E-BOX

Design and new media
Project 3 360

Smart food management box

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E-box

Desk research

User Interview
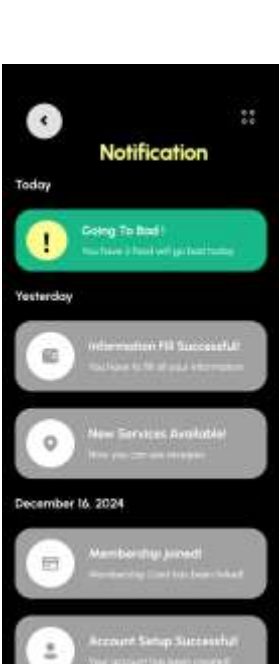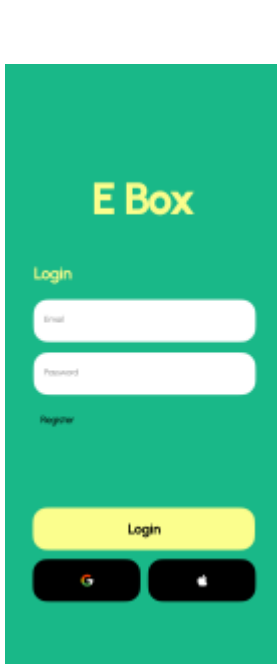
Food Wastage Footprint - Impacts on Natural Resources – Summary report

2013
This study provides a global account of the environmental footprint of food wastage (i.e. both food loss and food waste) along the food supply chain, focusing on impacts on climate, water, land and biodiversity.

Countries: Non-country specific
Commodities: Non-Commodity specific
Topics: Carbon footprint, Water footprint, Biodiversity, Food losses and food waste
Authoring organization: BIO-Intelligence Service, Food and Agriculture Organization of the United Nations (FAO)
Publisher: Food and Agriculture Organization of the United Nations (FAO)
Type: Discussion
Format: Document
References (Download): EN

About one-third of the world's food is wasted every year, which not only causes economic losses, but also has serious impacts on the environment.

Evans D., 2014, *Food Waste: Home Consumption, Material Culture and Everyday Life,* London: Bloomsbury, 219 p

Smart home devices and data-driven technologies have shown significant benefits in improving resource efficiency, especially in reducing household food waste.

Reference: Evans, D. (2014). *Food waste and the challenge of consumer behavior.* Journal of Industrial Ecology, 18(2), 182-194

User 1
ZiYing

21 years old
Postgraduate
lives off-campus
and cooks for herself.

Pain Points:
- Frequently forgets food expiry dates, leading to waste.
- Struggles to maintain a balanced diet, often relying on instant meals or takeout.

"It would be super helpful if the app could remind me about foods that are about to expire." "I'd love a feature that suggests simple recipes based on what's left in my fridge. It would save me a lot of time and effort."

User 1
AnRan

22 years old
Postgraduate
lives in dorm with
7 dormates.

Pain Points:
- Often forgets to restock groceries due to a busy work schedule.
- Wants to track daily nutritional intake but finds existing tools too complex.

"A feature that tracks my nutrition and gives me daily suggestions would be great."
"I like the idea of inventory reminders, especially if it could integrate with a shopping list.

User 1
HeXu

19 years old
Undergraduate
lives in dorm with
6 dormates..

Pain Points:
- Ends up wasting food because he forgets what he has or doesn't plan meals well.
- Has difficulty tracking daily nutritional intake

"The app should remind me about expiring food so I can cook it before it goes bad."
"I would appreciate a feature that shows a quick nutrition report based on what I eat, along with tips to improve it."

PACT

PERSON

USER GROUP:
international students
in the UK

User characteristics:
Busy with studying, may lack cooking experience and time.
Focus on physical health.
Limited budget, hate waste.

ACTIVITIES

Check food status , get recipes.
Plan shopping lists track nutritional intake.

Usage scenarios:
Check existing inventory when shopping
Check nutritional recipes when preparing dinner.
Browse food status daily

CONTEXT

CONTEXT:
Small spaces such as home kitchens and dormitories.
Fast-paced life, fragmented time using devices.

ENVIRONMENT:
May may share devices with roommates.

TECHNOLOGY

Smart sensors (temperature and humidity monitoring, gas detection).
Food Identification System
（AI Image Recognition)
Cloud-based data storage and analysis (recommendations, reminders).
Mobile App and voice assistant support.

Persona

Li Jiayi
20 Female   Undergraduate student

Enjoys cooking but is limited to simple meals and convenience foods. Environmentally conscious, aims to reduce food waste.

