List of edge cases to consider when testing

Inputs

- Combination of Spaces/Tabs between the time, command, address
  - Solution: Switch to sscanf after fgets and use whitespace separation between types
- Random new lines in input?
  - Idea: Check if first character is a new line, if so, read another line. <- Would not work if there were spaces and tabs before the new line character.
  - Solution: Ignore edge case, trace file input is very explicitly defined and does not mention comments in the trace file or the ability to have empty lines. An error will be sent if this happens.
- Comments in trace file? Look for //?
  - Idea: <- May not be necessary, Check if the first character is a number in the line. <- This may not work as it could have spaces before the numbers.
  - Solution: Ignore edge case, trace file input is very explicitly defined and does not mention comments in the trace file or the ability to have comments. An error will be sent if this happens.
- Negative time, or not monotonically increasing?
  - Solution: Dr. Faust said that the trace file will be monotonically increasing, so we can make this assumption.
- Out of bounds address or command in parser.
  - Solution: Dr. Faust said that we can choose how to handle this situation. We are using an unsigned long long integer which can hold 18446744073709551616 clock cycles which should be more than enough for a memory trace. We will exit the program if this is overflowed.

Runtime

- Clock time overflowing its variable bit width (choose a max length and throw an error if the time is too long)
  - Solution: Dr. Faust said that we can choose how to handle this situation. We are using an unsigned long long integer which can hold 18446744073709551616 clock cycles which should be more than enough for a memory trace. We will exit the program if this is overflowed.
- Queue Overflow. Receiving a 17th instruction before room for it has been made available.
  - Solution: Keep track of current time and wait until queue is not full to add it and do the same for future instructions after the delay caused by a full queue
- When the queue is empty, there could be a long time before the next instruction arrives.
  - Solution: Check this condition and make sure all banks and bank groups finish their delays before incrementing the time to the next instruction if its far away.
- When to clear memory access requests from the queue? When the read command is issued? When the burst starts? When the burst ends?
  - Solution: Dr. Faust said that memory requests can be cleared from the queue after their process is fully completed after the burst ends.