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1. Background

As part of assignment 01, I chose to explore a key area in life: "Patterns of digital media engagement among young adults". This study aims to explore the modes of digital consumption among young adults, including the devices and platforms they use, their motivating factors to engage with digital media, and the pattern of their use. Young adults have unprecedented access to digital information thanks to smartphones and social media, and they utilize these tools to stay connected, informed, and entertained. Given the rapid pace of technological change and the ever-changing landscape of digital media, it is critical to understand young adults' **digital consumption habits** in order to design effective interventions and promote digital wellness.

Taking inspiration from the probe kit used in the 'Energy Babble Project' by Bill Gaver where he designed probes to understand patterns of energy consumption, I selected a few things that can resonate with documenting patterns of technology use. To understand patterns of digital consumption better, informative probes encourage storytelling of personal views, an aspect that is key to an enriching design process. When activities are mapped over a given period, it gives us a more meaningful insight into the user's day to day.

I sent out a set of 7 probes that present an opportunity for participants to leave their input on the research of their own will and with their own answers. The probes were designed for evocative tasks that can prompt a co-design strategy, based on 4 questions:

- What are some of the seemingly important factors that encourage individuals to interact with technology of any kind?
- When is technology perceived to be absolutely necessary? Are they influenced by necessity?
- What daily tasks do people carry out that don't involve using technology?
- How does engagement differ based on lifestyle, and schedule of work?

The probes have influenced the participants to be more mindful of their digital well-being in the following way:

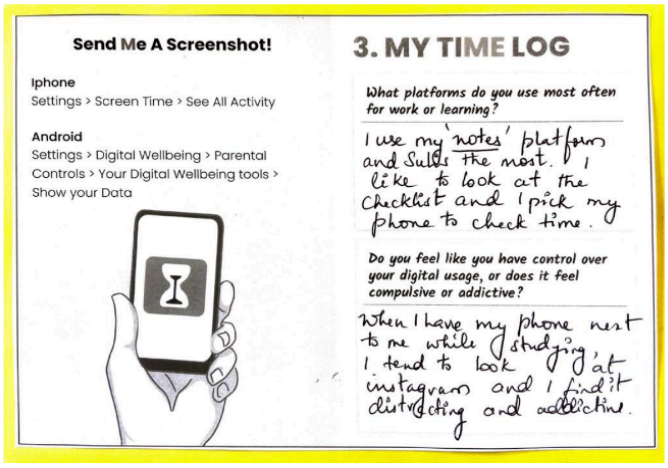
- Participants want to prioritize non-screen activities to break the cycles of screen dependency
- Phone free-zones at home or the workplace have encouraged participants to be more aware of their daily routine to help reduce screen-time cravings and improve focus.
- Participants only want to limit usage to essential communications and not be distracted by interruptions
- They want to set screen time restrictions: Use features on their phone or applications that allow them to set screen time limits and set precise goals for how much time they want to spend on their phone or screen each day.

From the probes, it is quite clear that **smartphone usage tends to be more prevalent among young adults compared to any device/gadget**. The data analyzed from the collected probes have led to the development of a design concept that can help users be more aware of their

screen habits. I devised the concept of creating a smartphone case that encourages people to flip their phones, thereby restricting phone usage

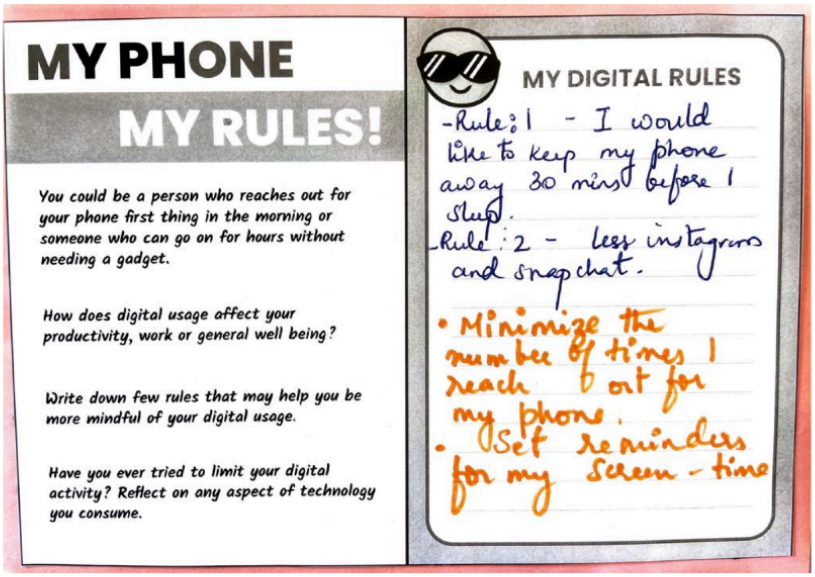
2. Ideas presented through probes

The response gathered from 5 of the 6 participants I recruited, generated multiple prompts to initiate a design intervention. From the gathered information, aspects that stood out to me or I found more prominent are as follows



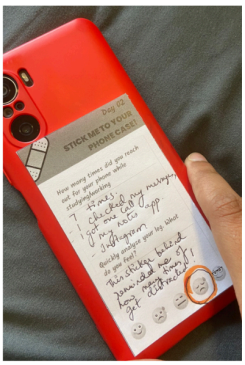
I use 'Notes' platform and Sulis the most. I like to make a checklist and I pick my phone to check time.

When I have my phone next to me while studying, I tend to look at instagram and find it distracting & addictive

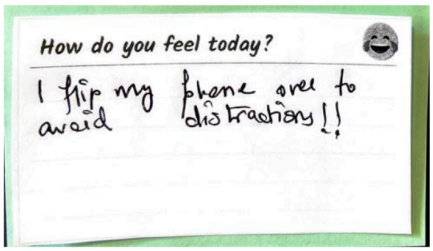


Rule: I would like to keep my phone away 30 mins before I sleep
Rule: Less Instagram & Snapchat

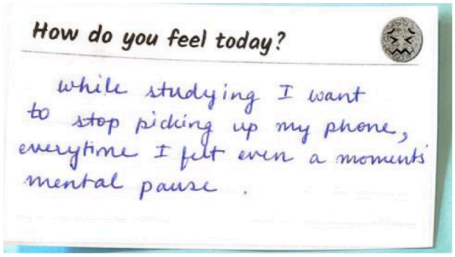
Minimize the number of times I reach out for my phone
Set reminders for my screentime



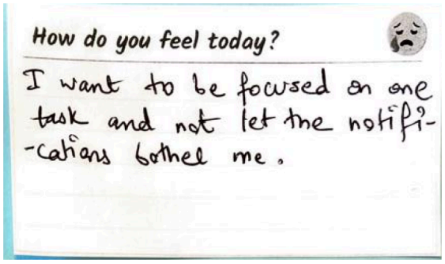
The sticker behind my phone reminded me of the number of times I get distracted



I flip my phone over to avoid getting distracted



While studying I want to stop picking up my phone every time I felt even a moments mental pause



I want to be focused on the task at hand and not let notifications bother me

Figure 1: Information from probes collected from participant

3. Initial design prompt

Concept 01

Design a **‘gamified application’** that helps users be more aware of their screen habits. Users want to be more conscious of their usage and the app can feature game elements, challenges, and reward systems to achieve a certain screen time goal in a day. They can set timers for certain applications and can be reminded by visual cues to notify their pattern and usage.

