

Food Magnate Simulation

Additional Programming Tasks (Extension)

These challenges are presented without solutions, and offer to further explore and understand the skeleton program.

1. Add validation any user input to ensure that something is entered and a message displayed if nothing is entered
2. Add validation according to type, such that inputs required to be numeric are, indeed, numeric
3. Create an additional category of restaurant, with a new company of that type created as part of the default companies
4. Generate random likelihood of an outlet being closed as a day progresses
5. Create a random instance of a company or an outlet running a promotion, during which time its expenses go up but its reputation score also rises
6. Close an outlet that runs at a loss for five consecutive days, adding a notification that this has happened to the events
7. Display details of the restaurant which, during a day, was either the most profitable, the most visited or the one with the highest reputation rating
8. Prevent a new outlet being opened within a certain distance of another outlet, or another outlet of the same type
9. Redesign `Company` to be an abstract class, with categories of company each being a subclass
10. Generate a random budget and store it as an attribute within each `Household` object; a household that eats out will only eat out with a company whose prices are within their budget
11. Incorporate weather into the simulation; it can rain at random, in which case the probabilities of eating out are all halved, and the presence of rain is indicated within the events
12. Generate random events, such as power cuts, fuel shortages and festivals, each of which can have an impact on the probability of each house eating out
13. Incorporate a text file from which initial companies and outlets are created (where they differ from the default companies), rather than having the user manually enter them each time the simulation is run
14. Add a feature in which meals can be delivered, rather than customers visiting outlets; households who choose not to eat out might, according to random chance, order food to be delivered, although this costs the company extra in fuel according to the distance of delivery
15. The named chef outlets generally make a profit, while other categories make a loss; write a subroutine to determine, for each type of company, how much an outlet should have charged per meal during the previous day in order to have operated at a profit