# FoodSim

**This educational urban design simulator/puzzler explores food deserts.** As he beats out rival Eliot for the new chief designer position, we follow young city planner Camden in understanding how a city's design influences the health and behavior of its residents.

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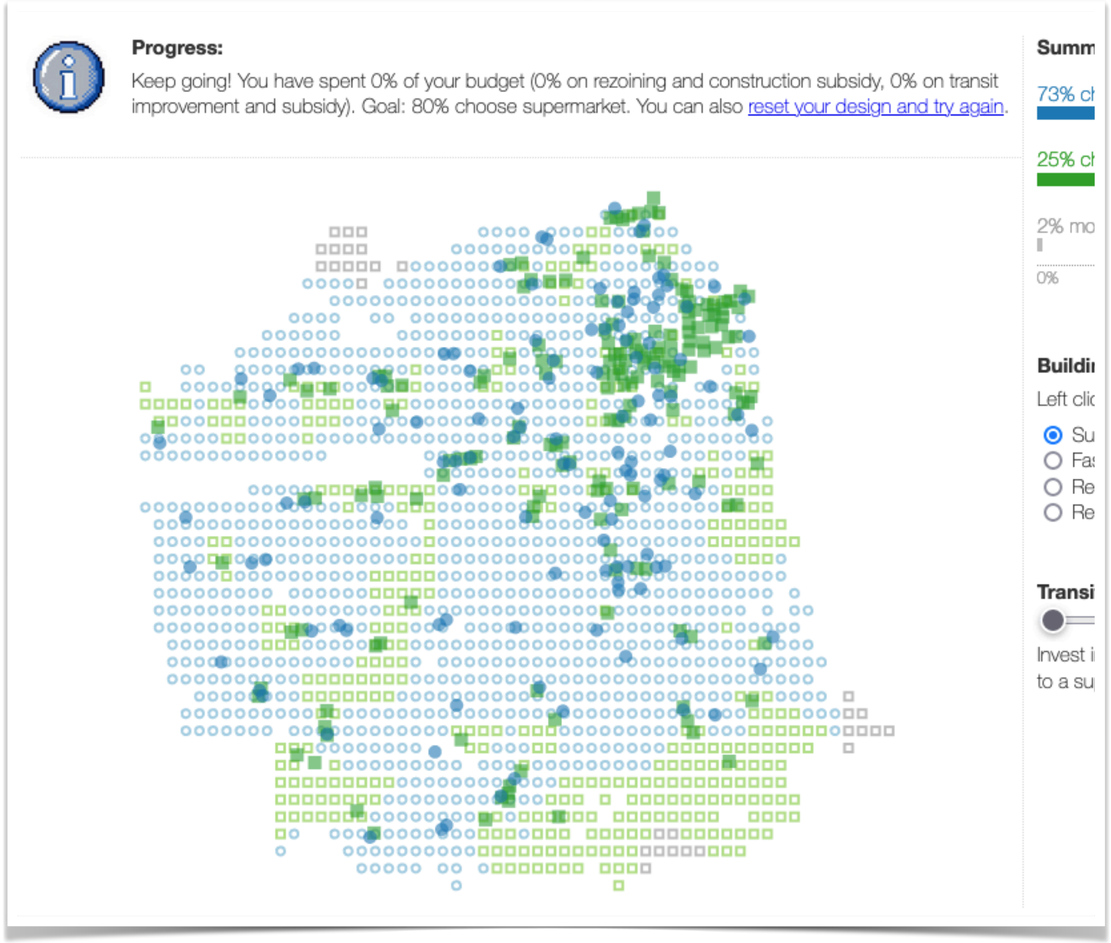

