1. KitchenSync: A Pantry and Recipe Companion
2. Team Members
   a. David Tran
      i. dtran2021@my.fit.edu
   b. Chris Nederhoed
      i. cnederhoed2020@my.fit.edu
   c. Tyler Son
      i. tson2022@my.fit.edu
3. Advisor - Fitzroy Nembhard
4. Client -Fitzroy Nembhard
5. Dates of meetings with Client for developing this plan
   a. 8/25/24
6. Goal and Motivation
   a. Making the process for home chefs to track and use what they have in their kitchen from the freezer and fridge to the cabinet and pantry. Current systems only have some of the features we have planned but not all of them which allows our users to be able to do it all in one place instead of several. Such as tracking the ingredients a user might have on hand and then see what recipes the user can make with what they have. Our application will also allow a user to see the cost of a recipe based on what they have and where they can purchase the remaining ingredients.
7. Approach (Key Features of the System) Need at least Three (at least one paragraph for each feature, more specific less vague) [e.g. Similar to app descriptions at Google Play, **NOT** the underlying tools]

   a. The user can track their inventory
      i. The inventory of a kitchen is managed and organized by where the items are stored such as a pantry, freezer, fridge, or cabinet. However if this level of organization is not for you that's fine too as products will be sorted by default into one of three locations based on where they are often found: Freezer, Fridge and Pantry.
      ii. From here you can tag items that you want a minimum to keep on hand. Other items that might be perishable or best if used by can also be tagged and tracked like fruit or cheese. Of course sometimes things might go bad before the date printed on a product so you should use your best judgment before consuming.
      iii. Push notifications can be enabled to let you know when something is low, expired, or needs to be used up soon.
      iv. When shopping you can simply scan a barcode on a product and have it uploaded into your kitchen's inventory. For larger hauls and to save time you can simply scan your receipt. First time users will need to scan the barcodes on items they have on hand or manually enter them such as with produce.

   b. The user can manage and share recipes

      i.   Keeping track of and organizing your recipes can be hard so storing them in one place that you can access from anywhere is important.

     ii.   Users can upload recipes they find, make, or scan into their recipe book. Each recipe will have its own recipe card which includes: Time to prepare and cook, Complexity to make, Equipment needed (with substitutions if possible), ingredients, directions, and of course pictures.

    iii.   Every user can also post their recipes to share with others and get feedback and reviews.

    iv.   Cooking is often more than just following a recipe so that is why recipe cards will also have recommendations such as pairings or even ingredients to spice things up.

     v.   Nutritional information on recipes will appear to make choosing recipes easier.

    vi.   Tags can be used to filter recipes such as vegan, high protein, keto, paleo, gluten free. To further help users find just what they want and things that they might want to try, recipes can be sorted by Time, Cost, and Complexity to make.

c. The admin can remove invalid recipes, reviews, and seed recipes

      i.   Admins will be able to take recipes from different sources and provide them to the database of recipes that all users can access in order to seed it.

     ii.   As users submit their own recipes then certain filters can be applied in order to remove invalid recipes that include bad ingredients like inedible items, bad names, or making illegal substances.

    iii.   Reviews from users will also be able to be removed based on keywords.

    iv.   Users themselves can also have their usernames removed or changed to an appropriate one by an admin.

d. The user can plan their meals

      i.   Recipe cards have prep and cook stages and can be organized in the meal planner to know when to pull meat to thaw or make dough to proof.

     ii.   Plan for up to two weeks in advance to keep track of when to prep meals and when you need to go shopping. Ingredients and their amounts needed for recipes will then be deducted from the kitchen's inventory when the meal is prepared.

    iii.   The meal plan made for the week can also be shared with family members to let everyone know what is on the menu.

e. The user can get better deals in shopping

      i.   You can create lists of items you need based on recipes or from the store you will be going to shop at. When a list is made for what a user needs the prices of items will be pulled from local stores and

compared to find the cheapest price. For bulk and club stores, users will be able to sign in and gain access to the price comparison at these stores as well.

    ii. From here a user can exclude places they don't want to shop at or if the store is too far out of their way. Certain ingredients can also be tagged for store preferences such as produce from store a rather than anywhere else. This will then be made into convenient lists to help you know what you need to pick up from which store.

    iii. Lists can also be shared with family members. The price per serving will be provided based on the stores that you have access to and your preferences. When you scan a receipt and the prices are different then the price per serving shown then the serving cost will be adjusted.