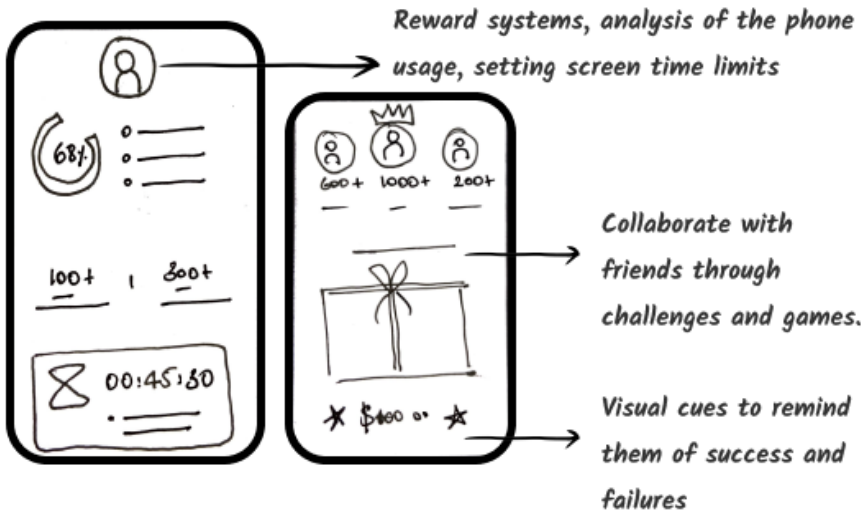


Figure 2: Concept sketch for gamified screen time manager app

Pros

- Comprehensive tracking: Apps can give detailed tracking of screen time usage, including information on which apps and activities are utilized the most frequently.
- Real-time monitoring: Many apps allow users to track their screen time usage in real-time, which can help them stay aware of their patterns and alter their behavior accordingly.

Cons

- App fatigue: Using another app to manage one's behavior may result in app fatigue, which leads to diminished motivation and uses over time.
- The use of a screen time management app may enhance a user's reliance on technology and their smartphone rather than encourage them to disengage.

Concept 02

Figure 3: Flip the phone over while focusing on the task at hand

The probe “Stick me to your phone case” nudged the users to be conscious of the number of times they picked up the phone while working on a task at hand. The common tendency among the participants was to **flip their phone over** (making the phone case visible) to avoid distractions but may need the phone to use applications that may be required while studying/working. Primarily, what I noticed was that users pick up their phones to strike things off the to-do list, change music or use the calculator when needed. They do not want to be distracted by other notifications or applications.

Pros

- Convenience: Using a phone cover as a screen time manager eliminates the **need for a separate device or application** to regulate screen time.
- Physical barrier: The phone case acts as a **physical barrier and a visual reminder** to limit screen time.
- Phone cases can be modified to meet individual preferences and styles, increasing user engagement and motivation.
- Limit functionality: Phone cases can **limit functions** when compared to specialized screen time management devices or apps.
- Encourages healthy habits: Phone cases can help users build healthier habits and lessen the harmful impacts of excessive screen time by giving **visual reminders** and incentives to reduce screen time.

Cons

- Device compatibility: Phone cases may not be compatible with all phone models, limiting their availability to some customers.
- Feasibility: Phone cases are usually meant to protect the phone and the usage of fragile material can hinder its function.

Finalizing design concept

On further evaluating both options, I decided to take up the phone case rather than designing a screentime management application. Applications are redundant since most smartphones these days have built-in managers that map your activity. These applications although have very poor retention rates and users find it hard to stay focused on their goals.

Why a smartphone case?
Phone cases are simple, unobtrusive, and customizable to a high degree. When people don't want to be distracted by notifications, they flip their phones over so that they can only view the phone case. I came up with the idea of making a smartphone case that encourages people to flip their phones, thereby restricting phone usage.

- Willpower, tips, and vague resolutions are not sufficient by themselves to tame the ability of new technologies to invade your cognitive landscape. Thus, the goal of my design is not to give people control over their minds or willpower but to give users a gentle nudge to live a more focused life consciously.

- The case functions by including a built-in system that monitors the user's screen time and delivers messages when they exceed their predefined limit. This input can help people become more aware of how they use their phones, allowing them to make better decisions about when and how to use them. Furthermore, the case can send users weekly or monthly reports that detail their phone usage patterns and highlight areas for improvement.

- One of the reasons why this idea works is due to its unobtrusive nature. The case does not require users to actively engage with it; instead, it runs in the background, quietly tracking their usage and sending notifications when necessary. This feature means that users can continue to use their phones as usual without feeling like they are being monitored or restricted

- Another reason this concept works is that it gives consumers autonomy and control over their screen time habits. Users are responsible for setting their own limitations and regulating their usage, rather than relying on external variables such as parental controls or app restrictions. This empowerment can assist individuals in developing a sense of ownership over their screen time habits, resulting in long-term behavioral changes.

Overall, the concept of developing a smartphone cover as a screen time manager has the potential to assist consumers in properly managing their screen time habits. This case can help users create healthier phone habits by delivering real-time feedback, allowing autonomy, and functioning invisibly, resulting in improved well-being, productivity, and focus.

State-of-the-art

Understanding usage of existing strategies & applications

I started looking at existing practices, strategies, and applications in the market that help users manage screen time and set goals for their digital activity.

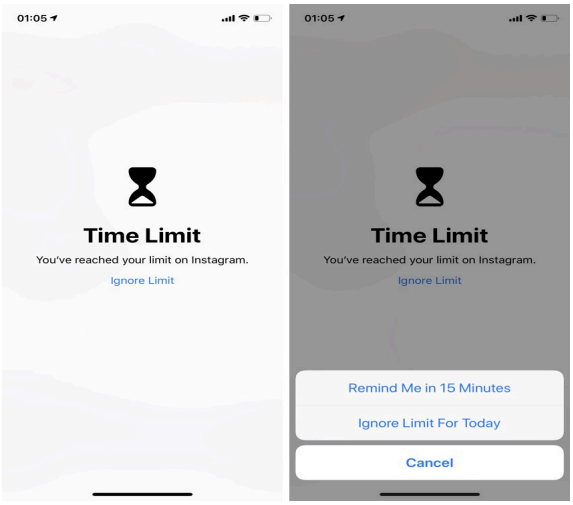


Figure 4: Instagram notification for time limits

Screen Time Settings/Limits:
Many devices now include screen time management tools that allow you to control app usage and screen time. Apple's Screen Time feature, for example, allows users to set limits on individual apps, measure usage, and even schedule downtime.