Cost on food £30-45 （week)

Spoiled	
Uneaten	Eat
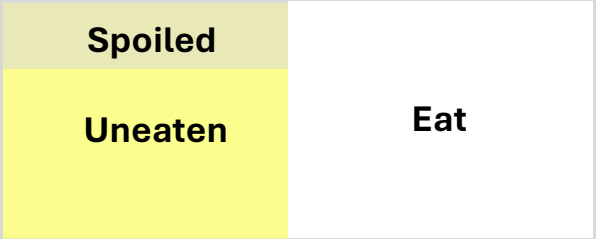
Waste about 40%

Pain Points:
Forgets food expiration dates
Lacks balanced nutrition
Struggles to keep track of what's in the fridge when grocery shopping.

Needs:
Quick access to food status and storage tips.
Easy and healthy recipe suggestions.
Daily nutrition tracking to improve dietary habits.

He An
23 Male   Postgraduate student

Often cooks for himself but prefers quick and easy meal solutions. Fitness enthusiast, focused on high-protein and low-fat diets.
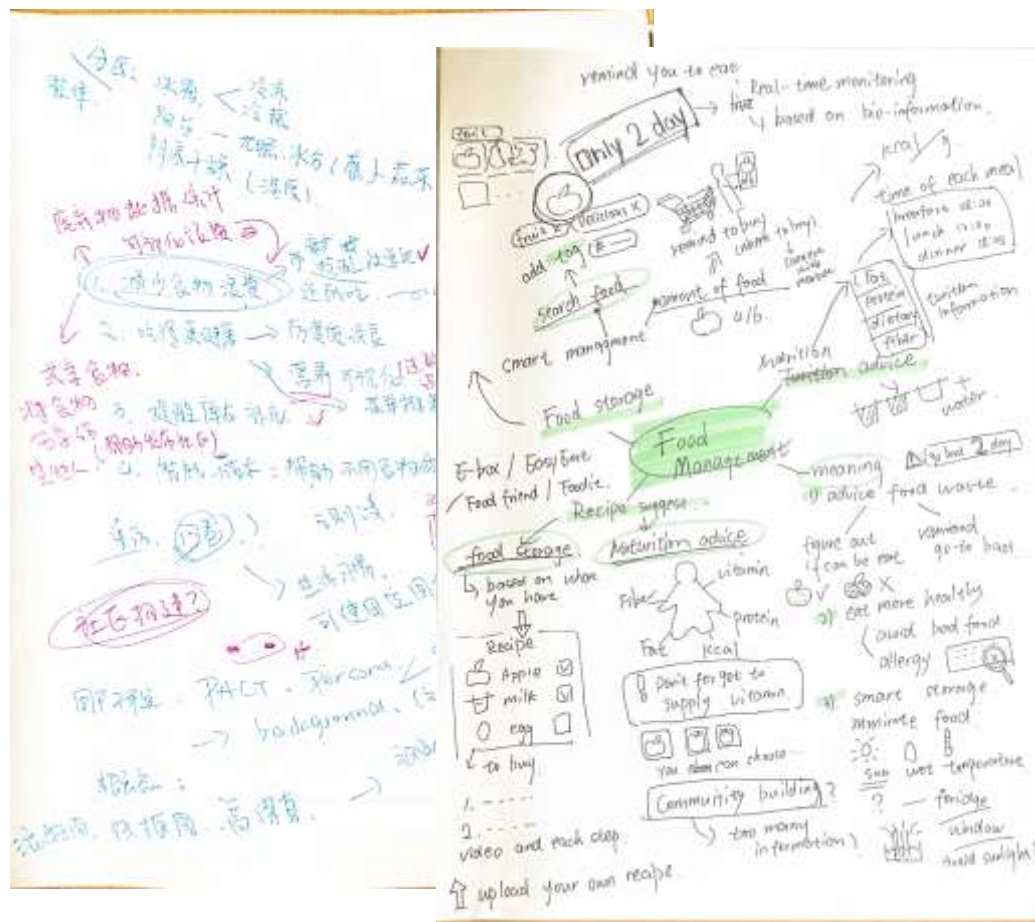
Cost on food £35-40 （week)

Spoiled	
Uneaten	Eat

Waste about 30%

Pain Points:
Busy schedule makes it hard to monitor food expiration dates.
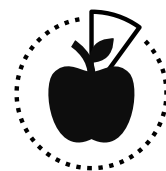Struggles to create fitness-appropriate meals with available food.

Needs:
Smart management with reminders for food nearing expiration.
Recipe suggestions and Personalized nutrition advice based on eating habits.

