**Interview Summary**

**Could you describe your sleep schedule on both weekdays and weekends? How many hours of sleep do you aim for each night, and do you usually achieve these goals?**

**“…**On weekdays, I usually try to go to bed around 11 PM and wake up at 7 AM. So, I aim for about 8 hours of sleep. On weekends, I tend to stay up a bit later, but I still aim for around 8 hours of sleep, although I sometimes sleep in until 8 or 9 AM.”

“On weekdays, I normally go to bed at 2 p.m. and get up at 8 a.m. for class. The weekend will be postponed. Because I suffer from insomnia, I occasionally go to bed late”

“…On weekdays, I usually go to bed around 10:30 PM and wake up at 6:30 AM, aiming for 8 hours of sleep. On weekends, I stay up a bit later, around midnight, and sleep in until 8 or 9 AM. So, I aim for around 9 hours on weekends…”

“on weekdays, I try to go to bed around 11 PM and wake up at 6 AM, aiming for 7 hours of sleep. On weekends, I'm a bit more relaxed; I might stay up until midnight and sleep in until 8 or 9 AM, aiming for 8-9 hours.”

“on weekdays, I aim for around 7-8 hours of sleep. I usually go to bed at midnight and wake up at 7 or 8 AM. On weekends, I give myself a bit more flexibility and might stay up until 1 AM but still aim for 8 hours by waking up around 9 AM.”

“I usually just go to bed directly; hmmm, if you count scrolling my phone as a routine, then this might count as my routine; whether on weekdays or weekends, I will lie in bed and use my phone for about half to an hour and turn off the light. I don’t set a goal of how many hours I should sleep, but if I know I have work tomorrow morning, I will try to get to bed earlier.”

“I try to be healthier these days, so normally, I will do some stretching before I hop on my bed. Weirdly, I have more motivation to be healthy during weekdays; at weekends, I just want to relax and do whatever I want, haha. I will watch some comics or read a novel before falling asleep. Yes, I do try to sleep for at least 6 or 7 hours each night, but sometimes things might happen and change my plan.”

“I don’t have a sleeping routine, but I will make sure before going to bed I am physically ready for sleep; I mean, like… I know I am fully hydrated and yet don’t need to go to the bathroom. I guess other things, like knowing all the tasks that have to be done, are also important for me, whether on weekdays or weekends. I don’t think about having any goals, but I used to sleep for 7 hours per night.”

“Sleep routine... that's a good question. It's about the time I go to bed and wake up, generally speaking. If I have classes, I have classes at 8 AM on Mondays, Wednesdays, and Fridays, so I wake up at 7 AM every day. Last week, I went to bed around 1 AM to 2 AM. On Tuesdays and Thursdays, I have classes at 10:30 AM, so I usually wake up around 9:30 AM… It depends on when I have morning classes the next day. My bedtime is relatively stable, around 1 AM to 2 AM. If I need to wake up at 7 AM, it's around five to six hours of sleep. If I wake up at 9 AM, it's around seven hours… If I'm sleep-deprived, I'll sleep for about ten hours. If not, I usually find around eight hours of sleep to be comfortable.”

“Sleep goals…Strictly speaking, no. I haven't really thought about it. It depends on the workload for the week and what time I have classes the next day. My sleep is mainly determined by my tasks and specific circumstances.”

“My sleep is in two segments because I have insomnia, as you know. When I have insomnia, I sleep from 8 a.m. to 10 a.m. If it's normal, I go to bed at 8 p.m. and wake up at 3 a.m. sharp. During insomnia, I sleep for about two to four hours. Around 2-3 a.m., I can't hold on and will fall asleep. If I don't have insomnia, I sleep 7-8 hours per night. Sleep goals…I don't have such a thing. If I had that, I would definitely have trouble falling asleep…this kind of planning is to be avoided as much as possible. When you close your eyes and say, "I must sleep at this particular time today," congratulations, you won't sleep. But it's a psychological suggestion.”

“In uni, I usually... usually go to bed around midnight and wake up at six…the bedtime can vary, but the wake-up time remains the same. The latest I go to bed is around two to three in the morning…A little over six hours. It's not enough for me…If possible... naturally waking up, I should get around nine hours of sleep.”

