

CS 649 — Final Report — Accomplife

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1. DESCRIPTION OF THE PROJECT

There are a lot of goal setting and task management applications and techniques, from scribbles on a piece of paper to dedicated software, and numerous tools in between. However, users in general devise alternative methods of task management tools to "make it work" for them. This results in wasteful utilization of time and loss of information across multiple tools, which eventually defeats the point of the tools regardless. The majority of apps on the market today which advertise themselves as helping users achieve goals are little more than to-do lists or just reminders. They do not provide the functionality of setting goals, nor helping users go about achieving them, nor do they help users organize the priorities or schedules for their tasks. Smart and effective planning is an essential part of achieving any goal, and yet this aspect is lacking in the current selection of apps available today. With this project we plan to help people achieve their various tasks in a timely fashion, as well as to make time for any other often-neglected goals they may have.

At present, we have applications for managing health, academics, music classes, shopping, creative writing, paying bills, etc; but the application marketplace is lacking a single integrated platform which brings all of these actions together. Another problem is the lack of simple and automated tracking process, so that routine tasks and goals become easier and easier to complete. In this regard we want to reduce the hassle for users who struggle to manage multiple applications to help them with their daily tasks.

Furthermore, there are no apps currently available that help users to break down long-term objectives into easy-to-manage actions or sub-tasks, and integrate them into one's busy schedule. The users lack a streamlined, easy-to-use method of creating and managing big-picture goals and the tasks to get them there. The present applications allow setting abstract goals (e.g. to get in physical shape) but do not know how to create actionable tasks that would ultimately lead to achieving these goals, nor how to fit them into the user's everyday schedule (e.g. to stop eating junk food; or to make a habit of running for thirty minutes, at 8:00 AM, five days a week).

It takes time to accomplish goals, and sometimes it can feel that one isn't making much progress. That's why it's important to take stock of everything that one has accomplished on a regular basis. If one doesn't estimate goal completion time accurately, it can be discouraging when things take longer to achieve than one thinks they should, and this can result in giving up. Setting small sub-goals, celebrating successes, and analyzing what is necessary to keep moving forward is important. Some of the problems that need to be resolved while planning the product include reassessing goals when priorities change, and reassessing the amount of time required for a particular goal-related activity.

2. GOALS AND HYPOTHESES (OMAR)

Having to use multiple apps to manage your day-to-day task can be hectic and inefficient. One of the goals for this app is to improve efficiency and streamline multiple apps for the user to reduce the burden of managing various apps such as calendar, to-do list, notes and reminders.

Another goal is to help people manage and achieve their short-and long-term goals. The goal is to provide the user an efficient way to turn long-term goals into achievable steps called 'sub-tasks'; and to incorporate multiple tasks and objectives into a user's schedule in a way that is manageable. Previous research has suggested criteria for such as task breakdowns, for instance the tasks should be Specific, Measurable, Actionable, Realistic and Time-bound (SMART) to be efficient and achievable [3]. As noticeable from the above two points, our goal is to improve efficiency of goal management and to integrate multiple functionality into one to reduce users' cognitive load.

One of our primary hypotheses is that many tasks that are urgent but not very important are assigned a higher priority than various non-urgent goals. This dichotomy is often attributed to former president of the United States Dwight Eisenhower [4]. The former tasks are often added to users' schedules and to-do lists, while the latter are often postponed indefinitely, as many users dubiously claim that they will "get around to it one of these days". This tendency has been noted in previous research, such as the Mere Urgency Effect [12]. One aim of our exploratory user study is to examine the difference in treatment between the aforementioned tasks and goals.

We also hypothesize that managing these different kinds of tasks and items across multiple scheduling platforms can be tedious for a user's ability to accomplish those tasks. We posit that such effects may generalize to other situations of scarcity as well, such as time-scarcity or attention-scarcity. In short, it suggests that one's concerns consume one's mental resources.

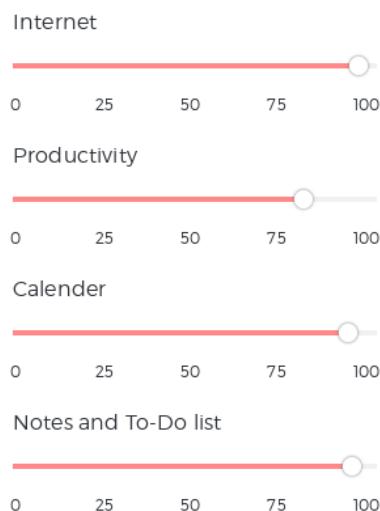
PROJECT: untitled



Demographic

Male 24 years
Toronto
Single
Student and a freelancer

App and internet Usage



NAME

Mathew Goes

TYPE

Artisan

Background

Mathew is a student and a creative developer working across contexts of data visualization and app development as freelancer. He is also has to keep track of his assignments, projects, quizzes, and exams. He has tried multiple methods such as sticky notes, productivity apps, reminders, but hasn't found a one to stick with.

Quote

I would like to be able to prioritize my daily tasks better so that I can find a balance between career and life goals...

Needs

1. To be able to keep track of my school work as well as future projects I want to work towards.
2. A common-place I can keep and build my schedule.

Frustrations

1. Missing a streamlined way manage daily tasks and long-term goals.
2. Cluttered systems and tedious usability.
3. Managing sticky notes, to-do lists, setting reminders is very inconvenient.

Figure 1. Sample Persona

PROJECT: untitled

NAME
Emily Schofield

TYPE
Rational

Background
My work bridges research, strategy and storytelling to design emotionally meaningful experience for people. Currently a Brand Experience Director at a organisation in NYC. She has a very busy schedule and wants a way to keep track of multiple tasks while working on a long-term goal.

Quote
“It is necessary to define what I am working towards and how I'll get there...”

Demographic

- Female 36 years
- NYC
- Married
- Brand Experience Director

App and internet Usage

Category	Usage Score (0-100)
Internet	85
Productivity	60
Calender	90
Notes and To-Do list	80

Needs

1. Tool that can streamline calendar, to-do list, reminder into a integrated platform so that can keep track of my goals
2. A reliable method to manage between personal and professional life.

Frustrations

1. Goals that quickly feel obsolete due to rapidly changing circumstances.
2. Managing multiple apps feels inconvenient and obsolete.

Figure 2. Sample Persona

Having one's goals and schedule items noted and organized in a single application may serve to greatly reduce the associated "cognitive load"; and as a result, may help users accomplish those goals.

3. TARGET USERS AND USERS FOR THE STUDIES (ISHANK)

AccompLife is slated to be an application to assist in the accomplishment of short and long-term goals. These goals may be long-term dreams and singular ambitions such as learning a new language, or they may be day-to-day tasks such as buying groceries. As such, most people could benefit from Accomplife, and we are disinclined to exclude anyone who wishes to use our app. That said, the people we think might benefit most from our app would likely fall into one of the following categories.

The first user group that we identify here is the group of high achievers and dreamers. These are the individuals who have identified long-term goals such as changing one's diet; exercising regularly; learning a new language; spending more time outdoors or with one's friends and family. For these goals, there is no singular end result, but rather the cultivation of a habit that they want to persist in longer period. Many of these tasks are daunting, and users may not always know how to start, or how to persevere through setbacks and issues. It is necessary to break-down these goals into smaller tasks to make them achievable. A good place to look for participants from this user group is students in competitive university programs, where international students might be trying to learn and improve a language; people who are working in industry trying to keep track of their health and fitness, or keeping track of a work in a project which may takes months, where they need to keep track of multiple entities.

The second user group we wish to reach is people with a lot of small and daily commitments. This group may consist of those with following goals: studies, family members to care for, buying groceries, volunteer work, meeting a friend etc. These are people who have many small but important goals and may not know how to balance all of them. For these people, it is important to find a balance between their many individual goals without burning out or having to compromise. Most graduate students at most universities, including the University of Waterloo, fall into this user group, as they balance commitments to research, classes, teaching assistant-ships, and other extracurricular duties. Also, people with children can have tasks like keeping track of a parents-teacher meet, taking/picking their kid to/from music classes etc. People from this group generally tends to remember their tasks mentally, but have a tendency to forget when cognitive load builds up.

In our studies, we want to focus on students from the University of Waterloo who try to balance commitments to research, classes, teaching assistant-ships, and other extracurricular duties. This group uses calendars, to-do lists, sticky notes, scribbles in Notebooks, multiple productivity apps etc. to keep track of their assignments, projects, quizzes or correcting TA assignments. Along with heavy load of daily tasks, students do have long-term goals like joining a university for further

studies or improving coding and technical skills for an interview. This user group will allow to test our application on multiple parameters such as efficiency on integrating a scheduler and a to-do list or minimalist interface to reduce friction in maintaining and updating goals.

The personas corresponding to the user groups can be referred to in fig.1 and fig. 2

4. PLAN FOR INITIAL EXPLORATORY USER STUDY

As a part of this project, we will be looking at the lifestyle segmentation, based upon multivariate analyses of user attitudes, behaviors, perceptions, and interests. Our methods of choice to gather this information are the qualitative research techniques of semi-structured interviews. The interviews will provide the necessary insight, the conceptual knowledge, and the user's exact language needed to design the initial sketches. We plan to use precise comments from users to build lifestyle statements and to inform us of how they might want to use such an application [11].

Our primary focus is to conduct in-depth interviews with a group of participants from different user groups, but primarily focusing on UW students. This is to get insights into their habits, their long-term and short-term goals, and what they look to achieve when using a productivity and planning app. Through the interviews, we intend to learn how open-ended or restricted we can expect users' tasks to be, as well as how users plan to achieve their tasks. We also want to learn whether they are able to use existing methods to fit those goals within their schedule.

The user study participants will be invited for an interview with us. Only one user will be interviewed at a time, but there may be several interviewers (one or more of our group members). We will have a list of questions at hand as provided in the appendix, although we may modify the provided questions or ask related followup questions, depending on the answers we receive from the participants.

The interviews can help us to gain a deeper understanding of users' attitudes and behaviors, and explore users' usage and perceptions of the product. Uncovering users' daily habits, practices, and tendencies using the product or category to identify unmet needs and optimize positioning and messaging.

5. EXPLORATORY STUDY RESULTS

Themes of the Affinity Diagram (Ishank)

In our affinity diagram fig.3, we identify the four main themes of:

1. Scheduling and Prioritization
2. Effort and Time
3. Tracking Progress
4. Efficient Organization

With respect to scheduling and prioritization, our study participants claimed that if they used a scheduling application, then they would only schedule events at fixed times (such as work meetings and games in a recreational sports league). They did

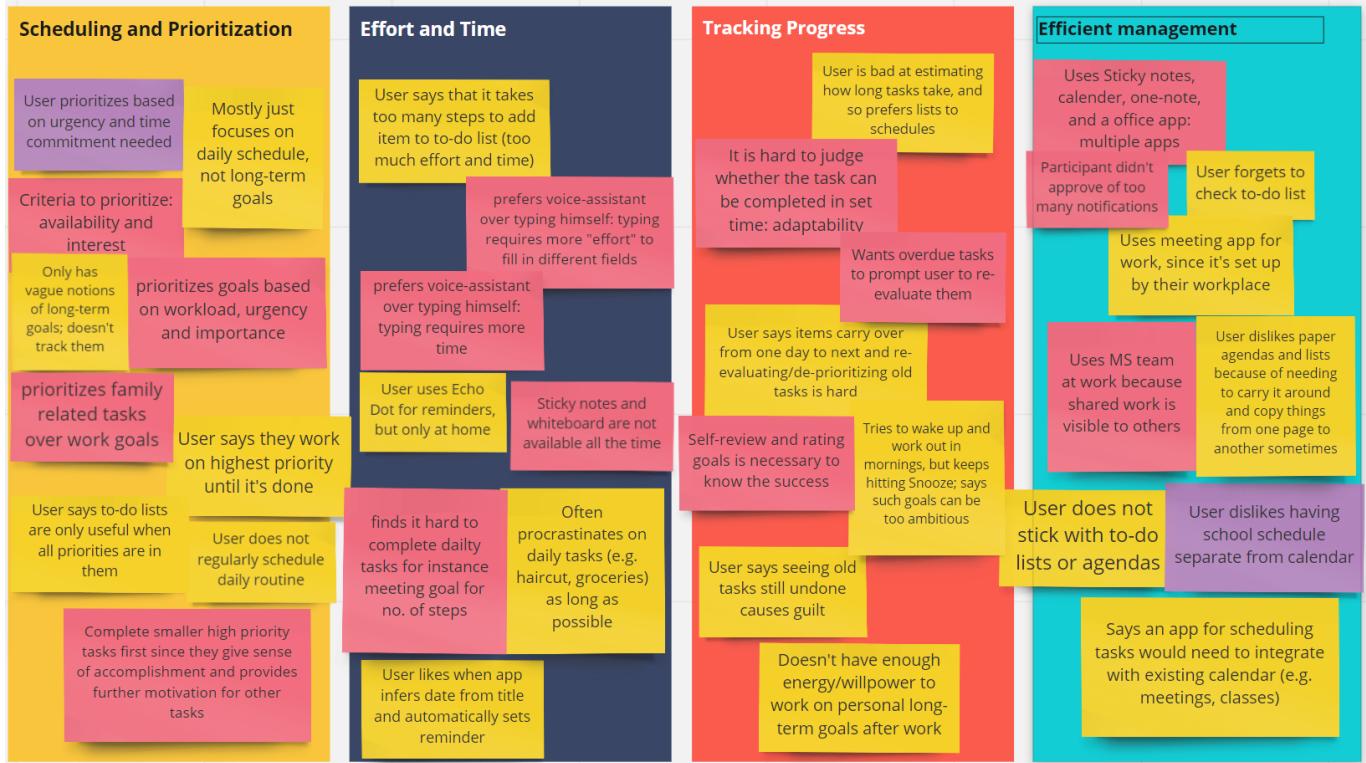


Figure 3. Affinity Diagram

not schedule tasks which could be completed at any time i.e. there is no deadline, and would often end up procrastinating on them as a result. Users typically identified one or two key priorities that they focused on exclusively, allowing other priorities to fall by the wayside.

Next, we will discuss the theme of effort and time. That is, to use apps to manage one's goals should not be difficult or time-consuming. All participants claimed that scheduling tasks into their calendar required entering too many steps. Some identified typing on a smartphone to be a nuisance, and preferred voice-recognition software. None of the participants scheduled tasks that were not associated with a particular time (buying groceries, for example) into their calendars and instead, they said, such tasks were better suited for a to-do lists. Additionally, several of the participants said that they were to use apps that scheduled things for them (e.g. work calendars, where all that is required is click "Add meeting to calendar" when invited to a work meeting).

Furthermore, several users said that to be able to track their progress was important to them. This seems particularly important in the maintenance of habits and keeping momentum towards ongoing long-term tasks. For shorter term tasks, two participants identified a desire for their existing to-do list apps to prompt them to re-evaluate tasks that have gone uncompleted for an extended amount of time. Multiple participants identified the problem of not completing tasks in the time allotted for them, and one also mentioned not having the willpower. Being able to re-evaluate tasks in progress may be a useful key in addressing these issues as well.

Finally, we identified that the organization of goals should be efficient. One issue that users identified the integration of such a calendar with another, personal calendar. Another is the issue of forgetting tasks, or forgetting to check one's schedule and to-do list. For this reason, several of our participants pointed to notifications as a potential solution; participants were divided on this issue however, as one user complained about receiving too many notifications.

Themes of the Cultural Model (Ishank)

Culture is always relative to one's own experiences. The cultural model defines the work that takes place in a culture, which defines expectations, desires, policies, values, and the whole approach people take to work [5]. It is necessary to take into consideration the cultural/social background of the target user(s) to build a localized application. From our exploratory studies we have identified several influencers who have an impact on the choices of the target user(s), the influencers are as follows (refer fig.7):

1. Co-workers (Supervisor/Superior)
2. Friends and relatives
3. Personal lifestyle
4. Health and fitness
5. Social media culture and
6. Family (Kid and partner)

A influencer can lead to change in how a user plans his day, it may change the priority of his/her tasks or it may even lead to a completely new routine which the user strives for.

Further we explain the impact of each influencer identified in our cultural model. Supervisor/Superior at a work place always get the top priority, so a task assigned by them goes to the top of the list, especially if the task has a short deadline. This validates our initial hypothesis of "Mere urgency effect" which states that the tasks that are urgent but not very important are assigned a higher priority than various non-urgent goals.

In some cases, the basics of the work are the same everywhere, although there can be local regulations and practices, such as variations in bank timings or work policies which lead to different choices. Similarly, requests made by co-workers for assistance in their work or having colleague get-together changes the user time-table. Friends and relatives can lead to an addition of task such as going for lunch, meeting for a get together etc. which may affect the pending tasks and you may need to re-schedule such as cleaning your house. Personal lifestyle is one of the most important factors how user plans to achieve their goals: The way an individual wants to organize his day, the number tasks user wants to complete, time and priority given to each task, and whether they are short- or long-term goals defines how the user will plan their day. For instance, keeping track of office work, assignments, activities in leisure time etc. have a significant impact on one's routine.

Additionally, habits for instance time spent on social media or fitness goals change the way the user plans his or her daily routine, more time spent on social media (such as Facebook, instagram etc.) leaves less time for other activities and thus requires re-prioritization. Finally, we observed family is one of the biggest influencer in order to achieve goals. The urgent tasks involving family takes the highest priority and leads to change in the way user plans and follows their routine. In case of family there are both long term (focus on us when home) and short term (kid's school meeting) commitments which the user needs to fine-tune in their routine.

Themes of the Flow Model (Omar)

The themes identified in the flow work model were those of scarce time, conflicts and the need for organization and prioritization. The user, in addition to having their own tasks, also received requests and demands from other groups - we identified several of these, such as family, friends and superiors / supervisors.

From family, the wish was to spend some time with each other and to perform some tasks together as a family. Therefore, they would ask the user for some time together. This caused a breakdown if there was not enough time remaining once the user's work hours were done.

From friends, the wish was to decide on a few get-together based on considerations of the schedules of everyone in the group of friends. For the user, this mainly involved negotiating what time to allot to these events.

From superiors / supervisors, the demand on the user was to complete the tasks that the supervisor had decided to delegate to them, and with the priority decided on by the supervisor. The user then had to report the results of completing these tasks back to the supervisor. The caveat was that this only applied during work hours, so the user had the non-work-hours to complete their other tasks.

All these groups were not necessarily aware of the user's existing schedule, nor of each other's requests to the user. This led to one of the main breakdowns we identified, which was that it was not possible to accommodate everyone's requests all the time, and requests could clash, so it was up to the user to negotiate and prioritize these tasks. To resolve this, the user could use considerations such as importance and consequences with respect to their own broader goals as criteria for prioritization of these tasks. One other breakdown we identified was that even when creating their schedule based on their own needs and wishes, the user found the process of adding new tasks to their existing scheduling app too cumbersome in some cases. (refer fig.8

Reflecting on our Original Hypotheses (Omar)

In our initial assignment, we hypothesized two main things - namely the mere urgency effect and the cognitive impairment due to mental load effect.