For example, on Instagram, the user is notified but **given options to ignore these reminders very easily.**

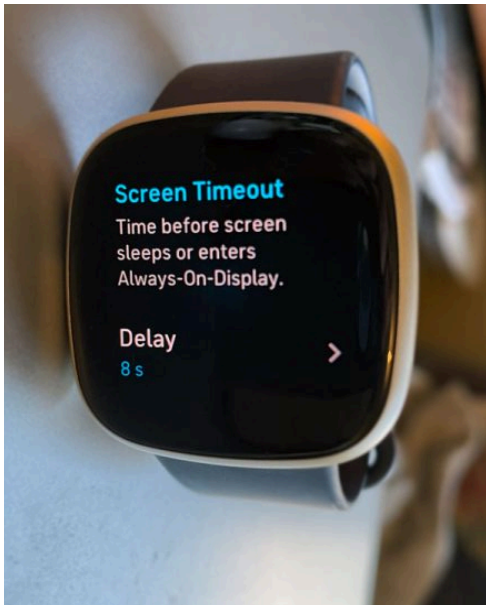


Figure 5: Fitbit screen-time alerts

Wearable gadgets, such as the Apple Watch and Fitbit, provide screen time management features that allow users to set goals and measure their usage. For example, the Apple Watch offers a feature called "Screen Time" that allows users to limit access to specific apps or types of content, such as social media or gaming. Users can also be notified when they hit their daily screen time limit, urging them to put down their devices.

Fitbit devices, on the other hand, offer a feature called "Reminders to Move" that reminds users to take a break and move around every hour. This function assists users in reducing screen time and being active throughout the day.

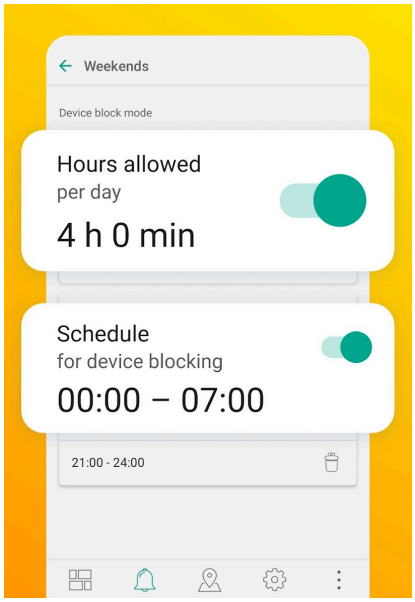


Figure 6: Focus@Will app

Apps that help you stay focused: Some apps are designed to help users stay focused and avoid distractions. Freedom, for example, enables users to ban specific websites and apps, whilst Focus@Will offers selected tracks designed to boost focus and productivity.

Many mobile devices now include built-in screen time capabilities that allow users to establish app usage limits, measure screen time, and receive device usage reports. According to research, using these capabilities can lead to less screen time and better sleep quality.

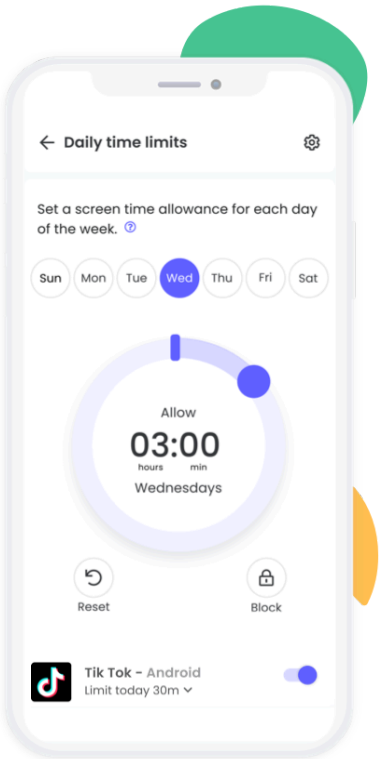


Figure 7: Qustodio app for parental control

Parental Control Apps:
These apps are intended to assist parents in controlling their children's screen time. Qustodio and Net Nanny are two examples of apps that allow parents to limit app usage, monitor online activities, and even track their child's location.

Digital wellness Apps:
There are a number of apps available that are expressly designed to manage screen usage and promote digital wellness. Forest, which encourages users to stay away from their phones by growing a virtual tree, and Moment, which records usage and offers daily updates on phone behaviors, are two examples.

User research

Figure 8: Focus group session

It is important to understand what distracts a user and what nudges them to be more mindful of their activity. I came up with 7 hypotheses and a questionnaire to further define how the smart case can function. For this, I conducted a focus group session to validate my hypothesis and gather more information on common practices and be more sensitive to my approach to understanding patterns of screen consumption.

The hypothesis is as follows:

" Even though I set screen reminders, I tend to ignore the notification and continue scrolling."

"The in-built screen time managers adds value to my screen time habits"

" I regularly use third-party apps to monitor and track my usage"

"I need to check on my notes or to-do list while I work or study to stay in track"

"The Do Not Disturb" feature manages my sleep cycles and limits my phone usage"

"I often listen to music while I am working on a task, it helps me stay focused"

"I consciously keep my phone away to not get distracted with notifications or alerts while studying"

After validating the hypotheses, I handed out a list of options to the participants to pick the top 3 functions or features of the phone they would require while working on a task at hand like studying/working. The questionnaire looked as follows