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# 👋 Introduction

| 🪵 Logline | 🙋‍♀️ Market, Audience, and Genre |
| --- | --- |
| In this educational simulation/puzzler, Camden Colby is on a mission to bring fresh healthy food to all, going city to city and town to town to help localities use the tools of urban planning to get groceries to the masses. Along the way, our hero learns how the design of our cities impacts our daily lives and health. Each region presents a new puzzle (and tight budget) from broken transit system to fast food dominated neighborhoods. However, nothing will stop this clever urban planner from making solutions to serve the citizens most in need, beating out rival Eliot to become the new chief of the food desert task force. | FoodSim is like SimCity or Roller Coaster Tycoon but with an academic purpose. This timed educational strategy / puzzle game explores the concept of food deserts: how failures in urban planning put often poor marginalized residents far from healthy affordable food. A problem impacting more than 1 out of 20 Americans in both remote towns and urban centers, the lack of convenient access to nutrition leads to poor chronic health outcomes such as heart disease and cancer. This game uses food desserts as an example to explore the ways actual urban planning impacts our lives for better or worse.<br><br>This game follows in the footsteps of other interactive educational experiences such as The Oregon Trail (general education) and SimHealth (often used in academic courses). The use of different cities as different levels acts as a way to modulate difficulty, giving the player a safe space first to explore the ideas of urban planning before learning about specific areas and exploring competing solutions.<br><br>Expected audience is young adults, potentially in educational settings. |

# 📚 Story (Synopsis)

Story synopsis presented using the 3 act structure presented in the course.

| Act 1 | Act 2 | Act 3 |
|---|---|---|
| Player-controlled new hire Camden enters a Office Space-like government office lobby. A person doing orientation asks Camden and another man, NPC Eliot Emery, why they joined the team. After Camden explains that his mother died due to heart disease caused by poor eating, Eliot laughs at Camden and says that he heard it pays well. Afterwards, both rookies are handed a brief document that welcomes newcomers to a task force of urban designers assembled by the United States Department of Agriculture to address a serious problem: food deserts. There is a place to sign and the player may change their name from Camden to something else if desired. With paperwork done, leader Chief Charlie explains food deserts as areas where folks have “low income and low access” or LILA, meaning they are far from a nutritious affordable food source such as a supermarket and many people in that area lack the financial means to cope with that lack of access. Finally, with the lesson complete, Camden and Eliot get plane tickets to their first assignments.<br><br>Camden sets off on a first assignment in Northern Elko County in Nevada. There, an “advisor” Zoe Zoning explains both the generous budget given for this introductory assignment and how they can choose where to encourage new supermarkets to be placed. A zoning map lets the rookie choose almost anywhere for the new supermarkets and, with Zoe’s help, Camden is delighted to see the top down view of households change from residential areas with no access to selecting the new grocery stores. Zoe congratulates our hero on a job well done, remarking that it appears both rookies found a solution for the first assignment. It looks like Camden and Eliot will both be racing to the top. | Camden and Eliot quickly become rivals. Chief Charlie gets our newcomers to increasingly difficult assignments with Camden and Eliot persistently neck and neck, their competition getting the attention of the entire office. Levels see increasingly bigger areas where there’s fast food to contend with, more resident groups opposed to changes, and tighter budgets. Still, Camden persists, working around zoning restrictions and community meetings, opening one new grocery store or farmers market after another, keeping pace with he surprisingly talented Eliot. In a surprise escalation, Zoe pulls Camden aside one day to mention that Charlie is retiring and rumor has it that the position will go to one of the quickly rising new hires: Eliot or Camden. For the first time, Camden feels confident and even a little too cocky. To finally edge ahead of Eliot, Camden takes the infamous San Francisco assignment despite Zoe’s discouragement.<br><br>Unfortunately, despite valiant efforts, Camden can’t get to a successful solution in the west coast city. Returning defeated to HQ and apologetic to Zoe, Camden now stands behind in competition to the boastful but effective Eliot.  However, Camden gets an unexpected call. Tamara Transit offers to join Camden’s team and opens a new tool to our hero: they can work with city authorities to improve transit systems! With this new ally, Camden returns to San Francisco to give the difficult location one final go, redeeming their name and putting them back in the running for chief. | With this new win and teammate, many new cities with transit opportunities open up. The two competing designers face their final set of assignments but neither are able to create a decisive lead. Finally, there’s an opening: Eliot fails the complex and difficult Wichita assignment. With all of the lessons learned, Camden takes on the final task and succeeds! Chief Charlie finally has what he needed to see, offering the position to Camden as he takes retirement. |

