BML MUNJAL UNIVERSITY™
A Hero GROUP INITIATIVE

CRESENT

FINAL REPORT

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CRESENT

CONTENTS

OBJECTIVE, MOTIVATION and CHALLENGES:

Objective: Something that you are trying to achieve; an aim

Motivation: The process that initiates, guides, and maintains goal-oriented behaviours

Challenges: Parts of our process that needed more effort

The objective of this project is to figure out ways technology can help people have better quality sleep and motivate them to sleep better.
In specificity, we are required to design and build an app/website with all the desirable human-computer interaction elements that we can come up with, using research and hypothesis testing for a better understanding and design.

Motivation for our objective is our sleep schedule and our own activities. We looked at it at our own individual perspectives, discussed them and it helped us in starting to work in our goal.also, inputs from others also helped.

Challenges we faced in this process are finding an optimum solution from a bunch of different pitches as they all had their own upsides, finding a hypothesis to test upon to support our quirky proposed solution and actually making the prototype for our solution

DELIVERABLES AND LITERATURE REVIEW

Deliverables: results of the project or the processes in the project

Literature review: a survey of scholarly sources on a specific topic

Deliverables:
User persona
Figma tool prototype of the solution
Affinity mapping
Hypothesis testing
Data gathering using obtrusive and unobtrusive techniques
Website prototype of the solution

Literature review:
This project allowed us to research literature on sleep and various methods for sleep inducing and having quality sleep, factors that affect sleep quality and methods to monitor that sleep quality.
As much as there was extensive research on specific areas/methods for sleep, it still looks like it lacks wholeness and less research on the remaining methods. This can be because humans still don't know much about sleep itself thus, sleep-inducing activities and methods to assess sleep quality research is inadequate.
The tips that are already there with little credibility for most of them are having a healthy lifestyle i.e., diet, physical activity and mental health. Reading, music, the ambience of the sleep setting, breathing techniques, meditation, stretching, baths, tea/drinks/eatables, etc are some of the factors that have a positive effect on sleep quality.
Monitoring techniques our mobile phones use are gyroscope, sound, and activity sensors.

PROPOSED SOLUTION

This section describes what solution we came up with to address our objective.

Crescent - Your Sleep Aid

Crescent is a gamified sleep motivating and monitoring app that uses interactive stories to engage the user in the app and provide for building a better sleep schedule and habits.

Design of our application(description, features and functionality):

1. 'How are you feeling?' feature - this contains tips that allow the user to first sit back and wire down all the thoughts to relax his mind and body and bring him to a state of calm
2. 'Interactive Story' game - this makes the user dwell in the story and asks the user some fun riddles in order to unlock the end of the story.

3. ‘Daily tasks’ facility

- Night task - an optional yet rewarding(points) task of a hallucinatory vision game to make the user drive towards sleep
- Morning task - another optional and rewarding(points) task of a fun focus challenging game to make the user pump those juices and get active in the morning

4. ‘Daily rewards’ feature - the user is given a reward(points) uniquely associated with the hours of sleep they contended themselves with.

- The points gained in tasks and daily rewards can be used to refill lives while solving the riddles in the story.

5. ‘Sleep music’ page - the user(after playing the game) can use the selected calm and relaxing music to fall asleep.

6. User progress - user is assigned titles and rewarded badges based on the number of points the user secures.

7. Sleep monitoring - The user’s sleep is monitored and categorized into total, deep and quality sleep. Each day’s amount of sleep is logged and the weekly average sleep is calculated