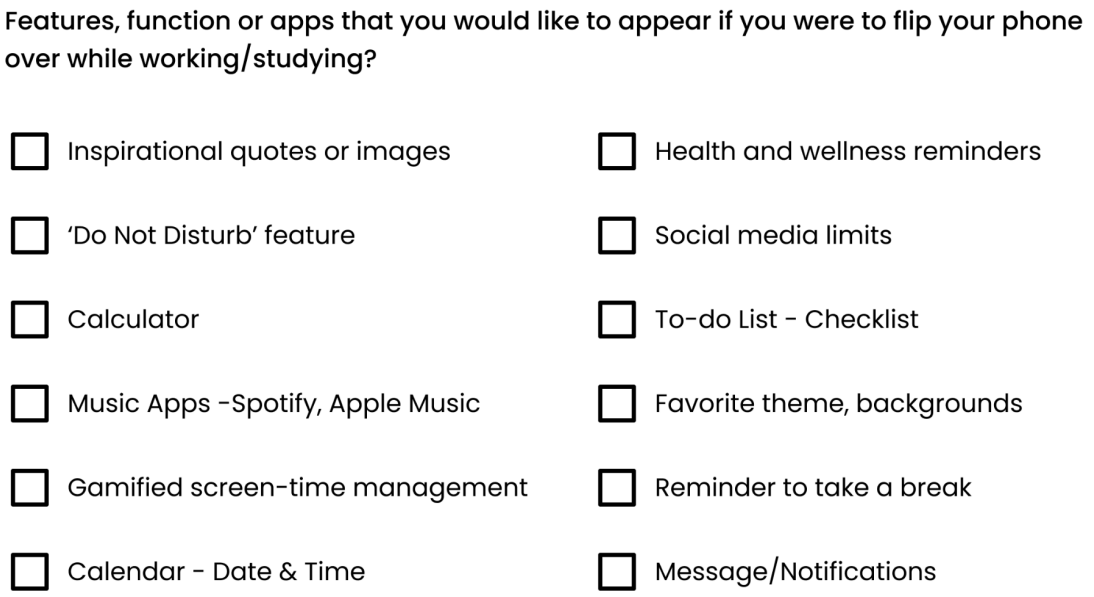


Figure 9: Questionnaire

Summary of findings

From the session, I concluded the following aspects:

- Users want partial access to their phones when working on a task at hand so they stay focused and use functions that are only necessary
- A to-do list acts as a nudge that helps users to check things off their list and feel a sense of accomplishment
- A gamified screen time manager can help the user stay more motivated to practice efficient habits
- Music helped certain users to stay focused and can help them block out any other distractions in the surrounding
- In-built apps are not used or do not add value to stay motivated. The analysis shows way too much information but is useful to people who can stay motivated.
- Calculators are commonly used when studying/working
- Messages and notifications are the primary sources of distraction. On opening a push notification it leads the user to open apps that may not be required at that moment.
- Flipping the phone over to avoid any distractions was a common practice among the participants
- The Do Not Disturb feature is useful but not as used as the participants want.

4. Concept-to-Design

Brainstorming App Features

I created a Miro board with information gathered from the focus group session. From the validated hypotheses and survey, I was now able to categorize features based on hierarchy and need.

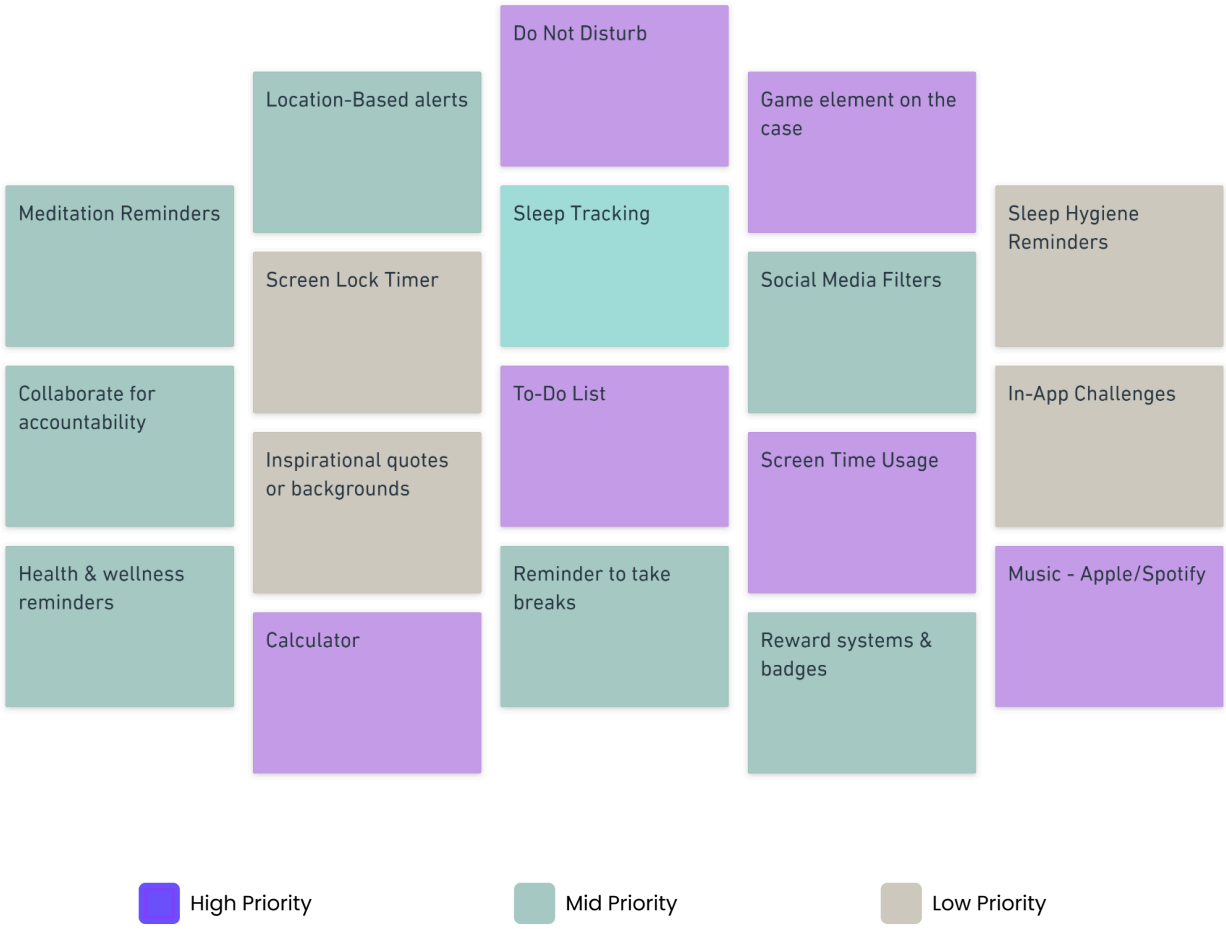


Figure 10: Brainstorm app features

Mindmaps

For the initial design version of the product, I prioritized the features highlighted above and mapped out what can be static on the case and the widgets that can be dynamic or customizable. I wanted to give a high level of freedom and customization to the user based on

their needs so any 4 widgets can be visible on the phone case.

