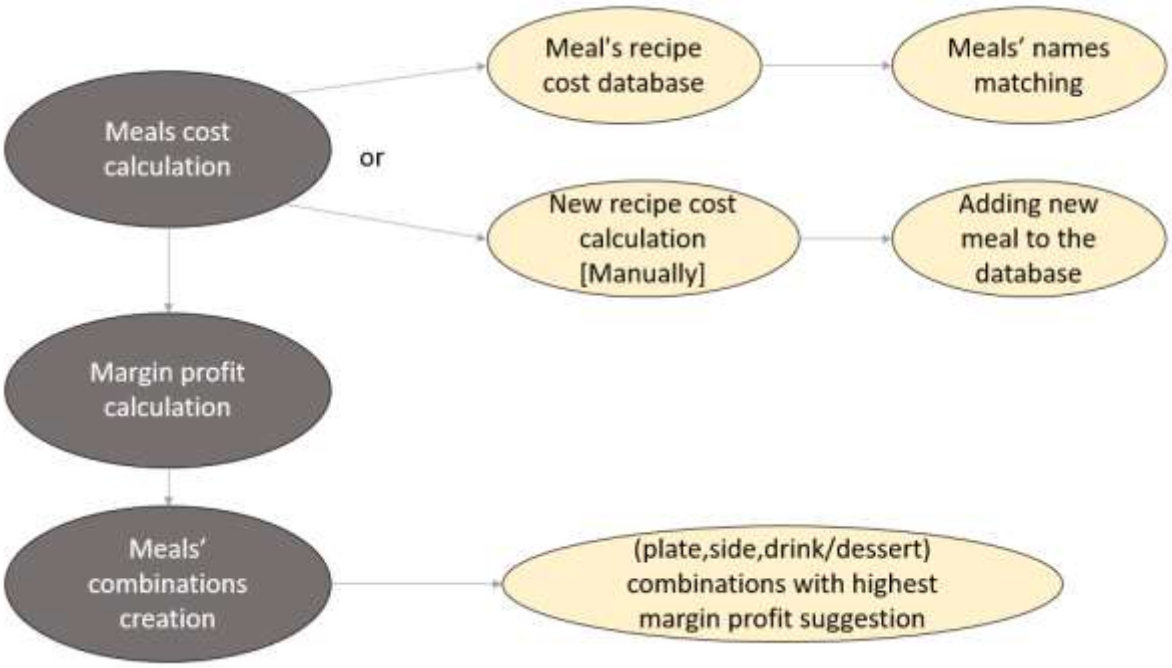
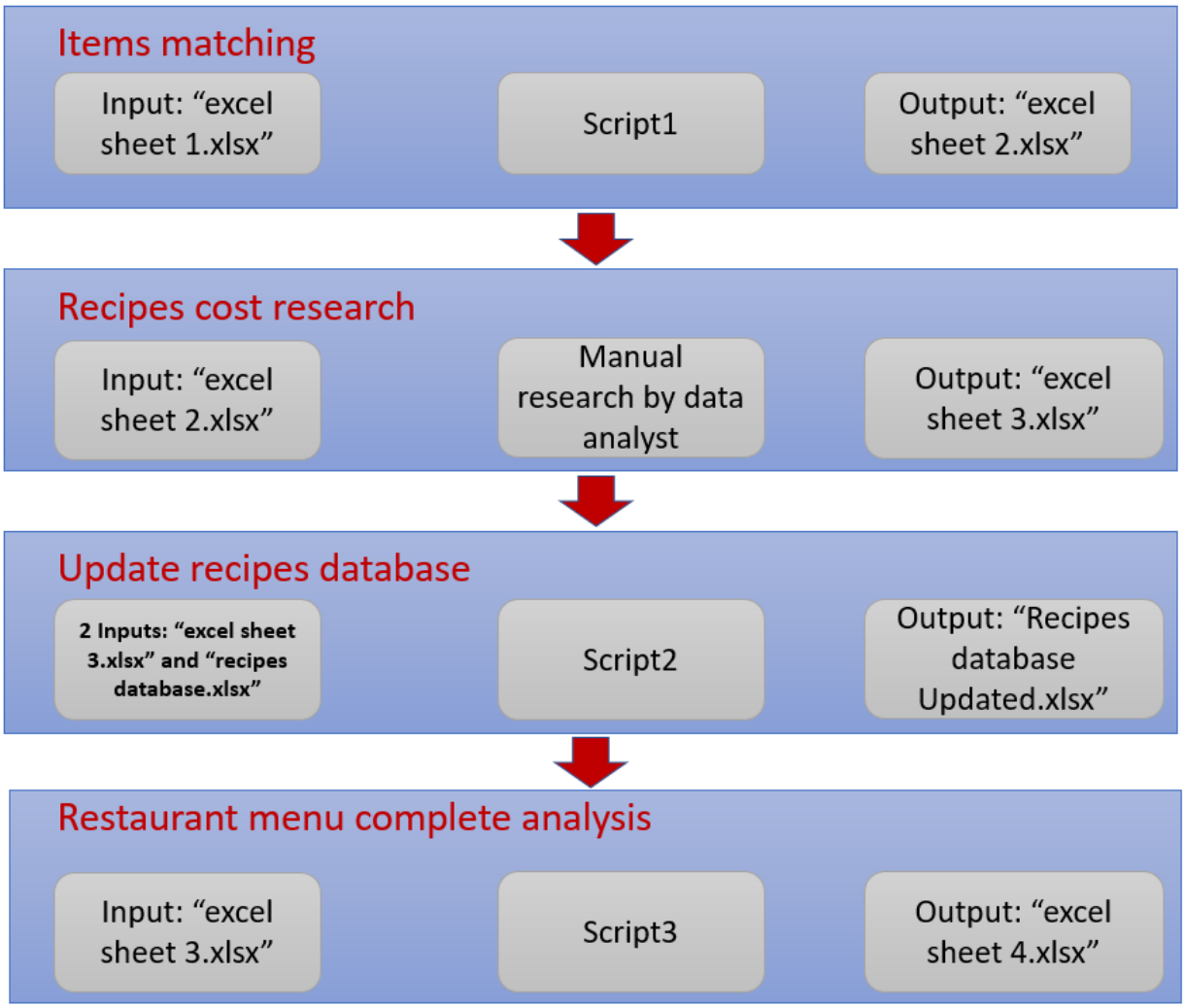
Restaurant analysis pipeline description:



Restaurant analysis pipeline (technical):

Set-UP Environment:

- Python 3 (libraries: ‘pandas’, ‘xlsxwriter’ you can install using this command in cmd “pip install xlsxwriter”, ‘openpyxl’ you can install it using this command in cmd “pip install openpyxl”)
- Jupyter notebooks (.ipynb)to run the notebooks attached with this document or use cmd to run python script files (.py) attached with this document (in this manual I will show the process with cmd)



1) Create an excel sheet 1 with three sheets: ‘single items’, ‘sides’, ‘drinks-desserts’. Each sheet includes the following columns:
    - menu
    - Restaurant Price
    - Recipe Cost
    - Research links
    - Meal recipe

    *Do not change the columns’ names
    *Do not change the names of the excel sheets (no uppercase either)
    *If the restaurant does not have any sides don’t create that sheet
    *If the restaurant does not have desserts or drinks don’t create that sheet

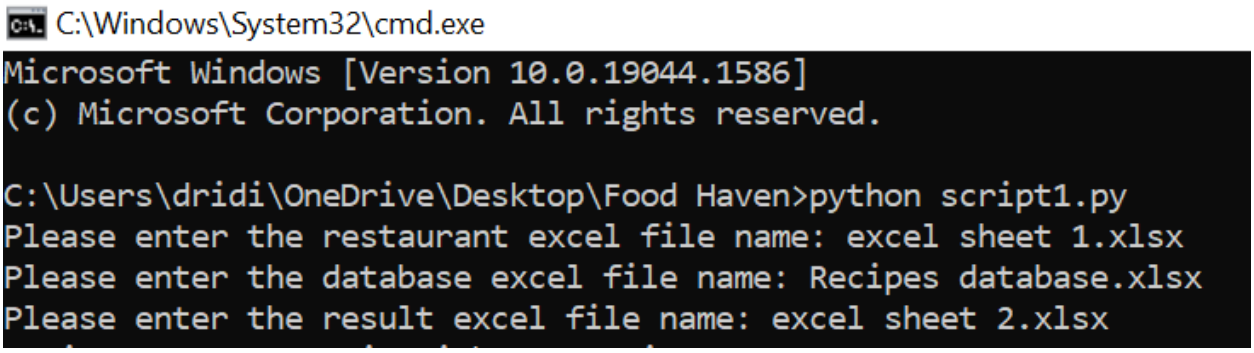
2) Run items matching script named “script 1” to check if any of the restaurant’s items are in our meal’s recipe cost database:

- Input: excel sheet 1
  If there are some matches the script will fill the recipe cost for those items matched (Actual Database contains 205 single items, 75 sides, 26 drinks/desserts)

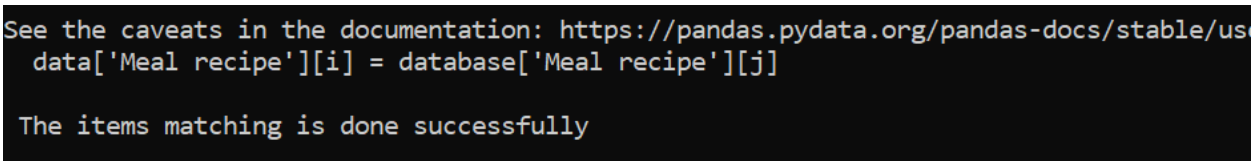
- Output from the script: excel sheet 2

- Then the business analyst should fill the unfilled items’ recipe costs manually and check the items matching script results if they are correct and if he finds less recipe cost for some items, he should update that in recipe cost database.

- Output from the business analyst: excel sheet 3



In the end of the code execution, you will get the message “The items matching is done successfully”



1st items matching script test on some items of La Luna restaurant:

	A	B	C	D	E
1	menu	Restaurant Price	Recipe Cost	Research links	Meal recipe
2	Grilled Chicken Chimichanga	8.09	1.415	Matched with grilled chicken chimichanga Founded in the recipe cost database at the line 125	$3.2 1 pound grilled chicken$0.77 1 can (16
3	Steak Chimichanga	8.09	1.976	Matched with steak chimichanga Founded in the recipe cost database at the line 127	$9.93 1 pound steak$0.77 1 can (16 ounces)
4	Grilled Shrimp Chimichanga	9.19	8.74	Matched with chimichanga Founded in the recipe cost database at the line 83	$5.66 burrito$0.8 queso$0.5 1 Plum iced ton
5	Burrito Diablo	16.09	6.12	Matched with burrito Founded in the recipe cost database at the line 67	$5.66 burrito$0.1 2oz refried beans$0.36 2o
6	Grilled Steak Quesadilla	7.49			
7	Shrimp Quesadilla	8.69	3.6	Matched with shrimp quesadi	$1.90 6 8 inch flour tortillas, or six 6 inch cor
8	Shredded Chicken Quesadilla	5.79	2.015	Matched with shredded chick	$3.74 1cup shredded cooked chicken$0.26 2

single items | sides | drinks-desserts

	A	B	C	D	E
1	menu	Restaurant Price	Recipe Cost	Research links	Meal recipe
2	Side of Sour Cream	1.39			
3	Side of Jalapenos	1.39			
4	Side of Pico De Gallo	1.39	1.2	Matched with pico de gallo Founded in the recipe cost database at the line 26	$1.2 4oz pico de gallo
5	Side of Chorizo	5.19			
6	Side of Shrimp	9.79			

single items | sides | drinks-desserts

	A	B	C	D	E
1	menu	Restaurant Price	Recipe Cost	Research links	Meal recipe
2	Coca Cola	2.89			
3	Unsweetened Iced Tea	2.89			
4	Pepsi	2.89	0.18	Matched with pepsi fountain drinks Founded in the recipe cost database at the line 4	
5	milk	2.89	0.2	Matched with milk in glass Founded in the recipe cost database at the line 14	
6	Vanilla ice cream	1.19			
7	Flan	4.09	0.6	Matched with mexican flan Founded in the recipe cost database at the line 10	$0.16 1 cup white sugar$0.32
8	Chimi Cheesecake	6.89			
9					