LOW AND HIGH FIDELITY PROTOTYPES OF THE PROPOSED SOLUTION

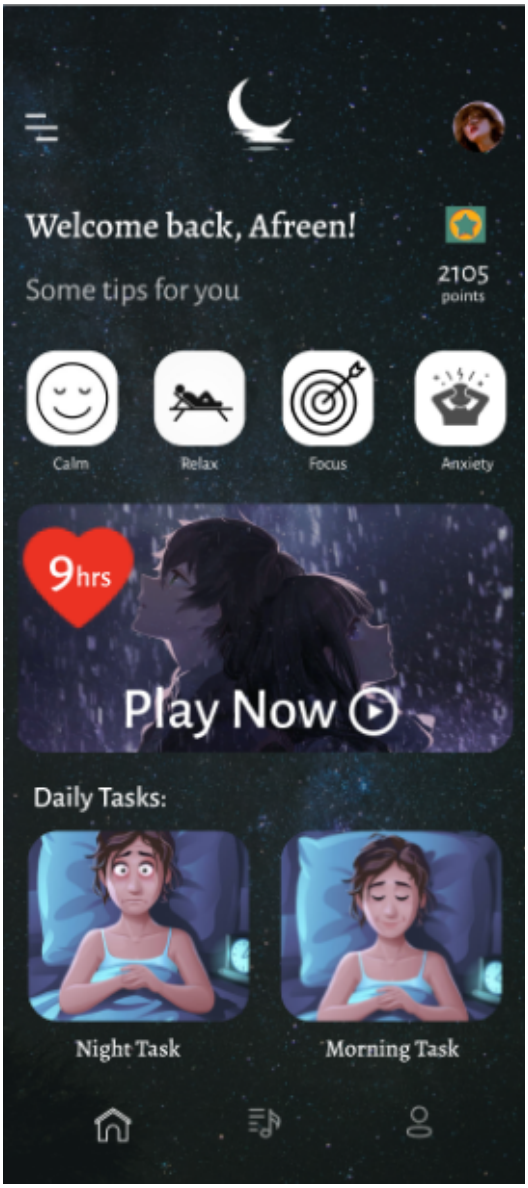
Design fidelity refers to the level of detail and functionality included in a prototype. Fidelity can vary in interactivity, visuals, content and commands, and other areas.

Low fidelity prototype of the proposed solution is done on Figma, which has less interaction and was solely used to brainstorm and design our ideas while gathering user data. This was an appropriate option for the process as it was easy to make any changes that were needed in the design making and made us directed towards our now specific solution.

The low fidelity Figma prototype is as below:

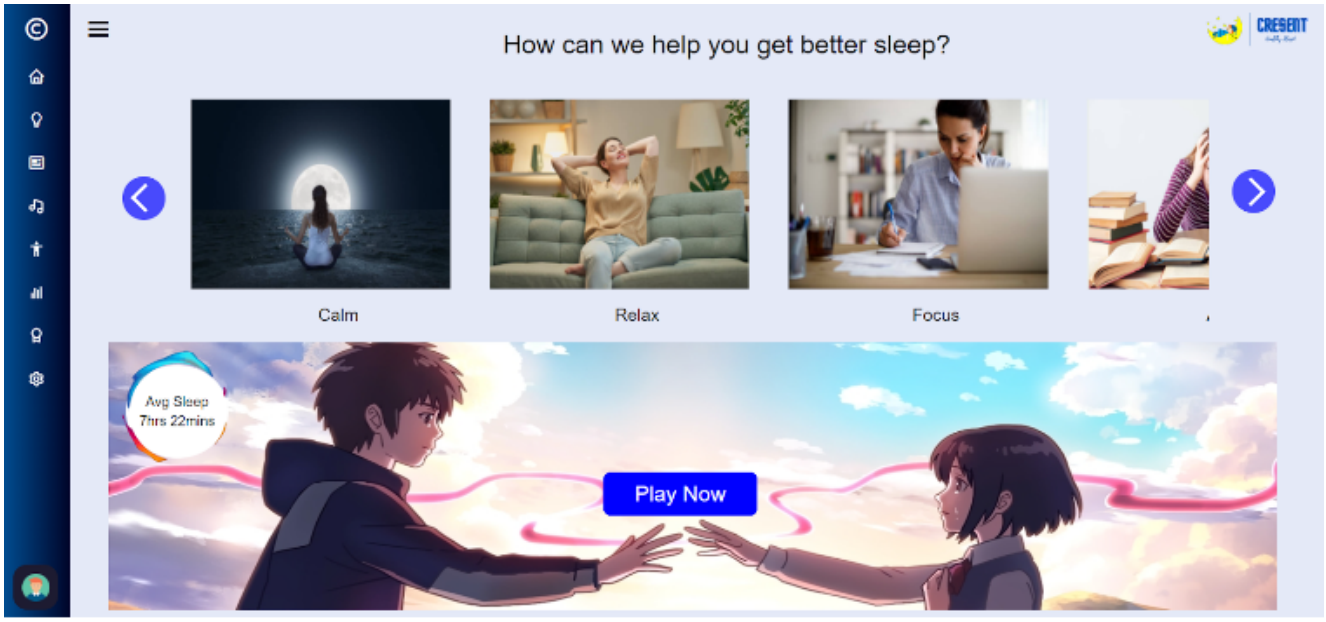
https://www.figma.com/file/DL4Sow7rUBGyriNNjyMR8D/HCI_Project_2.0?node-id=0%3A1