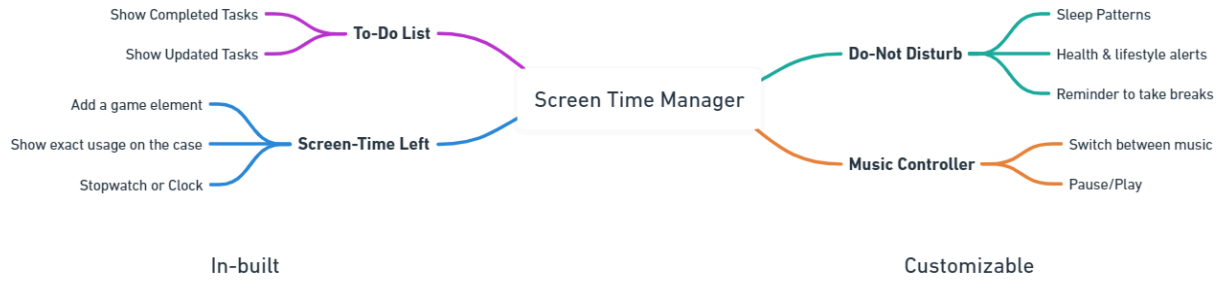


Figure 11: Mindmap

Application Structure

Following is the phone case and app structure for HourGoals

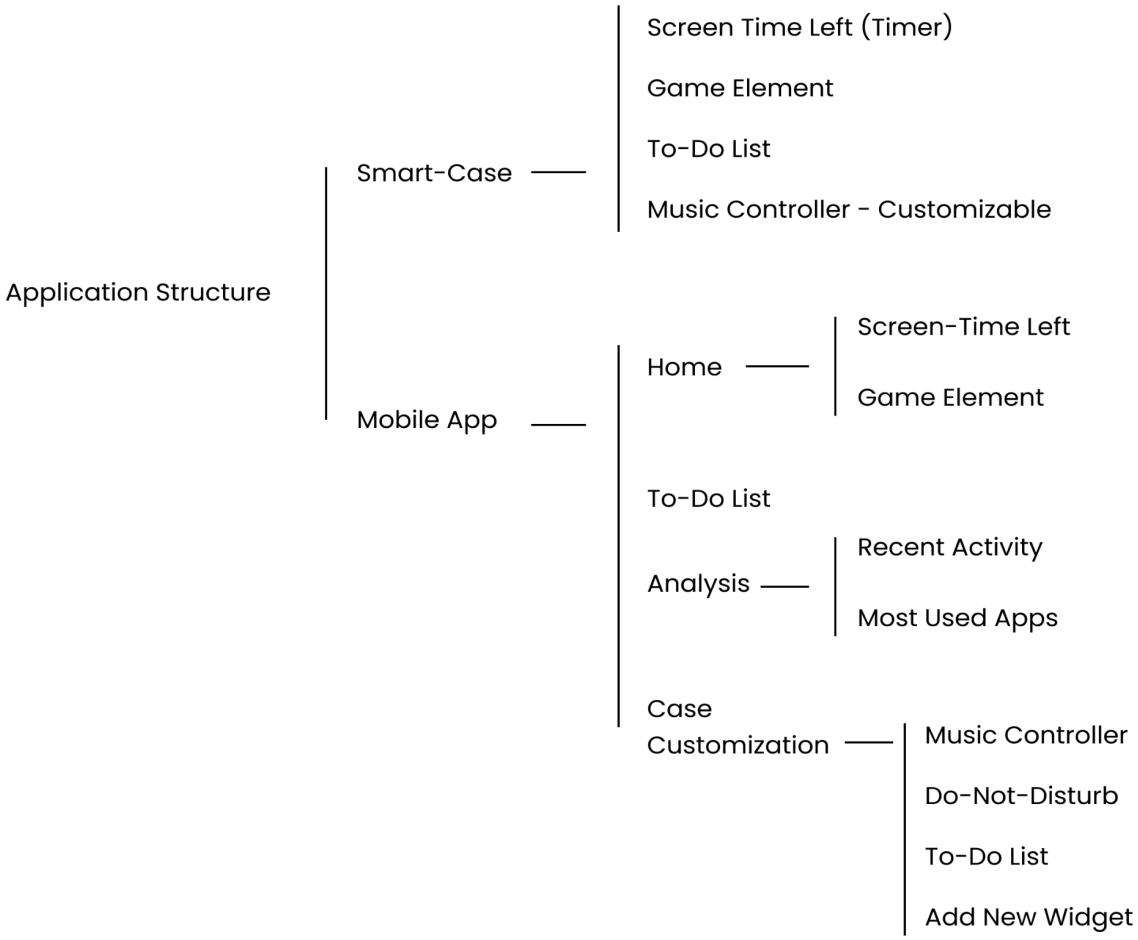


Figure 12: Application Structure

Exploratory Sketches

I began by sketching out ideas in low fidelity. The emphasis was on the information displayed on the phone case as well as the techniques used to encourage customers to flip their phones around. Finally, I chose the hourglass metaphor to represent the concept. The game element added to the phone case is a fish whose life is dependent on your screen time and usage. If the user exceeds or surpasses the time limit, the fish loses its life.

