Project outline:

The purpose of this document is to outline all of the constants, methods, and classes within our model so that they can be worked on asynchronously.

Constants:

primary list: numpy array of items representing the pool of primary items customers can have

secondary list: numpy array of items representing the pool of secondary items customers can have

full list: numpy array of items representing the pool of all items customers can have

view range: int representing the distance in any direction a customer can purchase items from

delta customer: int representing the number of steps between customers entering the store

total customers: int representing the total number of customers which can enter the store

store size: int representing the size of the array which will represent the store (the store will be square)

max time: int representing the number of steps which can pass before forcibly ending the simulation

global return values:

customer steps: int representing the number of steps made in the current simulation

items sold: int representing the number of items sold in the current simulation

money made: float representing the amount of money made in the current simulation

Methods:

initItems: takes a numpy array of strings and a numpy array of floats, which paired together represent an item. Returns a numpy array of all items created from this.

createStore: takes a 2D numpy array of coordinates (a[0,:] = x coords. A[1,:] = y coords), and returns a numpy array of shelves created in each coordinate, with a random item per shelf.

moveCustomer: takes a customer, a 2D numpy array representing the shelves of the store, and a numpy array of all customers in the store, and calculates the next movement step for the customer, and moves the customer.

customerPurchase: takes a customer and a 2D numpy array representing the shelves of the store, and determines which purchases the customer can make, and removes those items from the customer’s list, and updates return values accordingly

Classes:

shelf: class containing a reference to the item which is represented, and a pair of integers representing the position in the store of the item.

Item: class containing a string of which item it is, and a float price for said item.

Customer: class containing a two element numpy array representing the position within the store, a numpy array of items which represents the primary item list, and a numpy array of items which represents the secondary item list.