HCI Project Report (SEHAT)

GROUP MEMBERS

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DEMO VIDEO

The following is a link to the demo video of our project, where in we have explained the problem space and the idea, we have also given a walkthrough of our project in the video

https://www.youtube.com/watch?v=BeY5OUwmjmc

ABSTRACT

According to a report by the WHO, a sedentary lifestyle could be among the 10 leading causes of death and disability in the world in the near future. The consequences of sedentary lifestyle are a variety of direct and indirect health problems.

Thus, for a holistically healthy and disease-free life, following certain simple strategies such as a nutritious diet, fitness exercises and leading a balanced routine lifestyle has become imperative. However, in today's fast paced world, people often have a hard time in choosing the right fitness goals for themselves and also in following that fitness routine.

We decided to come up with the solution of a health and fitness app by understanding and gathering various user goals and requirements by conducting surveys and interviews, and we came up with a low fidelity and then a high-fidelity prototype of our app. The prototype was iterated upon several times by collecting valuable feedback from users by conducting various evaluation tasks.

The future work for our proposed app includes improvements on certain features based on constant feedback from the users along with overcoming the limitations of our solutions.

INTRODUCTION

What is sedentary lifestyle?

A sedentary lifestyle is one in which there is little or no physical exercise as opposed to an active lifestyle involving lots of physical exercises and work which requires moving from one place to another. It is an observation and a fact that we are all victims of sedentary lifestyles. Some of the main reasons are our job profiles that make us stick to our chairs, time constraints for timely and healthy meals, more screen time, travel luxuries and to an extent callousness and lack of understanding of the serious implications of sedentary lifestyle. Although the consequences of such lifestyle are serious health issues, the solutions may not be so complicated. Simple ways to overcome the sedentary habits can be to regulate our eating habits which means a healthy nutritious diet at proper meal times; climb up the stairs instead of using lifts; walk instead of driving, spend some time doing simple exercises and relaxing.

Moreover, Covid in the past two years have turned our lives tipsy turvy and there is an urgent need to tackle the negatively related lifestyle changes due to sitting at home and work from home culture.

Background and Motivation

It is often said that staying healthy is a choice. However, in the hustle-bustle of today's fast-paced world, people are unable to follow their health, fitness and diet goals regularly to bring about a positive change in their lives. Apart from this, at some point in our lives, most of us have had a hard time choosing the right fitness goals for ourselves. This acts as a deterrent in maintaining the focus for a healthy lifestyle. Examples are: not knowing what to eat and doing the wrong exercises which can have adverse effect.

This is because people are not always fully aware of their health requirements and dietary needs. Our motivation for choosing this topic of the project came from the above-described observations. Hence, we are inspired to come up with a solution that will provide the users with a customized health plan/guide along with ways for efficient implementation.

Existing apps and solutions

We did a broad research to find out the different types of already existing solutions in our problem space and found out a few apps which exist to solve the fitness and health problems of users. However, each of those came with their own set of limitations and drawbacks.

Table 1 Comparative analysis of existing Apps

Parameters	MyFitnessPal	Daily Workouts Fitness Trainer	HealthifyMe	FOODUCATE	SEHAT App Our Solution
Description	App with a database of 11 million food items	App that tracks your fitness routines and exercises as per your capabilities	App that tracks your holistic lifestyle to keep users engaged and motivated	App that tracks your food and dietary requirements and indicates progress through maintenance of charts and graphs	A guiding app for people who want to get fitter by changing their lifestyle/diet.
Food/Nutritional intake	Only food intake information displayed	No information on nutrition	One-on-one nutrition and diet plans	Only food intake information with macronutrient ratios displayed	Customized nutrition and diet plans under the guidance of certified dieticians
Bar code scanner	None	None	None	Barcode-scanner to facilitate nutrition data input	Scans food items and displays calories present,
Calorie tracking	No calorie tracking	No calorie tracking	Calorie tracking	No calorie tracking	Calorie tracker
Workouts	Over 350 workouts/ physical activity	Only home-based workouts	Includes fitness coaching, and workout plans	None	Fitness workouts which can integrated along with your daily routine.