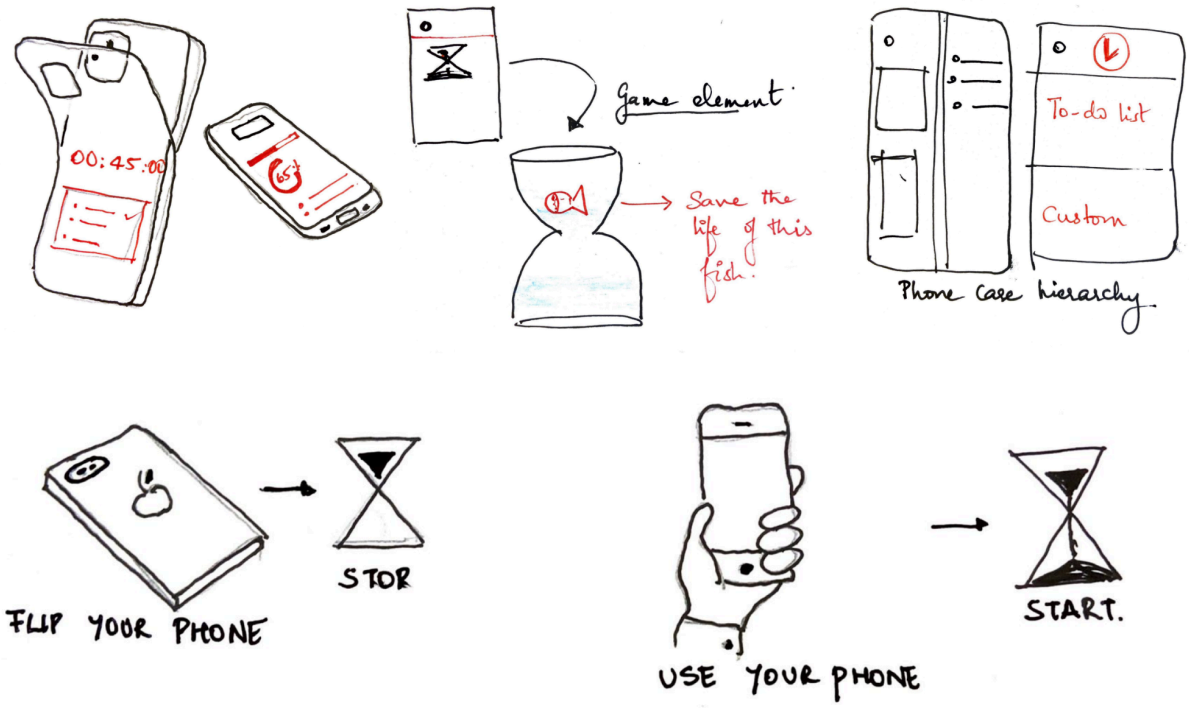


Figure 13: Exploratory sketches to further define the concept

To begin, an hourglass is a gadget that is used to quantify the passage of time, which is similar to screen time management. I wanted the user to find a synergy between the hourglass and their goals, hence naming the application/case; HourGoals. Second, the action of flipping the phone is similar to that of turning the hourglass. I'd like to take advantage of this link to help users become more conscious of their actions.

Low-fidelity Screens

To understand the link between the phone case and the application, I sketched out the hierarchy of the phone case first. The phone case should primarily have three sections that can enable 4 widgets to be displayed at a time

For the application, I started wireframing what all screens would be required for the user to enable certain features on the smartphone case. Following are the preliminary app sketches:

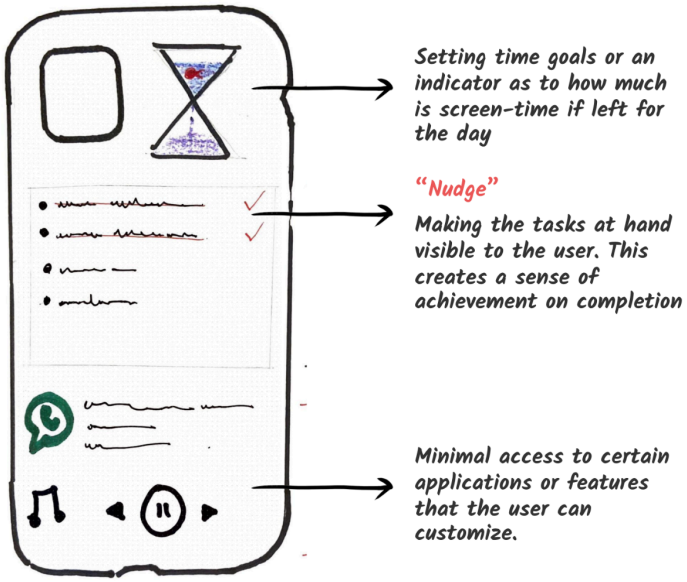


Figure 14: Phone case initial prototype sketch

- A nudge or a reminder to show your goals or how much time is left in a day. This is the gamified visual reminder where the user has to keep the fish alive in order to meet the goals

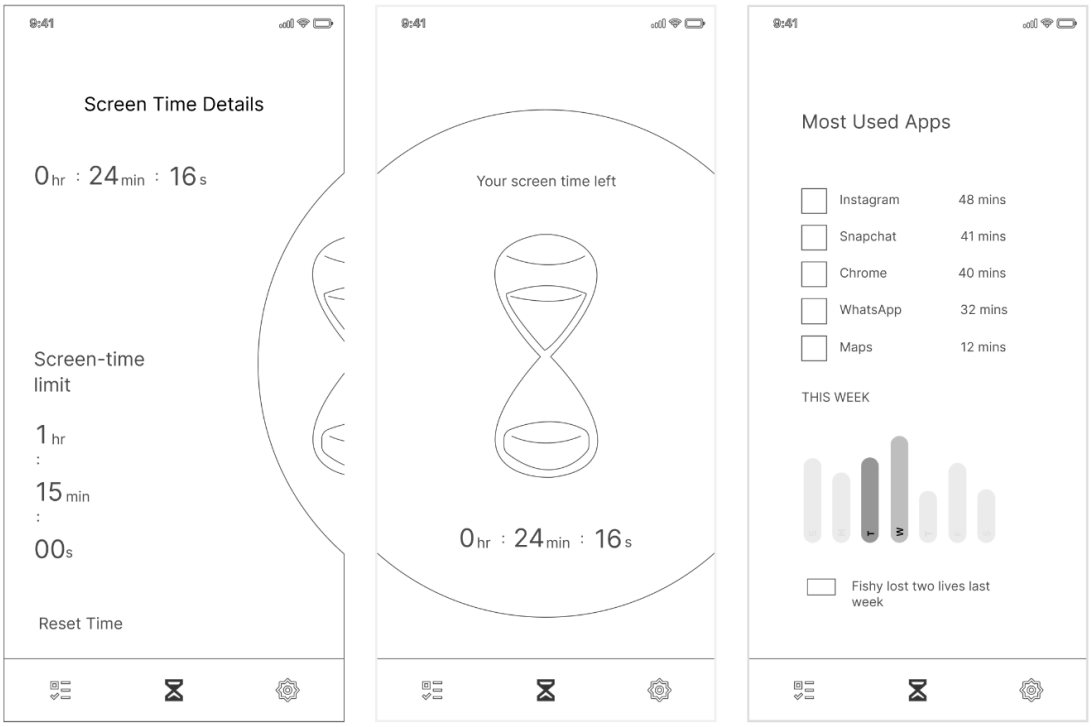
- A to-do list helps users stay focused on the task at hand. It can help avoid distractions and checking items on the list helps create a sense of achievement and stay motivated toward your goals

- Customizable area: For the first version, I have kept the bottom area customizable but has a music controller enabled by default. This is a customizable widget

Once I finalized the features to be displayed on the phone case, I created wireframes of how the app can sync to the smart case. Screen time management apps are often meant to be user-friendly and simple to use, especially for individuals who are not technically smart. To make the experience more engaging and interesting, the app has employed gamification tactics such as keeping the fish alive. To make the information more engaging and easy to understand, the app offers visual representations of the user's screen time data, such as graphs, charts, or infographics. Hourgoals enable users to follow their progress over time, giving them a sense of success and inspiration. Also, the app uses simple language and presents the benefits of screen time management in a clear and concise manner.

