1. What number of tellers should the branch manager hire? Explain your reasoning.

3. Due to the fact that hiring more than 3 tellers did not further reduce waiting time.

2. What kind of simulation is this and why?

This is an event based simulation. Because the system relies and reacts to internal and external events.

3. Why use the priority queue for the event queue and a regular queue for the bank line?

The regular queue for the bank line accurately depicts how a bank line would function in the real world, with people standing in a line. Priority queue is used for events because you have to process earlier events first.

4. Can you think of any other problems, aside from banking, that an event simulation could solve? What values would it track?

Elevator programming control. Which floors it goes to and where it stops. It takes inputs for people trying to get in and out and has to decide where to stop and open.

5. Sketch out in pseudo code how one would directly track the customer wait time instead of the teller busy time.

Customer:
- when_they_arrived_at_bank
- how_long_their_transaction_takes
- when_they_entered_the_waiting_line

List_of_all_wait_times = empty list

For each event (arrival or departure):
If event is an Arrival:
    If a teller is free:
        // Customer gets served immediately, wait time is 0
        Add 0 to List_of_all_wait_times
        Teller starts work, schedule departure
    Else (no teller free):
        Customer_X = new Customer
        Customer_X.when_they_entered_the_waiting_line = current_time
        Put Customer_X into bank_line

If event is a Departure:
    Teller is now free.
    If bank_line is NOT empty:
    Customer_Y = Take first customer from bank_line
    Calculated_Wait_Time = current_time - Customer_Y.when_they_entered_the_waiting_line
    Add Calculated_Wait_Time to List_of_all_wait_times
    Teller starts work on Customer_Y, schedule new departure

Else (bank_line IS empty):

Teller becomes idle

6. The starter code always chooses the first teller that isn’t busy, could this effect the results of the simulation? What could be done instead?

Yes, this oversimplifies the simulation. It doesn't take into account individual teller traits or loading. Even at the DMV you can sort the jobs by how long they take, certain tellers could get stuck with long lasting jobs while others answer simpler jobs. Instead of going by who's available, it should prioritize using tellers with the least accumulated busy time to help spread the workload.