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CMPS 109 - Karim Sobh

Assignment 2 - Due: Feb 6

Problem 2 Report

How to build:

Either use the Makefile provided to create an .exe or use the following command to build and run the program:

```
g++ problem2.cpp ScanningDevice.cpp
```

Implementation:

The scanning device contains a 2D array with the first index being the colorID from 0 to 7 and the second index being the productID from 0 to 255. When an item is checked in, its respective location in the array is incremented. If we check in product 6 with color 2, then the value at location products[2][6] is incremented unless it is at the max value 256. If we check out product 6 with color 2, then the value at location products[2][6] is decremented unless there value at the location is zero.

To check if a specific product is in stock, we use checkIfProductExistsInStock(). This function takes the parameters productID and colorID. The function returns true when the specified product has a count of 1 or more. The function returns false when the product has a count of zero or the IDs specified are out of range.

To check how many items exist for a specific product ID we use getNumberOfProductInStockByID(). This takes the parameter productID and returns the number of items with that product ID. The function returns zero when there is no stock of the product, or the ID specified is out of range.

To check how many items exist for a specific product ID of a specific color we use getNumberOfSpecificProductInStock(). This takes the parameter productID and colorID and returns the number of items with that product ID and color ID. The function returns zero when there is no stock of the product, or the IDs specified is out of range.

To check how many items exist for a specific color we use getNumberOfProductInStockByColor(). This takes the parameter colorID and returns the number of items with that color ID. The function returns zero when there is no stock of any color, or the IDs specified is out of range.

To get the number of items with stock regardless of color we use the function getNumberOfProductWithStock(). The function takes no parameters and returns the number of distinct items that have stock.