Regarding the first hypothesis, we found some interesting evidence that partially confirms it, but also partially changes what we expected since we did not observe the effect exactly as predicted. Our participant said that he does not coordinate his daily tasks with his broader goals, and that he accesses these broader goals less often. This would seem to suggest that the hypothesis is partly correct in this case. However, interestingly, he also said that by prioritizing his daily tasks, it helps keep his broader goals in mind, and also that he prioritizes his tasks based on the impact or consequences they have on these broader goals. This suggests that while the daily tasks do hinder the participant from doing additional things towards his broader goals, he orients his performance of his existing ones with these goals in mind, and the daily tasks do not hinder him from keeping the broader goals in mind if not in action.

Regarding the cognitive impairment due to mental load, again the fact that prioritizing tasks allowed the participant to keep his broader goals in mind suggests that the mental load freed by this prioritization played such an effect, and that in the absence of that it would be much harder to do that.

The problem we will focus on now is the friction and obstacles that users find when currently trying to schedule goals and tasks. The reasons for these obstacles could be that too much information is asked when trying to add a task (such as task name, description, start time, end time, etc), too much of the information is asked on one screen, there is too much textual input involved rather than other methods (voice, selection inputs, etc), and there is too much recognition rather than recall needed (lack of helpful auto-complete / smart suggestions).

Many of the participants we interviewed mentioned friction as an issue, and as it relates to our hypotheses and the information we found regarding them through our interviews,

such obstacles can have a very important impact, even if the user currently only schedules daily tasks the only affect is on adding these and not broader goals, since this has the negative impacts on broader goals suggested above. This provides insight suggesting that reducing such friction would have noticeable effects, which we will try to evaluate in detail in using the prototype according to the plan in section 4.

6. DESIGN IDEAS

We have identified three principle design ideas that address many of the issues described in section 1. The first of these ideas is to integrate to-do lists and calendars. As one study participant said in an interview: “I gravitate towards lists because they avoid scheduling, and I’m bad at scheduling”. Most tasks that one must do are not associated with a particular time or place, so they are easily entered into a to-do list, but not a schedule app which requires the user to enter start time and duration for each entry. However, one significant downside of to-do list apps that this participant identified is the issue of “never get[ting] around to a task”. The user knows that a certain task ought to get done, but without the necessary pressure, they never get around to it. This occurs with many personal goals that inevitably take a backseat to higher priority tasks.

Our idea here is to prompt users to regularly peruse their to-do list, and schedule times to complete the items on this list. In addition to giving users a motivation to avoid procrastinating on whatever tasks may not have the highest priority, it also allows users to start working towards long-term goals and building habits by making time for them in advance.

The second idea is to allow users to subdivide goals and tasks into sub-tasks, and encourage the users to re-evaluate them periodically. This can be accomplished by organizing tasks as children of goals in an ordered and rooted tree structure. Then, a minimalist interface could allow users to reorder elements on the same level of the tree (see Layout Sketches) to reflect updated priorities and levels of completion. Lastly, a system of reminders (say, at the end of a work day) to update the tasks that had been scheduled (say, during the aforementioned work day). During this updating process, users can modify ongoing tasks that may be too ambitious or not easily actionable. The former can be addressed by scaling down tasks or subdividing them into smaller tasks; and the latter can be done by breaking tasks into sub-tasks which can be stated in more actionable ways.

The final idea is to minimize the friction inherent to using the app. This primarily means being able to use it with minimal typing, by enabling users to enter task subjects via voice commands, by enabling users to reorganize ongoing tasks with simple drag-and-drop functionality, and by permitting them to enter dates and times in a schedule with simple touches instead of more tedious and specific time entry methods that are more commonplace in mobile apps. This issue can also be addressed by using a system of reminder notifications for the tasks in a user’s schedule, as well as the daily reminders to add items of to-do list to the user’s schedule for the upcoming day (as mentioned above) regular reminders to review and update ongoing tasks (also mentioned above). These reminders also

prevent another issue brought up by participants: that if one forgets to check and/or update a to-do list regularly, then the app will lose its usefulness.

User Flow and User Stories

“As a user, I want to be able to track my goals and tasks over a variety of devices so that I can track them regardless of what devices I have at hand.”

“As a user, I want to be able to use a goal management app without bothering to make an account so that I don’t have to worry about giving information about my personal goals to a company.”

When a user opens the app, they will be shown a login screen, which will allow a user to either create an AccomLife account, log into an existing one, or skip to access the app without logging in. The purpose of an account is to synchronize the user’s goals, tasks, and schedule over multiple devices. Next, they will be presented with their home screen, which displays a view of their current goals (accompanied by the subtasks associated with them) ranked in descending order of priority.

“As a user, I want to be able to view my existing goals and tasks in descending order of priority, so that I can more easily navigate the various things I have to do.”

The user can then navigate to the two lists of their goals and tasks (characterized as having end-dates, and may include a subset of subtasks of goals).

“As a user, I want to be able to create goals and tasks in order to stay on top of my to-do list.”

To add a goal or task, there will be a large button clearly visible when viewing each list, and pressing it will bring up a menu to enter them. When entering a goal, users can enter a title, an optional description, and associated tasks. When entering a task, a user must enter a title, and will also have the options to enter a description and/or add it to their schedule. In either case, upon completing the addition, the user is presented with the option to drag and drop the item into any position (i.e. priority) in the list.

“As a user, I want to easily change a goal’s/task’s priority so that I can more easily keep track of what’s important.”

When a user wants to reorder the entries of either list, they can long-press an entry to select it, then drag it up or down to reorder it with respect to the rest of the list.

“As a user, I want to add a task to my schedule for the day so that I don’t forget to make time for it.”

If a user wants to add a task to their calendar, they can press a button next to the task title to do so; upon which they will be presented with their schedule for the next day, and can click and drag to enter a time slot for completing said task. If they want to add it to their schedule for a different day, there will be a calendar button they can press to open a calendar dialog and select a different day.

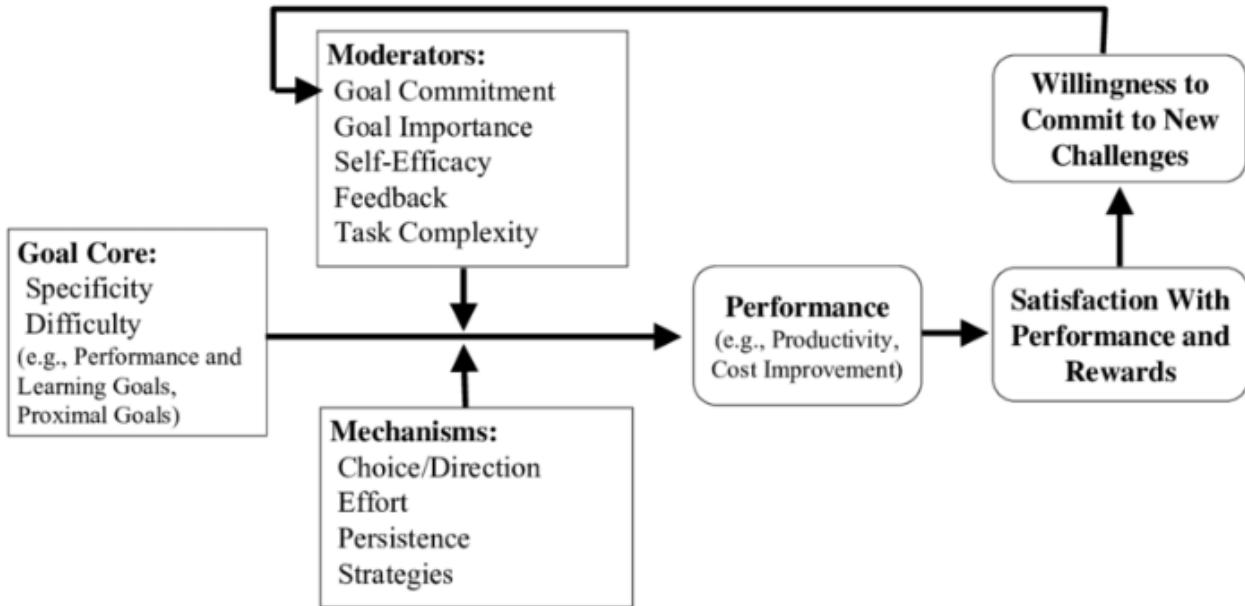


Figure 4. Performance cycle. (Google image:semanticscholar.org)

7. LITERATURE REVIEW (ISHANK)

Goal achievement are a competence-based aims that individuals target in evaluative settings. Goals have a prevalent influence on one's performance and attitude in daily routine, at organization as well as management (Locke & Latham, 2002) [8]. There have been several studies and research conducted in the past to study the effect of task management on individuals' performance when the person sets goals. [8] [7] [6]. The concept of goal setting can be further explained based on widely regarded work-motivation theories that have been formulated in past half-a-century, these include:

- Vroom's (1994) expectancy motivation theory, which proposes that the behavior towards a task is motivated by the outcome's desirability.
- Maslow's (1970) or Herzberg's (2009) motivation theories, which proposes that the presence of one set of tasks and goals builds the incentives for individual satisfaction at work, while other task or goal may lead to dissatisfaction.
- Bandura's (1986) social cognitive theory, states that the individual may repeat or try to surpass his previous effort displayed, depending upon whether individual is compensated for their effort and the result of the effort (incentives).
- Skinner's (1979) Operant-based behaviorism theory, states that learning occurs through incentives and loses associated with the task, and a individual makes an association between incentives and goals.
- Edwin Locke and Gary Latham's (1990) goal-setting theory, states the various principles that improves the individuals' chance of success. The principles are: clarity of the task, complexity of the task, effort required to complete the task, and the feedback a individual gets for the task.

As we have learnt from exploratory studies that "[people] like to work in an environment where they can learn or develop new skills". Goals that require effort will lead to higher effort to learn and develop, and thus lead to a persistent effort. Setting a goal inspires people to develop plans that will allow them to perform at the required performance level of the goal [6]. One important factor is the individuals' ability to accept the goals, and get feedback related to their performance [2]. If the individual is attempting the task for the first time or is new to the task, it can motivate an individual to develop approaches to the task that will enable them to perform at the required levels. Finally, completing the goal can lead a person to be satisfied and motivated, or dissatisfied and demotivated if the intended targets are not met for the goal [6]. Therefore, we can determine that people who set specific, hard, and achievable task are more likely to perform better on the task, compared to the people who do not plan.

A task or goal affects the performance through various mechanisms as we discuss below:

All the points can be better understood with help of fig.4.

- First, as stated above, a person with specific goal is more likely to complete the task, thus, a goal acts as a directive; they help the individual to direct attention and effort toward goal-relevant activities and away from irrelevant activities.
- Second, setting a goal brings a resolve to complete the task. There is a direct association between time and intensity of effort to complete the task. For instance, an individual can work harder for a short period or can work less intensely for a longer period to complete the task.
- Third, a task with a deadline makes an individual to work with a persistent effort to meet the deadline. Deadlines

acts as a tool that increases the motivational impact on goals. Matsui, Okada, and Inoshita (1983) [9] in their paper "Mechanism of feedback affecting task performance", state that when people find they are below target, they normally increase their effort or try a new strategy.

- Lastly, work-motivation requires a person to improve their effort. People set a tougher goals for themselves after they attain the prior goal. The higher goal provides higher motivation to outperform ones' previous effort.

As we have learnt from exploratory studies that "it gives [an individual] pleasure to use sticky notes and whiteboard since [they] are able to tick off completed tasks and that gives [them] a sense of accomplishment". Psychologically, there is something gratifying about lists and ticking them off. Depending on the format people use, most lists do not always help to prioritize. As stated by participants of exploratory studies, using sticky notes or whiteboard makes it easier to reschedule and prioritize overdue tasks. Prioritization is very important, when a new task comes up unexpectedly; how do you decide to shelve other things or add/move it to the top of the schedule? Such decisions add to mental processing load [10].

Since the circumstances constantly alter and so does our resolve, therefore, one of the key aspects of any time management app are reviewing and ability to reschedule to-do list. Failures to replicate task is usually due to errors, such as sub-par effort, not getting sufficient feedback, setting non-specific goals, misjudgment in measuring the one's own ability (self-set), setting a performance goal when a learning goal is required, not setting proper deadlines, or not forming a proper strategy to complete the task.

Thus, it can be summarized that goal setting, is motivated and affected by many factors for instance knowledge of expected result, difficulty of tasks related to a goal, reason for setting a goal, clarity and complexity of goal, commitment towards the goal, strategies formulated, and incentives/rewards related to completing goal.

8. PLAN FOR PROTOTYPE TEST AND EVALUATION

Goals for Evaluation Studies

With our paper prototype, we wish to test the ease of use of our application. We want to see what aspects of our design users find intuitive (or unintuitive). We will do this by giving them objectives, watching how they respond, and asking them to describe what they see.

Next, we want to see how much effort and time they require to use the application. We will do this by seeing how many steps it takes them to perform the objectives we give them, and judging their emotional responses. We will also ask questions about how they feel about the experience of interacting with the prototype, if necessary.

Lastly, we want to hear their opinions on the user interface, and how they felt about the experience of using our app. We will do this by asking them directly what they thought of using the app.

Please find the script for the paper prototype studies included in the Appendix.

Hypotheses for Paper prototype Evaluation Studies (Omar)

For our evaluation studies, we want to test various aspects of our prototype design; most importantly, aspects of the flow the user must go through when adding tasks, and aspects of flows related to reviewing broader goals.

We hypothesize that the user flow for adding tasks will be smooth and without significant friction, since this is an area we will concentrate on for the paper prototype, with features such as reducing textual input, avoiding too much information on one screen and taking advantage of recognition rather than recall (e.g. by providing smart options). We believe this will be successful as it directly addresses some of the issues with existing flows we found through our interviews.

We also hypothesize that reviewing broader goals will be something the user will perform explicitly when, for example, asked to prioritize their schedule. By specifically supporting this process related to broader goals in our app, we believe that this feature will be used by our participants, since it maps to what they already try to do implicitly as best they can when using existing apps, as we learned through our interviews.

9. EXPLORATORY STUDY RESULTS FOR PAPER PROTOTYPE (ISHANK)

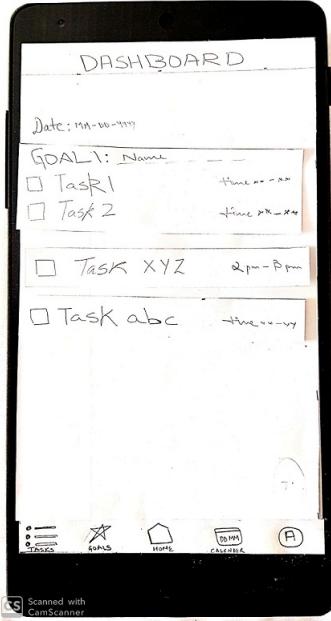
In this section, we discuss results we achieved for paper prototype study goals.

First, we began by asking the participant "whether they use a goal management keep track of their goals" to manage their schedule. This helped us to understand the knowledge and familiarity of the participant with the use of a goal management application. Then using our paper prototype, we wanted to test the ease of use of our application. We began by asking the participants about the first impression after logging-in to the home-screen of the application. We wanted to see what aspects of our design, users find intuitive (or non-intuitive). From our studies we found that the participants perceive the application had an intuitive interface; they were able to understand what each item on the screen implied for instance action button in task bar. The participants figured out the following items on the home-screen (refer Fig. 5): a) Goals and tasks for the current day, b) page heading and c) five-action buttons (task, goal, home, calendar, and menu) at the bottom of the screen.

Second, we wanted to check how much effort and time they require to use the application. So, we gave the participants different objectives, in which they have to complete task assigned to them without any assistance from the interviewer. We observed how the participant responded to the task, how much steps it took them to complete task, and their emotional response. we gave them the following tasks:

- First, "try to create a new task" starting from the home-screen. We observed that all three participants were able to navigate to the "task page" and created a new task by

Figure 5. Home screen



clicking on '+' button. Note: The first participant took slightly longer to figure out whether he has to navigate to task or goal menu.

- Second, followed by the previous activity, we ask the participant to add the task to the schedule. Each participant was easily able add the task to schedule using "add to schedule" tab.
- Third, we tell them to navigate back to home screen and this time try to create a new goal and add sub-tasks. Each of the participant (including first participant) was able to complete the task without any problem. Note: After completing the assigned objective, first and second participant commented "...why is there a need to have separate interface for tasks and goals..." .
- Fourth, we ask the participant to navigate to the calendar and switch view to daily schedule. All the participants were easily able to complete the objective, but we observed that the "switch view" button was adding an non-essential layer, when it's easier for user to click on the specific date and go that particular day.
- Lastly, we gave the participant a scenario where they would need to add a new high-priority task to their schedule and reorder the priority of the tasks in their schedule. All the participants found it easier to understand the feature and drag the more important task on the top of the "Dashboard" (home-screen).

We hypothesized that the user flow for adding tasks will be smooth and without significant friction, in studies we found that the participants were able to complete all the given objectives without much hindrance and false button presses. There were few design suggestions given by the participants, for instance, have create button accessible from every screen which

have been considered while creating paper prototype version two (refer appendix).

Then we hypothesized that reviewing broader goals will be something the user will perform explicitly, which we found was true for majority of the participants. They supported the idea of dragging tasks up and down to change priority, this way user can explicitly set higher priority to goals and tasks which are urgent rather than defining priorities at the time of adding the goal.



Figure 6. Affinity diagram for paper prototype

From our exploratory studies on In our affinity diagram (refer Fig. 6, we identify the two main themes of:

1. Efficient design
2. Effort and Time

With respect to the theme design efficiency, the one issue participants identified was the integration of task and goal page, they would prefer leaving it to user to decide to add sub-tasks and thus automatically distinguish between a short-term and a long-term goal. They also suggested to keep one focused list for tasks and goals which are not complete so that the user's effort is minimized. One of the participant suggested that the length of vibration can be varied to notify about the task, because text notifications may be overlooked.

Next, we will discuss the theme of effort and time. That is, to use apps to manage one's goals should not be difficult or time-consuming. All the participants claimed that creating a task or a goal is one of the most important feature and should be accessible from every page. In the current design, the participants identified that the user has to move through

several pages to create new task and is not accessible from all the pages. Another participant identified that there was an added effort required to navigate to day format of the calendar, which was unnecessary and can be done away with. The participant said "since I have a calendar I can just click on the required date in calendar" to navigate. The participants commented that it is easy to drag the tasks up and down to change priority of the task which they found is useful.

Please find the images for the paper prototype included in the Appendix.

10. DESIGN: WIREFRAMES (ISHANK)

Design changes and refinements

This section describes the design changes that have been made starting from sketches to different version of prototype. This is followed by the final details considered while designing wireframes from final version of paper prototype.

Our design sketches provided a basic outlay for the design of our application which had pages to enter goals, calendar, and dashboard without much focus on minor details. This helped us to create the first version of our paper prototype which was more or less a detailed version of sketches with account button moving down from top right for ease of use. The second version of our paper prototype has the refinements made after the initial evaluatory studies, there were following design changes:

1. Merging the goals and tasks screens together to enable user to differentiate between a task and goal. If a created event has sub-task then its categorised as along-term goal else it is a short-term goal. Therefore we kept a single button in the task bar to show the list of activities. This provides a focused list and reduces the icons on screen, thus, presenting a cleaner interface.
2. The participants of our evaluatory studies emphasized on the need for a create button which is accessible from all the screens. To incorporate this in our design we moved create button from the goal screen to the task bar where user can access it at all times. This allows the user to new goals with fewer screen changes and thus reducing the users' effort.
3. We removed the switch view button from the calendar screen as advised by multiple participant. The navigation from the monthly view to specific data can be made by just clicking on the date from the calendar thus making the navigation easier. This removes unnecessary items on screen and gives a cleaner interface.
4. One minor detail which was added later was the pin-to-top tab that was added to the "Dashboard" home screen to emphasize on the theme of priority from the initial affinity diagram. It enables the user to keep urgent and high priority task at top with color of the tab being red. We also added "save button" to create goal screen only when a user is creating a long term (a goal with sub-tasks), since short-term goals are added to schedule immediately and doesn't need to be saved for later. This gives user the ability to save goals like in to-do list and add them to their schedule when convenient.