single items | sides | drinks-desserts

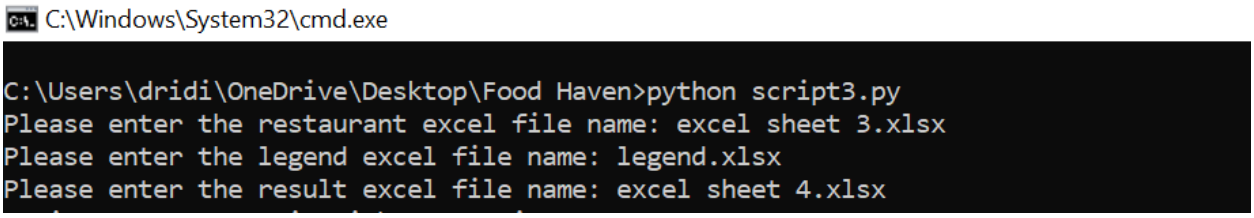
3) Once the recipe research is done, we run the "script 2" to add the new items to our recipes database

- Input to the script: excel sheet 3: excel file containing all the sheets that we prepared above ('single items', 'sides', 'drinks-desserts') of our restaurant and current database recipes database
- Output of the script: Updated recipes database with new items
-

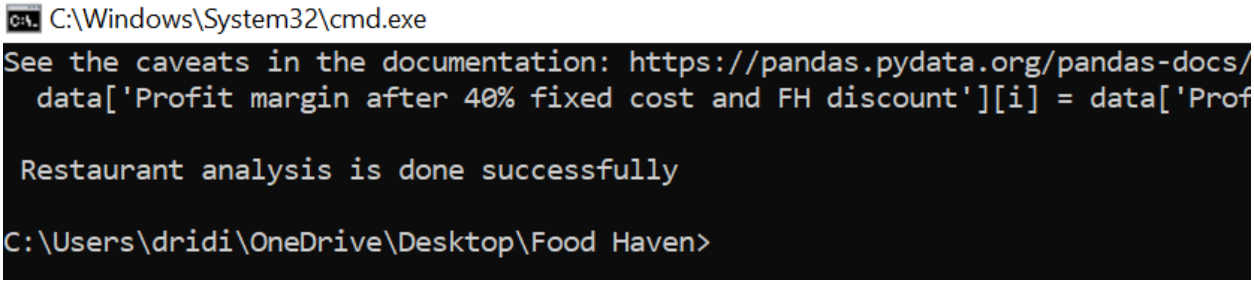
In the end of the code execution, you will get the message "Our database is updated successfully"

4) we run the margin profit calculation with fixed cost script named “script 3”:

- Input to the script: excel sheet 3: excel file containing all the sheets that we prepared above (‘single items’, ‘sides’, ‘drinks-desserts’)
- Output of the script: excel sheet 4: excel file having the following sheets: ‘legend’, ‘recipe research’, ‘single items’, ‘sides’, ‘drinks-desserts’, ‘combos’



In the end of the code execution, you will get the message “Restaurant analysis is done successfully”



For the ‘single items’, ‘sides’, ‘drinks-desserts’ and ‘combos’ sheets we will have as columns:

menu	Restaurant Price	Recipe Cost	Restaurant price after food costs	Restaurant price after 40% fixed costs	Restaurant price after food and 40% fixed costs	Price after FH discount	Profit after 40% fixed cost and FH discount	Profit margin after 40% fixed cost and FH discount

