One pizza model formulation

Link for the problem statement:
https://github.com/mmarouen/hascode/tree/master/one_pizza

Definitions

c=1…C clients index
i=1…I ingredients index
Preference(c,i) = {0,1, -1} c=1…C, i=1…I: Whether client “c” likes (=1), dislikes (=-1) or neither (=0) ingredient “i”

Decision variables

X_i, i=1…I, = {0,1}: whether ingredient “i” is included in the pizza

Derived functions

Satisfaction function for client c: $(\prod_{pref(c,i)>0} x_i) * [\prod_{pref(c,i)<0} (1 - x_i)]$

Objective function

$$maximize(\sum_c satisfaction_c)$$

Constraints

C1: Only one pizza is delivered
C2: Client will come to the pizzeria if all his likes and dislikes are respected
All the constraints are included in the formulation for the cost