Following are the initial wireframe screens for HourGoals

Wireframes



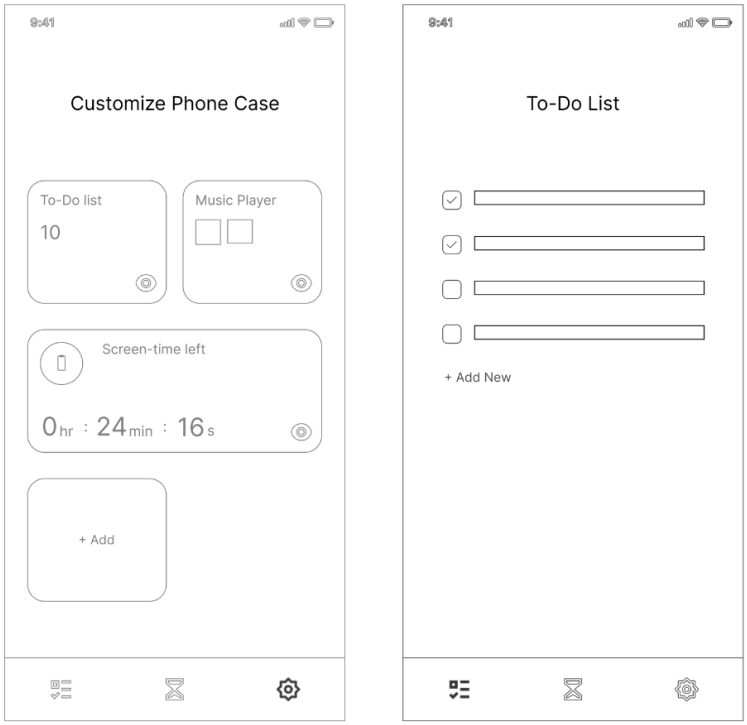
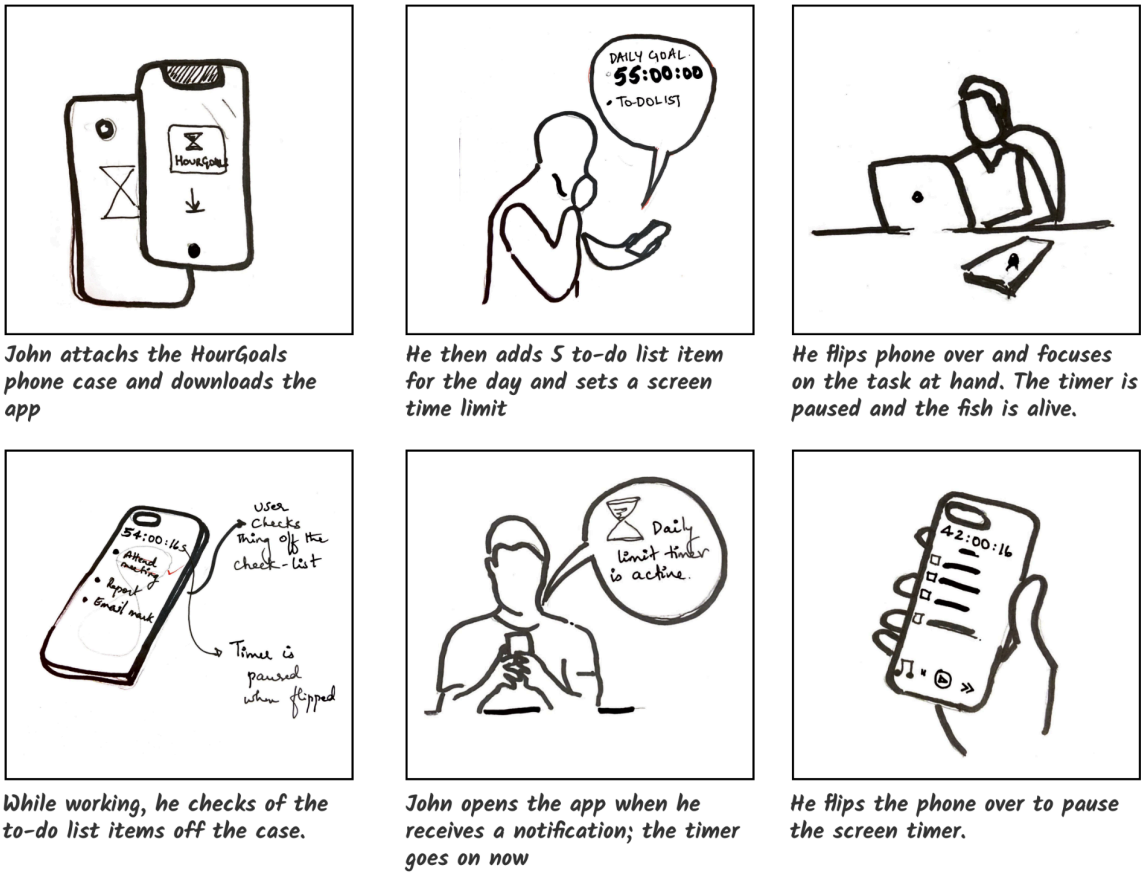


Figure 15: Wireframes

Storyboard

Scenario: The user has purchased the smartphone case and would like to schedule their day. He/she needs to update their to-do list and add 5 tasks to be completed for the college report. The user has to set a screen-time goal along with this.



John attachs the HourGoals phone case and downloads the app

He then adds 5 to-do list item for the day and sets a screen time limit

He flips phone over and focuses on the task at hand. The timer is paused and the fish is alive.

While working, he checks of the to-do list items off the case.

John opens the app when he receives a notification; the timer goes on now

He flips the phone over to pause the screen timer.

Figure 15: Storyboard

Prototype

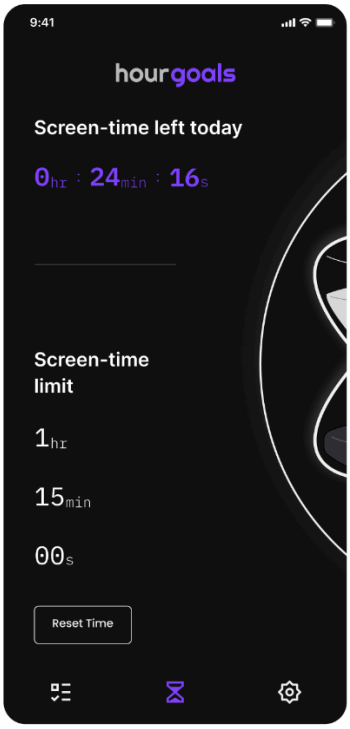
After finalizing the functions of the case and the app, I began to conceptualize the theme of the application with a focus on gamification. I wanted the look and feel of the application to give the user a sense of taking up a challenge and should stay motivated to flip their phones over whenever possible. For the smart case, I used a phone case mock-up to iterate and finalize the final layout. The HourGoals app was designed with a darker color palette similar to gaming applications and quirky font styles to make the user feel like it's a game.