Limitations of Existing Apps/Products:

We discussed and found some common limitations and drawbacks of the existing apps

Gamification fails to provide long-term motivation

- Most fitness/diet apps rely on game-like incentives. But all games come to an end and users may find the experience boring and monotonous.

Payment for all the important features & absence of food/nutrition intake tracking

- Manual input of daily food intake required, once a weight loss plan has been created.

- The app itself is free, however for all the premium features payment of $9.99 is required.

- No tracking of intake of minerals and vitamins by the users.

- Food database is insufficient. It is missing a lot of the popular food brands are missing, which means users have to manually type the nutritional values, which is unattractive for users.

Hard to trust intuitively

- Motivation towards fitness can quickly wear off when it feels like a chore. Every time you eat something you have to login to the app to enter the food intake, calories and other details. Tedious for the user to do this every time.

- Weight loss apps can feel like they're too restrictive, focus is only on reducing food intake/ calories and not on other factors like exercising and proper sleep.

- Some apps have rigid calorie-specific meal plans. There is a peril of developing too much faith into an app and becoming dependent on it for weight loss/fitness.

Impact of Improper Fitness Methods

- There is a lack of knowledge and understanding of the fact that not everything works for everyone.

- Absence of proper expert guidance in fitness and nutrition intake. Without the proper approach and guidance, incorrectly administered fitness regimes can lead to serious health issues. It may lead to compromising on mental well-being of people and subsequently loss of faith in the regime also.

Novel Solutions

The following are some of the key features that we will be incorporating into our solution while building our fitness app 'SEHAT'. These solutions will distinguish our solution from the rest

of the apps since they are focussed on overcoming the limitations of the existing apps and aim to match the user's expectations, goals and aspirations.

Feasible Exercises

Consistence in exercising is the most challenging step in achieving fitness goals. Missing physical exercises in fitness regime is mainly because of unexciting monotonous activities. Majority of the fitness regimes impose exercises that are either tough for beginners and/or require expensive equipment's that are inaccessible. Our app intentionally suggests exercises that are easy to follow even for beginners and can be easily incorporated into user's busy schedule. Further, exercises are integrated with interesting narrations and music to break monotony while exercising. Thus, our app makes it easier for users to consistently pursue their exercise routine.

Minimal and Focused design

The majority of the apps are overloaded with features that are not so useful. This is a major deterrent for users. Our Sehat app is extremely focused and minimal, thus facilitating the users to access the desired feature directly without any struggle. Further, pop-ups requesting to buy a premium membership has been avoided to ensure smooth and distraction free experience by the user.

Reward points

The app monitors 7 days of defined fitness regime, followed by a day of food intake with moderate relaxation (popularly known as cheat day). The app itself will reward the user with such relaxed calorie intake days by assessing the history of regime follow-up of apprx 10 days.

Sleep pattern alarm

The app will be designed to have the sleep monitoring feature. This is important as sleep duration, time of sleep and sleeping patterns can influence fitness regimes. So any deviations from healthy sleep pattern will be detected by the app and an alarm/pop-up notification will alert the user.

Calorie and step tracker

Depending on food input, calories alert per meal will be notified both at pre-meal time and post meal. Step tracker will be integrated with the app for tracking steps, that serves as an indication of calories used up by the body.

Exercising Alarm

Our app will have an alarm notification/ buzzer which can indicate less than required exercising or excess physical activity. This feature will by default help users to keep track of their rates of exercising.

Assigning of a fitness trainer

The app will feature fitness trainers' corner, where user can select his trainer and be in touch as and when required. The contact with trainer will keep the user motivated and on right track of fitness goals.

PROBLEM DEFINITION AND IDENTIFYING TARGET USERS

Problem Definition

The beginning of the 21st century is marked by a stark change in our lifestyles which is predominantly sedentary with little or no physical exercise as opposed to the active lifestyle of the people in the past. The consequences of sedentary lifestyle are a variety of direct and indirect health problems. Some of the more serious risks that are inter- related in a sedentary lifestyle are cardiovascular diseases, obesity, weight gain, high BP, diabetes and depression.

Thus, for holistically healthy and disease-free life, following certain simple strategies such as a nutritious diet, fitness exercises and leading a balanced routine lifestyle has become imperative.