**Could you share any of your best or worst sleeping experiences from last week?**

**“…**Well, I had a great night's sleep on Tuesday. I fell asleep almost immediately and woke up feeling refreshed. However, on Thursday, I had a really bad night. I couldn't fall asleep for hours, and when I did, I kept waking up throughout the night. It left me feeling exhausted the next day…”

“last week, I had one of those rare amazing nights. I slept like a log for a full 8 hours without any interruptions. I woke up feeling incredibly refreshed and ready to take on the day.”

“…on weekdays, I aim to get around 7 hours of sleep, so I usually go to bed at around 11:30 PM and wake up at 6:30 AM. On weekends, I try to catch up a bit and aim for 8 hours, so I might stay up until midnight and sleep in until 8 AM…”

“Last week was pretty rough. I had a couple of nights with terrible insomnia due to upcoming exams. On those nights, I barely got 3-4 hours of sleep, and it really affected my focus during the day.”

“Last week, I experienced a night of exceptionally deep sleep. I slept for a full 8 hours without any interruptions. When I woke up, I felt incredibly refreshed and ready to tackle my research. It was a rare and welcome occurrence”

“On Thursday, I forgot the reason, but I stayed up until 2 a.m., and I had to wake up before 6 a.m. for work, which really upset me and affected my emotions the whole day. But on Saturday, I sleep for about 12 hours; I guess as long as I get enough sleep, I will say it’s a good sleeping experience.”

“I think the best experience is on Friday; I know I have lots of time to get a good sleep, and even if I wake up late, I have much time to do all my work. The worst time is when I have to stay up late to complete my tasks and wake up early in the morning for class, but that’s all because of my poor time management.”

“Hmmm, well, last week, I didn’t have many things to worry about, so everything was pretty well. The best thing is probably the satisfaction of having time to go to the gym, and I know after a good workout, I can have decent sleep quality.”

“Exceptionally good sleep... well, today I slept really well. I went to bed at 9:40 PM last night and woke up at 9:50 AM today…around eleven hours of sleep…and sleep deeply.”

“A particularly bad sleep experience was last week... I believe it was on Wednesday. I only slept for four hours and forty minutes because I had to rush with assignments and had an 8 AM class the next morning.”

“Let me see... The best sleep last week was probably when I went to bed at 11 p.m. and woke up at 6 a.m., feeling refreshed. The worst one was when I went to bed at 10 p.m. and woke up at 1 a.m. After waking up, I felt very tired, like I hadn't entered deep sleep. Although I had slept for about three hours, I felt tired and kept dreaming…One important aspect of not sleeping well for me is having more dreams, and they are often nightmares…Nightmares have no pattern. At the peak of my nightmare experiences, I would dream of killing and arson every day. It's better now, with no specific patterns…But for good sleep, it feels like I'm not tired, and my heart isn't racing….I don't sleep deeply. Specifically, it means I can be easily awakened by various small disturbances.”

“Well... I didn't feel particularly good, but it wasn't particularly bad either. Because I have to wake up early for school, I don't sleep very late. However, since I live with roommates, they make noise in the morning, so I can't sleep for a very long time even if I want to. Because I wake up late during breaks, but if I have to adjust my schedule suddenly, I find it hard to fall asleep. Also, if there's something in my life the next day that excites or thrills me, I find it very hard to fall asleep. For example, when I went to a comic convention before, I didn't sleep the entire night.”

**What are some factors that affect your sleep quality?**

**“**…I was quite stressed about an upcoming presentation at work. I kept thinking about it, and it made it hard to unwind…”

“It was relatively quiet, but the room felt a bit too warm. I remember tossing and turning because of that…”

“When I wind down with a book or some calming music, it usually helps me sleep better. On the negative side, too much screen time before bed tends to disrupt my sleep.”

“Stress is a significant factor that negatively impacts my sleep. When I'm stressed, I find it hard to relax and fall asleep. On the positive side, having a calming bedtime routine and a comfortable mattress and pillows make a big difference in the quality of my sleep.”

“Stress is a big one for me. If I'm stressed about work or personal issues, it's much harder to fall asleep. Also, exposure to screens before bedtime tends to disrupt my sleep. And occasional noise from neighbors can be bothersome.”

“I did experience a period of insomnia recently due to academic stress. I'd lay awake, worrying about exams and assignments. It affected my concentration during the day, and I had to make some changes to my schedule to manage it better.”

