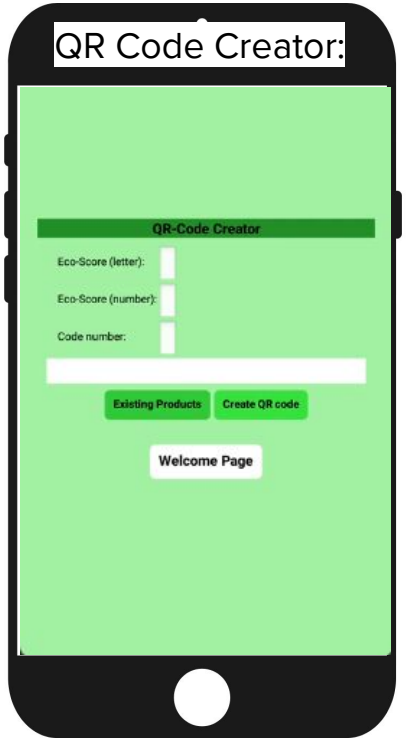
Step 7: Here are the rest of the possible results (continuing off from last slide):

Barcode/QR code scanner:



INSTRUCTIONS FOR SELLER PART:

QR Code Creator:



Step 1: Fill out the text boxes. Or, you can select an existing product from our database by clicking on the “Existing Products” button, which will automatically fill in the textboxes for you. After you have the text boxes filled out, click the “Create QR Code” button.

INSTRUCTIONS FOR SELLER PART:

Step 2: Now a QR code has been generated. Click the “Share” button to share the QR code. You can share it with yourself through email to print out later and stick it onto food products in your market!

LIMITATIONS

There are a few limitations to consider when using the app. First, due to the time constraint of this appathon, my database for the Barcode and QR Code scanner is currently limited to 11 food products (the most scanned ones). The database will expand when the user creates QR codes as a seller. Second, the screen showing the local farmers markets doesn't show all the farmers markets in the U.S.. When developing the screen for the farmers markets, I added around 350 farmers markets and ensured that there was a even and fair distribution of them in each state.

ACKNOWLEDGEMENTS

I would like to give a special thanks to my teacher:

- Dr. Yu Meng (Coach): Helped throughout the course of the project development, going from reviewing the project proposal to the final prototype.

MIT APP INVENTOR

DOCUMENTATION/PERMISSION FROM EXTENSION AUTHORS:

OpenAI by Gordon Lu:

QRCodeCreater (by Zhangzqs): Posted the extension for everyone to use: 127091541/https://community.thunkable.com/t/create-qr-code-without-network/24261?u=taifun

Website where I found the extension to use: https://puravidaapps.com/extensions.php

MIT APP INVENTOR

IMAGES/VIDEOS USED (ALL IMAGES ARE EITHER OPEN TO THE PUBLIC OR DOWNLOADABLE, NOT COPYRIGHTED):

- Welcome page image: created by DALL-E
- https://www.hiclipart.com/free-transparent-background-png-clipart-yrppq
- https://www.creativefabrica.com/product/cooking-vector-illustration-icon/
- https://vectips.com/tips-and-tricks/create-map-icon-in-adobe-illustrator/
- https://www.clipartmax.com/middle/m2i8d3H7H7m2m2G6_barcode-icon/
- https://www.statista.com/statistics/276629/global-co2-emissions/
- Education screens 2-3, kid badges: images created myself with Canva, using research from sources
- Video: Stock videos and images from Canva

MIT APP INVENTOR

RESOURCES USED FOR RESEARCH:

- https://8billiontrees.com/carbon-offsets-credits/reduce-carbon-footprint/average-footprint-per-person/american/
- https://8billiontrees.com/carbon-offsets-credits/carbon-ecological-footprint-calculators/food/
- https://www.thecable.ng/climate-facts-food-system-accounts-for-30-of-worlds-energy-consumption#:~:text=The%20United%20Nations%20says%20the,fossil%20fuels%20that%20generate%20emissions.
- https://environment.ec.europa.eu/news/field-fork-global-food-miles-generate-nearly-20-all-co2-emissions-food-2023-01-25_en