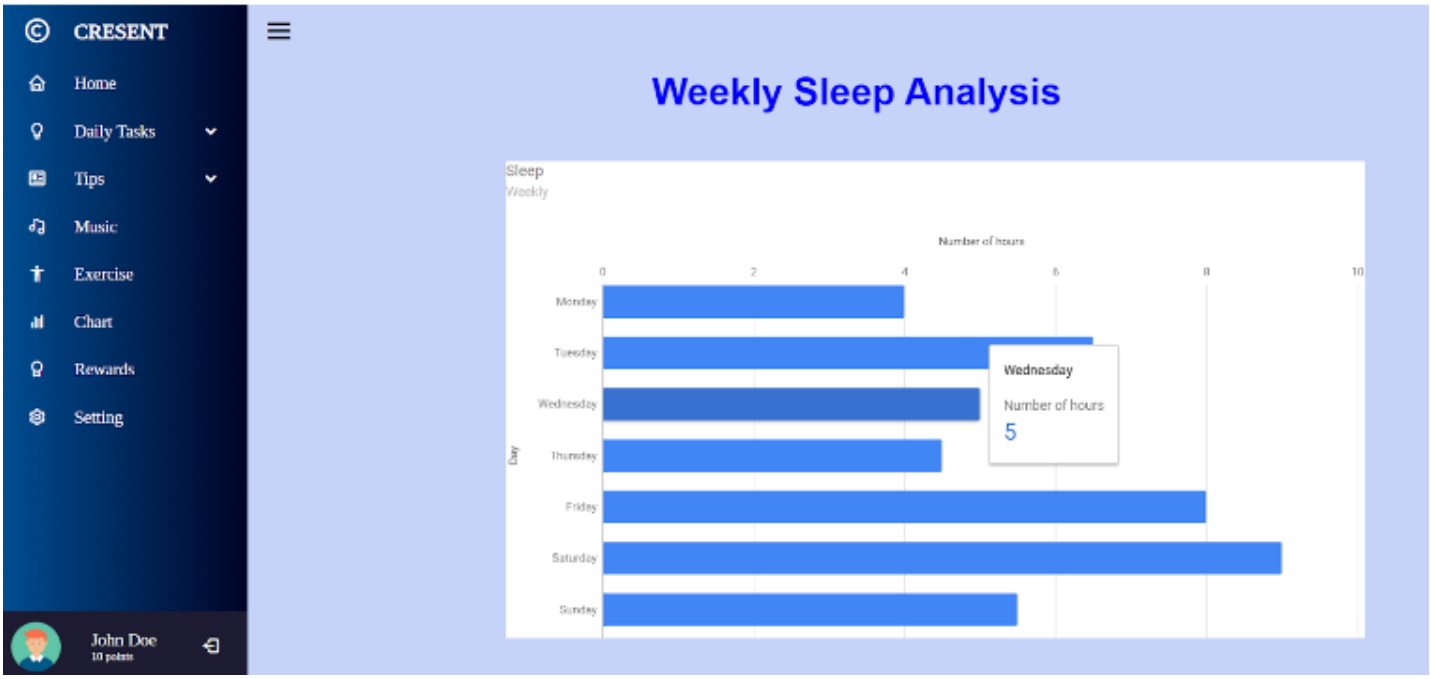

Cresent
WELCOME
We count it as a certainty that everyone naps in paradise.
Login With Email
Don't have an account? Sign Up