Sketchbook

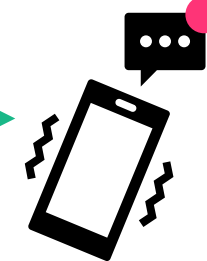Some initial
thoughts

Design concept and
functional ideas for the app

Ideation

Real-time monitoring of food status

Monitor **when the
food in the box
will expire**
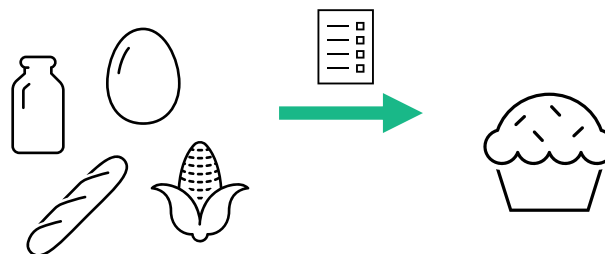
Notify the user

**"Your apple will
go bad tomorrow"**

**Search
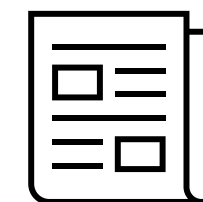Related recipes**

**Share with
people nearby**
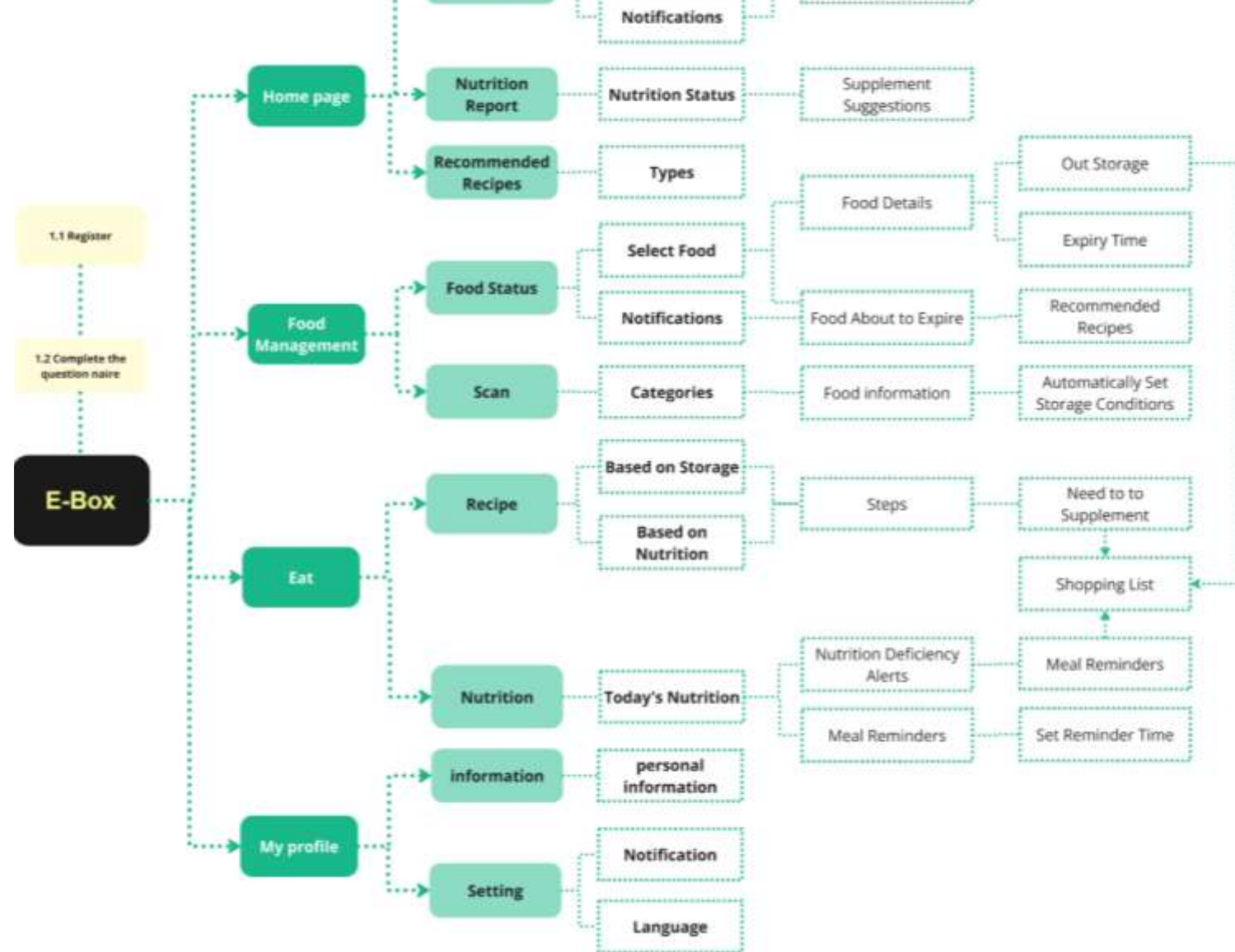
Recommended recipes

Based on your current food

Nutrition Report

**Meet daily
Nutrition need**

User need

**"You can eat
your orange"**

**"You should
buy a orange in
nearby market"**

Low-fi

Food Information · Food · Home page · Personal Page · Food Storage

Eat time
Breakfast 08:00
lunch 12:00
Dinner 16:00

Daily need

Food Recipes

Nutrition Report

Persona

E-box

1.1 Register

1.2 Complete the question naire

E-Box

- Home page
  - Food Status
    - Status Overview → Food Report