“…stress is definitely a major factor. Exam stress, deadlines, and even the pressure to perform academically can keep me up at night. Also, my roommate occasionally brings friends over late, which disturbs my sleep.”

“Stress, particularly related to academic deadlines and research pressures, is a major factor. Also, my tendency to work on my laptop late at night can disrupt my sleep patterns. Furthermore, living in a noisy neighborhood has its challenges.”

“Light; Caffeine. Sometimes, I just want to drink something. If I know I have something important to do tomorrow, and I will keep waking up in the middle of the night.”

“I guess worry about unfinished tasks? I can easily wake up super early if I know there’s something urgent that I need to do.”

“Amount I sleep per night; level of tiredness; sound and bedding stuff.”

“If I sleep a lot the previous day and the next day doesn't involve much physical exertion, like when I sleep for ten hours on the weekend and stay home all day, I might have trouble falling asleep due to excess energy at night. Also, if I stay up too late doing homework and get excited, or if I exercise too late at night, or if I watch something and laugh for a long time, or suddenly have a strong emotional shift at night, these significant changes in emotions before bed can affect my sleep.”

“Sometimes when there are a lot of disturbances, this situation occurs occasionally. The purpose of this training is to make your mind stop thinking about anything in real life and focus completely on your own body. On one hand, it helps you relax and adjust your breathing, and on the other hand, it helps you concentrate your attention entirely on the act of sleeping, without being disturbed by other factors. Because you will definitely have that kind of experience... when you really want to sleep, but suddenly you remember there are some points in your homework that you could write about, and the more you think about it, the more excited and difficult it is to fall asleep... But when you get into long-term anxiety about something, like the upcoming exam... you find it hard to control yourself, and it's difficult to focus your attention on the act of sleeping. During that time, I occasionally used a 30-minute session, but later on, I mostly used melatonin to force myself to chemically fall asleep.”

“Exams, assignments, deadlines, stressors, and minor irritations. When my comfort towel disappears. Anxiety. This kind of anxiety, once it happens, significantly affects me. Also, physical factors like headaches, rheumatism, and so on. And I prefer quiet environment. I'm very sensitive to noise.”

“Noise, and my roommates' different living habits. If I want to sleep early, it's not really possible. Also... if there are study tasks to complete, I'll procrastinate and not feel like sleeping. It's irritating, and not sleeping well makes me feel not so great. But the impact is not so great that it affects my daily life significantly.”

“If I slept really well, I would feel very clear-headed and bright. When doing things the next day, I feel my focus and productivity would improve.”

**Have you ever used any technology or gadgets to improve your sleep quality, such as sleep trackers or white noise machines? If so, did you find them helpful, and why?**

“…I've tried using a sleep tracker and a white noise machine. The sleep tracker helped me understand my sleep patterns better, and it motivated me to stick to a consistent schedule. The white noise machine helps drown out background noise, which is especially useful when I have noisy neighbors. So, I'd say they've been helpful…”

“…I hardly ever use technology to keep track of my sleep. I believe it will bother me more and cause me worry…”

“I've used a sleep tracker, and I found it helpful in monitoring my sleep patterns and identifying areas for improvement. ”

“I've used a sleep tracking app, and I find it helpful. It provides insights into my sleep patterns and helps me adjust my routine. I also use a white noise machine to drown out noise, which has been quite effective.”

“I do use a sleep tracking app, and it's quite helpful. It provides insights into my sleep patterns and has motivated me to establish a more consistent sleep schedule. I've also tried using earplugs and a sleep mask to block out noise and light.”

“I use a sleep tracking app to monitor my sleep patterns. It's been quite helpful in identifying trends and areas for improvement. Additionally, I've experimented with blue light-blocking glasses to reduce the impact of late-night screen time.”

“No, I never think of using technology to improve my sleep quality. (The interviewee does not think of tracking time as a way to improve his sleep quality.)”

“I do try to use an app that can wake you up gently; surprisingly, it did work and makes me feel more refreshed if I get enough sleep. That’s a function I really like about this app, and I still keep the app till today.”

“Not really; I usually just make sure I’m in good condition and balance my life.”

