Samuel J. Gomez

Professor Benoit

W200 – Project 1 Design Document

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Project 1 Proposal

The goal of Project 1 is to create a warehouse management system that sends and receives product to and from various production systems. At a high-level, a warehouse management system tracks product throughout the production lifecycle. The purpose of this project is to create an object-oriented production environment and WMS in python. Emphasis will be placed on how to arrange bins in the cold storage as well as follow a first in first out (FIFO) method to the receiving line and wash line production processes.

User Interaction

Before describing the user interaction, it is helpful to understand the receiving and production processes. At the very start of the process, Tasteful Selections receives trailers filled with 50,000lbs mix of baby potatoes and dirt/foreign material. Once trailers arrive on site, they are stored in trailer locations until processed by the Receiving Line. The receiving line consumes trailers by the variety in bulk and outputs sized product by continuously filling bins. There are eight size profiles produced during the sizing process.

After a bin is created, it is moved to a cold storage where it is held at 38 degrees for a few weeks before utilized as a wash line input. The scope of this project focuses on the inputs and outputs to and from the receiving line and wash line as well as the trailer and bin storage locations.

The program will start by allowing the user to initialize a factory (e.g. amount of trailer storage locations, cold storages, a receiving line, and a wash line). The user will have the ability to add trailers (supply) to the yard and the ability to create orders which will dictate production inputs and output destinations. The destination (cold storage) will organize the product and will allow the user to view the capacity of the room and the contents of each bin if requested. Also, the program will incorporate certain rules—such as FIFO, etc.—for consuming trailers from storage locations and bins from the receiving line and to the cold storage. A random function will be used to create the bins produced by the receiving line based on the order. If time permits, the program will generate a weighted average consistent with expected size profiles.

Classes:

1) Factory – processing facility
    a) Name
    b) Location
    c) Number of cold storages
    d) Number of trailer storages
    e) One receiving line

f) One wash line

2) Bin – Sized product held in a bin.
   a) Attributes
      i) Bin Id
      ii) Variety
      iii) Size
      iv) Weight
      v) Time stamp
      vi) Lot

3) Receiving Line – Production line that sorts unsized product into sized product.
   a) Attributes
      i) Name
      ii) Capacity
   b) Input
      i) Unsized product measured in pounds.
   c) Output
      i) Bins that weigh 1200 pounds
   d) Methods
      i) Create Bins from pounds.

4) Cold Storage – Refrigerated storage room to hold product before it is consumed by the wash line.
   a) Attributes
      i) Name
      ii) Number of bin locations
      iii) Bin locations
      iv) Temperature
   b) Methods
      i) Receive bins
      ii) Receive and order from the wash line
      iii) Output bins in FIFO (first in first out) method.

5) Receiving Line Order
   a) Attributes
      i) Order number
      ii) Variety
      iii) Weight
      iv) Destination

6) Wash Line Order
   a) Attributes
      i) Order number

ii) Variety
iii) Size
iv) Bin Quantity