Target Audience

Major Stakeholders and their roles: -

1) **General Public**: - The most important stakeholder is every other person using the fitness app or the end consumers.

   i) **Young people in the range of 14 – 19 years** - They are in their growing years and they need to take special care to move towards a healthy body and mind. They can benefit from the app by doing appropriate exercises and eating healthy so that they can have a fit body. Of special concern is obesity which is a growing problem in youngsters. The app will come handy and enable them to choose and play appropriate sports and pursue other physical activities so as to ensure fitness.

ii) **Adults between 20 – 50 years** - This age group is the most affected in terms of health-related practices as they neglect their well being because of the workload at jobs or in studies and lack of time. Hence an app with its health calendar and charts is expected to help in disciplining their exercise and healthy food regime. Also the app community can facilitate to motivate each other to work towards their goals of leading a life with a healthy diet and physical exercises, even after long, frustrating working days.

iii) **Senior citizens of 50 years and above** – There is a significant increment of health problems   in this age group. They prefer light yoga, walking, and light calisthenics. Proper diets can help to control issues like blood sugar and heart ailments by keeping healthy limits of sugar, cholesterol etc. However, if some people of this age group are interested in heavier workouts, then appropriate option is provided.

2) **Dietitian**: - They have a stake in the app because the role of a healthy diet for better physical development is very important. A dietitian facilitates integration of your diet with other habits which subsequently help to reach your health and fitness goals. They also advise about pros and cons of pursuing alternate diet plans like keto to paleo to high protein , motivate the consumers and provide new recipes for healthy eating. Further, they help in maintaining the charts for a regulated lifestyle by food and exercise tracking, providing nutrition insights, checking water intake, etc.

3) **Fitness trainers**: - For consumers a tough decision is how to exercise optimally in a routine manner. Trainer or instructors help overcome this difficulty. They provide dynamic warm-ups, cross-training sessions, and workouts tailored to target specific parts of the body, such as the abs, arms, and glutes. Strenuous exercises can be risky and to avoid it they filter out the exercises, routines and the levels according to your current physical state.

REQUIREMENT GATHERINGS

A survey consisting of a questionnaire with eight questions was conducted across varied age groups. The aim of the survey was to understand the user's idea of health and fitness, their lifestyle, their eating habits, their goals and personal motivations to lead a healthy and fit life.

The conducted survey resulted in the following inferences:

**Do you think an App will be able to change your lifestyle?**
83 responses
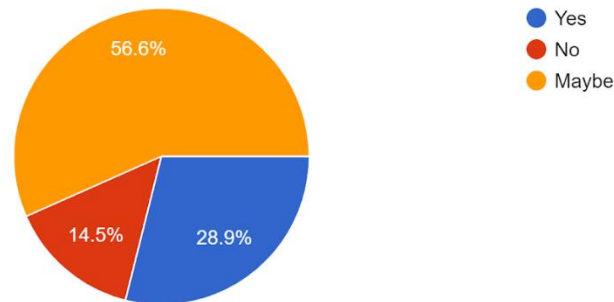
1. It is evident that majority of people are not sure, if an app will be able to change their lifestyle and 14.5 % do not think an app can help change their lifestyles. So, this indicates that the new app that we make should focus on features that:

    i) convinces the "maybe" respondents to use the new app.

    ii) makes the "No"/negative respondents to clearly see the benefits of using the new app

Do you think you are eating healthy?
83 responses
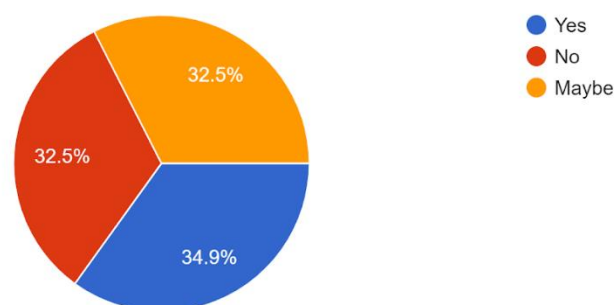
2. The respondents were almost equally divided into the three categories of responses for this query. This indicates that two third of the respondents with "No" and "maybe" replies are most likely to be benefited by the new app we intend to make. Further, the remaining one-third who think they eat healthy food can assess their convictions by

checking under professional guidance provided by the new app w.r.t calories to intake as per their BMI.