    - Notifications
  - Nutrition Report
    - Nutrition Status → Supplement Suggestions
  - Recommended Recipes
    - Types
- Food Management
  - Food Status
    - Select Food
    - Notifications → Food About to Expire
  - Scan
    - Categories → Food information
      - Food Details
        - Out Storage
        - Expiry Time
        - Recommended Recipes
      - Automatically Set Storage Conditions
- Eat
  - Recipe
    - Based on Storage
    - Based on Nutrition → Steps
      - Need to to Supplement
      - Shopping List
- Nutrition
  - Today's Nutrition
    - Nutrition Deficiency Alerts → Meal Reminders
    - Meal Reminders → Set Reminder Time
- My profile
  - information
    - personal information
  - Setting
    - Notification
    - Language

WIRETHUMBS & VISUAL PLAN

Register

1.0 welcome
1.1 log in
1.1.1 register
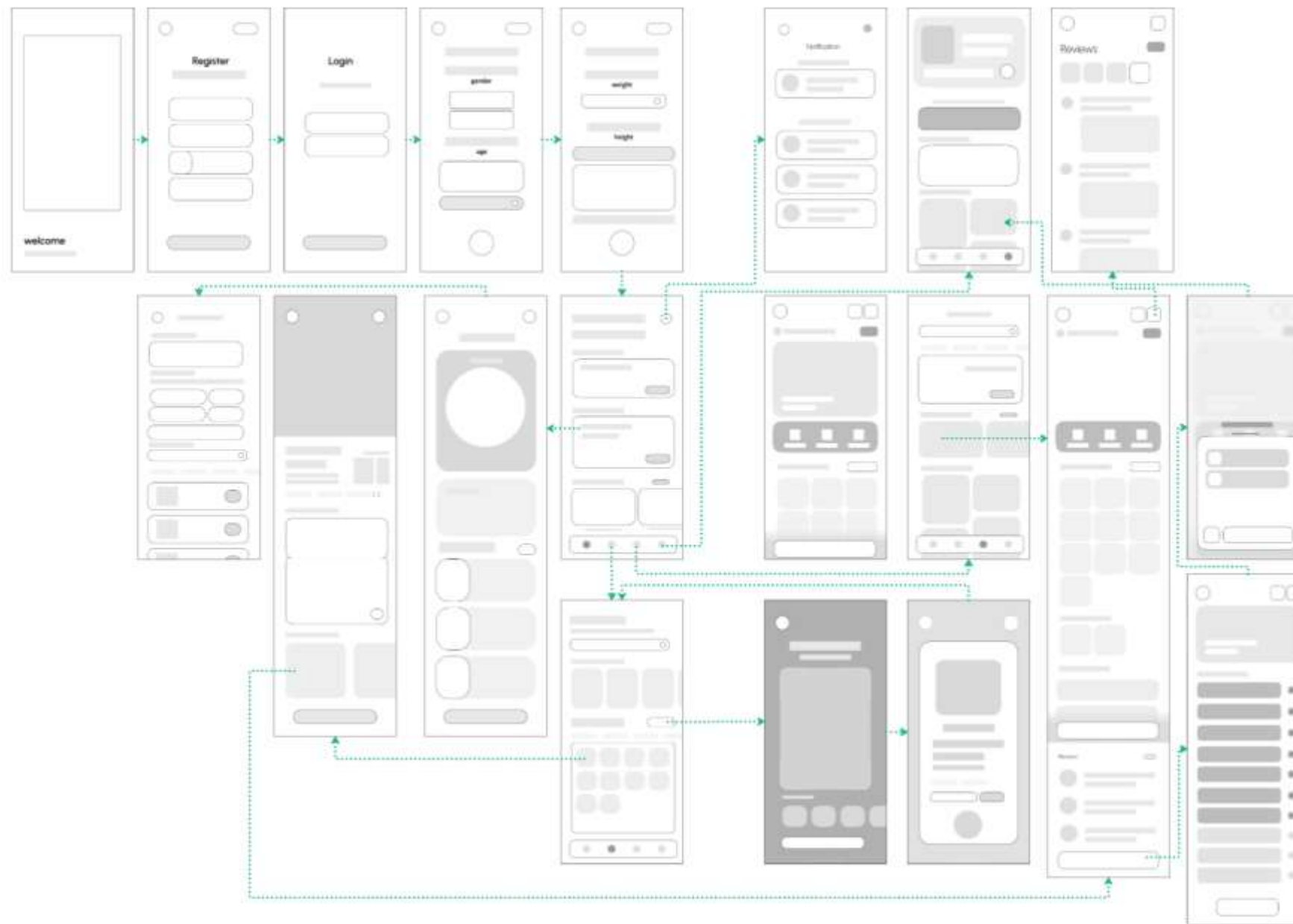1.2 fill information
5.1 personal information