Welcome back, Afreen!
Some tips for you
2105
points
Calm
Relax
Focus
Anxiety
9hrs
Play Now
Daily Tasks:
Night Task
Morning Task

High fidelity prototype was a website prototype coded using HTML, CSS and JavaScript. This was nearer to the actual real-world prototype with its design specificity and functionality. Changes are more difficult to make in this high fidelity prototype and thus are followed after the low fidelity prototype of Figma. There were changes between these two prototypes as it is much more difficult to code the actual desired interface and functionalities.

The High fidelity Website is as below:
http://cresent.surge.sh/




CRESENT
Home
Daily Tasks
Tips
Music
Exercise
Chart
Rewards
Setting
John Doe
10 points
Weekly Sleep Analysis
Sleep
Weekly
Number of hours
0
2
4
6
8
10
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Day
Wednesday
Number of hours
5

TECHNOLOGY STACK:

A tech stack is the combination of technologies a company uses to build and run an application or project

The following technologies were used to reach at the end of the prototypes:

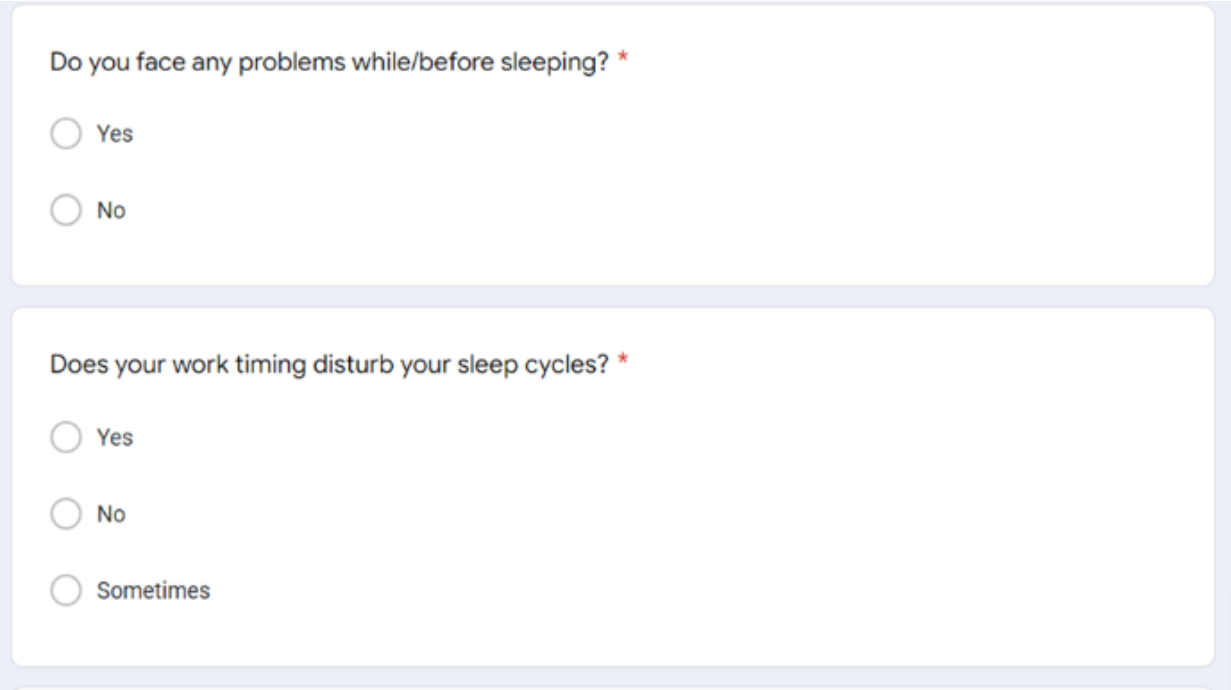
- Figma tool
- HTML
- CSS
- JavaScript
- Node js
- Online domain (surge.sh)

Our Data Gathering process:

This explains the method we followed to collect data and the methodology we applied.