How frequent do you consume unhealthy food?
82 responses

- Once-twice a week
- Once in 15 days
- Once in a month

23.2%

72%
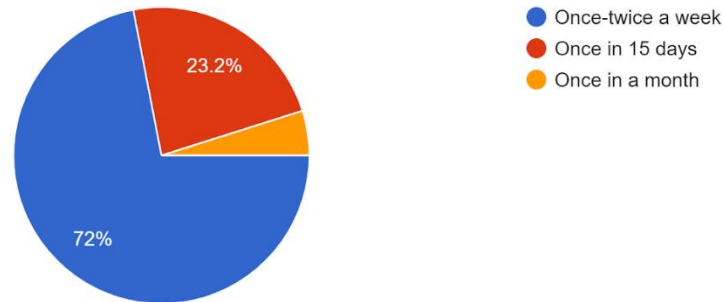
3. The majority of the people are consuming processed/unhealthy food, which can have serious implications on their health. We will strongly recommend our new app to them to encourage them to eat healthy.
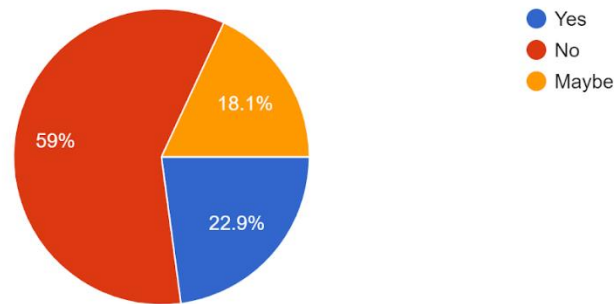
Are you satisfied with your current Physique?
80 responses

- Yes
- No
- Maybe

57.5%

15%

27.5%
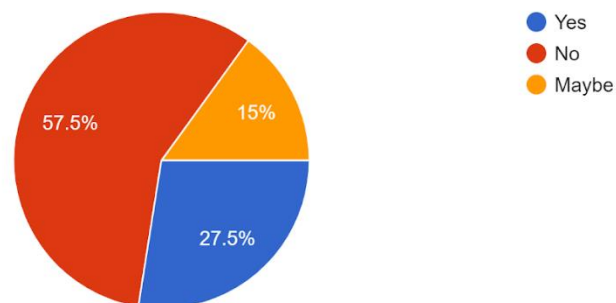
4. Most of the people are not happy with their physique. Using our app, users will definitely help them to achieve their goal of maintaining a healthy physique.

Do you exercise regularly?
83 responses

- Yes
- No
- Maybe

59% 18.1% 22.9%

5. Because of our sedentary and busy lifestyle, it is challenging for people to maintain a regular exercise routine; using our new app, they can maintain good health by following simple daily exercise regimes which will be integrated within their routines.

Do you feel the need for proper guidance while exercising?
78 responses

- Yes
- No
- Maybe

17.9% 25.6% 56.4%
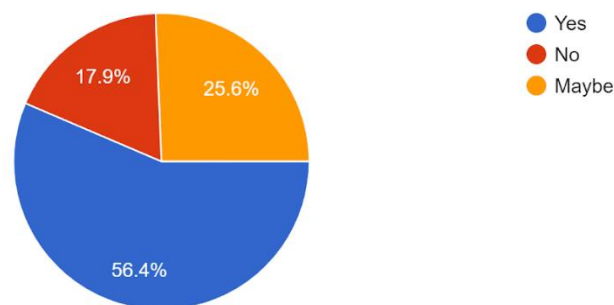
6. The majority of the people who exercised regularly, also felt the need for a proper guidance while exercising. Providing guidance through our app will be one of the primary goals of our SEHAT App which will be an appropriate platform to provide proper guidance to users while exercising.