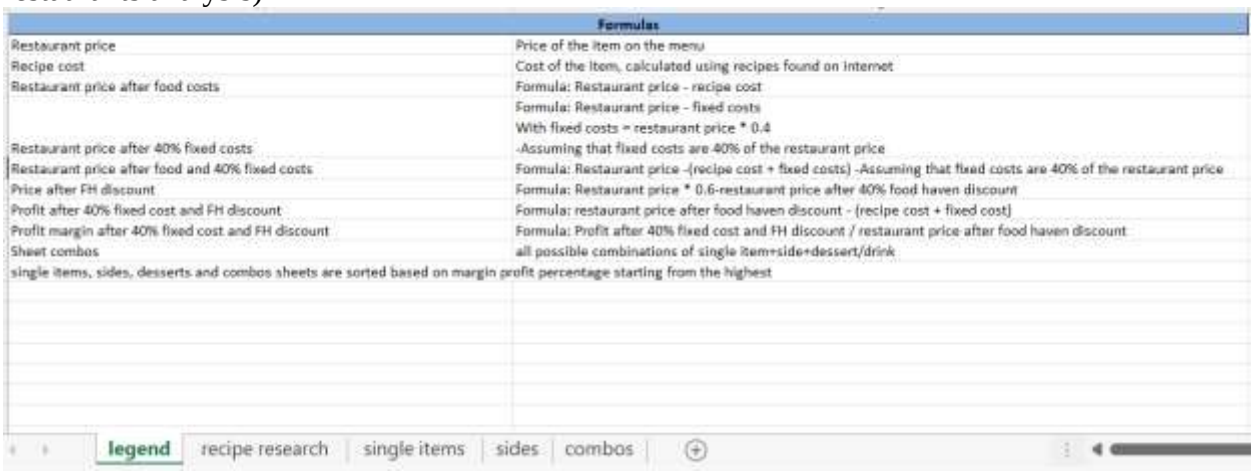
menu	Restaurant Price	Recipe Cost	Restaurant price after food costs	Restaurant price after 40% fixed costs	Restaurant p
Spicy Fried Chicken Sandwich+Brussel Sprout Chips	27	2.5	24.5	16.2	
Spicy Fried Chicken Sandwich+Osaka Fries	28	2.6	25.4	16.8	
Spicy Fried Chicken Sandwich+Cheesy Hayashi Fries	30	3.3	26.7	18	
Teriyaki Chicken Burger+Osaka Fries	27	3.17	23.83	16.2	
Teriyaki Chicken Burger+Brussel Sprout Chips	26	3.07	22.93	15.6	
Spicy Fried Chicken Sandwich+French Fries	27	3.27	23.73	16.2	
The Curry Rice+Osaka Fries	24	2.975	21.025	14.4	
The Curry Rice+Brussel Sprout Chips	23	2.875	20.125	13.8	
Teriyaki Chicken Burger+Cheesy Hayashi Fries	29	3.87	25.13	17.4	
Spicy Fried Chicken Sandwich+Salty Cabbage	25	3.47	21.53	15	
Chicken Katsu Curry+Osaka Fries	28	3.9	24.1	16.8	
Chicken Katsu Curry+Brussel Sprout Chips	27	3.8	23.2	16.2	
The Curry Rice+Cheesy Hayashi Fries	26	3.675	22.325	15.6	
Grilled Chicken+Osaka Fries	17	2.44	14.56	10.2	
Grilled Chicken+Brussel Sprout Chips	16	2.34	13.66	9.6	
Teriyaki Chicken Burger+French Fries	26	3.84	22.16	15.6	
Spicy Fried Chicken Sandwich+Tatsuta Karaage	33	4.92	28.08	19.8	
Chicken Katsu Curry+Cheesy Hayashi Fries	30	4.6	25.4	18	
Tonkatsu Curry+Osaka Fries	29	4.46	24.54	17.4	
Tonkatsu Curry+Brussel Sprout Chips	28	4.36	23.64	16.8	
Crispy Giant Prawn+Osaka Fries	29	4.58	24.42	17.4	
Spicy Fried Chicken Sandwich+Cheesy Garlic Toast 4pc	26	4.12	21.88	15.6	
The Curry Rice+French Fries	23	3.645	19.355	13.8	
Crispy Giant Prawn+Brussel Sprout Chips	28	4.48	23.52	16.8	
Spicy Fried Chicken Sandwich+Takoyaki 6pc	25	4.1	20.9	15	

