

Cooking instructor: Design a system that can be used to prepare and cook a recipe

### Phase 0:

#### **Background environment:**

- Targeted users have a varying degree of cooking knowledge ranging from inexperienced to expert.
- These users usually refers to a source of instruction for cooking a meal rather than cooking experimentally or by memory.
- The users may not be experienced in our system and so our interface should be easy to use and intuitive.
- Users will need to refer to the instructions while cooking.

**What the system will be used for as well as the general expectation that system should satisfy:**

- Used to prepare and cook a recipe in an easy to follow fashion.
- Search and find recipes based on different user dependant criteria.
- Save favourite recipes all in one place.

#### **System constraints:**

- Limited knowledge of C# (would be added into budget for training).
- Constrained by typical consumer quality hardware, or worse.
- Access to WiFi/internet may not be ubiquitous.

### Phase 1:

#### **Expected type of users:**

- Typical Users - Beginner level cooks:
  - People who want to learn how to cook.
  - Little to no experience with cooking.
- Unusual Users - People who cook frequently
  - People who want to try new recipes.
  - People who want to master a known dish

- Some to advanced experience.
- Seasonal Users - Professional Cooks
  - People who might want to share their recipes with others
  - Professional Cooks who might be interested in innovative recipes

### **Work contexts:**

- During cooking there are steps involved such as preparing and following series of instructions to prepare the meal.
- Ingredients used vary in size and number depending on the recipe.
- Time to prepare a meal varies depending on the recipe.
- Generally the type of meal will differ depending on the time of day (breakfast, lunch, dinner, midnight snack, etc).
- Users could have a variable amount of time available to them to prepare a meal which influences their possible recipes.
- Users may be cooking for multiple people (portion sizes).

### **Approach for getting background information for tasks:**

- Use the knowledge within our team (*we suck at cooking*)
- Interviewed family members

### **(5 - 7) Concrete task examples:**

1. Janice Lockheed is a physicist who is also a mother that needs to prepare dinner for her family (a 16 year old daughter, a 10 year old son, and her husband). She was too busy to prepare a meal the week prior, so she searches for a recipe that she can make with the ingredients at her disposal, for her family size. She gets her 16 year old daughter (Jane Lockheed) to help her prepare the meal while her husband helps her son with homework. Janice discovers that she can make some fancy spaghetti, and then follows the directions provided to prepare the meal, instructing her daughter to assist

with the simpler tasks. After dinner, she rated the recipe positively for its low difficulty, quick preparation time and quality.

- a. A typical family (with average cooking skill) uses the interface to determine what and how to prepare a meal depending on certain parameters, in this case it being by ingredients and portion size.
  - b. Frequently done and critical.
  - c. Task fictionally created from personal experiences and general knowledge.
2. Eli enjoys cooking and wants to develop his skills with a more challenging recipe. He searches for a high difficulty seafood recipe whose ingredients do not cost too much, finding Whole Fish Baked in a Salt Crust, and then goes to purchase the required materials at the farmer's market. Upon coming home, he prepares to produce the meal and notices that the recipe mentions the need to *fillet*, which is not completely familiar with. After reviewing how to perform the required cooking techniques, he prints off a paper copy of the recipe since he will be using his hands and doesn't have to worry about getting a paper copy of the recipe dirty. Eli thoroughly enjoys making the recipe and is pleased with the result so he marks the recipe as one he'd like to try again in the future.
  - a. A typical user with interest in the culinary arts.
  - b. Somewhat frequent and important.
  - c. Fictional task based off of interview with an avid culinary student, and online research.
3. Stephan is a first year university student who just started living on his own for the first time. He has never prepared a meal for himself before and relied on his mother for everything from grocery shopping to doing his laundry. He has basic cooking skills for example making an omelette. Shortly after moving to his own apartment, he craves for pasta and decides to make it himself. He searches for recipes for pasta for beginner level difficulty and chooses the one that requires minimum amount of ingredients. He then gets the list of ingredients from the recipe (1 (14 ounce) package turkey smoked sausage, 8-ounces pasta, 2 cups heavy cream, 1/2 cup grated Parmesan cheese)

also the list of cookware needed ( boiling pot, strainer, measuring cup, grater, skillet). He then looks at this stock of ingredients and cookware that can be used for making the meal and goes shopping to get the rest of the items. When he returns home, he begins by measuring and preparing all the ingredients required to make the dish. He then follows one instruction at a time, and moves on to the next instruction once the previous tasks gets completed. In one of the task, he finds the instruction to dice the tomatoes, but he is not sure how to execute the task. Then looks up what dicing means before continuing with the next task. He finally completes all the instruction of the recipe and his pasta was done. He takes a bite of the pasta and amazed by his new learned cooking skill. He saves the recipe for future reference.