We learned about the user's sleep cycle by filling out forms(https://forms.gle/1FjyP2cXGn45ctkGA) and collecting data via questionnaires with open-ended and closed-ended questions. We also utilized a Likert scale to quantify several items with scales from 1 to 5.

For convenience, screenshots have been included.



How long does it take you to fall asleep once in bed? *

- 5-10 min
- 10-30 min
- 30 min+

If you wake up in the middle of night, how long do you stay awake? *

Short answer text

What is the reason to wake up in between the sleep?

Short answer text

How often do you feel exhausted or drained in the morning after waking up? *

	1	2	3	4	5	
Never	○	○	○	○	○	Always

How often do you take sleeping pills to fall asleep? *

	1	2	3	4	5	
Never	○	○	○	○	○	Always

Do you find it useful if some app monitors and helps you in improving the quality of your sleep? *

- ◯ Yes
- ◯ No

How likely is it that you recommend others to use the app? *

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	More likely

OUR EXPERIMENTAL DESIGN AND ITS JUSTIFICATION:

This section describes the main objective of our experimental design and also why we chose it.

Our major goal in our experimental design is to increase sleep quality, thus we designed our website where they get a task reading interesting stories according to their mood and solving little puzzles, similar to how we read stories in video format on our phones before going to bed. The stories will be lullabies to them, assisting users in falling asleep quickly after getting into bed.

After testing with a few people, we discovered that if they select the appropriate mood before beginning the game, they will receive pleasant stories tailored to their mood, which will aid in their sleep.

DEMOGRAPHIC INFORMATION:

This section contains the users' personal information, such as their age and gender.

- Age
- Gender

Name	Age	Gender
Razina	16-20	Female
Yaswin	16-20	Male
Twisha Khurana	16-20	Female
Venkata Sai Saran Granc	16-20	Male
Rishwik	16-20	Male
Vikas	20-25	Male
Ananya	20-25	Female
Karthik raja	16-20	Male
K Vineetha	20-25	Female
Sivapuram shanmukhara	16-20	Male
Mathamsetty krishna akh	16-20	Male
Suyash bagul	16-20	Male
Kumkum Mittal	16-20	Female
Payas Gakhar	16-20	Female
Nishita Namdeo	16-20	Female
Rohith	16-20	Male
Muskan	16-20	Female
Divyanshi Singhal	16-20	Female
Kriti Shrivastava	20-25	Female
Shubham kumar	16-20	Male
Jyotiraditya Singh Rathor	16-20	Male
Jitesh	20-25	Male
Digvijay Rana	16-20	Male
RAA	16-20	Male
Alupana jawahar reddy	16-20	Male
Saketh Anchu	16-20	Male
Nipun Agarwal	16-20	Male
K.SAI NITHIN	16-20	Male
Yashika	16-20	Female
Siva Edeti	16-20	Male
Divyam Jain	16-20	Male
Sai Ram Reddy	16-20	Male
Mayank Sharma	20-25	Male
PRIYA GUPTA	16-20	Female
Muskan	16-20	Female
chandu	16-20	Male

Descriptive analysis

A tech stack is the combination of technologies a company uses to build and run an application or project

Age segmentation:

Age segmentation is a key demographic factor since people of different ages react differently to different scenarios, and we discovered that the sort of tale provided to users based on their age is crucial.

Gender segmentation:

Gender segmentation is also significant, and we are grateful for the 32.5 per cent female participation rate.