Homepage

2.1   homepage
2.2 notification
2.3 food will expire
2.4 daily nutrition report
2.5 recommend recipe

RECIPE

3.1 recipe page
3.2 recipe detail
3.3 recipe reviews

Food management

4.1 food page
4.2 category
4.3 tag fruit
4.4 food detail
4.5 scan
4.5.1 scan information

#19B888   #FBFE8D
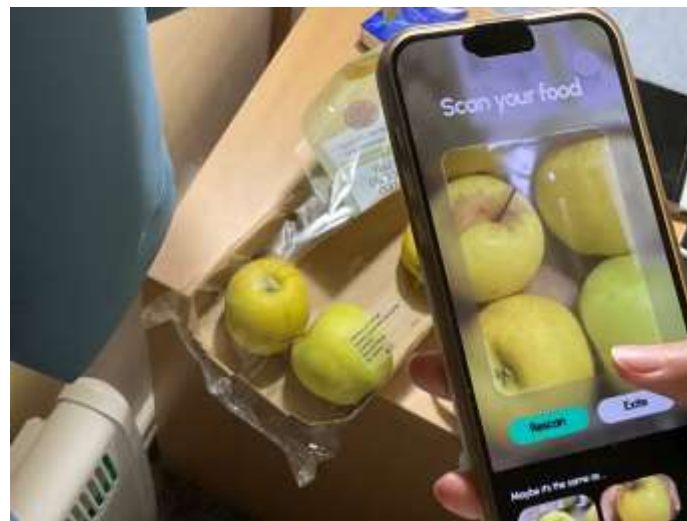
#D1D1D1   #0D0D0D

Font: Urbanist
8px-64px

When food is about to go bad:

When food is about to go bad, receive prompt reminders.

When forget how long the food has been stored:
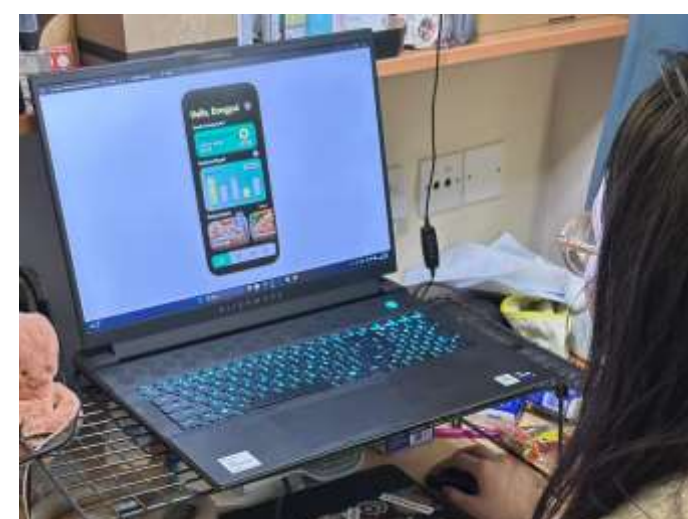
check the food information at any time.

When need to cook:

When cooking, you can use recommended recipes to make the most of your ingredients

When using in the market:

When you forget whether you still have this food at home, check the remaining quantity at any time

Invite some users

Make changes to the final model based on the feedback received