Part A

Sleep is often underestimated, but it plays a crucial role in how well we learn and remember things. When you study or practice a skill during the day, your brain initially stores that information in short-term memory. However, this fragile early memory trace can fade quickly unless it is stabilized. That stabilization happens during sleep. While you rest, your brain works behind the scenes, replaying and strengthening the information you encountered when awake, almost like pressing "save" on a file you created earlier in the day.

Different sleep stages contribute to learning in different ways. Deep slow-wave sleep, for example, helps consolidate facts and knowledge — things like vocabulary, formulas, and concepts. Rapid Eye Movement (REM) sleep, on the other hand, is more involved in creativity, emotional learning, and connecting ideas. This is why after a good night's rest, you might suddenly understand something that confused you before, or come up with a new solution to a problem that seemed impossible the previous evening.

Skipping sleep or staying up late to cram can have the opposite effect. Although it might feel like you're being productive by studying longer, your brain lacks the chance to cement what you've learned. As a result, you might wake up feeling foggy, struggle to recall information, or perform poorly on tasks that require concentration and memory. In the long run, consistent lack of sleep harms not only learning but also mental and physical health. So, investing in good sleep habits is not a luxury — it's one of the most effective tools for academic success and overall well-being.

Part B

My approach was to maintain two separate queues, one for outgoing people and another for incoming people. Notice that whenever we allow a person to go out or go in, then we will be allowing all people present in that queue to go out or in, and then whenever we are allowing a person to pass the door, then we will add all the people who come to the door in that particular time. If both queues become empty at a particular time, then we will just jump to the next person.

They do not ask questions about advanced algorithms or complex concepts. Instead, they focus on the applications of various data structures and algorithms. Therefore, if you learn about arrays, stacks, queues, priority queues, min/max heaps, sets, maps/dictionaries/hash tables, DFS, BFS, Dijkstra's algorithm, and topological sort, you will be well-prepared. During the introduction session, they mentioned that they wouldn't ask questions beyond these topics (note that I only recall the graph algorithms; I don't remember the specific algorithms for other data structures, but I'm confident they didn't include any advanced concepts).

Part C:

We often overlook how important sleep really is, especially when it comes to learning and remembering things. You can spend hours studying or practicing something during the day, but if you don't sleep well, a lot of that effort can go to waste. When you're awake, your brain starts by storing new information in short-term memory — almost like scribbling notes on a sticky note. But those "notes" are easy to lose unless your brain gets time to properly file them away. That filing process happens while you sleep, when your brain quietly organizes, strengthens, and saves what you learned, kind of like hitting "save" on your computer instead of leaving the file open and hoping for the best.

Not all sleep is the same, either. Deep slow-wave sleep is when your brain locks in facts — things like definitions, formulas, and concepts. REM sleep, which is the dream stage, does something different: it helps you get creative, process emotions, and connect ideas in new ways. This is why sometimes you wake up and a topic that felt confusing suddenly makes more sense, or you come up with a fresh solution to a problem you couldn't figure out the night before. Sleep isn't just rest — it's your brain doing some of its most important work.

When we pull all-nighters or stay up way too late cramming, it might feel like we're being productive, but it usually backfires. Without enough sleep, the brain doesn't get the time it needs to solidify memories, so the next day you might feel mentally dull, forget what you studied, or struggle to focus. If poor sleep becomes a habit, it can affect not just your learning but your mood, health, and overall energy. So, getting enough sleep isn't just good advice — it's one of the smartest habits you can build if you want to do well and feel your best.

Part D:

My approach was to maintain two separate queues — one for people exiting and another for people entering. The key idea is that whenever we allow someone to exit or enter, we process all individuals currently present in that respective queue. At the same time, whenever a person is allowed to pass through the door, we also add all individuals who arrive at that exact time to the appropriate queue. If, at any point, both queues become empty, we simply jump to the next person's arrival time.

They do not ask questions involving advanced algorithms or complex concepts. Instead, they focus on the application of fundamental data structures and algorithms. Therefore, if you are comfortable with arrays, stacks, queues, priority queues, min/max heaps, sets, maps/dictionaries/hash tables, DFS, BFS, Dijkstra's algorithm, and topological sorting, you will be well-prepared. During the introduction session, they clearly mentioned that they would not ask questions beyond these topics. While I do not recall every specific algorithm discussed for each data structure, I am confident that no advanced topics were included.