8. Novel Features/Functionality
   a. Many kitchen apps only have a fraction of features compared to this app or lock these features behind expensive paywalls. This app provides all of these features (tracking inventory, sharing and discovering recipes, shopping aids, meal planning) without any major paywalls.
   b. Our application will also allow a user to see the cost of a recipe based on what they have and where they can purchase the remaining ingredients; for example the cost of a recipe will be based on the cost of the remaining ingredients the user needs to buy.

9. Algorithms and tools: potentially useful algorithms and software tools
   a. Tesseract for OCR of the receipts images
   b. Barcode Lookup for getting product names of individual items
   c. Open Food Facts to get the data on nutrition of ingredients

10. Technical Challenges
   a. Some of the challenges we might face are:
      i. Getting the prices from online websites that are accurate to the price shown in store. Almost every store doesn't have a public api that we can access. We will need to do a weekly webscrape of the websites when new deals are updated.
      ii. Getting the prices from stores like costco and other bulk/clubs that require a sign in
      iii. Being able to take the image of a receipt and scan it and get just the food items. We can use tesseract to process the image of a recipe to parse all the data in the image and then filter it out for what we need such as food items from non food items.

11. Milestone 1 (Sep 30): itemized tasks:
   a. Compare and select technical tools for *Tesseract, Barcode Lookup, and Open Food Facts*
   b. Provide small ("hello world") demo(s) to evaluate the tools for *Tesseract, Barcode Lookup, and Open Food Facts*
   c. Resolve technical challenges: *Retrieving accurate prices, retrieving prices from stores that require a sign in, and scanning images from a receipt*

      d. Compare and select collaboration tools for software development, documents/presentations, communication, task calendar
      e. Create Requirement Document
      f. Create Design Document
      g. Create Test Plan
12. Milestone 2 (Oct 28): itemized tasks:
- *Implement inventory management system along with the subsystems of scanning a receipt and barcode to manage what a user has on hand and where it is.*
  - *Demo of Bar code and Recipe scanning*
  - *Demo Moving Items to different storage locations*
  - *Demo Tagging items*
  - *Demo List Creation and Sharing*
- Implement Recipe organizing system and Sharing
  - Demo Recipe Card Creation from user imputed recipe
  - Demo Recipe Filters and Tags
  - Demo Recipe Sharing
  - Demo Review System
  - Demo Recipe Nutrition breakdown
13. Milestone 3 (Nov 25): itemized tasks:
- Implement Meal Planner
  - Demo Planning two weeks of meals
  - Demo Nutrient totals for each day
  - Demo Menu Sharing
  - Demo Meal Cooking and Ingredient deduction
- Implement Shopping Companion
  - Demo List creation based on Store filters
  - Demo Store Filters and Tags
  - Demo Store Sign in process like club stores
  - Demo Price per serving based on available store prices

14. Task matrix for Milestone 1 (teams with more than one person)
      a.

	David	Chris	Tyler
Technical Tool Comparison	Tesseract	Barcode Lookup	Open Food Facts
Tool Demos	Tesseract	Barcode Lookup	Open Food Facts
Resolve Technical Challenges	Retrieving prices from stores requiring	Scanning images from receipts	Retrieving accurate prices

	sign-ins		
Collab Tools	Documentations/presentation	Software development	Communications and task calendar
Requirement Doc	Writes 35%	Writes 50%	Writes 15%
Design Doc	Writes 45%	Writes 30%	Writes 25%
Test Plan	Writes 25%	Writes 25%	Writes 50%

15. Approval from Faculty Advisor
    a. "I have discussed with the team and approve this project plan. I will evaluate the progress and assign a grade for each of the three milestones."
    b. Signature: _____ Date: _____