**Data Structures**

To complete this project I decided to use 3 data structures all of which were priority queues. The first priority queue is used to hold the process information we get from the text file. I decided to use a priority queue because I wanted to have the processes sorted by arrival time. By using this data structure, it made it easier to later pop processes as the current time was more than or equal to the process arrival and input them into the second priority queue. An additional benefit about using a priority queue from java is that I did not have to worry about the size of the input data as I would if I used a simpler data structure such as an array.

The second and third priority queues are connected. The second priority queue is used to transfer the processes once the arrival time condition is met. In this priority queue the processes are stored by priority which simplifies the order and which we process each process.

The reason I used a third priority queue is to be able to update the priority of processes as they met the wait time condition. This third priority queue serves as a temporary data holding area because we can only look at the top of the pile of queues. During each loop I test whether any process has meet the wait time condition. If it has meet the wait time condition the priority gets updated and that process gets added to the third priority queue. If the process has not met the criteria it gets added into the third priority queue without any changes. Once the second priority queue is empty then we add everything back from the third priority queue.

**Observations**

Even though I used priority queues as the main data structures in my program I first tested my data with a simple array with a fixed size to test that all the data was imported correctly and completely. This showed me that there are many different data structures that could work better or worse for the assignment. However, I believe that my choice of using priority queues was good as it made it easy to have it always sorted in the order that I needed it.

Another observation that I have is that I have some repetition on my code. Once data structure 1 is empty then I had to copy my inner loop into another loop to empty data structure 2. If I had had more time I think there might be a way to make this code better and less repetitive.

**Learnings**

The main learning from this assignment was Java. There were a lot of different aspects that I had to look how to do in java such as creating a file or having a file output. I also had to take into considerations error handling for the input and output files. Finally I had to make sure to test different inputs. For example, at the end I almost forgot to test when the input file was empty and that would have caused an error. However, I have now added code to handle this position. As I have had no experience with java before this class this was a great learning experience in coding a full project and thinking of different ways the program could crash.