These are all the refinements and changes we made shifting from sketches to paper prototypes and then to wireframes.

Please find the images for the wireframes included in the Appendix.

11. EXPLORATORY STUDY PLAN FOR HIGH FIDELITY PROTOTYPE (ISHANK)

Goals for high fidelity prototype evaluation (Ishank)

With our high fidelity prototype, we wish to reaffirm the ease of use of our application. We want to test what aspects of our design users find intuitive (or non-intuitive) considering the changes made after the paper prototype evaluation. Similar to the paper prototype testing We will do this by giving them objectives, watching how they respond, and asking them to describe what they see. This will enable us to know whether we are successful in reducing the friction in usage of application which is one of our objectives.

Next, we want to calculate how much effort and time they require to use the application, since the objective is to reduce friction. We will do this by checking how many steps it takes them to perform the objectives we give them compared to steps it took participants in paper prototype, and also judging their emotional responses. We will also ask questions about how they feel about the experience of interacting with the high fidelity prototype and what they think of the components available on different screens, this will enable us to analyze that the features incorporated in the app are delivering the promised results.

Lastly, we want to find out how the participants would choose to incorporate the application into their lives. We will do this by asking them to describe the kinds of goals and tasks they could imagine using the application. This will allow us to understand whether the application is successfully (or unsuccessfully) meeting the requirements of its intended users.

Heuristic Evaluation (Ishank)

We will testing the following heuristics in this phase of evaluation:

1. Match between system and the real world: We will begin the evaluation by asking the participants "In what scenarios do you see yourself using a goal management application?". This will help us to set the tone and understand what the participant is expecting from the application.
2. Consistency and standards: We will ask the user to "Please describe what you see on the screen.", followed by "Do all the symbols and words on the screen convey a singular specific function and whether they notice anything which causes confusion". This helps us to understand the clarity and assurance about the outlay of the design.
3. Recognition rather than recall: This part is the extended part of third point where we observe whether the user needs to remember the items on the screen or they can recognise them as they see them.
4. Flexibility and efficiency of use & Aesthetic and minimalist design: we will give the participants following objectives:

- "You remembered that you have a assignment deadline tonight and want to add a task to submit your assignment to your schedule"
- "You have long wanted to learn a new language, you have to now set it as a goal with sub-tasks that can help you achieve the task"
- "you want to check how busy is your tomorrow's schedule so that you can manage your tasks and goals, please navigate to a specific date in your schedule."
- "Yesterday you had some unforeseen activities come up and you couldn't complete few tasks in your schedule, look into uncompleted tasks and try and add to your schedule."
- "From the list of tasks on schedule you want to set one has the highest priority task which has to be completed."

This will enable us to check that the application can cater to users (both inexperienced and experienced) and allows the users to tailor frequent actions. Moreover, we will be able to confirm validity our design changes made after the two versions of prototype. Since, every extra unit of information on the screens and in a dialogue competes with the relevant units of information and diminishes the user's relative visibility of the features. [1]

Click Test

In addition to the heuristic we will be doing click testing. we will be keeping track of which points the user clicks and how many clicks it takes the user to complete his objective. This will help us to check whether we were successful in creating a minimalist design that could help reduce friction in the use of the application. We may ask the participant for the feedback, this will help us to check if the participant is receiving the expected response when they click a certain section of the screen.

12. RESULTS OF HEURISTIC EVALUATION (ISHANK)

In this section, we present results for each parameter of heuristic evaluation.

1. Match between system and the real world: the participants navigated to different screens of the application and found that each of them were named in accordance to their real world representation, for instance, Dashboard which represents home page on a app. Participant had a minor suggestion to add names to action buttons in the task-bar and highlight the active tab in the task-bar. This design enhancement helped the user to know which page and tab is active. One major change was the need to add "check button" on "create goal" screen to denote the task is a long term task. This change help the user to explicitly decide the goal is a long-term goal.
2. Consistency and standards: The participants response was pretty positive. Each icon closely represented its real world illustration, for instance, Calendar icon or home icon for "Dashboard". The participant found that the font size and color scheme were consistent throughout the app.

3. Recognition rather than recall: The participants were able to recognise the information on the screen, for instance, participants were able to recognise the items on the dashboard were tasks to be accomplished for the given day. The participants wanted a minor change to "Create goal" screen, where they wanted to add a "switch like feature to mark a goal as long-term". To incorporate this we added a check-box to the "Create Goal" screen to change to long-term goal screen to indicate user wants goal with sub-tasks.

4. Flexibility and efficiency of use Aesthetic and minimalist design: the participants accomplished all the tasks that were listed in the script. we found that majority of the tasks can be done in 3 clicks and all the tasks can be completed in maximum 5 clicks (Creating a goal with sub-task(s)). The participants were happy to use a more click friendly interface, for instance, when you want to select time you can scroll inside picker and repeat tab. This has allowed us to reduce user effort and minimize friction.
5. Recovery from error: the participants always had the emergency exit available, since the task-bar is accessible from each page. The participants also used the cancel button in create task to navigate back to previous screen if they wanted to edit the item or mishit the button to next screen.

We got a positive response from our heuristic evaluation and minor changes that were recommended by the participants have been added to final design. There were 3 design changes in total to hi-fi prototype.

- Addition of names and highlighting active tab in the task-bar.
- Addition of checkbox to switch to long-term goals from create goal screen. The above two changes improves real-world match of the system.
- For detail we added AccomLife logo to header, in addition it acts as emergency exit button to go to Dashboard.

13. COGNITIVE WALK-THROUGH (ISHANK)

We will be using the following script for Cognitive walk-through test.

"In front of you is an application called "Accomplife", this application let's you manage your short- and long-term goals in a minimalist way."

Display hi-fidelity prototype of Accomplife opened to home screen.

"You have a list of tasks to complete and you can explore the app as you wish"

The list of tasks will include:

1. Reorganize task priorities on the Dashboard
2. Create a new short term goal and add to your schedule.
3. Add a long term goal and a few sub-tasks that will help you accomplish that goal.
4. Check the list of goals you haven't completed and add one to your schedule.

- From the list of task in the Dashboard, mark one goal as most important.

Lastly, we want to gauge their opinions on the application. "So, what do you think of the app? Did you find using it to be a good experience? How could it be improved? Would you consider using this for managing your own personal goals?" Finally, thank the participant for their time and help in improving the AccomLife app.

14. RESULTS OF COGNITIVE WALK-THROUGH (ISHANK)

The participant of the cognitive walkthrough were given a script which had a list of tasks and left alone to explore the app. We recorded the following response:

The participant was able to complete all the tasks given in the script in 4-6 clicks. The participant said "[he] understand the way app is supposed to operate, but initially it took [him] 5 minutes to navigate through all the screens and see the functions provided on the screens to proceed ahead". This illustrates that the 'learnability' of the app is good and user can figure out how to use the app given few minutes. In regards to our goal of improving efficiency the participant said "[he] likes the idea of combining to-do list and scheduler", this helps to keep items in a single place and thus improved approachability. The participant told that the app was easy to use once he has seen through all the pages and could see himself using the application.

15. CONCLUSION

The initial idea was to have an app that allows you to organize and accomplish your short- and long-term goals, regardless of the category the fall under. People use multiple applications such as reminder, to-do list, calendar, we intended to integrate these applications into a single platform. In the exploratory study we explored the hypotheses of the mere urgency effect and of cognitive impairment due to cognitive load. With some support to the applicability of these effects to the problems addressed by our app, which we established through the initial interview. In our sketches we incorporated features such as task list, goal list, calendar, scheduler, re-prioritizable list for current day. Based on these features we built first version of paper prototype (refer appendix: PAPER PROTOTYPE VERSION 1) and conducted our paper prototype evaluation. We got various design suggestions such as combined short- and long-term goal list to reduce complexity in design, adding create to task-bar to improve accessibility which we integrated in our application. Using this we prepared our second version of paper prototype (refer appendix: PAPER PROTOTYPE VERSION 2). Further evaluation led to small minor changes such pin-to-top button for tasks which enables the user to keep urgent and high priority task at top with color of the tab being red and addition of save button for long-term task.

Based on the above observation we made our wireframes and hi-fi prototype, which were used for heuristic evaluation. We got a positive response from our heuristic studies, we did some research to decide final color scheme and converted our included that into our app (refer appendix: Final App). We believe we were able to build an efficient system which

integrates reminder, to-do list, calendar into a minimalistic designed platform.

We achieved the following results with AccomLife:

- Efficiency: By integrating to-do list, calendars and reminder into single platform, thus, reducing users' need to navigate multiple platforms.
- Accessibility: Most of the tasks can be completed in 3-5 clicks thereby reducing user effort, thus, focus has been on learnability of the app.
- Approachability: The app allows user to build their own schedule and allows dynamic re-prioritization of goals. Moreover, it provides both vocal and text input methods.

ACKNOWLEDGEMENT

We would like to thank Dr. Edward Lank and Anastasia Kuzminykh for their continuous support and feedback throughout the project.

REFERENCES

- Assistant Secretary for Public Affairs. 2013. Heuristic Evaluations and Expert Reviews. (Oct 2013). <https://www.usability.gov/how-to-and-tools/methods/heuristic-evaluation.html>
- Albert Bandura and Edwin A Locke. 2003. Negative self-efficacy and goal effects revisited. *Journal of applied psychology* 88, 1 (2003), 87.
- George Doran. 1981. There's a S.M.A.R.T. way to write management's goals and objectives. *Management Review* 70, 11 (1981), 35–36. <https://community.mis.temple.edu/mis0855002fall2015/files/2015/10/S.M.A.R.T-Way-Management-Review.pdf>
- Dwight D. Eisenhower. 1954. Address at the Second Assembly of the World Council of Churches at Evanston, Illinois. Available online at <https://web.archive.org/web/20150402111315/http://www.presidency.ucsb.edu/ws/?pid=9991>. (19 August 1954).
- Anastasia Kuzminykh. 2018. (2018). <https://www.student.cs.uwaterloo.ca/~cs449/w18/Lecture%205%20W18%20slides.pdf>
- Edwin A Locke and Gary P Latham. 2002. Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American psychologist* 57, 9 (2002), 705.
- Edwin A Locke, Ken G Smith, Miriam Erez, Dong-Ok Chah, and Adam Schaffer. 1994. The effects of intra-individual goal conflict on performance. *Journal of management* 20, 1 (1994), 67–91.
- Fred C Lunenburg. 2011. Goal-setting theory of motivation. *International journal of management, business, and administration* 15, 1 (2011), 1–6.
- Tamao Matsui, Akinori Okada, and Osamu Inoshita. 1983. Mechanism of feedback affecting task performance.

Organizational Behavior and Human Performance 31, 1
(1983), 114–122.

10. Whitney Quesenberry and Daniel Szuc. 2011. *Global UX: design and research in a connected world*. Elsevier.
11. Jerry Thomas. 2017. Market Segmentation. (2017).
<https://www.decisionanalyst.com/media/downloads/MarketSegmentation.pdf>
12. Meng Zhu, Yang Yang, and Christopher K Hsee. 2018.
The Mere Urgency Effect. *Journal of Consumer Research*
45, 3 (02 2018), 673–690. DOI :
<http://dx.doi.org/10.1093/jcr/ucy008>

APPENDIX

Persona (Ishank)

Persona was completed by Ishank.

Affinity Diagram (Ishank)

Both the Affinity Diagram for interviews and paper prototype were completed by Ishank.

Cultural Model (Ishank)

Cultural model was done by Ishank.

Work Flow Model (Omar)

Work Flow Model was done by Omar.

Initial Sketches (Ishank)

The initial sketches were made by Ishank.

Wireframes (Ishank)

The Wireframes were made by Ishank.

Paper Prototype (Ishank)

Both the versions of paper prototype were drawn by Ishank.

Final Hi-fi Prototype (Ishank)

Final Hi-fi Prototype was made by Ishank in proto.io. Link to final video: <https://www.youtube.com/watch?v=20Uh7Hj9ut8>

Paper prototype evaluation and studies (Ishank)

The paper prototype studies and evaluation were completed by Ishank.

Interview Questions

1. How do you usually schedule your daily routine? Do you use any records to track your schedule? What motivates your corresponding choices?
2. Are there any difficulties you encounter with the current way you do it? How do you choose what information to add to those resources, how, when, why?
3. Are there any aspects of the way you record your schedule currently, that you find not efficient enough and why?
4. How do you decide which types of tasks to use the productivity and planning apps and why. Was it always the same way? What affects your decisions to use these apps?
5. Do you use any reminders for tasks, Why? How often do you set the reminders?
6. In your experience what are the obstacles for them to achieve tasks. What kind of problems are you usually running into? How do you deal with these problems?
7. Do you formulate for yourself some broader goals? How do you organize them, e.g. temporal aspect (for the month, for the year, etc.), life area aspect (professional, social, romantic, personal, etc.), geographically, etc.
8. How do you coordinate between your daily schedule and your broader goals?
9. Have you ever been in a situation when you would want to change your daily habits? How did you approach this task? Would you use any tools to help you? Why
10. How do you choose to prioritize your tasks, What motivates you to prioritize a task over the others?
11. In your opinion, how does it affect your bigger goals? (follow-up question)

Paper Prototype Script (Trevor)

"Let's start by pretending that this is your phone, and that you've just downloaded the AccomLife app. What will you do?"

Display paper prototype of unlocked smartphone opened to home screen, with AccomLife icon distinctly shown on the launcher. When the user touches the app to open it, go to the login screen.

"You see this screen; what would you like to do next?"

Let the user either register for an account or skip this step by pressing Skip; do not permit them to log into an existing account at this point since they are simulating their first experience with the app. Then, present them with the home screen.

'Imagine that you've downloaded this app to help you achieve a personal goal of yours. For example, suppose you want to learn to speak Spanish. How would you use this app to help you accomplish this goal?"

When the user creates a goal, guide them to create an associated task. "Great, now what are the steps required to progress towards that goal?"

When the user creates a task, suggest that they fit it into their schedule. "Now, you want to set a specific time to take these steps, and stick to a schedule to stay on top of the goal. How would you do that?"

Now, we want to test the user experience of reorganizing task priorities. Present the user with a display of a task list with several entries. "So, imagine this is your list of work tasks, and your boss has just asked you to shelve [top entry] and to make [bottom entry] your new top priority. What would you do in this case to reflect that?"

Lastly, we want to gauge their opinions on the application. "So, what do you think of the app? Did you find using it to be a good experience? How could it be improved? Would you consider using this for managing your own personal goals?" Finally, thank the participant for their time and help in improving the AccomLife app.