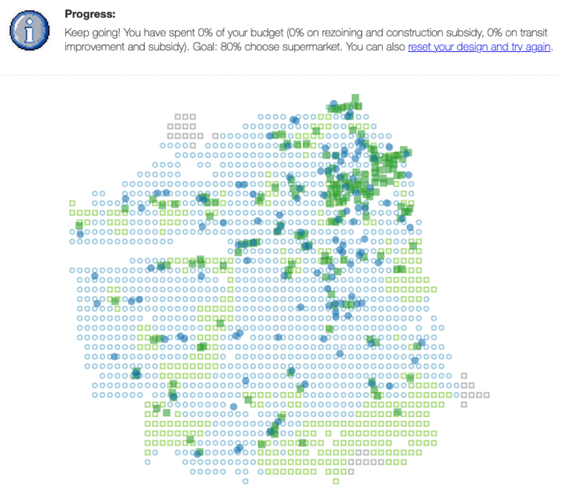
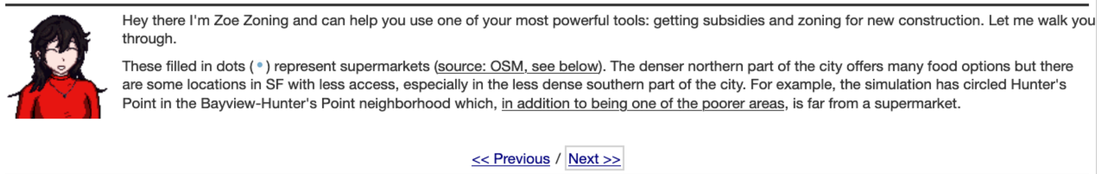
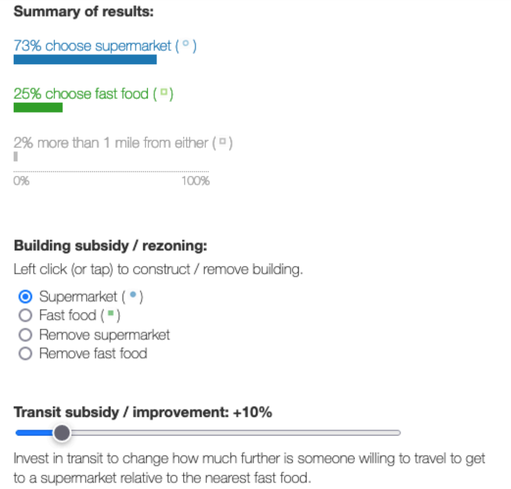
# Design: Characters

Note that silent protagonist Camden (the player) is not explicitly depicted in gameplay. In essence, the game happens from a first person vantage point and Camden does not have a fixed visual design. However, other characters are depicted.

| Eliot | Zoe Zoning | Chief Charlie | Tamara Transit |
|---|---|---|---|
| | | | |
| The main antagonist, a bit boastful but a very talented urban planner. Motivated by money and acts in contrast to Camden's personal connection to food deserts. Joins teams same time as Camden. | Kind and confident advisor with the player throughout the game helping update zoning and subsidize new grocery store locations.<br><br>Appears in early game to introduce basic mechanics. Also provides educational information for different levels. | Cheerful, talented, encouraging, and cool under pressure. Current leader of the group that gives assignments.<br><br>Appears in early game to introduce game concepts and educational information. | Friendly, energetic, and slightly more assertive than Zoe.<br><br>NPC joining later in game allows the character to modify transit systems |

# Design: World

Note that world layout is described in the prototypes section. The world also features uplifting jazz music in the background to reinforce the sense of progress and design. Example music is provided in the playable demo.