- a) This task example involves a beginner level user. This type of user has little to no prior experience with cooking and will benefit from simple and direct instructions. This user also requires a bit of help knowing what kind of cookware and ingredients he will need to create a recipe.
  - b) The application can help them by providing a list of ingredient and minimum cookware needed for a recipe. Providing a detailed list will thus help create a list for shopping. Also simple and direct instruction will be required
  - c) **How this task was collected:** Talked to a family member who happens to be a first year student who just started living on her own. She shared her experience where she wanted to make a recipe but did not know she need to have a pot deep enough to prevent overflow when boiling. As all student, she is also on a budget and looks for ways to prepare food with less ingredients or reusable ingredients as possible. She also shared how confused she got with cookery terms like dicing, julienne cut and so on.
4. Bob is a busy computer science student who has advanced experience in cooking but has limited time to do so. He is looking for a quick and easy meal to cook through the application. Bob searches up recipes that are easy to

prepare and can be cooked within 20 minutes. He discovers that he can cook fried rice, an easy meal that can be prepared within this time limit. Bob follows the instructions shown on the application to prep can cook the meal, he then saves it as one of his favourites, so he can prepare it again without having to search for it.

- a) This task example involves an advanced cook but has limited time to do so.
- b) The application provides users with a way to search up recipes that can be prepared within a certain time.
- c) **How this task was collected:**

5. Frank is a user who has intermediate cooking experience, however has frustrations with the traditional mediums he has always used (e.g. cookbooks and websites) to prepare his meals. When following a recipe, he often forgets what step he is currently on. As a solution, he uses the application to track the current step and to check off all previous steps. He also detests how recipes are frequently written in units he is unfamiliar with. The application allows him to quickly convert the listed units to any standard unit that he is more familiar with. These tools prevent these obstructions and allow him to focus on the cooking experience.

- a. This task example involves a user who has enough prior cooking knowledge to make other parts of the application less important. To this type of user, the main benefit of using the application is to speed up the cooking process by minimizing the negative effect that the described obstacles evoke.
- b. This situation is common with this class of user. The ability to track steps is an essential feature of the application due to this task being commonplace among all traditional mediums. Next, the frequency that the user needs to convert units is variable since it depends on the type of units found in the recipe, as well as the units they are familiar with.
- c. **How this task was collected:** I (Aaron) am familiar with the experiences listed in the above task description. Whenever I cook by following a

recipe (usually on a website or in a cookbook), I usually lose the location of the current step on the page since it is saturated with information that is unnecessary to me. Also, more often than not, I find myself obstructed by unfamiliar units. This leads me to closing the web page or looking away from the cookbook in order to manually convert the units myself using another application.

6. Alice Johnson is a stay home mother who loves to cook and often invents healthy new recipes for her kids. She usually does not plan on making these new recipes but she discovers them during trial and error process. She writes down the recipes and saves them so that she does not forget the recipes incase she wants to recreate the same dish. Her friend shared that she has difficulty persuading her 4 year old son to eat vegetables and she requested her to share one of her fun recipes. Alice shares one of her shared recipes with her friend. Alice's friend was really happy and was successful in following her recipe.
  - a. This task example involves medium to advanced cooks who cooks on a regular basis. This type of user often come up with their own recipes and does not always end up remembering the steps they followed in creating the dish. When their invented dish becomes a favourite among family and friend, the recipes are often requested and shared
  - b. The system can be useful in creating new recipes and sharing with others
  - c. **How this task was collected:**
7. Anne Chovi considers herself a novice cook as she cooks for herself on a regular basis. One day, she starts craving her recently new favourite meal; Tuna Casserole. She was able to quickly access the recipe since she liked it so much last time. She then proceeds to follow the instructions to prepare the Tuna Casserole. While cooking, she realizes that she doesn't have some of the necessary ingredients. She looks up what can be used for a substitute for milk and eggs. During one of steps, she must set a large pot of water to boil for a set amount of time and so sets a timer for that. Then continues through with the recipe until it is completed.

- a) This task example involves a novice cook who is able to access their favourite recipe quickly. Anne is a typical system user as well as a typical client.
- b) Illustrates some environments in which users may not have necessary ingredients. Users may want to find substitutes for ingredients that they may not have or do not want to use.
- c) **How this task was collected:** Talked to a friend who cooks often. He does it as a recreational activity and often finds himself without some necessary ingredients and so looks up substitutes that he can use.