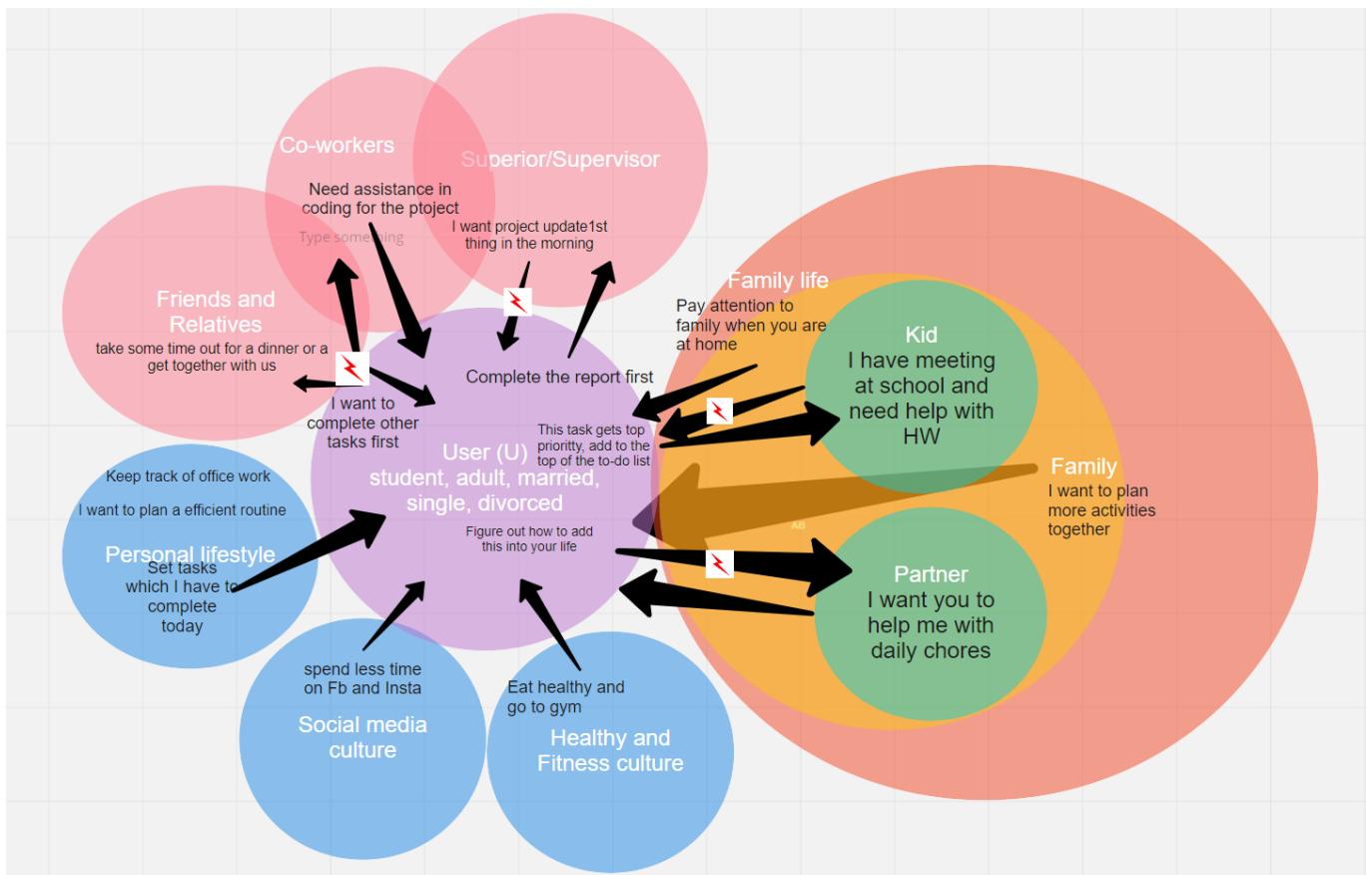


Figure 7. Cultural Model

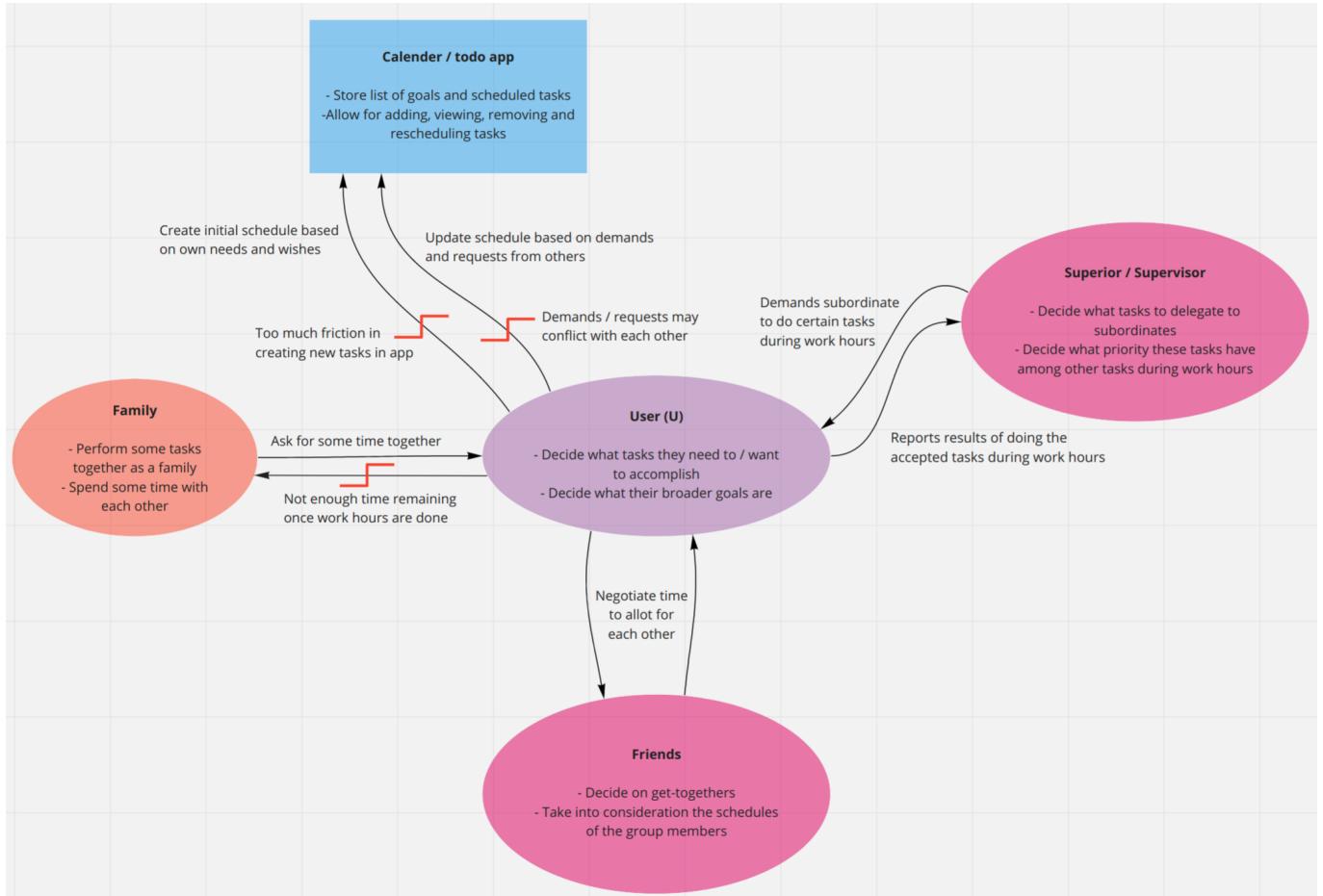


Figure 8. Flow work Model

INITIAL SKETCHES

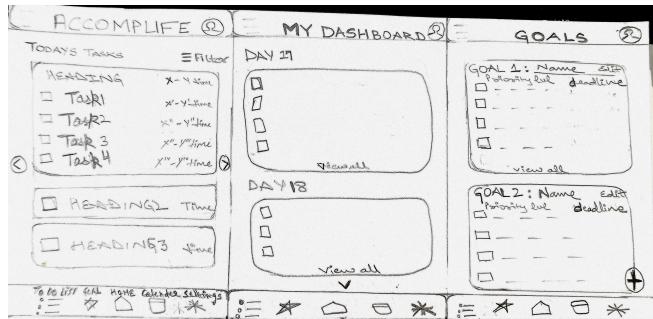


Figure 9. Sketch



Figure 10. Sketch

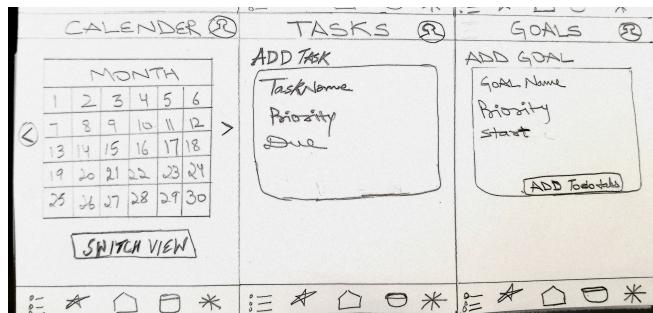


Figure 11. Sketch

PAPER PROTOTYPE: VERSION 1

Images of the paper prototype version 1 developed from the sketches.