| Map | Communication Panel | Action Panel |
| --- | --- | --- |
|  |  |  |
| Here regions are coded to indicate if they are in food desert status, dominated by fast food, or have good access to healthy groceries. Based on options selected in action panel, player can construct new buildings which are color coded. Note that this section also includes a status section above the map indicating if the player has won or lost.<br><br>The map once featured more detailed icons but it became too noisy so went back to this abstract. Version. | Advisors (and complaining citizens) can communicate with the player at the top of the screen. Typically this section is used to provide educational material to the user but it may also present the user with options in the case of citizen complains. | Here the user can design their solution. In addition to a summary of how well their solution is doing, there are controls to construct new buildings in the level map and options to modify transit.<br><br>See demo for details on mechanics. Note that, in post-production, these may become a toolbar with icon links. |

# Resources: Assets

In response to feedback, I got access to or built various game assets, many of which feature in the demo. Where appropriate, licensing information included below. Note that this replaced some hand-sketched assets of earlier GDD versions in response to grader feedback. All assets used and licensed legally. Note that I have open sourced my code as a non-commercial educational project. Licenses for assets documented in GitHub repository.

| Character Assets | Game World Assets | Other Assets | Music |
|---|---|---|---|
| | | | |
| Designed using the open source (MIT license) Pixel Art Portrait Generator. Resources are provided and used under the CC BY 4.0 License from V-ktor. | From Owncham via a paid license. | From Greyjj via a paid license. | Using “Brush Strokes” from texasradiofish and billraydrums under the CC BY-NC 3.0 License. |

# Resources: Mood Board (In Level)

Note that this is provided for reference only. These materials are not to be included in the game and provide only general background information and feeling. These have been superseded by the other resources, mechanics, and designs included in this document. General inspiration only.

| SimTower | Undertale | SimCity DS |
| --- | --- | --- |
| | | |
| Credit: SimTower, MobyGames | Credit: Undertale, PushSquare | Credit: SimCity DS, Kikizo Archive |

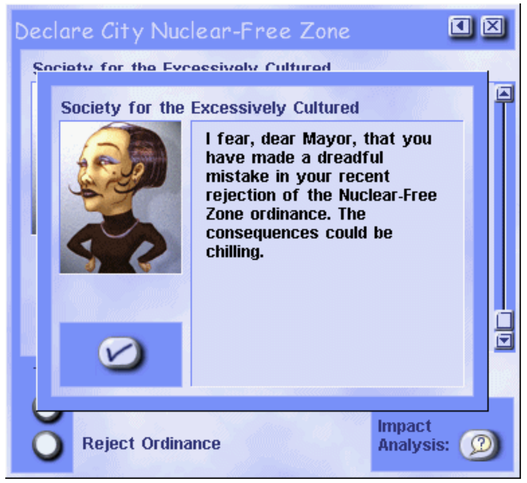
# Resources: Mood Board (World Map)

Note that this is provided for reference only. These materials are not to be included in the game and provide only general background information and feeling. These have been superseded by the other resources, mechanics, and designs included in this document. General inspiration only.

| Carmen Sandiego | FTL |
| --- | --- |
| | |
| Credit: Carmen Sandiego, MobyGames | Credit: FTL, Digital Trends |

# Resources: Mood Board (Advisors)

Note that this is provided for reference only. These materials are not to be included in the game and provide only general background information and feeling. These have been superseded by the other resources, mechanics, and designs included in this document. General inspiration only.

| SimCity 3000 | Oregon Trail |
| --- | --- |
|  | |
| Credit: The Deadly Hume, SimCity 3000 | Credit: Oregon Trail II, Mobygames |