## Phase 2:

### **System requirements:**

(Some rough ideas):

- Ability to identify and learn what a specific cooking term means (e.g. dice, julienne, mince, etc.)
- Ability to search for a recipe based on:
  - Time constraints,
  - Ingredient constraints,
  - Expected price,
  - Portion size (number of people it feeds),
  - Category (pasta, soups, cold food, seafood, desserts, etc)
- Ability to rate or otherwise give feedback on recipes.
- Ability to favourite/save recipes.
- Ability to edit saved recipes.
- Ability to add new recipes, and submit them publicly.
- Ability to convert between standard measurement units (also possibly, give user a way to judge what a specific measurement looks like, visual/to scale).
- A Timer (optional).
- Voice commands
- Ability to look for substitutes

- Format print paper copy

## Absolutely Must Include :

- Ability to search for a recipe based on:
  - Time constraints,
  - Ingredient constraints,
  - Expected price, → Can be Optional ?
  - Portion size (number of people it feeds), -> I feel like most recipes should specify the portion size and then leaves it up to the user to vary the amount according to their need, for example 2 pounds of ground beef will make 4 burger patties )
  - Category (pasta, soups, cold food, seafood, desserts, etc)
  - Name of the dish

The requirement to be able to search for recipes by different parameters is a must have. The tasks performed by each user type group starts by looking up a recipe based on some search criteria. This step to search for a recipe is a frequent interaction we can expect with our system. The search parameters like time constraints and ingredients constraint seems more common with our typical user group. But parameters like Category, Name is also very common in other user groups.

- Ability to identify and learn what a specific cooking term means (e.g. dice, julienne, mince, etc.)

This task is very important to our typical user groups who are inexperienced level cooks (in addition to more experienced cooks who wish to learn more in general) willing to try out new recipes and improve their culinary skills. The requirement to be able to look up certain culinary terms is a must have since it is a task that will be performed regularly with our typical user group.



## Should Include :

- Have brief videos/gifs or tutorials demonstrating cooking terms.

It would be highly beneficial to have convenient '*bite-sized*' informational bits to aid users with quick visuals on how to do something or what it is, though it isn't absolutely critical where a written definition can suffice, but it would be useful to observe and mimic.

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## Could Include:

## Exclude:

- Voice commands and text to speech (primarily for defining terms).

It is highly unlikely that someone who is cooking will have their hands free and clean to interact with an interface haptically, so the ability to provide verbal input and receive output aurally could be useful, but it is not strictly necessary for the successful function of the interface. The costs of implementation, and convenience gained are not in balance, however.

<u>Absolutely must include</u>	<u>Should include</u>	<u>Could include</u>	<u>Exclude</u>
<ul style="list-style-type: none"><li>• Ability to search for a recipe based on:<ul style="list-style-type: none"><li>○ Time constraints,</li><li>○ Ingredient constraints,</li></ul></li></ul>	<ul style="list-style-type: none"><li>•</li></ul>	<ul style="list-style-type: none"><li>•</li></ul>	<ul style="list-style-type: none"><li>•</li></ul>

<ul style="list-style-type: none"> <li>○ Name</li> <li>○ Category</li> <li>● Ability to identify and learn what a specific cooking term means (e.g. dice, julienne, mince, etc.)</li> <li>●</li> <li>●</li> </ul>			
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### Phase 3: Prototyping

(Mehnaz) will do prototype for Task 3 and Task 6

Task 3:

Version 1: After doing the first iteration of the prototype using storyboard style prototyping, we found few problems that needed to be improved :

- The user wanted to find recipes for pasta for beginners first and then choose the one with least amount of ingredients needed. The prototype design has a filter and sort option. So if the user clicks more than one category for example difficulty level and least of ingredients first for sorting, it will be confusing because the system would not be able to tell which one has more priority.
- The sort and filter functionality is not that user friendly as it does not tell you the options available without first clicking on it
- The user is given an option to save the recipe at the end of all the instruction step. The user then has an option to create a profile. The design does not take into account that user might want to create profile from another screen for example home page.

- The user can only access the favourites recipe list from profile page, a shortcut to favourites should be added because it might add more value to user
- The user might want to just browse the food categories and then choose pasta. There should be an option for browsing different categories.

Version 2 : This version addressed the issue we encountered in version 1 but introduced more problems:

- User can browse different categories of recipes and also search for it in this Version. But in order to search for recipes , the user needs to click on recipes and then go to search option. Since search will be a frequently done action, it should be more easily accessible.
- The search bar has too many options like name, category, portion size, ingredients. It might be a bit of hassle looking through all the options before searching for an item
- User might want to go to another screen for example home page. The design does not have a option to go back to the in progress recipe

Final Prototype:

What was improved and how ?