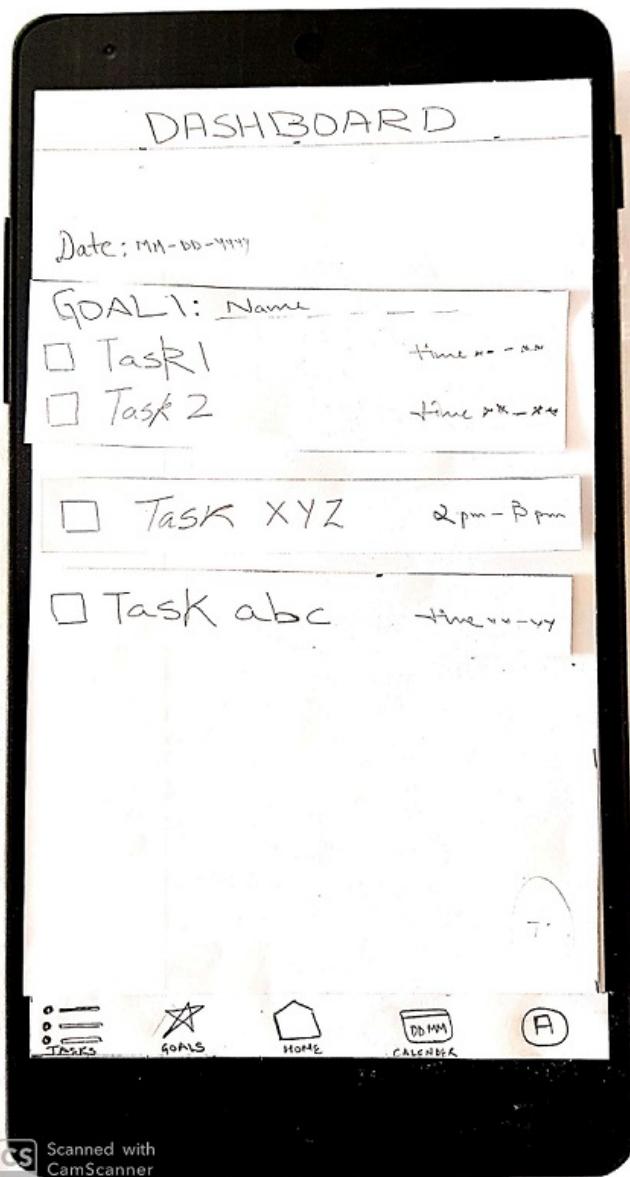


Figure 12. Home Page

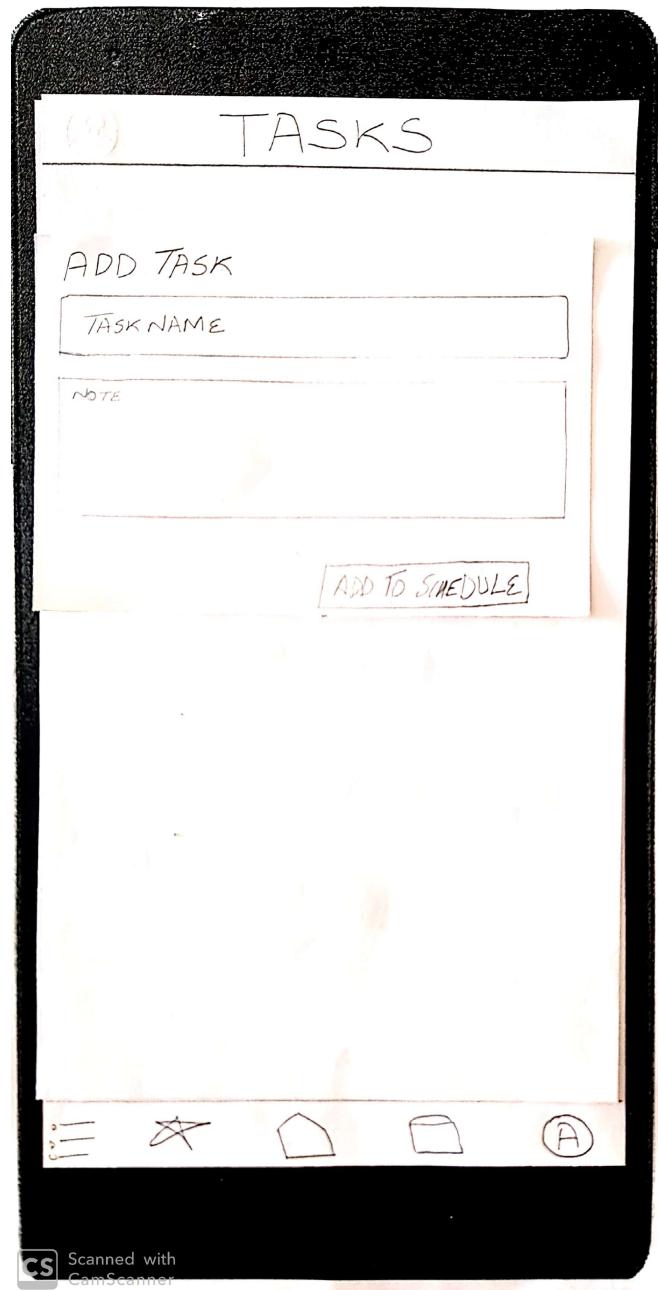


Figure 13. Add Task

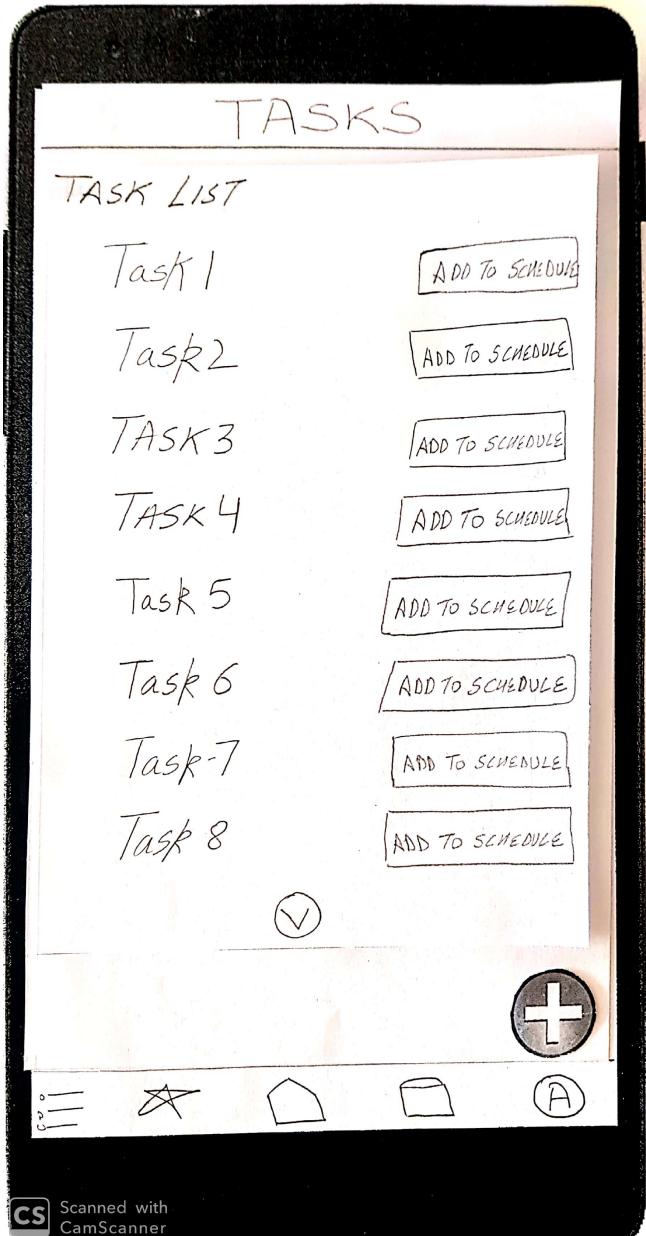


Figure 14. Task List

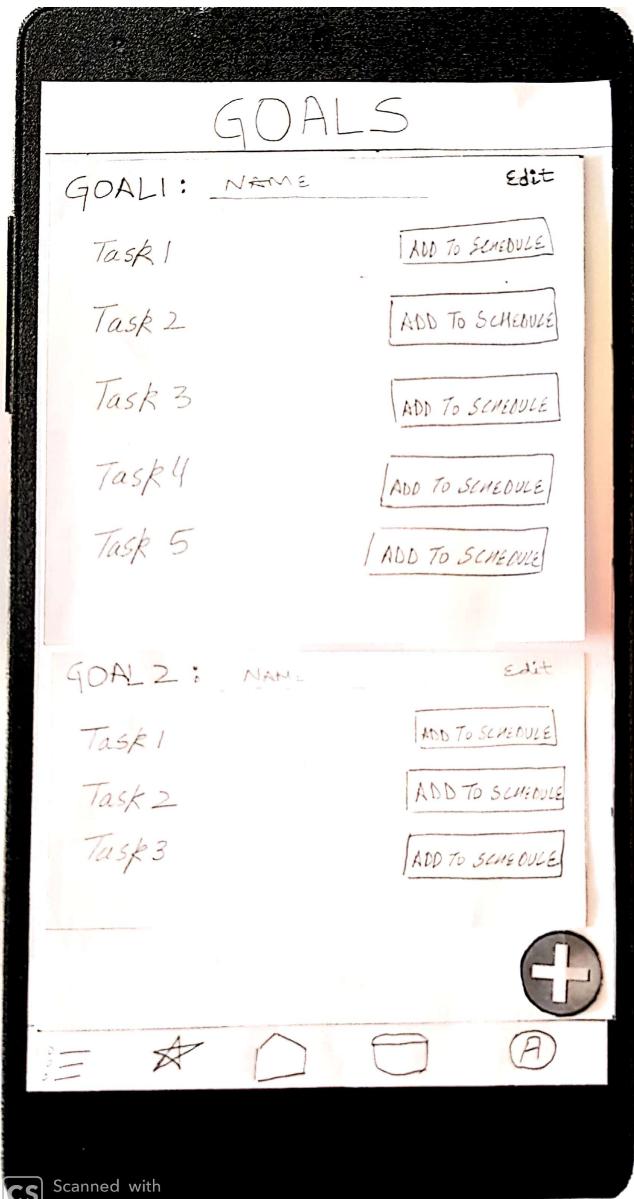


Figure 15. Goal List

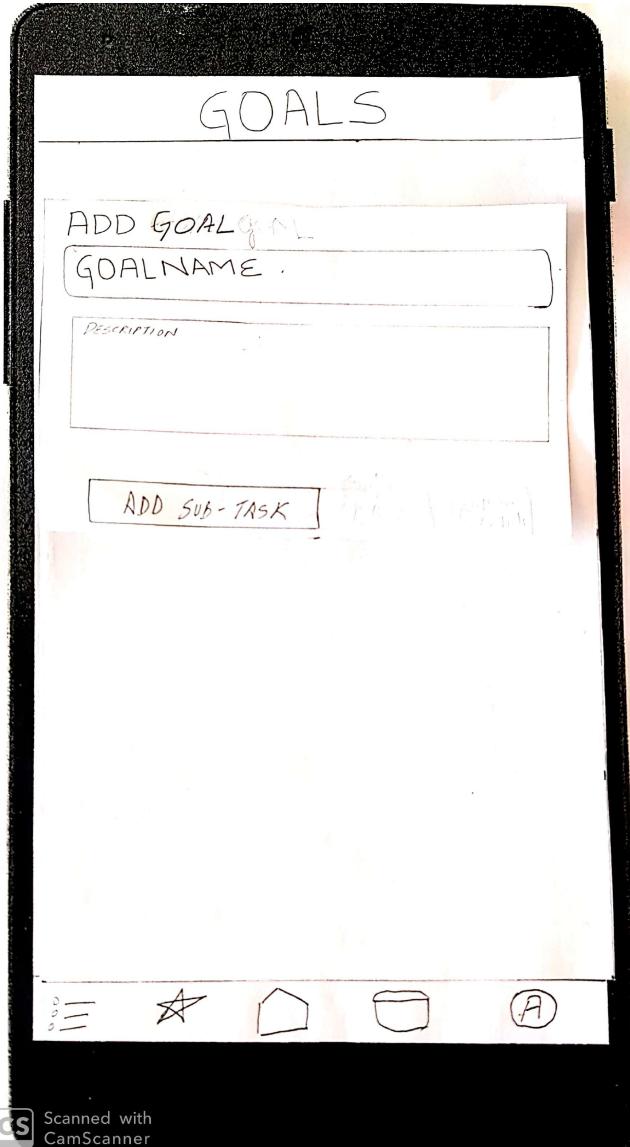


Figure 16. Add Goal

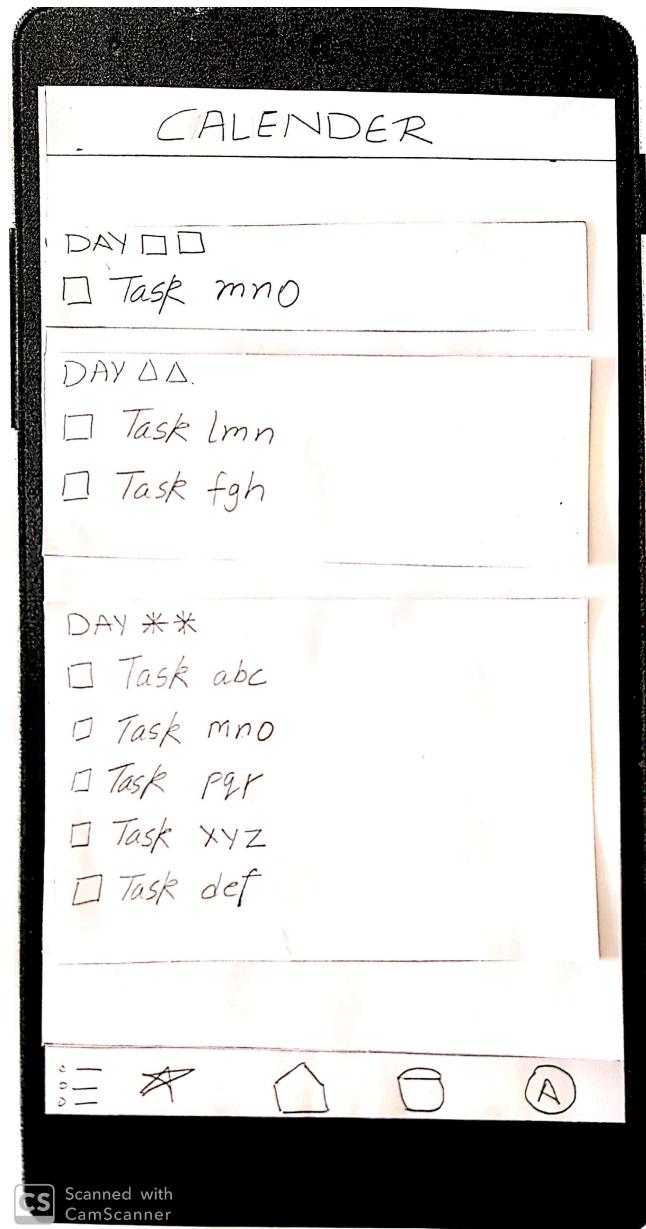


Figure 17. Calendar Day Page

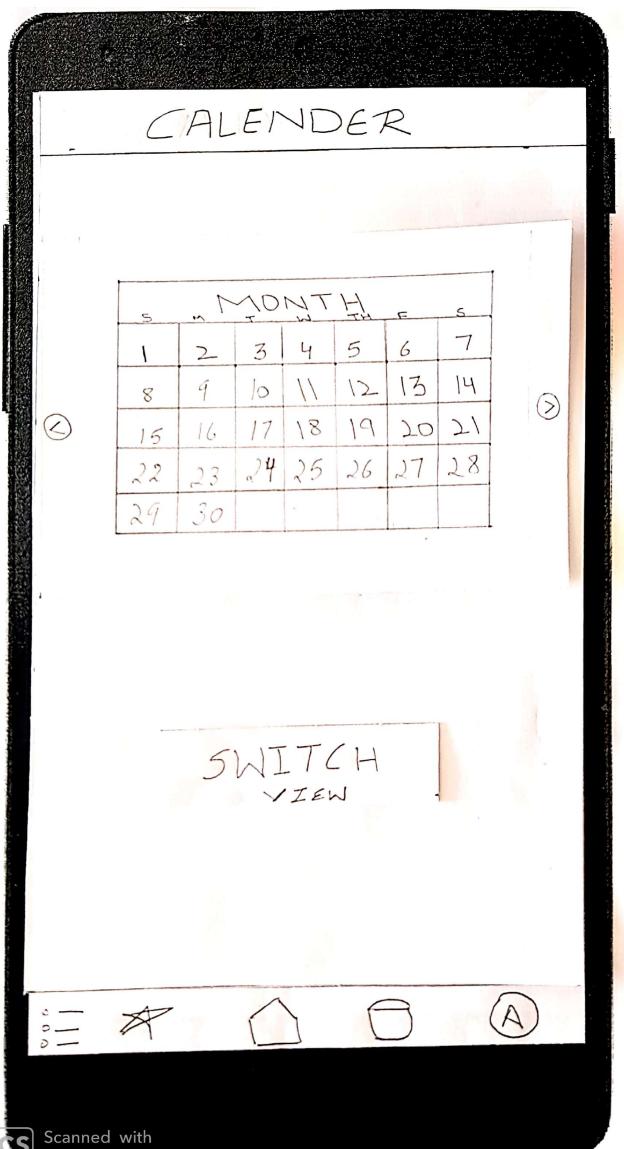


Figure 18. Calendar Day Page

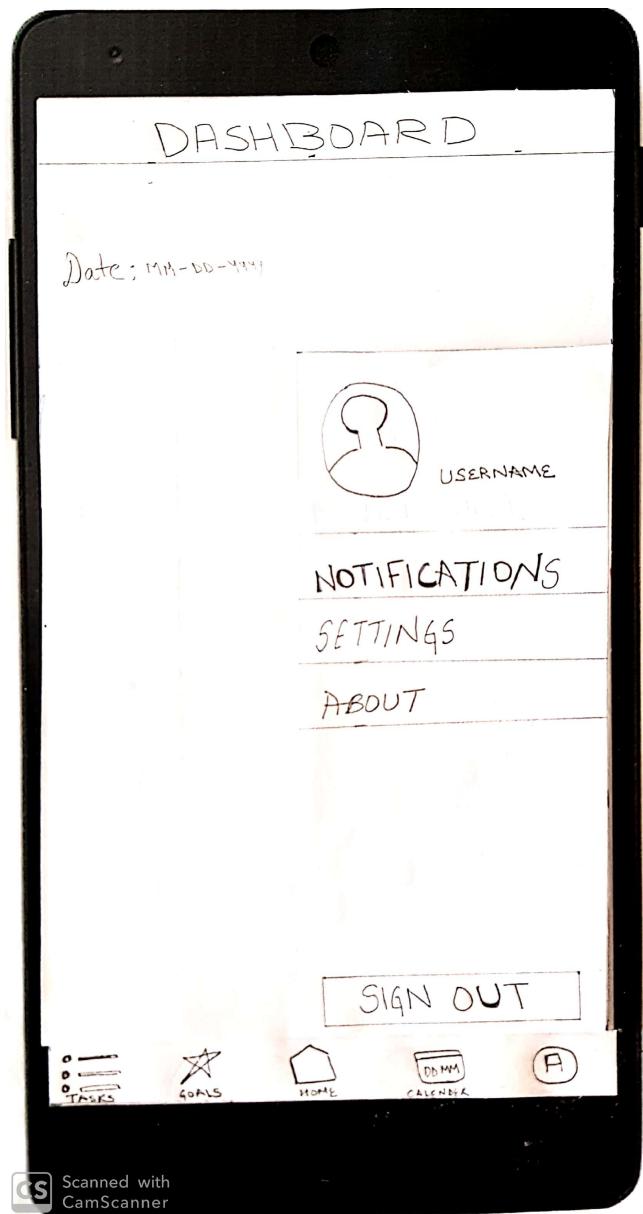


Figure 19. Menu

PAPER PROTOTYPE: VERSION 2

Images of the paper prototype version 2 developed from the changes suggested in version 1. This includes changes made to improve design efficiency and also to reduce user effort to create and manage task.

- Addition of create button to bottom task bar to allow user to create task for all pages,
- Remove switch view tab from calendar screen, and
- Combine task and goal screen into one, where user is involved in differentiating between the two (An event with sub-tasks becomes a goal else it is a task).