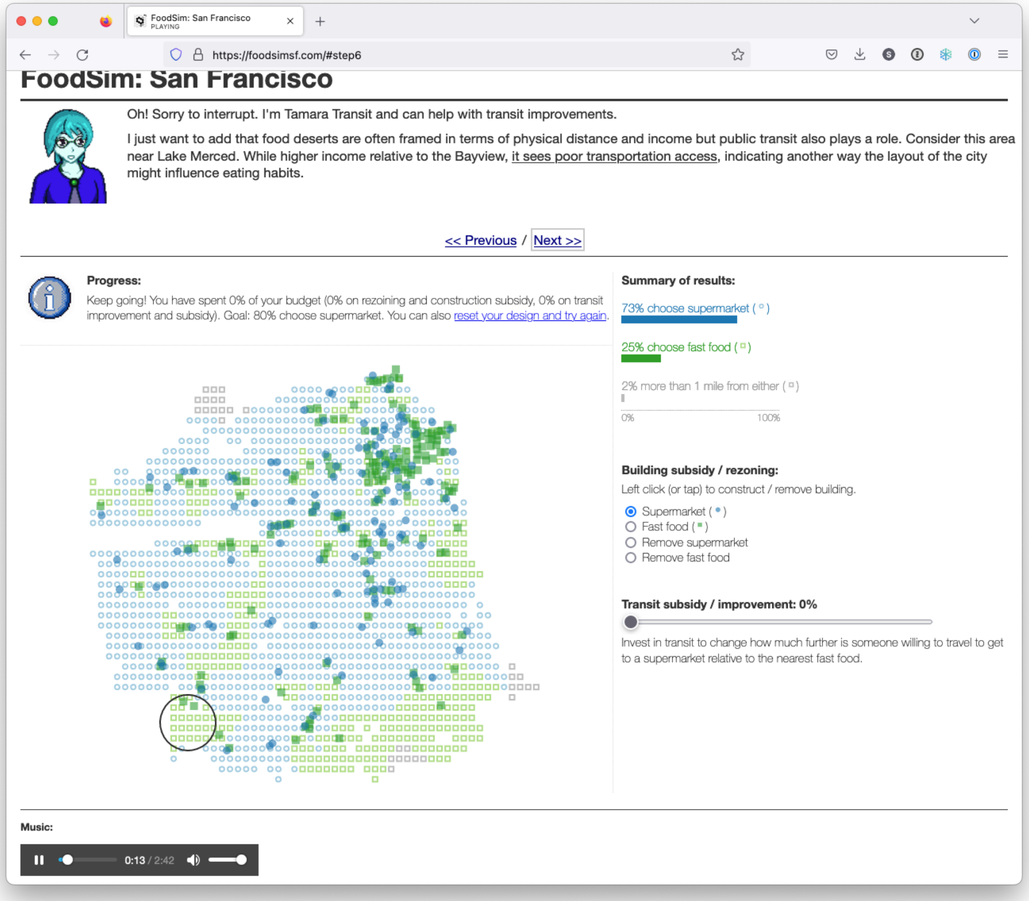
# 🏙️ Resources: Feedback Response

I have responded to feedback provided earlier in the course with the following steps:

- By request, music has been added.
- Additional details provided on gameplay and characters with distinctions made on the demo versus intended long term design.
- Graphics were refined including the sourcing of legally licensed materials, replacing my hand drawn sketches.
- Audience clarified.

I am thankful for the feedback provided and have worked hard to respond to those comments in order to complete both this GDD and its associated live demo.