“Yes, I used an app for meditation called "Calm" before. It was good, but the annual fee was quite expensive, so I stopped using it. It had a dedicated meditation for sleep, which I used daily for a while, helping me stabilize my sleep. It also had some training. Now, the annual fee was too expensive, so I didn't continue using it. Mainly, after I started using melatonin, I found it more efficient than meditation, so I gave up on meditation…it's a course. It had various courses like "deep sleep" and "deep rest," with a guide instructing you. They'd guide you to focus on your breath, on your temples, the top of your head, your chest... using this shifting of focus to calm down, and adjusting your breath to a more regular and slower pace, which helps in falling asleep more easily…you can place your phone by your ear and follow the guidance to adjust your breath and do some movements. It also had some white noise options, and you could choose which white noise was more comfortable for you. It provided various courses as well.”

“Right, but I usually use some other methods for better sleep... like therapeutic sleep music. Apart from that, I also listen to thunder, rain, and water sounds to fall asleep. Now I bought an aurora projection lamp, which also has the function of playing white noise, so every time I set it to the sound of a stream and then go to sleep.”

“White noise, yes. White noise is the only effective tool I've used. Besides that, I haven't found anything else useful. Listening to white noise helps me fall asleep. Some stable, consistent sounds can cover the sudden noises for me, and then I can sleep.”

“I haven't used those specialized apps, but I have played sleep-inducing music on video apps before. I think that might have a little effect, helping me get into a state of sleep.”

**What is it like when you can't fall asleep?**

“Ah... it's a different feeling every day. Sometimes it's very emotional, sometimes very anxious, and sometimes my thoughts are overly active, and I just can't calm down. I'm not someone with particularly good sleep quality, so not being able to sleep is a very normal state for me.”

**Do you live alone or with others? How do these factors affect your sleep quality?**

“…I live alone in my own apartment. It generally has a positive impact on my sleep quality because I have full control over my sleep environment. I can set the room temperature, control the noise, and follow my own bedtime routine without disruptions. It's been quite conducive to getting restful sleep…”

“I share a house with three roommates. Our schedules and routines differ, which can sometimes affect my sleep. If they stay up late or have friends over, it can be noisy, and that disrupts my sleep. However, we've discussed quiet hours to minimize disturbances, and that has helped improve the situation somewhat.”

“I live with my partner, and we share a bedroom. Most of the time, it doesn't affect my sleep negatively; in fact, I find their presence comforting. However, there are occasional nights when their snoring keeps me awake.”

“I currently live with my partner. Luckily, our sleep schedules align well, so it's not much of an issue. Although, there have been occasions when their snoring has kept me up. We've worked on strategies to minimize disruptions, like using separate blankets.”

“I share a dorm with a roommate. Generally, we respect each other's sleep schedules, but there have been occasions when their friends visiting late at night caused noise that made it difficult for me to fall asleep.”

“I share an apartment with roommates. While we try to be considerate, sometimes their late-night discussions or activities in common areas can be disruptive. We've had conversations about noise levels to strike a balance.”

“I live with another roommate, but I do own my room, so it doesn’t affect me that much.”

“I live alone by myself.”

“I live with others; no, I have my own bedroom.”

“My sleep quality decreases when I sleep with anyone else, except for my mom. Because sleeping with my mom gives me a sense of security. Besides, I'm easily awakened by noises from other people; I need a quiet environment. Also, I'm sensitive to temperature when I sleep... I can be easily woken up by heat or cold. If my roommate and I have very different temperature preferences, it will have a significant negative impact on my sleep.”

“Firstly, I sleep alone, so there's no noise created by others. Also, no one is moving around while I'm sleeping. Moreover, I have to keep the lights on when I sleep because I have claustrophobia. If I don't have the lights on, I can't sleep.”

“I have Three roommates and we sleep in the same space. We have bunk beds and study desks in our dorm. The dorm is also quite old.”

**Do you have any specific bedroom decorations or arrangements that you believe might contribute to your sleep quality?**

“…I enjoy sleeping with a teddy bear. It immediately puts me at peace. Because my bedroom is quiet enough, I believe this environment is conducive to good sleep…”

“Not at all. Normally, I only bring earplugs when it's noisy”

“I try to keep my bedroom simple and clutter-free. I've also added blackout curtains, which help create a dark sleeping environment. We have a few calming posters and dimmed lighting to create a relaxing atmosphere. Overall, I think these elements contribute positively to my sleep quality.”