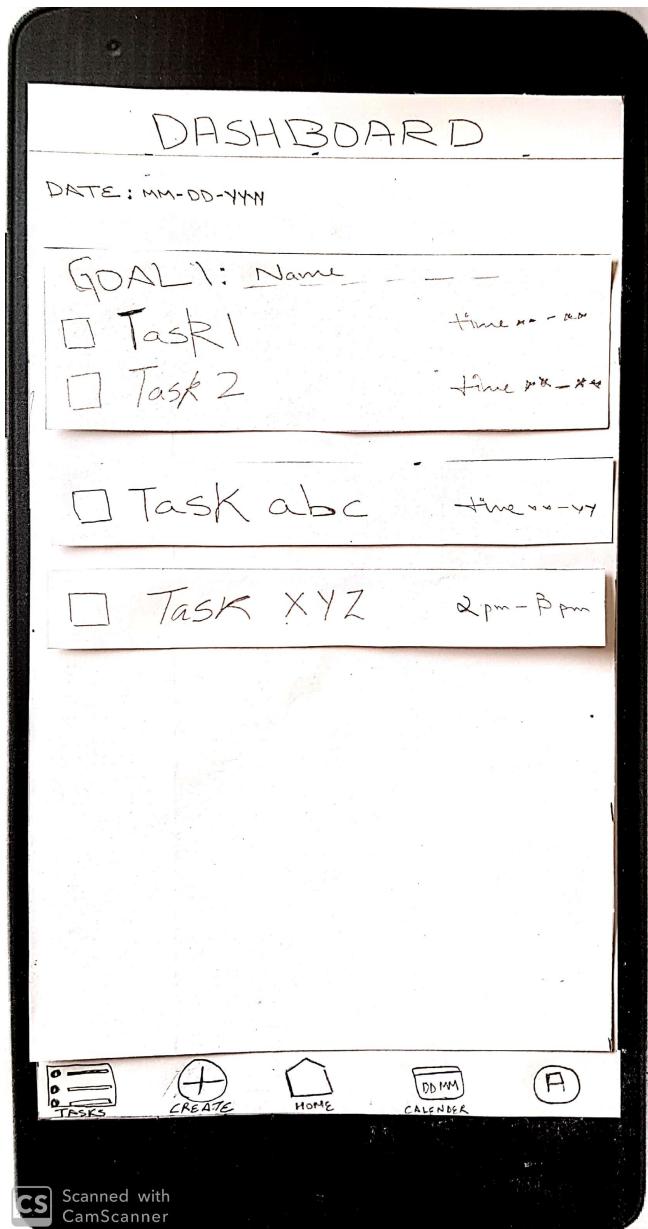


Figure 20. Home Page

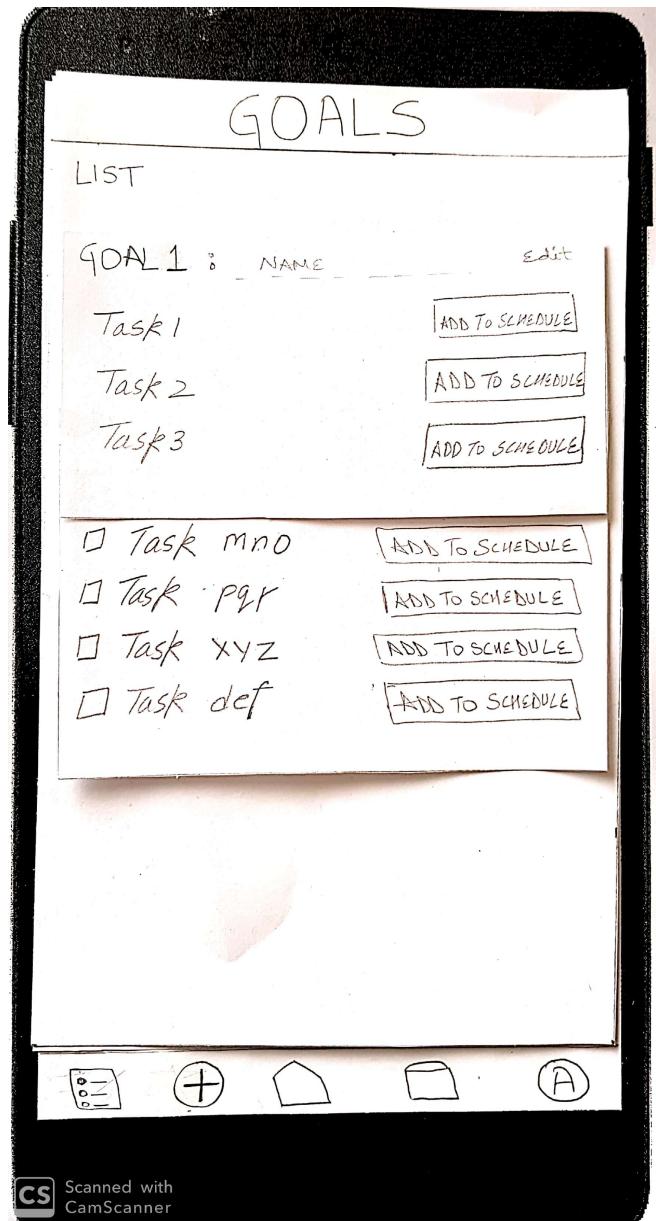


Figure 21. Goals List

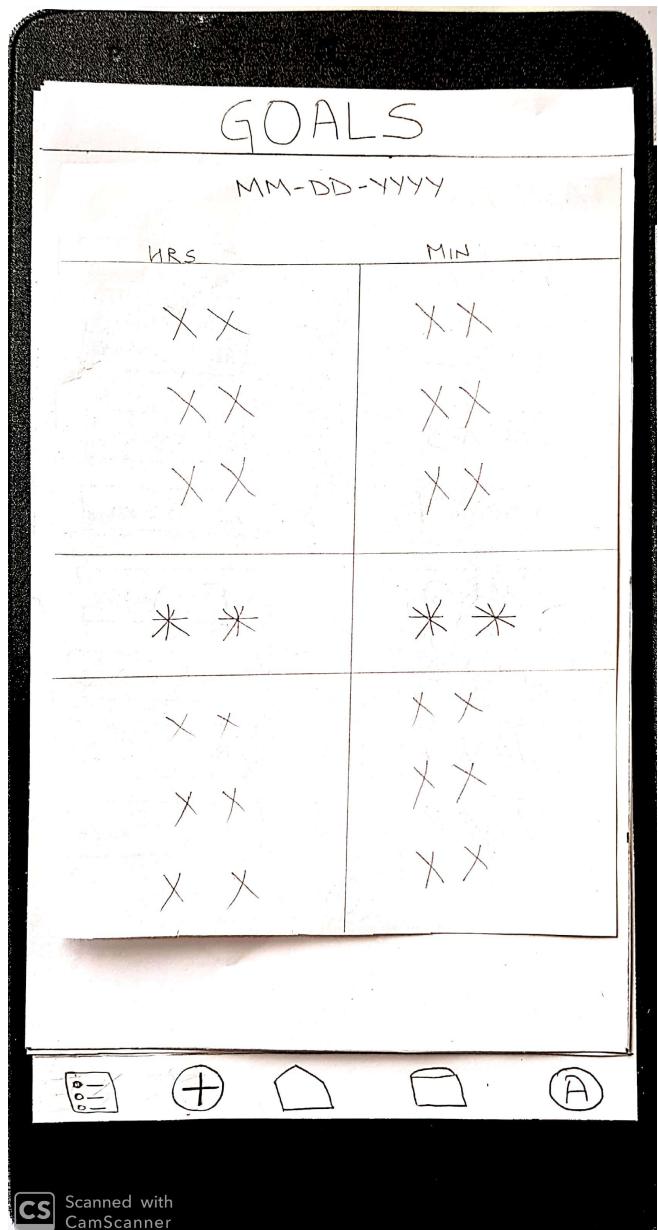


Figure 22. Select time and date to add to schedule

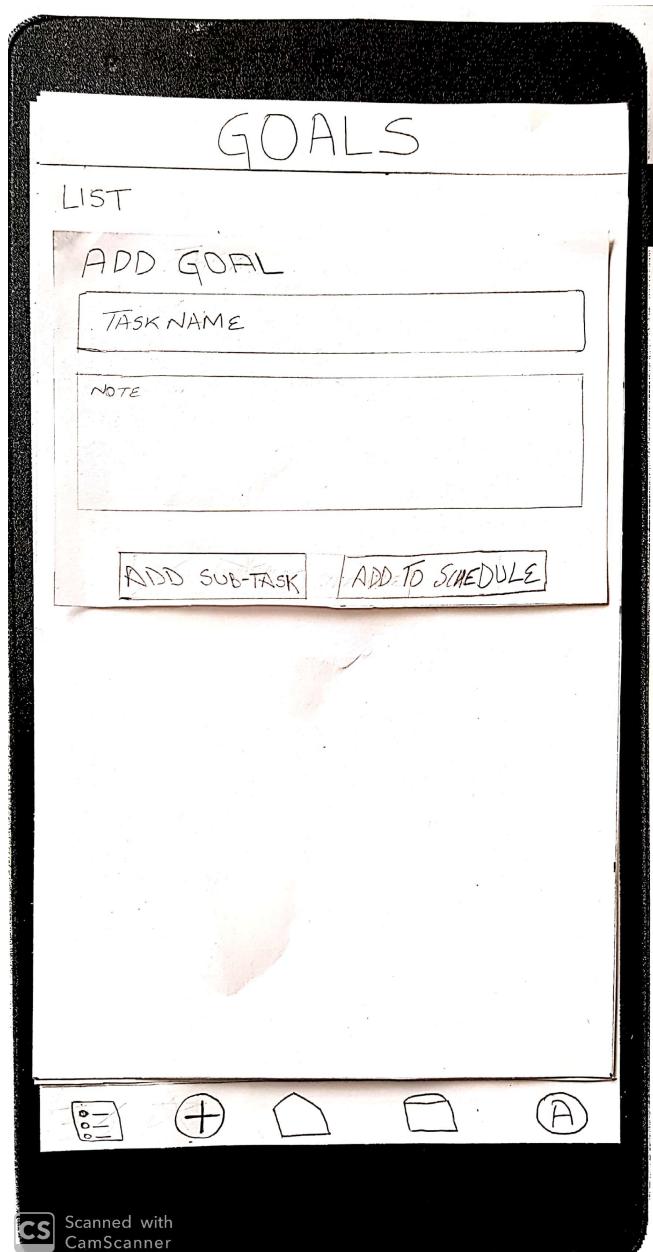


Figure 23. Add Goal

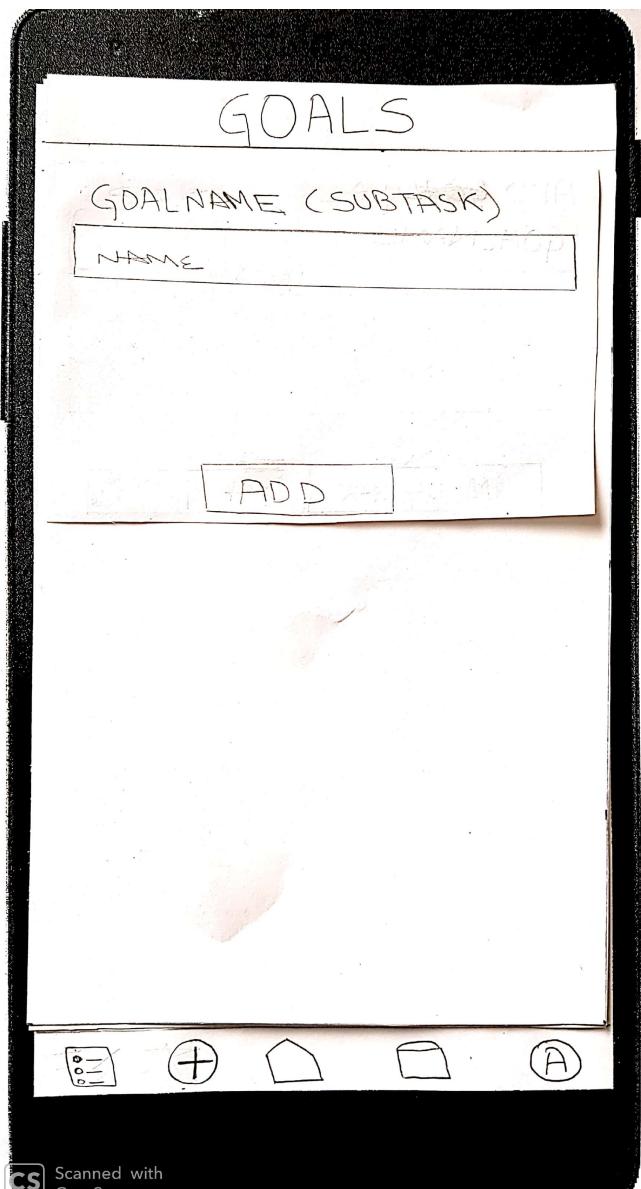


Figure 24. Add Sub-task

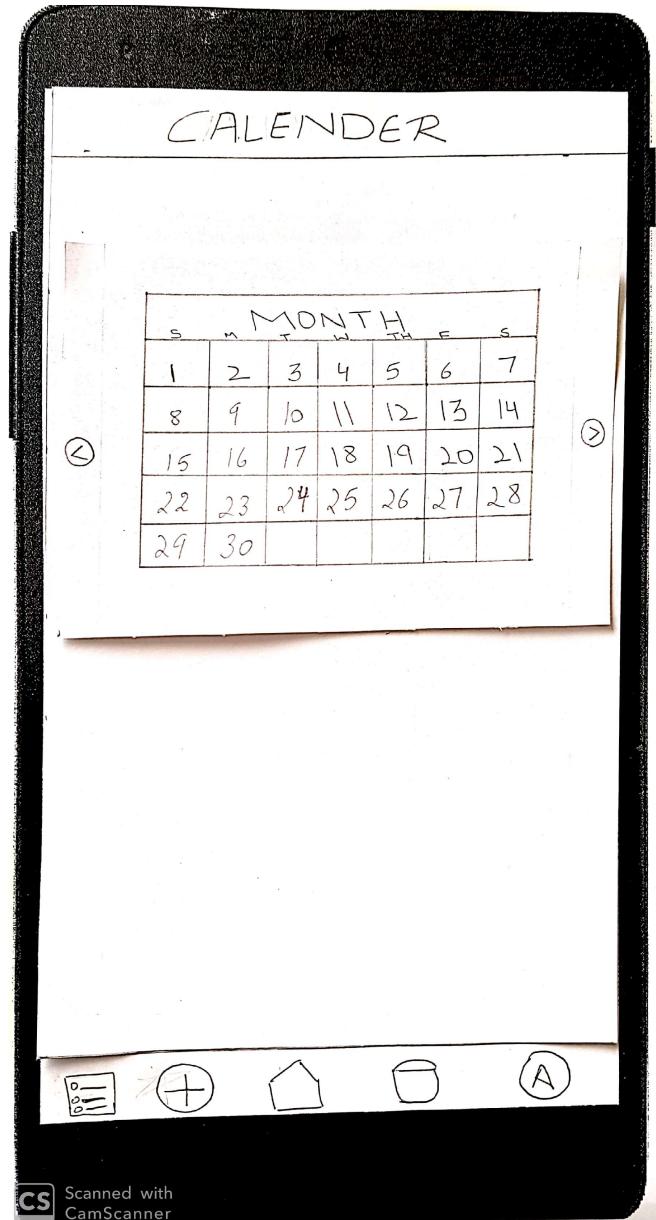


Figure 25. Calendar Month Page

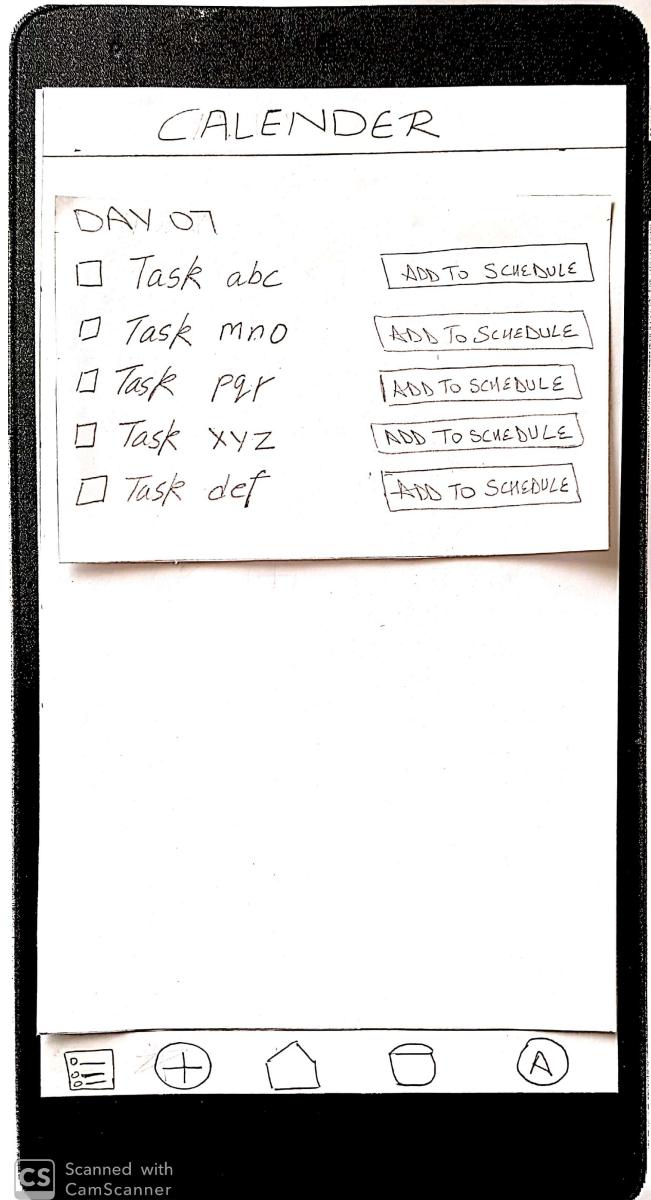


Figure 26. Calendar Day Page

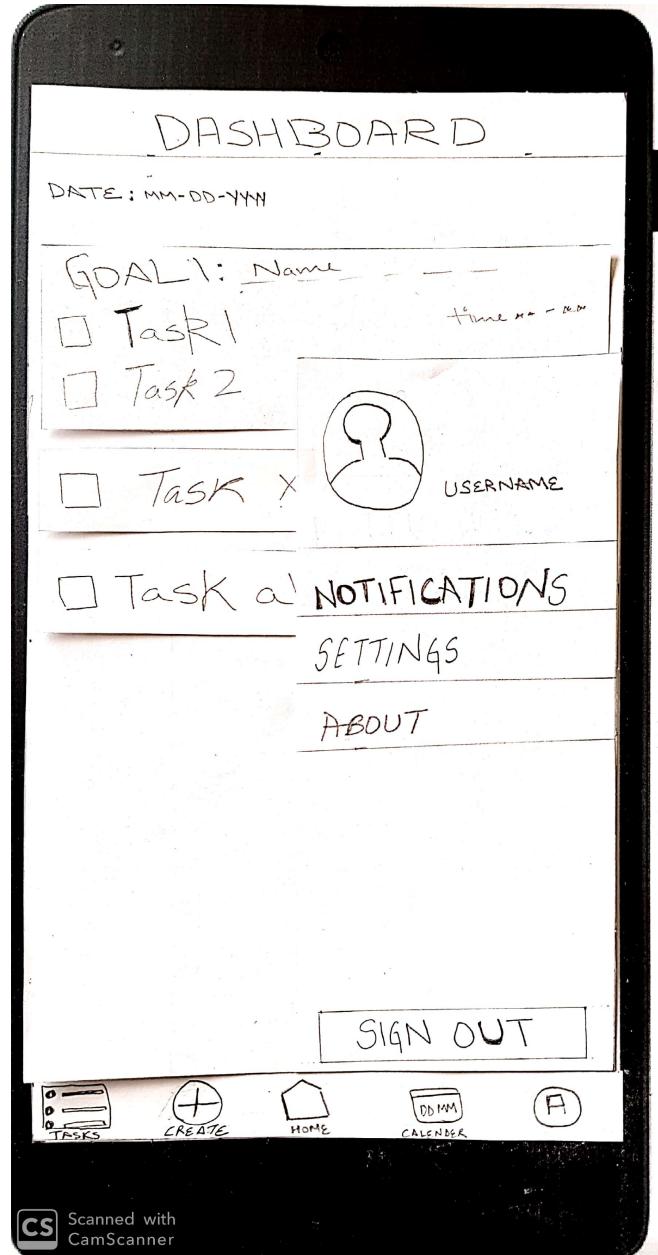


Figure 27. Menu

Wireframes (Ishank)

Images for the wireframes designed after paper prototype evaluatory studies.

ACCOMPLIFE



USERNAME

PASSWORD

[Forgot password ?](#)

[Sign up](#)

[LOGIN](#)

[SKIP](#)

DASHBOARD

07/01/2019

WELCOME TO YOUR DASHBOARD

Learn Spanish

- Watch YouTube videos

PIN TO TOP



- Do 15 mins tutorial

PIN TO TOP



- send paper to K

PIN TO TOP



Click to mark a goal as
"Urgent and High Priority"

