Step 1: Choosing Sim Model Subject

Shoe Salesperson
I chose this subject because I like to model stuff and shoes are cool.

Step 2: Preliminary Research of Subjects


Macy's Southlake, Morrow, GA: Retail Support Associate - Shoe Expeditor, Part Time (Job Number: 71703584)

Overview:
As a Shoe Expeditor you will be an integral part of Macy's ability to maintain the high customer service and presentations standards for which it is known. Performing wide ranging functions anywhere from recovering the Shoe Department sales floor to receiving and processing new merchandise for the Shoe area.

Key Accountabilities:
Understands the needs of the business and reacts with urgency to attend to matters that impact our selling efforts
Demonstrates customer service as a priority through the delivery of prompt, friendly, knowledgeable, and professional execution of all duties to drive sales
Utilizes Enterprise Locator System to fulfill shoe orders efficiently for selling associates
Ensures the prompt recovery of shoes from the selling floor back to the stockroom
Maintains the integrity of the shoe inventory through accurate scanning and placement efforts
Processes new merchandise and re-allocates stock as necessary
Processes damages, return-to-vendor merchandise, clearance and "job outs"
Maintains a clean, orderly, and safe work area; safely and adequately handles equipment required for the job function - maintains safety awareness in the execution of their job
Assists with seasonal inventories
Performs all other assignments assigned by Shoe Selling Manager or Shoe Expeditor Lead

Hierarchy:
1. Helps customers
2. Manages inventory
3. Cleans work area/safety

Note: This is simplified from the job description above.

Conclusion:
A shoe salesperson has many tasks that revolve around managing the inventory of shoes and trying to sell them to potential customers. Since sales are their primary goal, a salesperson should have helping customers as the primary task in a hierarchy. Next, the salesperson should focus on managing the inventory to be sure of what is in stock for customers and to be sure that none of the shoes are damaged. A salesperson would also want to be aware of when to order more shoes when many have been sold. Finally, a salesperson should maintain a clean and safe work environment, so they should clean the store when not helping customers or managing inventory.

Step 3: Research Validation and Online Collaboration

This was not completed for the tutorial.
Outline/Plan:

Have one salesperson be modeled.

A customer has a 50% chance of appearing every 20 seconds.

If there is a customer help them.
   The customer has a 33% chance of buying shoes when approached by the salesperson.
   If they buy the shoes, ring up the shoes at the register.
   If they don’t buy the shoes, the salesperson should continue their normal work routine:
      wander, clean, or do inventory.
   If a counter keeping track of the time between doing inventory is greater than 50 seconds, then manage inventory for 10 seconds.

If a counter keeping track of the time between cleaning the store is greater than 20 seconds, then clean the store for 10 seconds.

If a customer comes in during any point while the salesperson is doing inventory or cleaning, the salesperson should stop and help the customer and then return to their duties when the customer leaves.

Agents (States/Depictions):
Salesperson (normal, carrying money, carrying shoes, cleaning)
Customer
Register
Inventory
Floor
Walls (blank, shoes, glass)
Bench/Customer Generator

Worksheet Layout:
Store
Inventory Room

Variables:
Counter for time between doing inventory.
Timer for period that inventory is being done.
Counter for time between cleaning.
Timer for period that the salesperson is cleaning.
True/False variables for when a task needs to be done
   - serving customer
   - ringing up shoes
   - doing inventory
   - cleaning

Diffused Values:
Customer
Register
Inventory
Floor Diffusion:
  set $c$ to $0.25 \times (c[\text{left}] + f[\text{right}] + f[\text{up}] + f[\text{down}])$ in floor.
Salesperson:
  updateHierarchy:
    Count up for the time until cleaning is needed or inventory needs to be done.
  move:
    If no tasks are required of the salesperson, then move randomly
    Else if a customer has arrived, then move to the customer
    How to move:
      if $c[\text{right}] > c[\text{left}]$ and $c[\text{right}] > c[\text{up}]$ and $c[\text{right}] > c[\text{down}]$ then move right
      repeat for each direction.
  satisfyHierarchy:
    if the salesperson is next to a task that needs to be completed and nothing else is more important, then work on the task until complete and then move on.