[Start]
  |
  V
[Receive API Input from App: "Beef Straganoff 2P"]
  |
  V
[Parse Input]
  - Meal Type: "Beef Straganoff "
  - Size: "Small"
  |
  V
[Retrieve Recipe for "Beef Straganoff " from recipe DB]
  - Chicken breast: 200g
  - Soy sauce: 50ml
  - Sugar: 20g
  |
  V
[Adjust for "Small" (Factor: 0.5)]
  - Chicken breast: 100g
  - Soy sauce: 25ml
  - Sugar: 10g
  |
  V
[Query Nutrition API for Each Ingredient]
  - Get macros for 100g chicken, 25ml soy sauce, 10g sugar
  |
  V
[Sum Macros]
  - Total calories, protein, carbs, fats
  |
  V
[Format Response]
  - JSON with total macros
  |
  V
[Send via API Gateway back to App]
  |
  V
[End]

Recipe DB

- Need to store the meal type
- Need to store the components of the meal
- Need to store the ingredients and quantities of each component that makes the meal
- Need to store the portion ratios (1P,2P,3P)

Sample Schema:

```
-- MEALS TABLE
CREATE TABLE meals (
    meal_id INT PRIMARY KEY,
    meal_name VARCHAR(100) NOT NULL, -- e.g., "Beef Stroganoff"
    description TEXT
);

-- COMPONENTS TABLE
CREATE TABLE components (
    component_id INT PRIMARY KEY,
    meal_id INT REFERENCES meals(meal_id),
    component_name VARCHAR(100) NOT NULL, -- e.g., "Grilled Beef",
"Stroganoff Sauce"
    base_quantity_g INT, -- Total cooked weight (e.g., 867g for beef)
    caloric_density DECIMAL(5,2) -- e.g., 1.9 Cal/g
);

-- INGREDIENTS TABLE
CREATE TABLE ingredients (
    ingredient_id INT PRIMARY KEY,
    ingredient_name VARCHAR(100) NOT NULL, -- e.g., "Beef Topside", "Olive
Oil"
    default_unit VARCHAR(20) -- "g", "ml", etc.
);

-- RECIPE_INGREDIENTS (Junction Table)
CREATE TABLE recipe_ingredients (
    component_id INT REFERENCES components(component_id),
    ingredient_id INT REFERENCES ingredients(ingredient_id),
    raw_quantity_g INT NOT NULL, -- Quantity before cooking
```

```
    cooked_quantity_g INT, -- Quantity after cooking
    PRIMARY KEY (component_id, ingredient_id)
);

-- PORTION_OPTIONS
CREATE TABLE portion_options (
    portion_id INT PRIMARY KEY,
    meal_id INT REFERENCES meals(meal_id),
    size_name VARCHAR(20), -- "1P", "2P", "3P"
    component_breakdown JSONB -- Stores weight ratios per component
);
```

Sample API request to MVE App:

```
GET /api/recipes/Beef%20Stroganoff?size=2P
```

Sample DB query:

```
-- Get only recipe composition (no macros)
SELECT
  m.meal_name,
  c.component_name,
  i.ingredient_name,
  (ri.raw_quantity_g * po.component_breakdown->c.component_name->>'ratio')
AS scaled_quantity,
  i.default_unit
FROM meals m
JOIN components c ON m.meal_id = c.meal_id
JOIN portion_options po ON m.meal_id = po.meal_id
JOIN recipe_ingredients ri ON c.component_id = ri.component_id
JOIN ingredients i ON ri.ingredient_id = i.ingredient_id
WHERE m.meal_name = 'Beef Stroganoff'
AND po.size_name = '2P';
```

Sample response to the DB query

Sample Result (CSV Format):

meal_name	component_name	ingredient_name	scaled_quantity	unit
Beef Stroganoff	Grilled Beef	Beef Topside (Strips)	120	g
Beef Stroganoff	Grilled Beef	Olive Oil	2.4	ml
Beef Stroganoff	Stroganoff Sauce	Cooking Cream	60	ml

Sample edamame API query based on DB response:

curl -X GET \

"https://api.edamam.com/api/nutrition-data?app_id=YOUR_ID&app_key=YOUR_KEY&ingr=120g%20Beef%20Topside%20(Strips)" \
  -H "Accept: application/json"

Sample edamame API response:


```
{
  "calories": 228,
  "totalNutrients": {
    "PROCNT": { "label": "Protein", "quantity": 42.1, "unit": "g" },
    "FAT": { "label": "Fat", "quantity": 5.2, "unit": "g" },
    "CHOCDF": { "label": "Carbs", "quantity": 0, "unit": "g" }
  }
}
```


Sample MVE App API response:


```
{
  "meal": "Beef Stroganoff",
  "portion_size": "2P (340g)",
  "total_macros": {
    "calories": 452,
```

```
  "protein_g": 38.2,
  "fat_g": 22.1,
  "carbs_g": 24.7,
  "fiber_g": 3.2
},
"components": [
 {
  "name": "Grilled Beef",
  "weight_g": 120,
  "macros": {
   "calories": 228,
   "protein_g": 42.1,
   "fat_g": 5.2,
   "carbs_g": 0
  },
  "ingredients": [
   {
    "name": "Beef Topside (Strips)",
    "quantity": "120g",
    "calories": 228,
    "protein_g": 42.1,
    "fat_g": 5.2
   },
   {
    "name": "Olive Oil",
    "quantity": "2.4ml",
    "calories": 21.6,
    "fat_g": 2.4
   }
  ]
 },
 {
  "name": "Stroganoff Sauce",
  "weight_g": 120,
  "macros": {
   "calories": 196.8,
   "protein_g": 3.6,
```

```
        "fat_g": 19.2,
        "carbs_g": 4.8
      },
      "ingredients": [
        {
          "name": "Cooking Cream",
          "quantity": "60ml",
          "calories": 196.8,
          "protein_g": 3.6,
          "fat_g": 19.2
        }
      ]
    }
  ],
  "metadata": {
    "source": "Edamam API",
    "warnings": [
      "Mushroom macros estimated (missing in API response)"
    ]
  }
}
```