“I have blackout curtains to keep the room dark, some calming artwork, and a Himalayan salt lamp that provides a warm glow. These elements create a soothing atmosphere that helps me relax before sleep.”

“Yes, I've added blackout curtains to keep the room dark and reduce external light. I also have some calming artwork on the walls, and I use a white noise machine to mask noise from outside.”

“I need a lamp because I will need a light when I am using my phone and I can turn it off straight from my bed.”

“I will always open the curtain before I go to bed, I believe that the morning sunshine makes it easier for me to wake up.”

“I like to have something to hug when I’m sleeping, like a pillow; also, I need to cover my feet, this just makes me feel safe somehow.”

“I think a bed curtain is important, mainly because it blocks out light. And during summer, we use air conditioning, and during winter, we use a heater. It can't be too cold or too hot, or else I won't be able to sleep.

”

**Do you currently have any issues with your sleep? If so, could you tell me how they impact you on a daily basis?**

“…I've been dealing with insomnia lately. It's been difficult to fall asleep, and even when I do, I wake up frequently during the night. This lack of quality sleep has left me feeling fatigued and less focused during the day. It's affecting my work and overall mood…”

“…Just last week, I had an important presentation at work. I was up all night trying to prepare, and the lack of sleep really showed during the presentation. I stumbled over my words, couldn't concentrate, and it was embarrassing. I knew my sleep issues had a direct impact on my performance that day. Therefore, stress is a big one. When I'm stressed, it's harder for me to fall asleep and stay asleep. ”

“Apart from the recent insomnia during exams, there have been times when I've struggled with maintaining a consistent sleep schedule due to my part-time job. This inconsistency made it challenging to stay alert during classes and focus on studying.”

“There was a period when my research workload was particularly heavy, and I was staying up until the early hours of the morning to meet deadlines. This disrupted my sleep schedule and left me feeling fatigued during the day, which affected my productivity and ability to focus on my studies.”

“Not getting enough sleep; sometimes I know I have to wake up early in the morning, but I do not want to go to bed because I just feel I haven’t done enough things, and it’s a waste to end the weekend so early.”

“I think not having enough sleep is an issue for me. I can easily fall asleep around 8 to 9 p.m. these days, yet if I’m still awake after 12, I will feel energetic somehow, and not easy to fall asleep even if it’s late.”

“No, I’m satisfied with the status of my sleep. I guess a few weeks later, the weather can be an issue; sometimes the weather changes affect my skin sensitivity, which makes it hard to have good sleeping quality if I feel unwell when I try to fall asleep.”

“Not getting enough sleep… Not only do I feel sleepy and have poor mental condition, but sometimes I need... for example, if I have class tomorrow morning, I must make sure I'm doing something with my hands during class, like constantly taking notes, or forcing myself to raise my hand to ask questions, or chatting with my desk mate, or even opening an app and chatting with a friend... I must have some actions to make myself feel like I'm actively participating in the class, needing external stimulation. Besides, when I don't sleep well, my mood is particularly bad, and my sensitivity to external reactions decreases. It feels like there's a layer of bubble between me and the outside world, and I easily do things without thinking, like... standing on a chair to reach something and accidentally falling, not paying attention to traffic lights, walking while listening to music without paying attention to the road conditions...”

“Anxiety. This has been going on for five or six years.”

**If you could use an app now, and it's specifically for cultivating good sleep habits and improving your sleep, what features would you like this app to have?**

“First of all, it should record the time I fall asleep and wake up each day, the duration, and then it can create something like a weekly report... and record any unexpected occurrences during sleep, like waking up due to temperature, being disturbed by snoring, getting up at night... and other activities that can disrupt normal sleep. I think this kind of recording feature would be quite useful. In addition to this weekly report, there could be a check-in feature where you can set your sleep goals for each day, and you can see how you're doing each month, with some reward mechanisms... like leveling up.”

“Rather than leveling up, the best would be if you could exchange for some fancy but not very useful things, like... unlocking new white noise elements. It's best if it can motivate me. There could be some more creative things, like meditation music. Initially, it could meet my basic requirements for white noise, but later, through continued use of the app, I could unlock more types of white noise, or other things, like lock screen wallpapers or sound backgrounds.”