I began designing my final screens on Figma with 3 main components in the first version of the application;

- Set screen time,
- Sync the to-do list,
- View analysis of usage

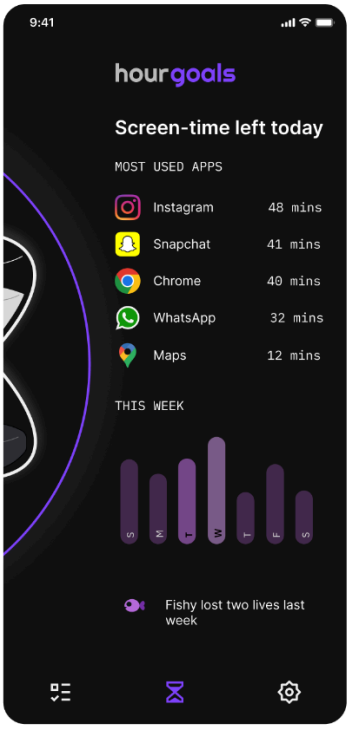
Final screens & mockup

Following are the final screens made on Figma. I tried using gesture interactions to slide to the two sides of the screens. The background of the screens resonates with the clock and the hourglass in the center has a fish swimming in it. The goal is to keep the fish alive while you are mindful of the time spent



Reset daily timer

Home page



Anaysis

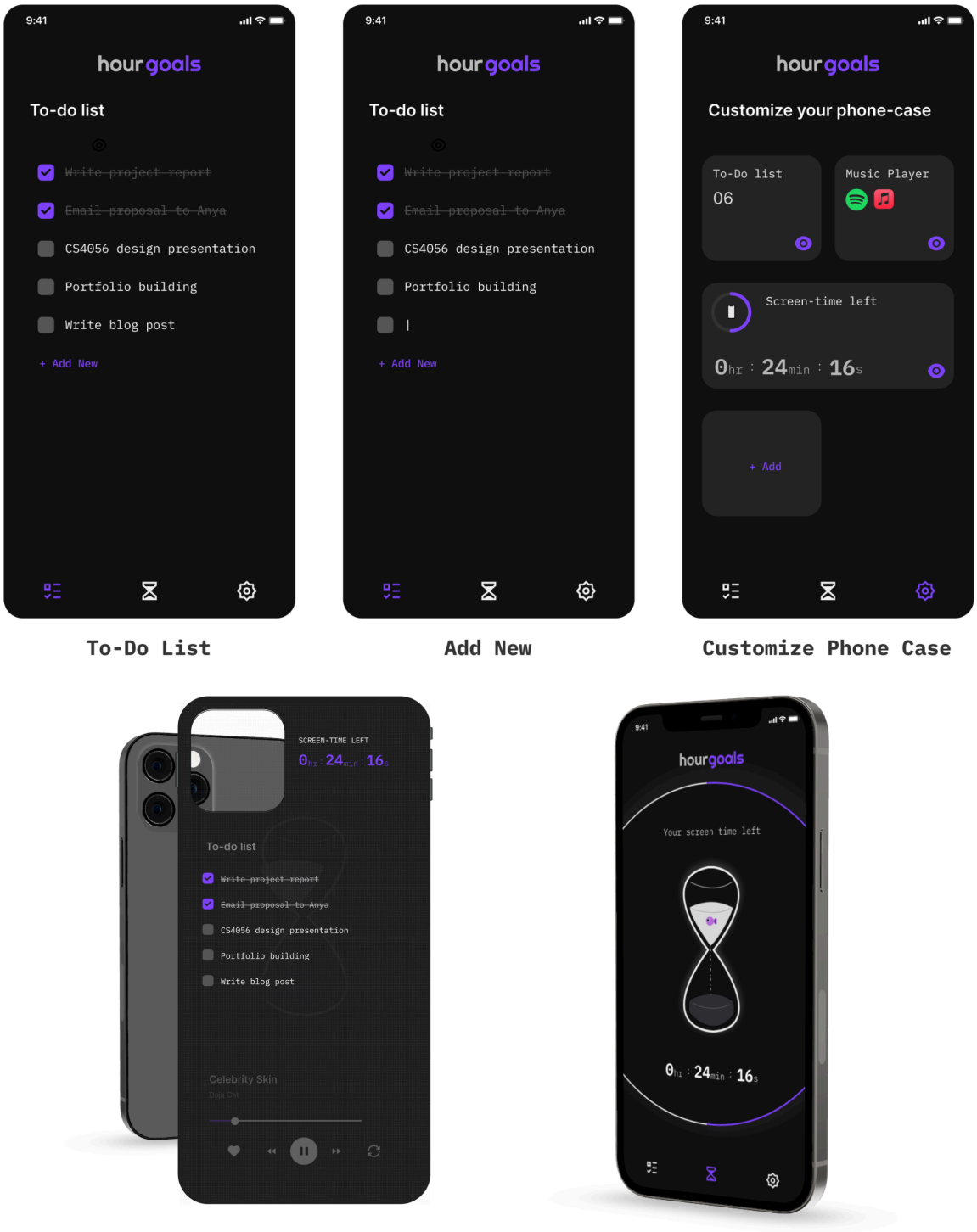


Figure 15: Final screens & Mockup

Product Video Demo

I wanted to create a product demo to explain the function, concept, and working of the HourGoals smart case and the application, since my animation expertise wasn't the best. I first created product shots with the final screens and used mockup libraries to present the screen. I stitched these frames using the smart-animate feature on Figma. Watch the full video here

Follow the link below to test the clickable prototype
Link to Figma prototype

Watch the video presentation here

5. Learning & Takeaway

Moving further, the material for the phone case must be examined. It will be necessary to perform research into how to incorporate the app into various materials and designs. Additionally, the degree of flexibility must be considered, as some users may prefer a more rigid or durable case, whereas others may prefer a more flexible and lightweight material. For the app's user interface, simplicity and clarity are key. Users should be able to simply browse and grasp the app's functionality without needing additional instructions or support. As a result, I concentrated on building a clean and basic design that allows users to rapidly access the app's main functions. Gamification features can make the software more enjoyable and engaging for users. For example, I included elements like "save the fish" to encourage people to limit their screen time usage.
Finally, building a phone case app for screen time control necessitates a careful mix of technical feasibility, user experience design, and customizing possibilities. We can design an app that effectively encourages users to regulate their screen time habits and promotes healthy device usage by taking these aspects into account.