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HW2 Report

1. Problem 1

   Most important decision of problem 1 was to use bit manipulation rather than a traditional storage of elements. This allowed me to conserve space and use time efficiently for storing students' information. An implementation involving standard means of storage would have been likely 8 times more space. Program behaves as expected and there were no unusual issues.

2. Problem 2

   This one was fairly straightforward as well. There were very few alternatives that were efficient from a programming perspective for using limited storage of each product. Since each one had the possibility of holding 256 items, a minimum of 8 bits was required for each product carried. This problem was very similar to Problem 1.

3. Problem 3

   This problem was somewhat difficult. Knowing how to overload std operators was very unusual at first but became easier throughout the problem. For some reason, the += operator for heaps is unable to return a Heap without it being empty. This means that it is the only operator that doesn't technically function.

Using auto for combining the two += operators didn’t handle well so I instead created two separate += functions.

4. Makefile

   For building the programs I use g++ <file> -std=c++14. For use with a makefile I create the object files and then link them. This was difficult initially since the subdirectories contain the source code and the outputs are being stored in the high level directory.