Press and drag to
change priority

Pending & saved goals

Create goal

Home

Calendar

Menu



DASHBOARD

07/01/2019

WELCOME TO YOUR DASHBOARD



send paper to K

URGENT

Learn Spanish



Watch YouTube videos

PIN TO TOP



Do 15 mins tutorial

PIN TO TOP



GOALS

*PENDING TASK LIST

Learn Spanish

- Watch YouTube videos
- Watch a spanish movie
- Take spanish quiz

ADD TO SCHEDULE
ADD TO SCHEDULE
ADD TO SCHEDULE

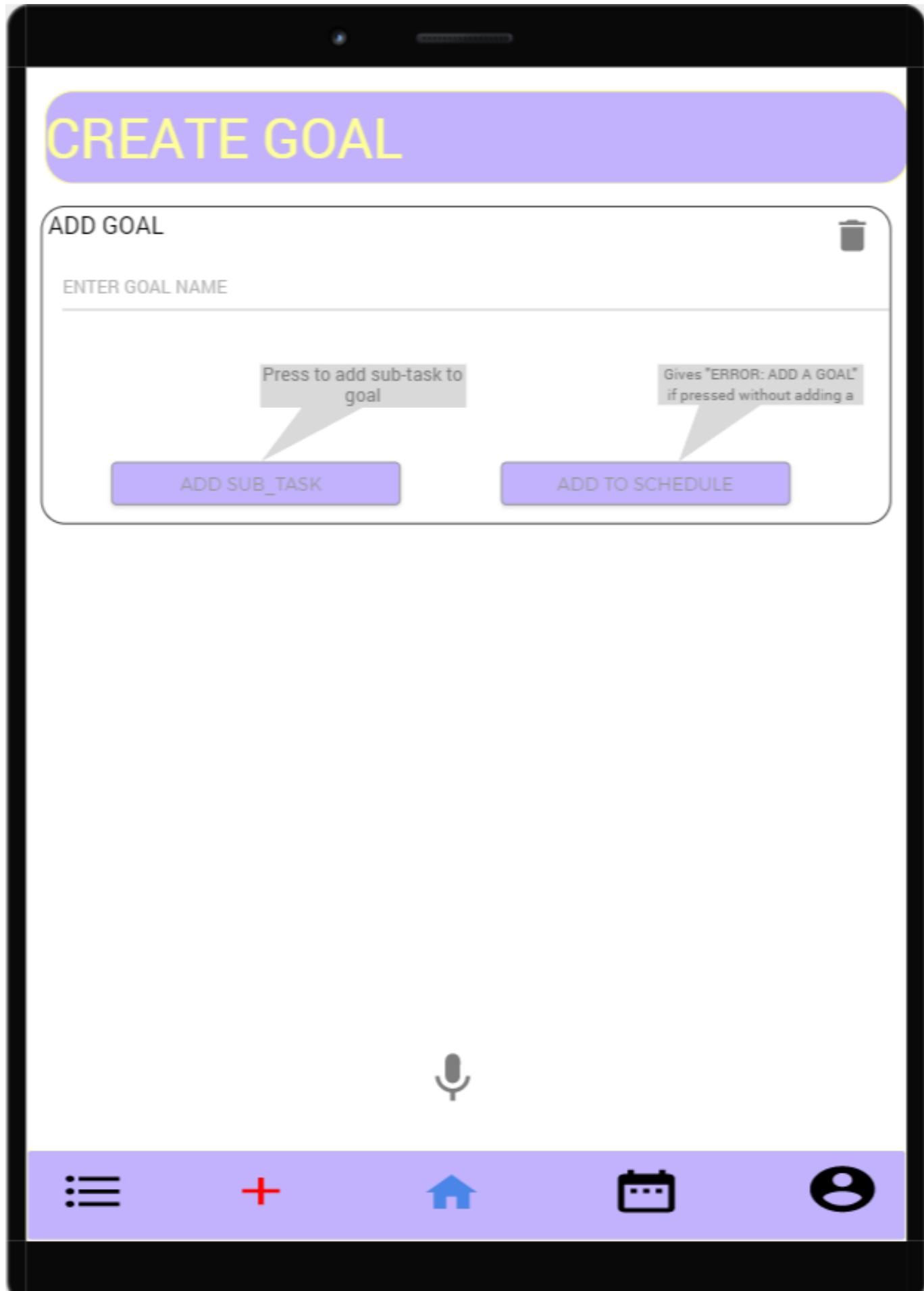
- Do laundry

ADD TO SCHEDULE

- submit assignment

ADD TO SCHEDULE







CREATE GOAL

ADD GOAL





XXXXXXXXXX



SAVE GOAL

ADD SUB_TASK





Figure 35. Screen 8

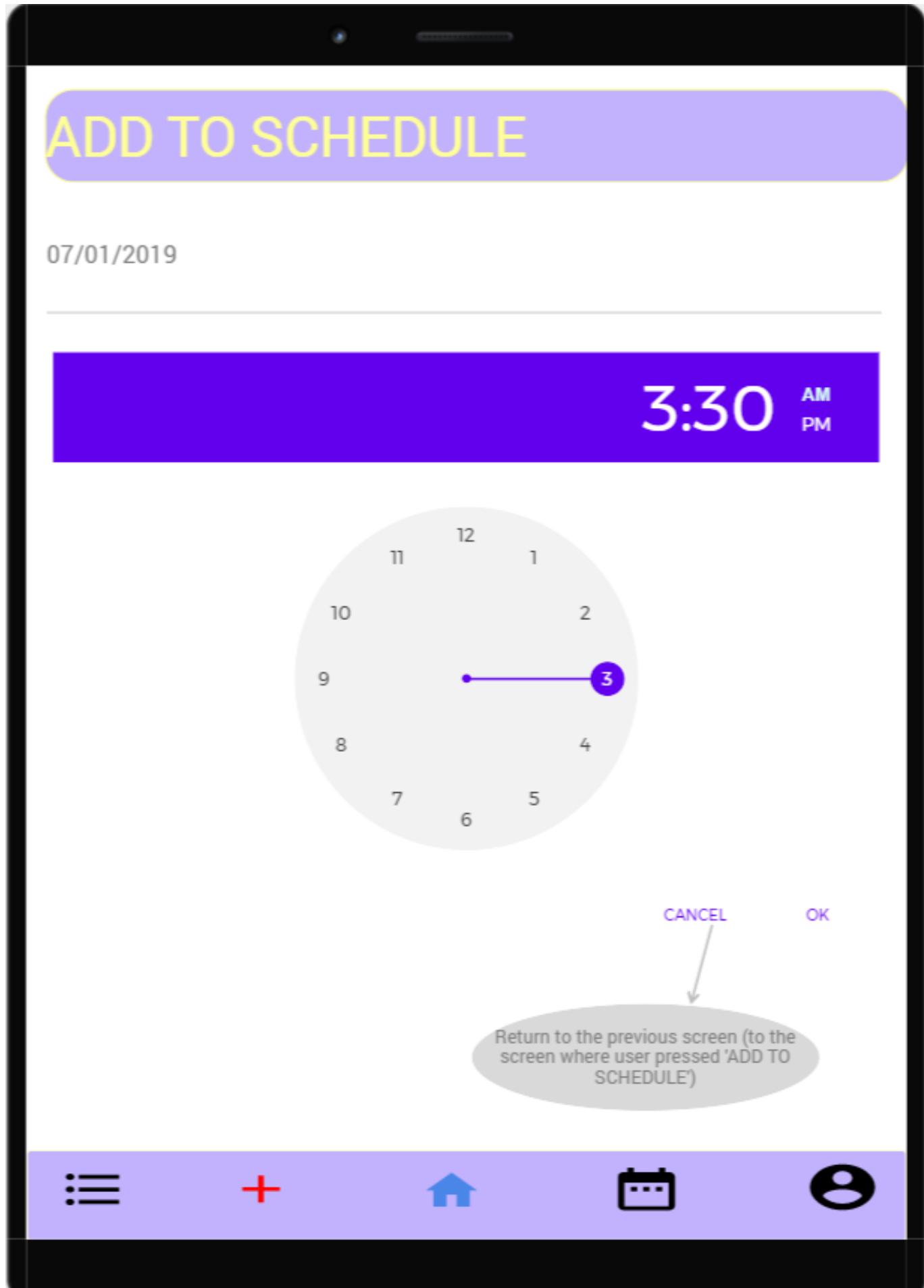


Figure 36 - Screen 9

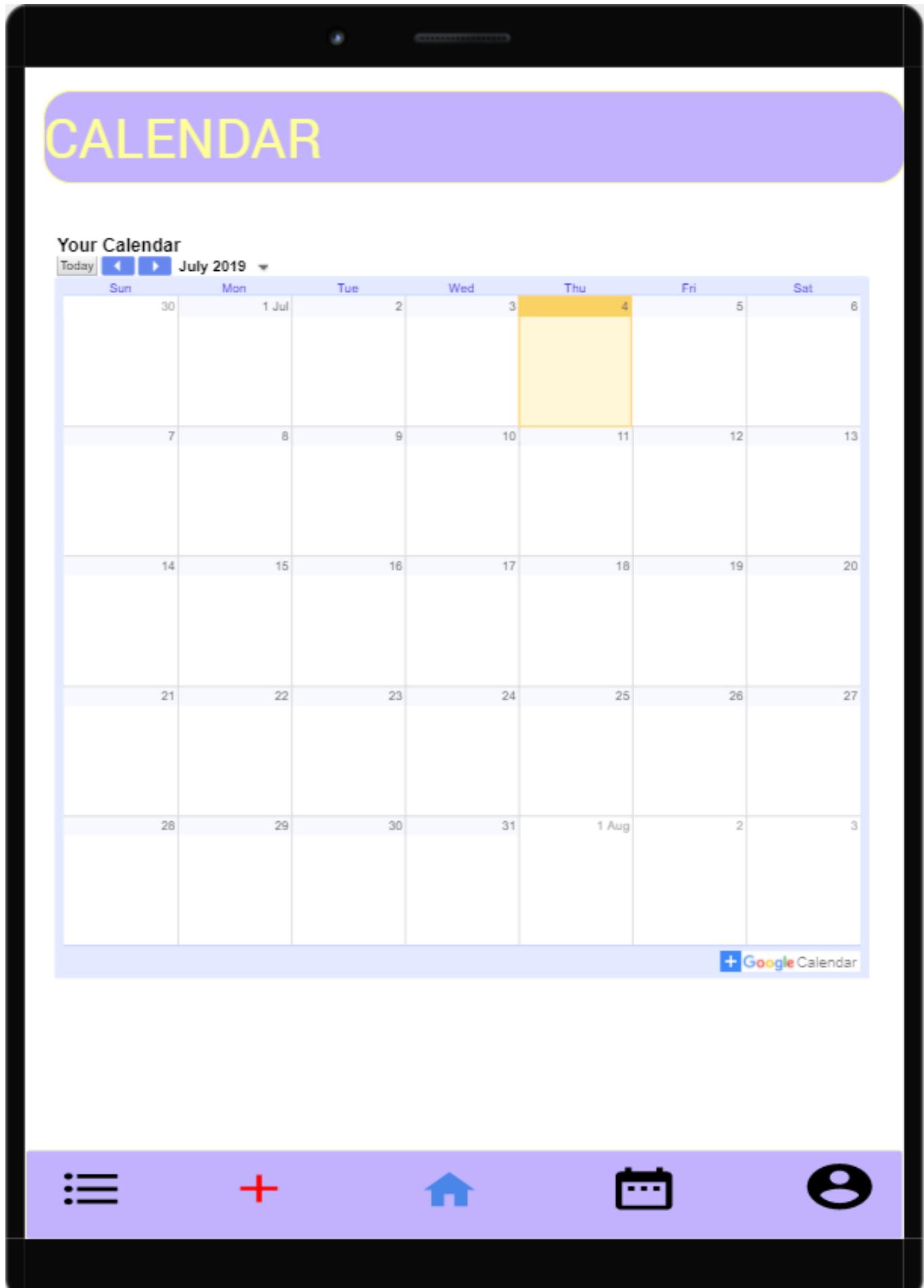


Figure 37. Screen 10

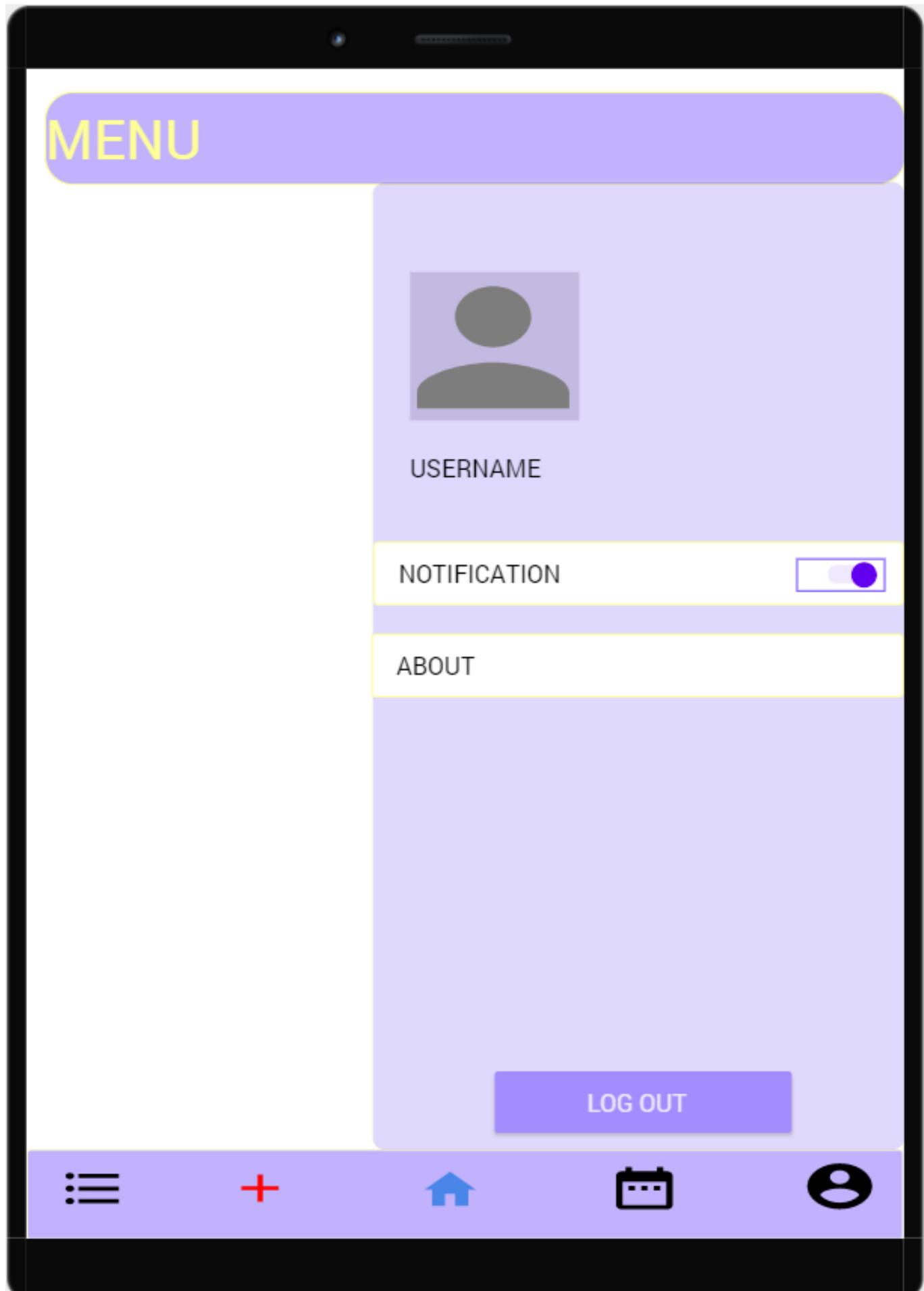


Figure 38. Screen 11

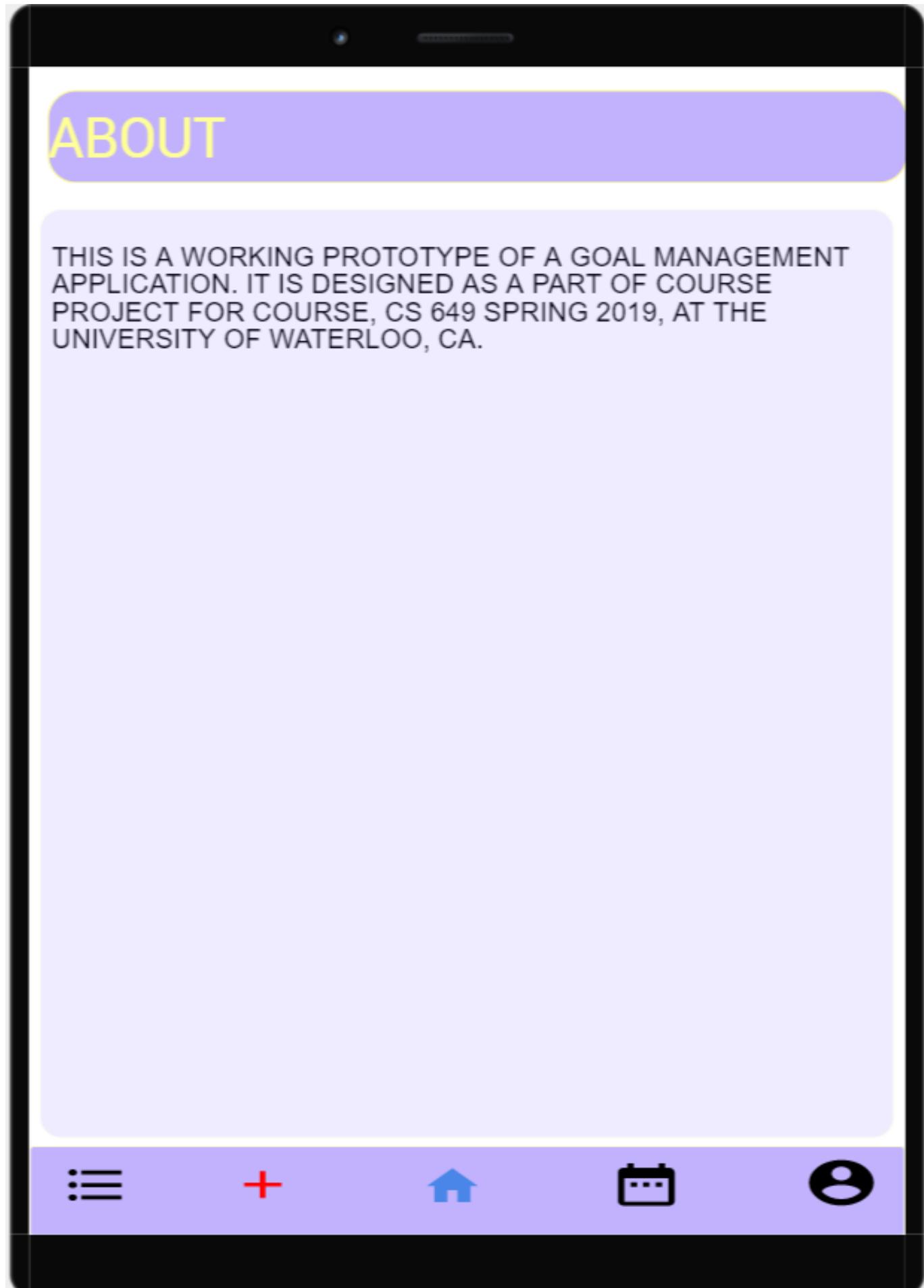


Figure 39. Screen 12

FINAL APP (Ishank)

Images of the final app developed from wireframes with changes of based heuristic evaluation.

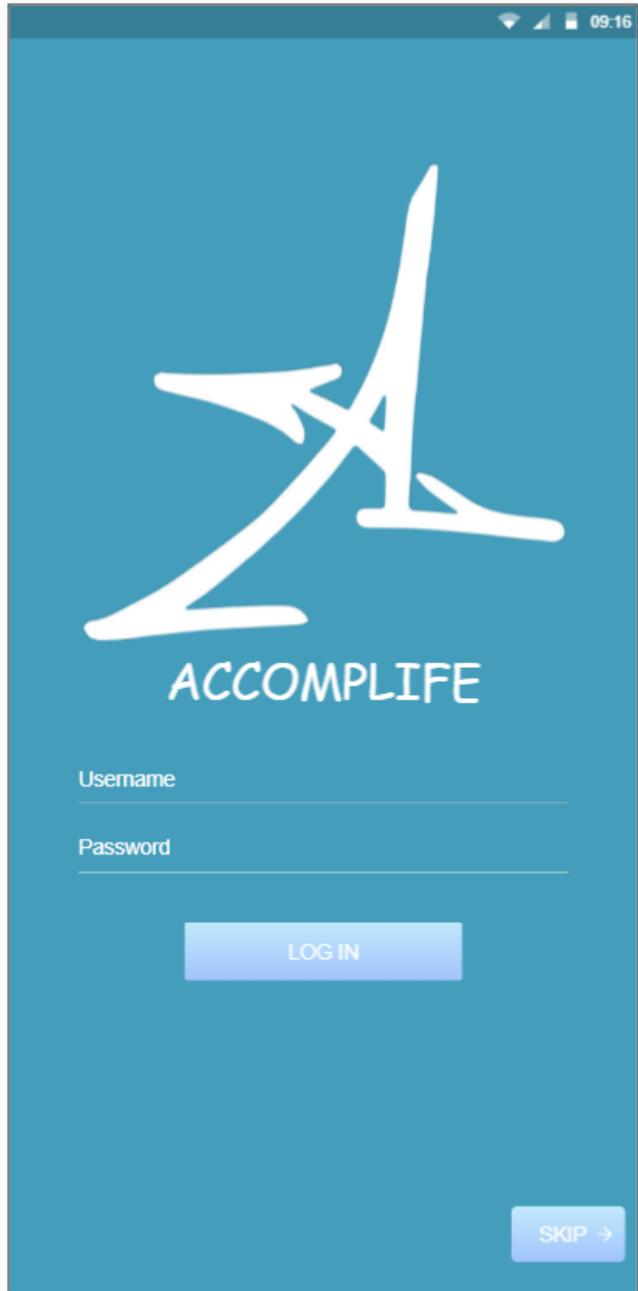


Figure 40. Log-in screen

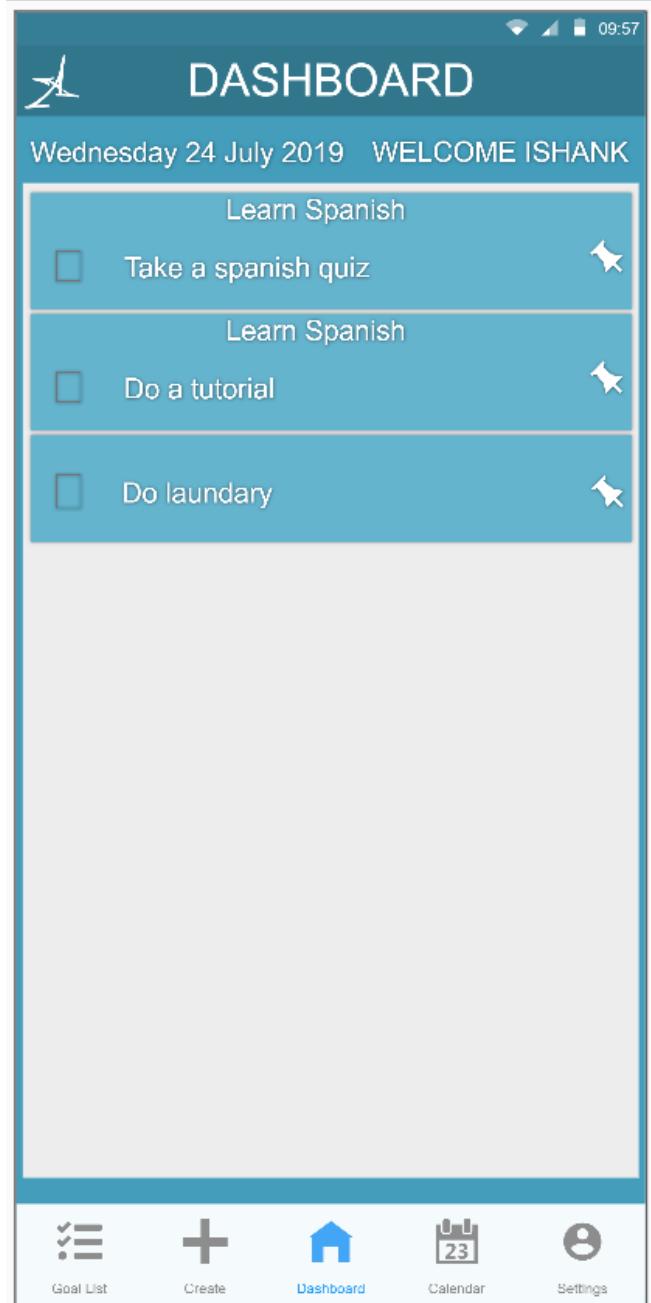


Figure 41. Home Page

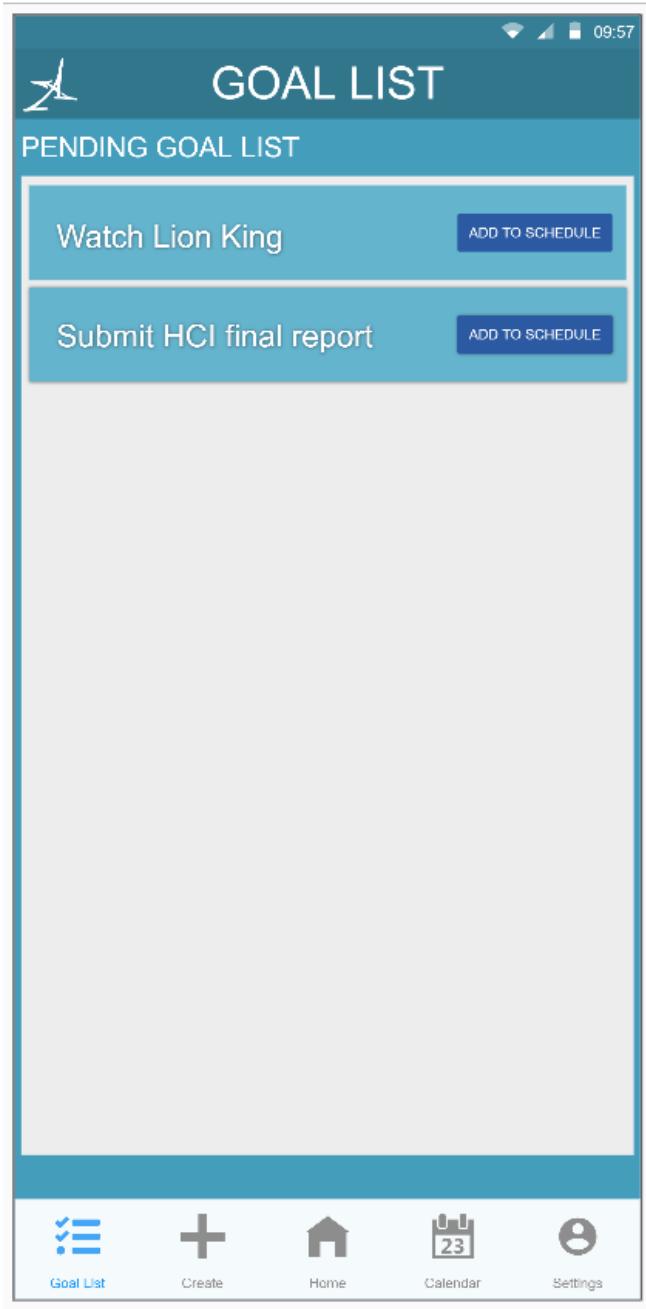


Figure 42. To-do list

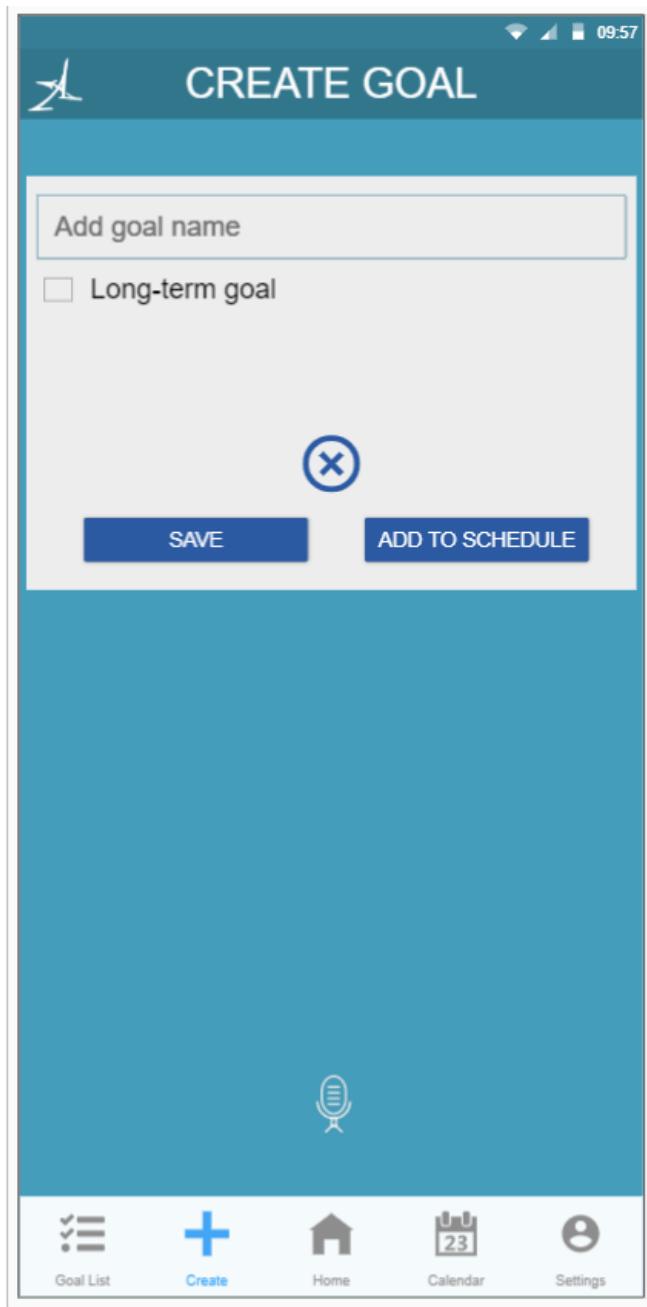


Figure 43. Add Goal screen

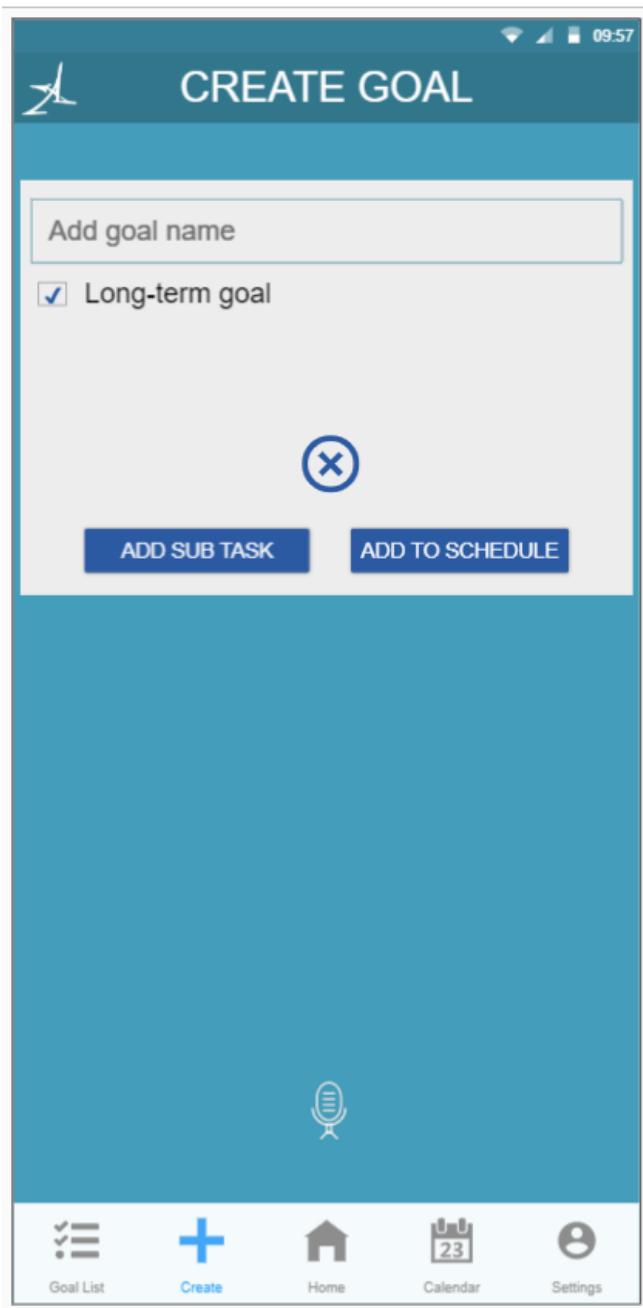


Figure 44. Long-term goal with option to sub-task(s)

