

For this first programming assignment, we started developing object oriented programming. As far as we have learned, we have been focusing on inheritance, derivation list, "has a", "is a" relationships, and so on. With those notions based, I began to think of design hierarchy at the beginning. As considering about the design how the flow it would be, I was quite able to see the design and draw the structure. Therefore, I decided to have two main parts which are household and school. The household class is composed of graph data structure and the data come from an external file, census.txt. And the school class is composed of doubly linked list data structure and the data also come from an external file, school.txt. In order to make effective design on this program, inheritance is essential factor. As putting a managing class (base class), household and school classes are the derived classes. And also, for each school class and household class, they have node class, adjacency list class, and so on to construct the appropriate data structures. As long as using inheritance feature, it is easy to manage many functions and also able to access functions from the base class. It would definitely say this is really effective design.

The data structures I performed for this program are graph and doubly linked list. Basically, The data structures performed well, as I had much experience writing them in the past so they came fairly well-organized together. At the first time, it was quite hard to implement the graph data structure for the household information but finally complete.

About the efficiency of my design, I had a weird implementation, but I made the

decision early and just stuck with it. Essentially, instead of allocating and de-allocating memory between the house hold information and the graph, I tried to remove the data from the household info class. That was why I could not implement the function correctly.

This was efficient in the sense that I wasn't needlessly allocating and de-allocating memory everywhere. But given the small scale of the program, began to wonder weather or not I was overcomplicating the solution. Perhaps allocating and de-allocating memory for some pointers and some data for every household and school data would not have been so inefficient by comparison if it gave me a more readable and comprehensible solution, but it's the decision I made so I went forward with it.

What I think is inefficient is dealing with the graph. I think I still don't feel comfortable using graph so my graph data structure with house hold information might be inefficient. If I were more confident with graph I would have developed them more effectively and made more useful functions. For that reason, I would have used a different data structure. It might be binary search tree. I am pretty sure I would feel I can build better program with other data structures. If I had more time I would change the data structure to binary search tree or hash table with chaining. Hence, I would be able to deal with many data easily.

I think I am confident with my design hierarchy and met the object oriented programming requirements. Each class had a clear job and responsibility. The act of writing out a comment about each class helped nail down a definition of what each class was concerned with.