legend | recipe research | single items | sides | combos

Restaurant price after food and 40% fixed costs	Price after FH discount	Profit after 40% fixed cost and FH discount	Profit margin after 40% fixed cost and FH discount
13.7	16.2	2.9	17.90%
14.2	16.8	3	17.86%
14.7	18	2.7	15.00%
13.03	16.2	2.23	13.77%
12.53	15.6	2.13	13.65%
12.93	16.2	2.13	13.15%
11.425	14.4	1.825	12.67%
10.925	13.8	1.725	12.50%
13.53	17.4	1.93	11.09%
11.53	15	1.53	10.20%
12.9	16.8	1.7	10.12%
12.4	16.2	1.6	9.88%
11.925	15.6	1.525	9.78%
7.76	10.2	0.96	9.41%
7.26	9.6	0.86	8.96%
11.76	15.6	1.36	8.72%
14.88	19.8	1.68	8.48%
13.4	18	1.4	7.78%
12.94	17.4	1.34	7.70%
12.44	16.8	1.24	7.38%
12.82	17.4	1.22	7.01%
11.48	15.6	1.08	6.92%
10.155	13.8	0.955	6.92%
12.32	16.8	1.12	6.67%
10.9	15	0.9	6.00%

legend | recipe research | single items | sides | combos

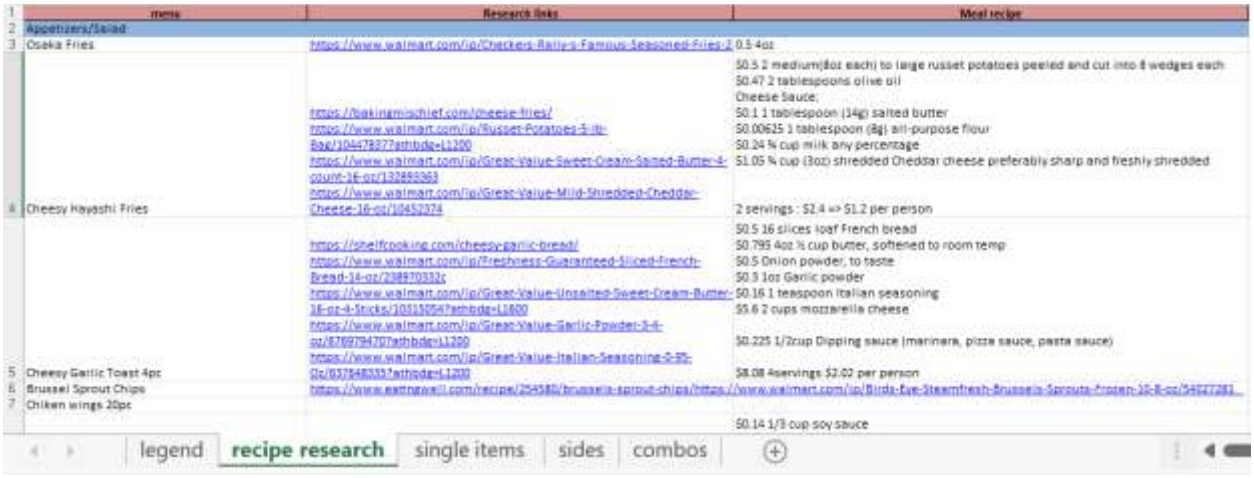
In the ‘legend’ sheet: formulas explanation (‘legend.xlsx’ an excel sheet that we will use for all restaurants analysis)



Formulas	
Restaurant price	Price of the item on the menu
Recipe cost	Cost of the item, calculated using recipes found on internet
Restaurant price after food costs	Formula: Restaurant price - recipe cost
	Formula: Restaurant price - fixed costs
	With fixed costs = restaurant price * 0.4
Restaurant price after 40% fixed costs	-Assuming that fixed costs are 40% of the restaurant price
Restaurant price after food and 40% fixed costs	Formula: Restaurant price -(recipe cost + fixed costs) -Assuming that fixed costs are 40% of the restaurant price
Price after FH discount	Formula: Restaurant price * 0.6-restaurant price after 40% food haven discount
Profit after 40% fixed cost and FH discount	Formula: restaurant price after food haven discount - (recipe cost + fixed cost)
Profit margin after 40% fixed cost and FH discount	Formula: Profit after 40% fixed cost and FH discount / restaurant price after food haven discount
Sheet combos	all possible combinations of single item+side+dessert/drink
single items, sides, desserts and combos sheets are sorted based on margin profit percentage starting from the highest	

legend | recipe research | single items | sides | combos

In the ‘recipe research’ sheet: we will have the research links and meal recipe for each of the items