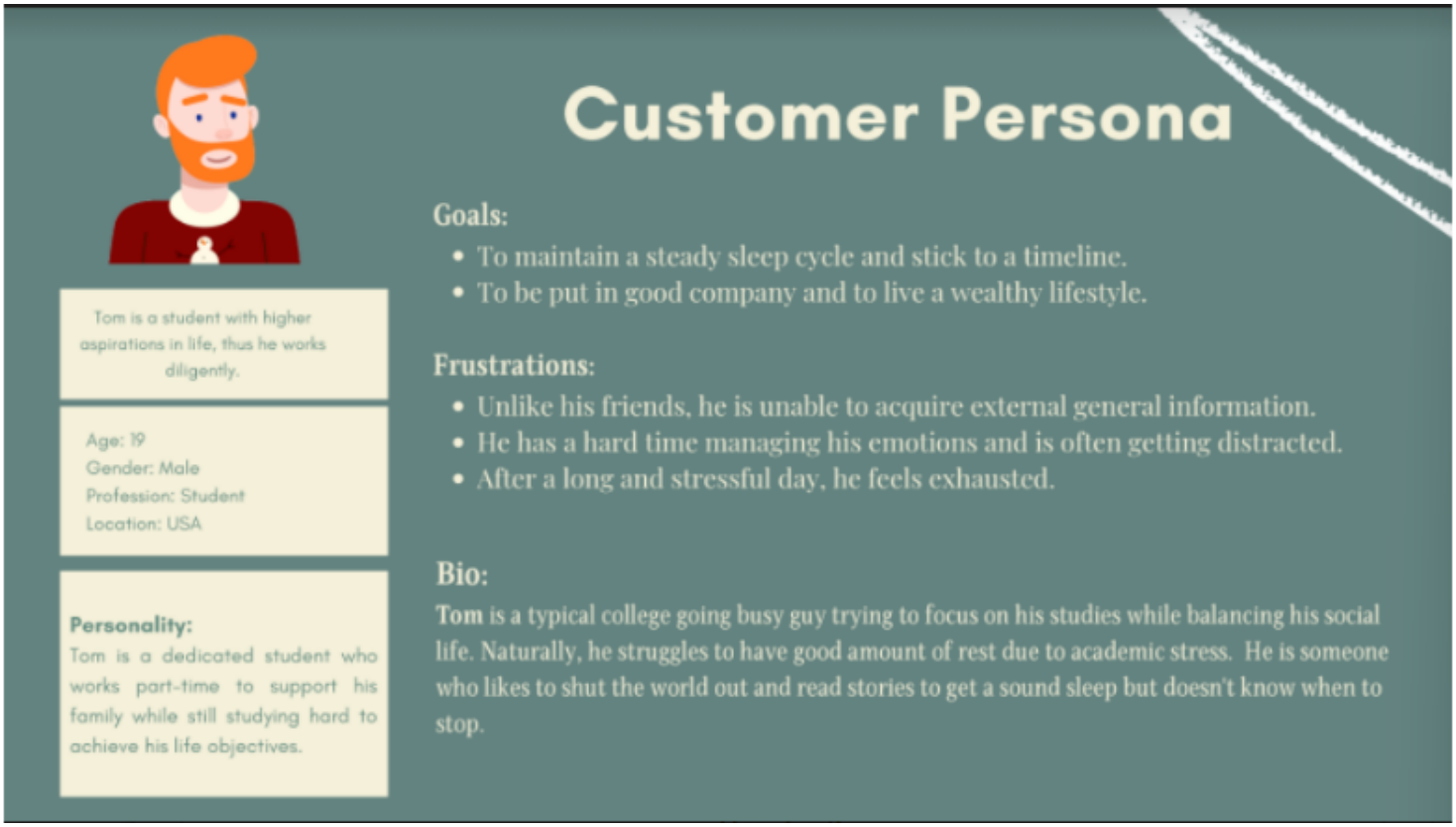
User research

This is a description of results obtained from the user survey.

For the finest results in anything, research is critical since it uncovers the hidden facts that may surprise us. We did the same thing here, and we ran a study on different people's sleep cycles. From this survey, we learned that an individual's job cycle disrupts their sleep cycle, and as a result, people frequently suffer from bad sleep.So, after hearing this, we were curious to know what they do before going to bed, and we discovered that many people choose to listen to music or scroll through social media before going to bed.

