Assignment 4: a4vmsim.c

Objective:

The objective of this project is twofold.

1. FIrst is to introduce to us the concepts of how a virtual memory page work

2. The second objective is to increase our understanding of the strategies and the implementations of choosing a victim.

This is what I believe are the two objectives of Assignment 4

Design Overview:

My project is set up a little something like this
4 Sections of the code.
It first check that there are 4 different argv's
And then it splits up into 4 different distinct sections
Each section refers to the strategy and has their own stdin reader
The first section is a none strategy where I used a set in order to not have to worry about memory allocation and I can also just keep adding to the set.
The second section is the MRAND section. I took my LRU function and expanded upon that. So that when it chooses a page to kick out, it generates a variable between 3 and the number of frames. Then it victimizes and adds to the end of the list.
The third section is the LRU section where I used a double queue in order to keep track of which page was used last.
The fourth section is the SEC strategy. Where there was a double queue and also a dirty bit array to keep track of which ones we were going to give a second chance and which ones we weren't

Project Status:

I encountered a little bit of difficulty getting C++ to like playing with unsigned int arrays. It was my first time coding in C because I wanted to use the useful containers such as set and double ended queues. The only function that i couldn’t really get to work is the sec. There were weird problems between array types and pointers that I couldn’t really solve.

Testing and Results:

I tested my implementation after every single function. Once a function was complete, I tested it to its fullest range, trying to make it fail, and trying to make it succeed. Once I was happy with it, I moved on to the next function and repeated the process. After I was finished the entire project, I ran through every function and made sure I haven't broken anything else in the process.

Acknowledgements:

I had to research quite a bit to figure out how to do this, I acknowledge the TA’s help, the textbook, as well as all the websites I used thats referenced in the program. There was a lot of stack overflow and a lot of C++ documentation to look up.