Dallon Jarman
Assignment 2
CYB136

For this assignment, I created a mock inventory manager using classes, queues, sets, maps, and hashes. The purpose of this program is to allow the user to add products to into their inventory manager. The program has a couple of cool features that took me a long time to figure out how to implement them. There is error checking for everything. There is extraordinarily little room for the user to make a mistake. The program allows the user to add items to the inventory. It also allows the user to delete items, change the quantity and price of an item. It allows the user to see everything in their inventory all at once in a nice and neat table. It also allows the user to find specific products within their inventory. When the user first loads up the program it will introduce itself and talks about what it does. Then it will show the user all the different options from which they can pick. The first option being add an item. From here the user can add any item they would like. The cool part is the program knows if the user is trying to add an existing product. If the user adds an existing product, then it will let the user know. If the product does not exist, then they can add the quantity of the product and set the price. For the second option, the user may remove an existing product. If a product is sold out or no longer exists, the user may simply delete it from the inventory. If the user inputs an item that already doesn't exist, then it will let the user know. The next option is letting the user change the quantity and price of any item. If the user accidently input the wrong price or wrong quantity or if a shipment came in. The user can simply input the name of the product and it will prompt the user for a new price and new quantity. The next option is printing out a list of all the products, quantity of each product, and the price of each product. This makes it easy to see if a product exists in a small form. If let us say the user had hundreds of items in their inventory, then there is the final option. Find a specific product. The user will insert the name of the product. It will let the user know if the product exists or does not and it will tell the user the price and quantity of the item.

In the bugged code, the function addProduct will allow user to insert the same product as many times and will overwrite the previous item. This could cause many issues when you have hundreds of items in your system. If a employee accidently added the same product twice this will cause the program to forget the previous entry causing the previous quantity to disappear. This could be really bad leading to an inaccurate count or inaccurate item quantity causing companies to not being able to sell some of their inventory. Another way this could be bad is if there were two products that were similar like t-shirts but with minor distinctions, the user could accidently overwrite product without knowing and it no longer exists in the system. This could cause issues for the company revenue and could keep products from selling.

The language feature this misuses is storing data in maps. When you add a key value to a map. If there is already one existing, it will go and overwrite it causing all that data to be lost. I have a pretty good understand of maps because it closely relates to dictionaries in python, so it makes it easy to understand how they work. This program works surprisingly well and it was tricky to find a flaw this isn't obvious. I'm impressed with myself that I didn't run into much bugs when writing this code. The main issue I ran into was user input but that was fairly easy to fix. As I was writing this, I was trying to find every small flaws and quickly finding a fix to it. This is a

small bug and is easy to fix by adding in a check to see if the product exists. But this is still a nasty bug that will cause issues for many users.

Every company uses a inventory system of some kind. Medical offices use inventory systems to keep track of how much medical supplies they have left before they need to buy more. Store use inventory systems to keep track of what products are being sold the most, what needs to be reordered, and what hasn't been sold in a while, restaurants use inventory software to keep track of what items need to be reordered. Every business needs some sort of inventory system to keep track of how much of each item they have available. With almost every business using an inventory system. Thousands of users are inputting many different characters and number. There is bound to be a bug found at some point.

All bugs are hard to find and detect. Majority of bugs are found from rigorous testing and usually never found from just looking over the code. When you create your own code it's even harder tp find bugs that exist within it. You know to look for certain things but there are so many things you would never think to look for. Having people test your code before releasing it to the public is the best way to debug code. Having some of your friends just go through the code and try their best to break it is a great way to debug.

Finally, flaws in code are tricky to find but with enough trial and error and plenty of testing that can come to the light and then as a developer it is their job to remove the bug and not create other bugs in the process.