(Mehnaz) will do prototype for Task 3 and Task 6

## Phase 4: Task Centered Walkthrough

### Task 3 Walkthrough :

Step #	Step Description	Does the user have the knowledge to do this step?	Are users motivated to do this step ?	Comments on solution for this step
1	Opens Application	Yes, the user has a smart phone and uses technology on a daily basis	Yes, user is hungry and want to learn a new recipe	N/A
2	Clicks on search icon in order to search for recipes of pasta dishes	The search icon will have the text "search" underneath it . The search icon is also universal so it be easily spotted.	The user wants to browse all recipes of pasta and searching for it seems reasonable. But there could a food category for	The solution we went with is providing food categories as well as option to search via text. The search

			just pasta and user might choose this option also.	algorithm will do a string match when displaying result.
3	Clicks on beginner level option in order to search for recipes which are beginner friendly		The user wants to find all recipes for beginner level difficulty only. He will	
4	Types in "Pasta" in the search bar			
5	Presses enter or clicks search icon besides search bar			
6	Clicks sort in order to get the list of recipes of pasta with least number of ingredients first			
7	Selects/ clicks on radio button beside the option for sorting by number of ingredients least to most			
8	Clicks on the first recipe displayed in the list			
9	User checks of			

	checkbox besides the ingredient items in the ingredients list that he has in his stock			
10	User checks of checkbox besides the items in the equipment list			
11	User downloads the recipe information by clicking on the download button			
12	User takes the recipe along with the ingredient list items to grocery store to get the rest of the items			
13	User clicks on start to begin the process			
14	User follows Step 1 displayed on screen			
15	User clicks the arrow pointing to right to go to next step			
15	User comes across the word "dice" in the instruction which is in red and user			

	click on the word			
16	User reads the definition in a pop up that appeared and click on the “x” button to close the pop up.			
17	User clicks on next step and follows through all the steps			
18	User sees the options to rate the recipe, save the recipe or share the recipe			
19	User clicks on the save button			
20	User see a page for sign up to create profile			
21	User sees option to sign up with email			
22	User clicks option to sign up with email			
23	User sees a form that requires name, email and password			
24	User fills in name			
25	User fills in the box with email			

26	User fills in the password			
27	User clicks on create account			
28	User sees profile page with the new saved recipe			

#### Task Example #5 Walkthrough:

- Assumptions:
  - Frank is a user with intermediate cooking experience.
  - Frank has enough previous knowledge of the app to get to find a recipe and get to its recipe info screen.



## IN PROGRESS...

Step #	Step Description	Does the user have the knowledge to do this step?	Is the user motivated to do this step?	Comments on solution for this step
1	Frank has gotten to the recipe info screen for "Beef and Onions".	Yes. Since Frank has intermediate cooking experience, he has enough knowledge to find a recipe that he wants to follow.	Yes. He wants to cook by following a recipe and the first step is finding one, regardless of the search method.	N/A
2	He presses the "Begin" arrow button to start following the recipe.	Yes. The button is clearly labeled with an appropriate term in English and with a universal arrow symbol.	Yes. The action is simple since it consists of tapping one button.	N/A
3	He completes step #1 of the recipe.	Yes. He has experience with cooking, so he should be able to complete some steps without help.	Yes. This step is necessary in order to progress through the recipe.	N/A
4	He presses the "--->" button to mark step #1 as completed and to move onto step #2.			The arrow could also be labelled with an English term like "Next" to add more clarity to its purpose.
5	He reads the instruction to "Chop the onions", but he has forgotten what quantity of onions he needs. He presses the drop-down ingredients menu button.	He may not have the knowledge that he can tap at the top to bring down the ingredients list. He may try swiping the menu down and wonder why the button doesn't do anything.		Add the ability to either tap on the button or swipe it down to view the ingredients list.

<b>6</b>	He presses on the measurement units proceeding “onions” in the ingredients list.	Yes, since the units are displayed inside an identifiable button.	He is motivated since he doesn’t know what 4 oz. looks like and he doesn’t have any equipment to measure ounces.	N/A
<b>7</b>	He presses on the “cups” option in the drop-down menu that has appeared in order to convert from ounces to cups.	Yes, since he understands that this menu is displaying different measurement units.	He is motivated since he is more familiar with measurements in “cups” and has equipment to measure volume in “cups”. He also wouldn’t be able to continue cooking without this conversion.	N/A
<b>8</b>	He now sees that he needs ½ cup of onions. He presses the pull-up steps menu button to return to step #2 in the recipe.	Yes, since he realizes that this button acts similar to the ingredients drop-down button that he pressed earlier.	He is motivated since he wants to continue following the recipe.	N/A
<b>9</b>	He completes step #2 of the recipe.			
<b>10</b>	He presses the “--->” button to mark step #2 as completed and to move onto step #3.			
<b>11</b>	He completes all the remaining recipe steps and gets to the “recipe completed” screen.	He is able to finish preparing his recipe. If any similar challenges occurred during the remaining recipe steps, he would be able to use the tools in the application and his knowledge of how to use them to overcome them.		N/A