Are you able to easily follow your current fitness goals?
78 responses

Legend:
- Yes
- No
- Maybe

69.2%
7.7%
23.1%
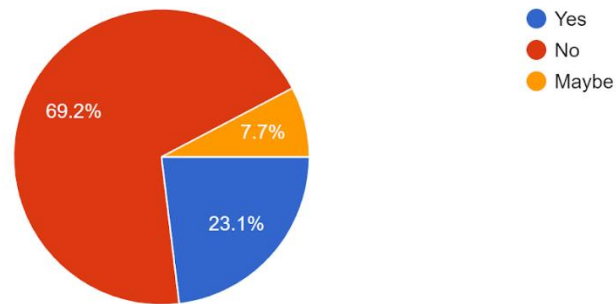
7. The pie chart data reflects that people are aware about fitness but are unable to keep up with their fitness goals. Our aim through this app is to be able to make a difference in people's lifestyles by facilitating their healthy regimes and consequently work towards a better and healthy future.

If you think an App will be able to guide you about exercising in a personalized way, Will you find it Helpful?
83 responses

Legend:
- Yes
- No

14.5%
85.5%
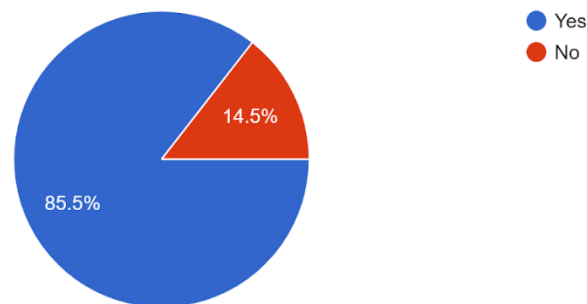
8. After analysing the response received from our potential users, we are confident that the synthesis of our ideas for our app will benefit the users maximally.

Interviews

To gain a closer view of the user requirements and expectations, we also conducted a few personal interviews with potential users from diverse backgrounds. The people were selected keeping in mind their different health and fitness goals in order to achieve wider accessibility and inclusiveness.

https://drive.google.com/file/d/1SScl3HYRSyW5NZExcldnG4RCU6B6W7WN/view?usp=drivesdk

https://drive.google.com/file/d/1STztss6J7B8A9z90QZmmsnjNrhQV9Esr/view?usp=drivesdk

https://drive.google.com/file/d/1STvQL_6lhxgCtIm_eU3coZpIibHiP4we/view?usp=drivesdk

https://drive.google.com/file/d/1SWGb0yysA3P1e_my1kcRZYvtyAZKxBwJ/view?usp=drivesdk