**“**Also... you could actually incorporate those meditation courses. I really recommend trying Calm for the next one; it provides various white noise functionalities, and there are other apps that include white noise as well. You could use elements from them as a reference. You could also push some tips, like about recipes. You could specify which teas are sleep aids, which foods help improve sleep, helping users improve their dietary habits and regulate sleep, and so on.”

“I think white noise is still very useful. I've tried so many apps, and in the end, the most useful function for me is still white noise. Next would be... even though I had it before, I don't need it now. You know some people experience sleep apnea, and for a period, the medication I was taking would make me experience sleep apnea while sleeping. After that, I was afraid to sleep. During that time, I found the monitoring function of a smartwatch quite good. Also, I think gradually awakening alarms... because I believe the feeling of being awake will affect your next sleep. At least a good waking experience won't make you fear sleep. If designing a watch, I think monitoring heart rate and breathing is valuable. Besides that, I don't think pure statistics are useful. Because I used to have sleep apnea, and if this watch can't detect your breathing, it will wake you up by vibration.”

“There are smartwatches on the market that monitor sleep stages... I think they're quite useful. It could also have additional features to monitor sleep states. For example, some people talk in their sleep, but they're not aware of it...”

**Interview Analysis**

**Sleep routine:** Most students want to have seven - nine hours or more of sleep per night.

**The definition of good sleep:**

* Fall asleep immediately.
* Feel refreshed the next day.
* Sleep deeply
* Long sleep time

**Main sleep issues**

* Hard to fall asleep
* Feel anxious and can’t calm down
* Can’t get enough sleep
* Wake up multiple times throughout the night – can’t stay sleep
* Feel exhausted the next day
* feeling fatigued and less focused the next day
* can’t maintain consistent sleep schedule
* the sleep affected the focus, productivity and overall mood
* keep dreaming and have more dreams
* Anxiety

**Factors contributed to sleep quality:**

* Quiet environment
* No stress
* Exercise
* Enough sleep time
* Appropriate temperature
* A book
* Some calm music
* Follow the calming bedtime routine.
* Comfortable mattress and pillows
* Control over the sleep environment
* Get relax.
* Amount I sleep per night
* level of tiredness
* sound and bedding stuff.
* Get a sense of security

**Factors causing sleep issues:**

* Stress and anxiety (mainly due to academic index e.g. presentation and exams and deadlines…)
* Get excited before falling asleep
* Late exercise
* A strong emotional shift
* Inappropriate temperature
* Too much screen time
* Poor time management
* Can’t have enough sleep time
* Noise
* Excess energy
* Stay up late
* poor sleeping environment (e.g. noise made by roommates/neighbours, sometimes from partners)
* Light
* Caffeine
* Worry about unfinished tasks or tasks to do tomorrows – keeps user awake when they need to/want to fall asleep
* Feel unwell (physical factors)
* Roommate’s different living habits

**Technology:**

* sleep tracker (wearable) – “helpful in monitoring my sleep patterns and identifying areas for improvement”
* white noise machines – deal with other noise
* sleep tracking app – “give me insights about my sleep patterns and helps me adjust my routine.”
* an app that can wake you up gently
* meditation app - shifting of focus to calm down, and adjusting your breath to a more regular and slower pace.
* therapeutic sleep music
* thunder, rain, and water sounds (Some stable, consistent sounds)

**Living patterns:**

* Live alone – quiet
* Have my own bedroom/sleep alone
* Live with partner/roommates - Sometimes it relaxes the mood, and sometimes it negatively affects sleep (e.g., because of different living habits and noises)

**Bedroom decoration:**

Visually relaxing – lighting modification

Relaxation to the touch – soft pillows, calming posters…

blackout curtains

Natural light/sunshine

Aurora projection lamp with white noise

Bed curtain (blocks out the light)

**Wanted features:**

* record the time user fall asleep and wake up each day, the duration, and then it can create something like a weekly report.
* record any unexpected occurrences during sleep, like waking up due to temperature, being disturbed by snoring, getting up at night... and other activities that can disrupt normal sleep
* check-in feature where users can set their sleep goals for each day, and they can see how you're doing each month
* reward mechanisms for motivation
* meditation courses
* some diet tips
* White noises
* Monitoring heart rate and breathing
* monitor sleep stages and status
* awakening alarms that awake user gently