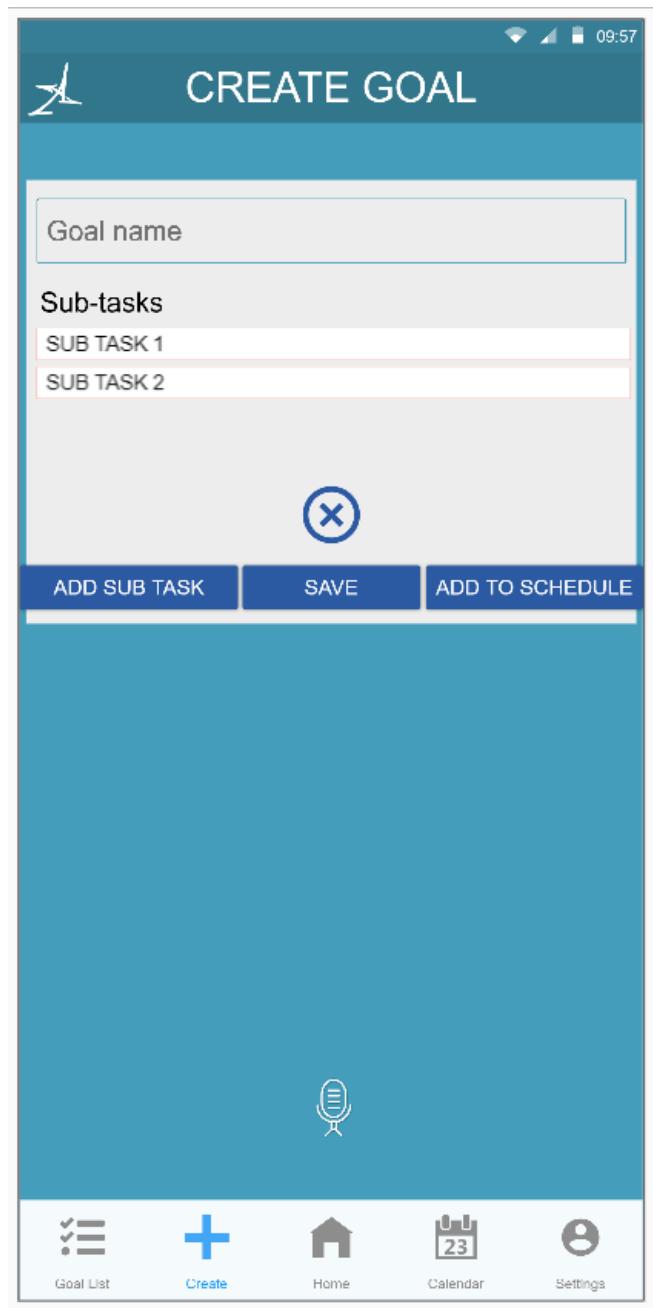


Figure 45. Long-term goal with sub-task(s)

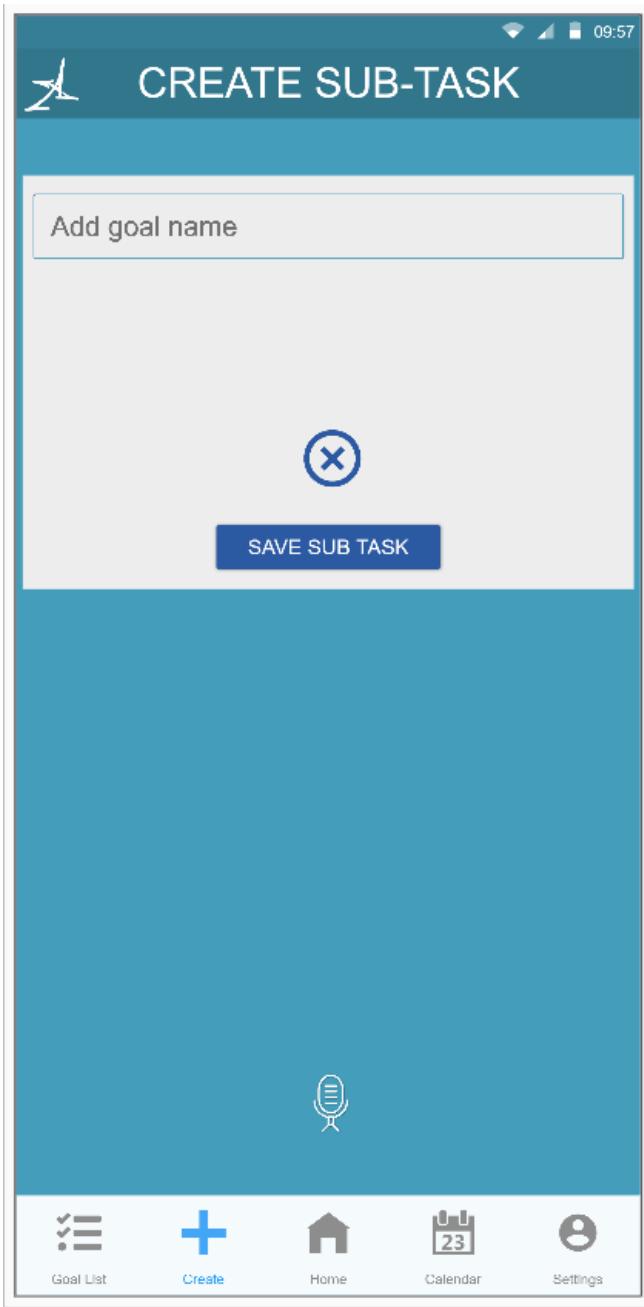


Figure 46. Screen to add sub-task



Figure 47. Calender month view

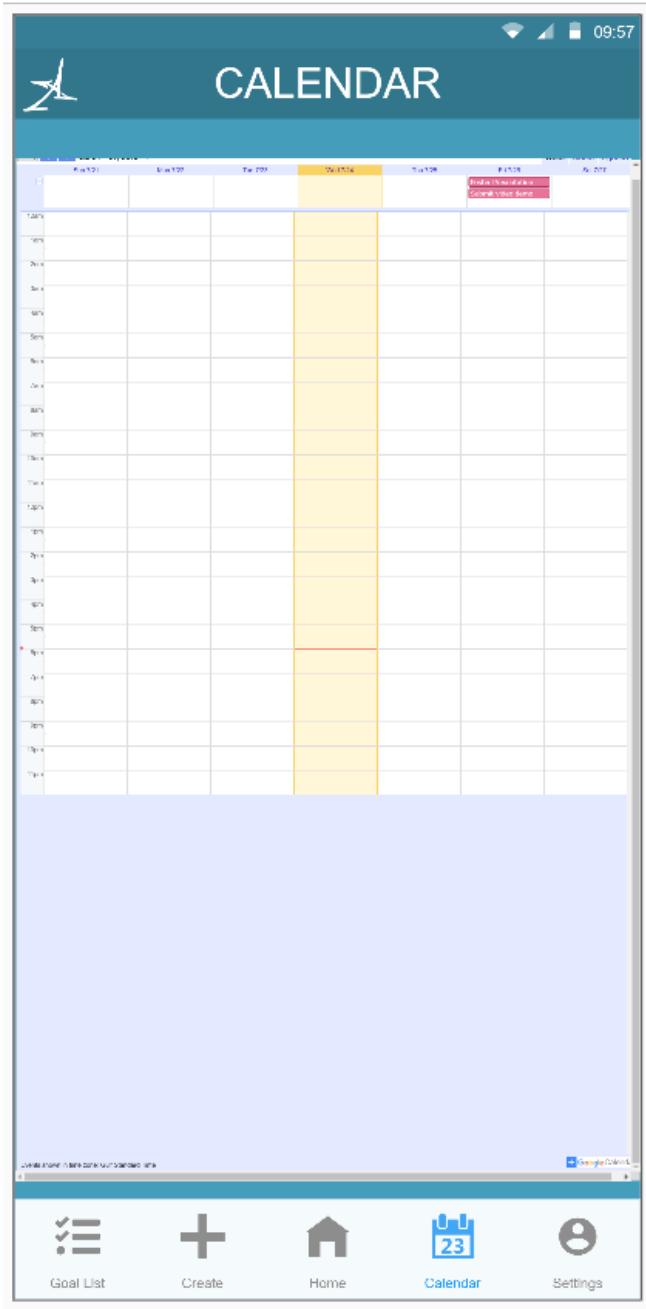


Figure 48. Calender day view

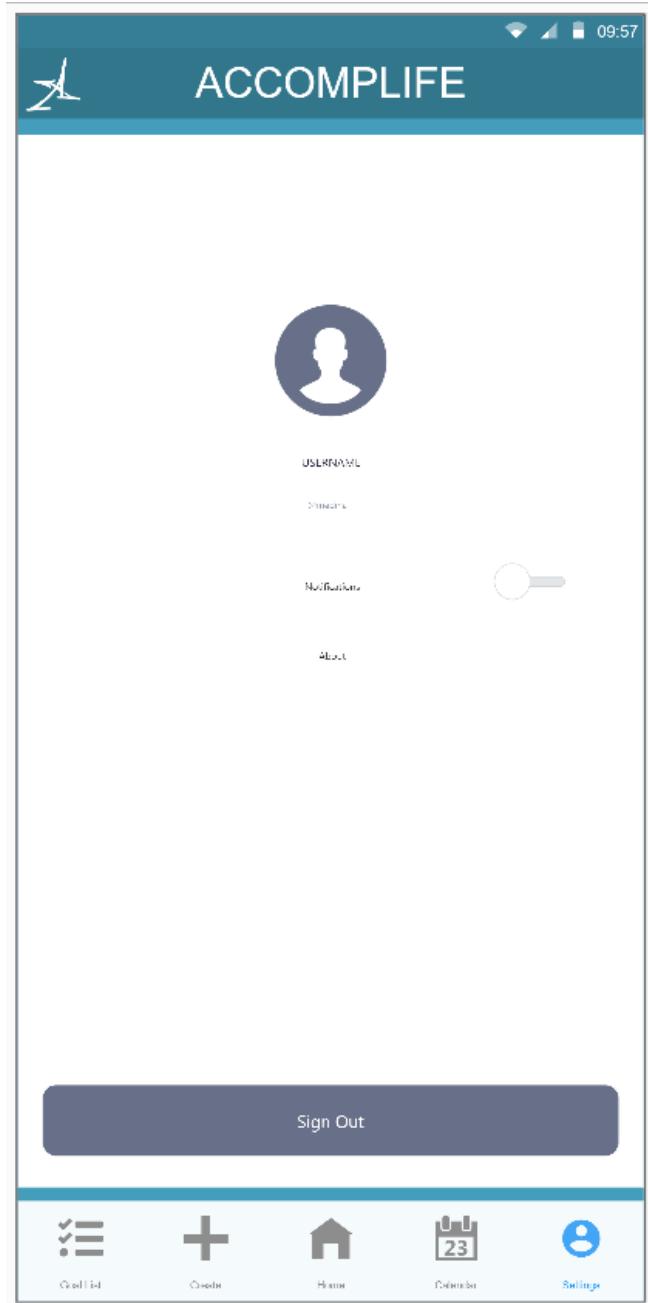


Figure 49. Settings and logout

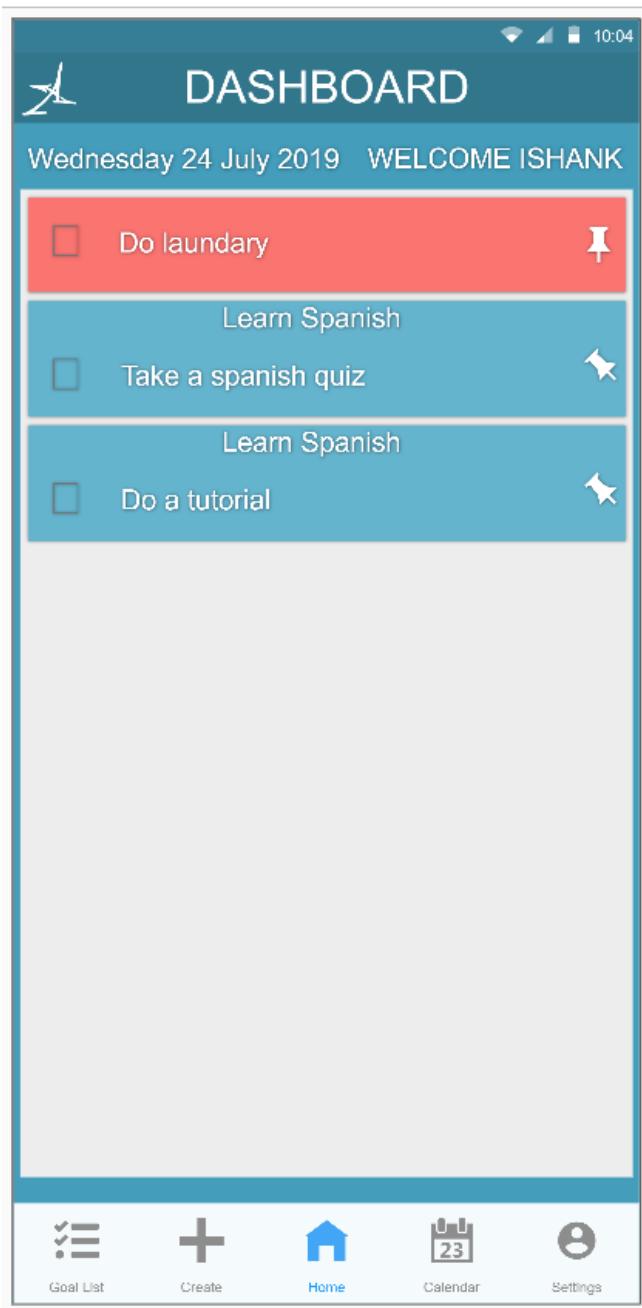


Figure 50. Dashboard with task pinned to top

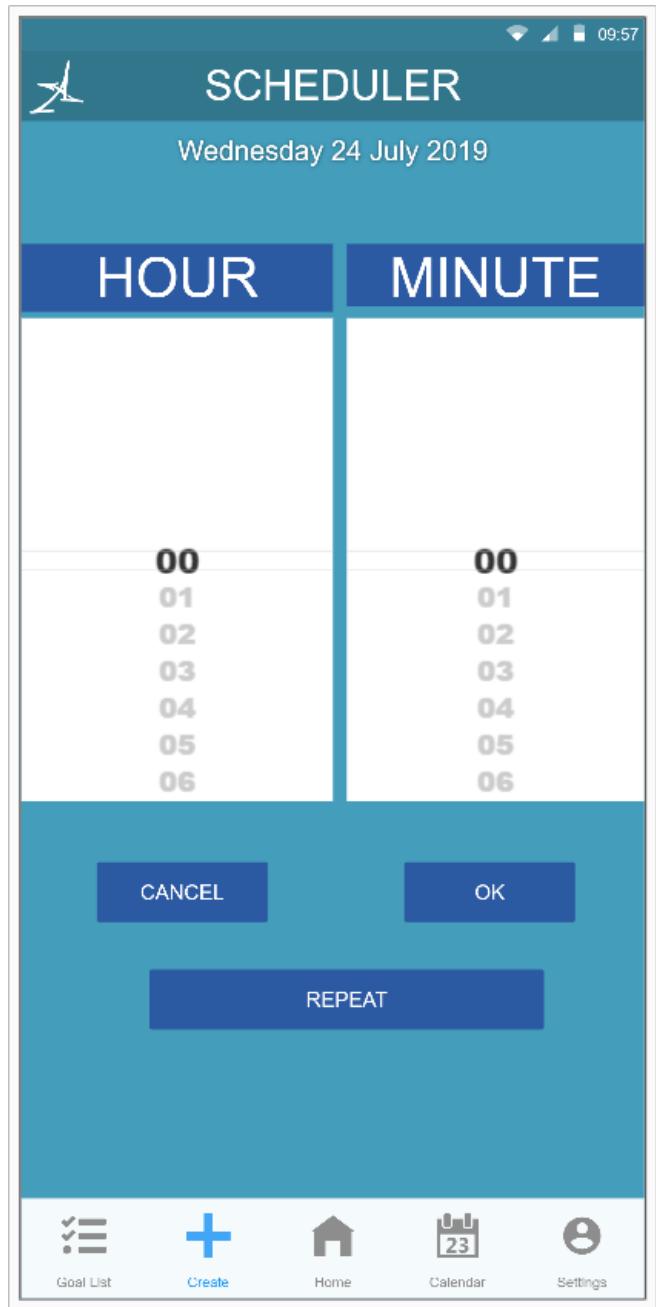


Figure 51. view of time picker