Simulation Program Outline

For each simulation run do the following:

- Get the input parameters and write them to the report file
- Create the event queue and the waiting queue
- Create a Poisson generator for the number of dial-in attempts
- Initialize the event queue with dial-in events
    - Populate the event queue with dial-in events before the simulation begins, for each time unit of the simulation:
        - Determine how many customers will dial in (random Poisson)
        - Create a dial-in event for each of these customers for this time Unit, and insert it into the event queue
- Create a Poisson generator for length of connection time
- Start the simulation
    - Do the following for each time unit of the simulation:
        - While there are still events for the this time unit in the event queue
            - Remove the event from the event queue
            - If it is a hang-up event, a modem becomes available
            - If it is a dial-in event, add it to the waiting queue if the queue is not full. Otherwise, discard the request and print a message
        - While a modem is available and the waiting queue is not empty
            - Remove the customer at the front of the waiting queue
            - Add customer's wait time to the total wait time
            - Determine the connection time for this customer (Poisson)
            - Create a hang-up event for this customer and add it to the event queue
            - Add the length of the time this customer uses the modem to the modem running total
            - Reduce the number of available modems
- Do the following when the current simulation run ends:
    - Compute and display the percentage of the time modems were busy
    - Compute and display the average wait time
    - Display how many users were left in the waiting queue
    - Output to the report file the percentage of time modems were busy, the average wait time, and the number of customers left behind in the waiting queue.
    - Start another simulation run if the user wishes.