USER PERSONA

This is a description of a fictional representation of your ideal customer



AFFINITY DIAGRAM

The affinity diagram is a business tool used to organize ideas and data

Terms related to sleep quality and monitoring:

Light	Reading	Yoga	Massage	Temperature
Diet	Music	Clothes	Studies	Tracking
Devices	Mood/Mental state	Meditation	Audiobooks	Age
Schedule	Exercise	Breathing techniques	Sleeping tips	Night routine

Yellow highlight - Ambience
Green highlight - Lifestyle
Blue highlight - Activity aid
Orange highlight - Profile
Violet highlight - Monitoring

What we used for our app:

Mood/mental state	Exercise	Reading	Schedule	Tracking
Light	Yoga	Music	Age	
		Sleeping tips		

Usability Testing

Usability testing is the process of assessing a product or service by putting it through its tests with real-world consumers.

Think-loud was the usability test that we conducted. When our user initially began browsing the website, the first thing he did was scroll through the above-mentioned scrolling bar, after which he proceeded to the side bar and methodically looked over each item one by one.

In the side bar review process, we have two blocks with drop downs, and he tried all the available methods to access them, such as with the side bar closed and hovering to obtain the dropdown and gone through them.

Finally, the user enjoyed walking through the interface and examining the side bar more closely. One recommendation from the user is that in the night task that we have, where there will be a number input range, the limit information line should be replaced because it is not noticeable.

HCI CONCEPTS USED

This describes the concepts of HCI that are used to build this application.

Assessment of usability goals

1. **Effective to use (effectiveness)**

Crescent app is effective in meeting its goal of gamified sleep motivation using the addition of stories in its favour as well as sleep monitoring

2. **Efficient to use (efficiency)**

Crescent app is pretty straightforward in its functioning, has clear directions as to what to do with each feature and doesn't bother the user with too many options rightly as a sleep-friendly app

3. **Safe to use (safety)**

The app rightly asks the user twice before logging out or deleting data or exiting from the app thereby supporting safety for the user

4. **Have good utility (utility)**

As of now the utility of the app is pretty limited as it is in its development stage but it meets the basic utility requirements of the app goals such as playing games, rewarding daily points so to motivate the user to sleep 7-9 hrs as frequently as they can, access of the quality and amount of sleep over a day and over a week etc.,

5. **Easy to learn (learnability)**

The app is straightforward and consistent in its functionality and has a limited number of functionalities as well which makes it a no problem for the user to learn the app's functionality.

6. **Easy to remember how to use (memorability)**

The app is consistent in its interface and the icons used to make for better readability and recognition and recalling for the users to support memorability

Assessment of user experience:

This describes the evaluation of the user experience

- The app interface is in teal theme associated with nature visuals, thus providing for a calm and relaxed user experience i.e., aesthetically pleasing.
- The gamified motivation goal accounts for a rewarding experience through points.
- It also accounts for creativity rewards for solving riddles
- The app provides a satisfying and an emotionally fulfilling experience for the user by getting to see the happy ending of the entertaining story
- The tasks are compact and enjoyable and fun to complete
- The unique rewarding of points based on the amount of sleep is motivating while the tips at the start of the app are helpful for the user to reach the required relaxed and calm state to sleep

RESULTS - INFERENCES

List of what we inferred from this project

- HCI elements directly impacts the success of the solution irrespective of how advanced the solution is
- Brainstorming, affinity mapping is an essential process for designing and coming up with potential or possible solutions
- Clearly defining our audience/customers with user persona boosts our user data gathering and design thinking
- Going through first the low fidelity prototypes and then high fidelity prototype while designing for efficient work
- Keeping in mind of usability goals while thinking of features and user experience while thinking about interaction design
- user-centered design is always a plus point as much as an essential part of effective human computer interaction

Conclusion

What we can conclude about the work regarding the project

Overall, Crescent app effectively uses the addiction and satisfaction in indulging in a story to form better sleep schedules and habits while not compromising on usability and user experience goals.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank our Esteemed faculty Nishtha Phutela, who guided us in doing this project. She provided us with invaluable advice and helped us in difficult periods. Her motivation and help contributed tremendously to the successful completion of the project.

Besides, we would like to thank all the teachers who helped us by giving us advice and providing the equipment which we needed. Also, I would like to thank my family and friends for their support. Without that support, we couldn't have succeeded in completing this project.

Last but not least, we would like to thank everyone who helped and motivated us to work on this project.