	menu	Research links	Meal recipe
2	Appetizers/Salad		
3	Osaka Fries	https://www.walmart.com/ip/Checkers-Rally-s-Famous-Seasoned-Fries-2	0.5 4oz
4	Cheesy Hayashi Fries	https://bakingmischief.com/cheese-fries/ https://www.walmart.com/ip/Russet-Potatoes-5-lb-Bag/10447827?athbdg=L1200 https://www.walmart.com/ip/Great-Value-Sweet-Cream-Salted-Butter-4-count-16-oz/132899363 https://www.walmart.com/ip/Great-Value-Mild-Shredded-Cheddar-Cheese-16-oz/10452374	$0.5 2 medium(8oz each) to large russet potatoes peeled and cut into 8 wedges each $0.47 2 tablespoons olive oil Cheese Sauce: $0.1 1 tablespoon (14g) salted butter $0.00625 1 tablespoon (8g) all-purpose flour $0.24 ¾ cup milk any percentage $1.05 ¾ cup (3oz) shredded Cheddar cheese preferably sharp and freshly shredded 2 servings : $2.4 => $1.2 per person
5	Cheesy Garlic Toast 4pc	https://shelfcooking.com/cheesy-garlic-bread/ https://www.walmart.com/ip/Freshness-Guaranteed-Sliced-French-Bread-16-oz/238970332 https://www.walmart.com/ip/Great-Value-Unsalted-Sweet-Cream-Butter-16-oz-4-Sticks/10315054?athbdg=L1600 https://www.walmart.com/ip/Great-Value-Garlic-Powder-3-6-oz/876979470?athbdg=L1200 https://www.walmart.com/ip/Great-Value-Italian-Seasoning-0-95-Oz/653648355?athbdg=L1200	$0.5 16 slices loaf French bread $0.795 4oz ½ cup butter, softened to room temp $0.5 Onion powder, to taste $0.3 1oz Garlic powder $0.16 1 teaspoon Italian seasoning $5.6 2 cups mozzarella cheese $0.225 1/2cup Dipping sauce (marinara, pizza sauce, pasta sauce) $8.08 4servings $2.02 per person
6	Brussel Sprout Chips	https://www.eatingwell.com/recipe/254580/brussels-sprout-chips/https://www.walmart.com/ip/Birds-Eye-Steamfresh-Brussels-Sprouts-Frozen-10-8-oz/54927281	
7	Chiken wings 20pc		
			$0.14 1/3 cup soy sauce

legend | recipe research | single items | sides | combos

Meals names matching process:

- All meals' names should be converted to lowercase before we match the names
- We separate the meal's name parts by spaces and put the words in a list and we delete the words 'or' or 'and'
  Example: grilled chicken chimichanga -> ['grilled','chicken','chimichanga']

- We iterate over the database meals' names and for each database meal's name "sample" we test:
  - If the meal's name and the sample are represented by the same list of words so it's a po ssible matching

Example of possible matching-> meal's name: ['grilled','shrimp','chimichanga'],
sample: ['grilled','shrimp','chimichanga']

  - If the meal's name is composed of only one word and the sample is composed of more t han one word:
    we test if the meal's name word exists in the sample's words list
    Example of possible matching-> meal's name: ['chimichanga'],
    sample: ['shrimp','chimichanga']
  - If the meal's name is composed of more than one word and the sample is composed of one word:
    we test if any of the meal's name words exists in the sample's words list

    Example of possible matching-> meal's name: ['shrimp','chimichanga'],
    sample: ['chimichanga']

  - Finally, if both meal's name and the sample words list length is more than 1
    we test if at least two of the meal's name word exists in the sample's words list

Example1 of possible matching-> meal's name: ['shrimp', 'quesadilla']
sample: ['shrimp', 'fajitas', 'quesadilla']

Example2 of possible matching-> meal's name: ['shredded', 'chicken', 'burrito']
sample: ['shredded', 'chicken', 'nachos']

Example3 of possible matching-> meal's name: ['grilled', 'shrimp', 'chimichanga']
sample: ['grilled', 'chicken', 'chimichanga']

Example4 of possible matching-> meal's name: ['coca', 'cola']
sample: ['coca', 'cola', 'fountain', 'drinks']

Example5 of possible matching-> meal's name: ['grilled', 'steak', 'quesadilla']
sample: ['lunch', 'grilled', 'chicken', 'or', 'steak', 'fajita']