# Prototypes: Limited Demo

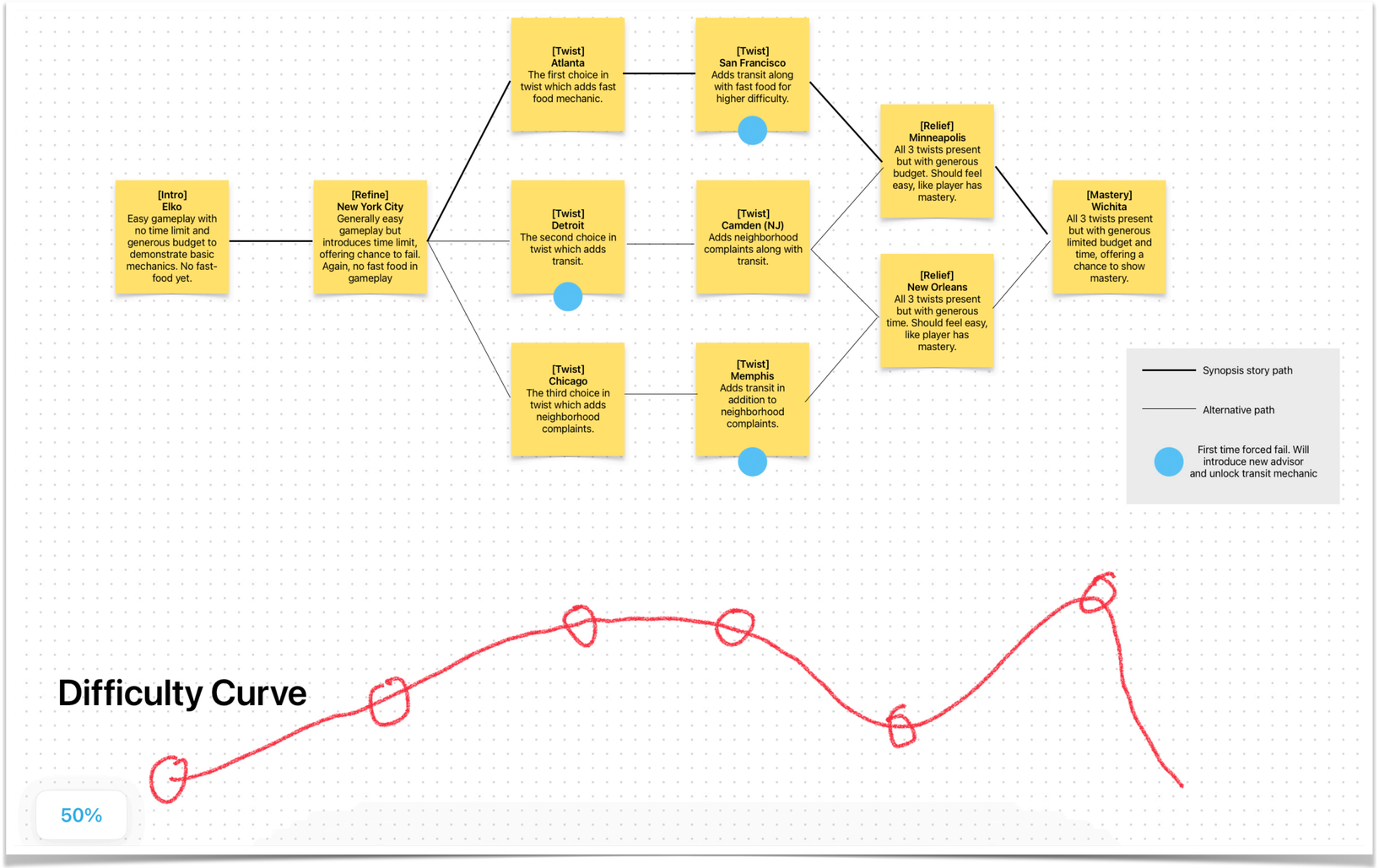



## https://foodsimsf.com

The first of two prototypes is a playable game demo. It is modified to fit a demo format so all characters are introduced in one go, time limit is removed, and the tutorial sequence appears on-level. Specifically, this prototype explores the San Francisco level. Note that this uses real data on the city as described at the bottom of the page.

In addition to these visuals and mechanics, music will play in the background after starting game. Only one track provided for reference. Visual design may change in post-production. Note that Eliot does not feature in the demo for simplicity.

# Prototypes: Flow Chart




This second prototype (diagram) maps out the levels with the difficulty curve, playing on the concept of 4 Step Level Design. This structure introduces mechanics, add ability to fail, introduces twists on those base mechanics, and then offers the player a chance to demonstrate mastery. However, since I am spreading these across levels, I introduced a middle step called “relief” which gives the player a moment of rest between two difficult levels.

Note that the image has resolution to support zooming in. There are some gameplay aspects such as time limit and neighborhood complains that are introduced through the course of the levels and not all at a once.

This game design document describes a demo released under an open source license at https://foodsimsf.com.
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