IDEATION AND LOW-FI PROTOTYPING

Ideation

We conducted regular meets along with ideation cum brainstorming sessions over a period of time, to think about the various solutions for the problem and different features/functionalities that our app could include. Here we thought about numerous solutions and after taking into considerations all ideas, we identified the most practical and feasible solution.
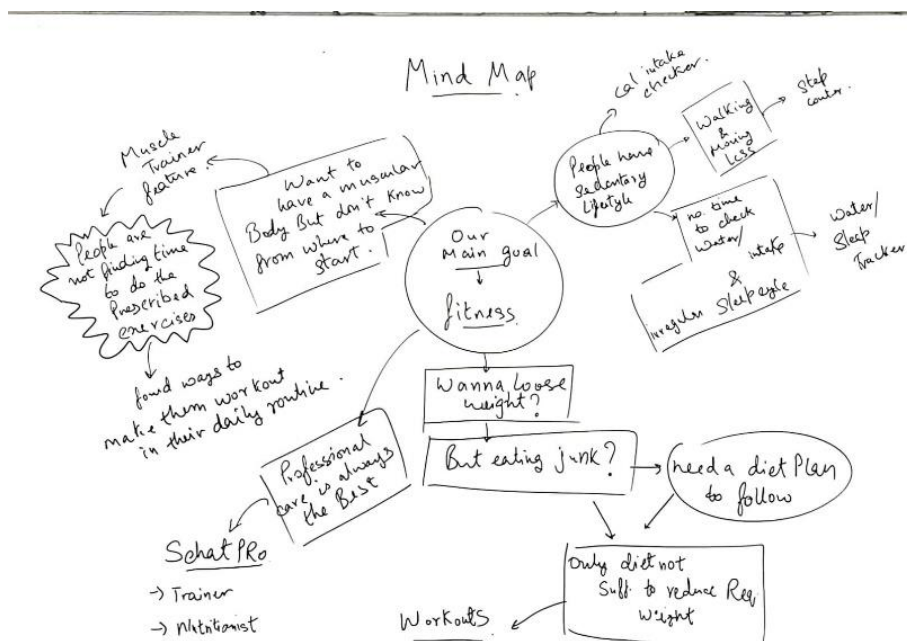
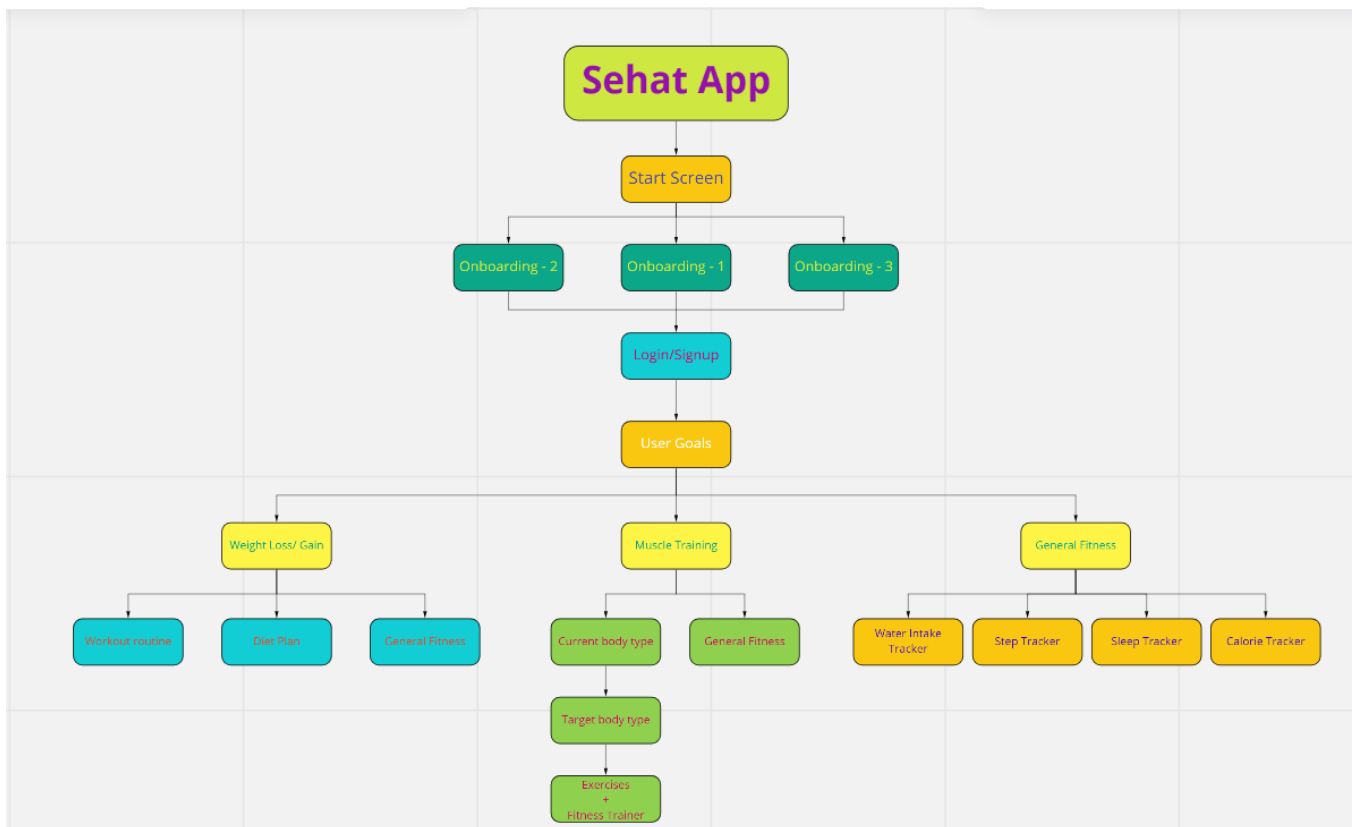The following is a link to our mind map made on Miro:

https://miro.com/app/board/uXjVOAkxOtA=/

The following represents our app's basic flow in the form of a flowchart, along with basic sketches of the interface at each step. This is a Low-Fidelity Prototype of our app.
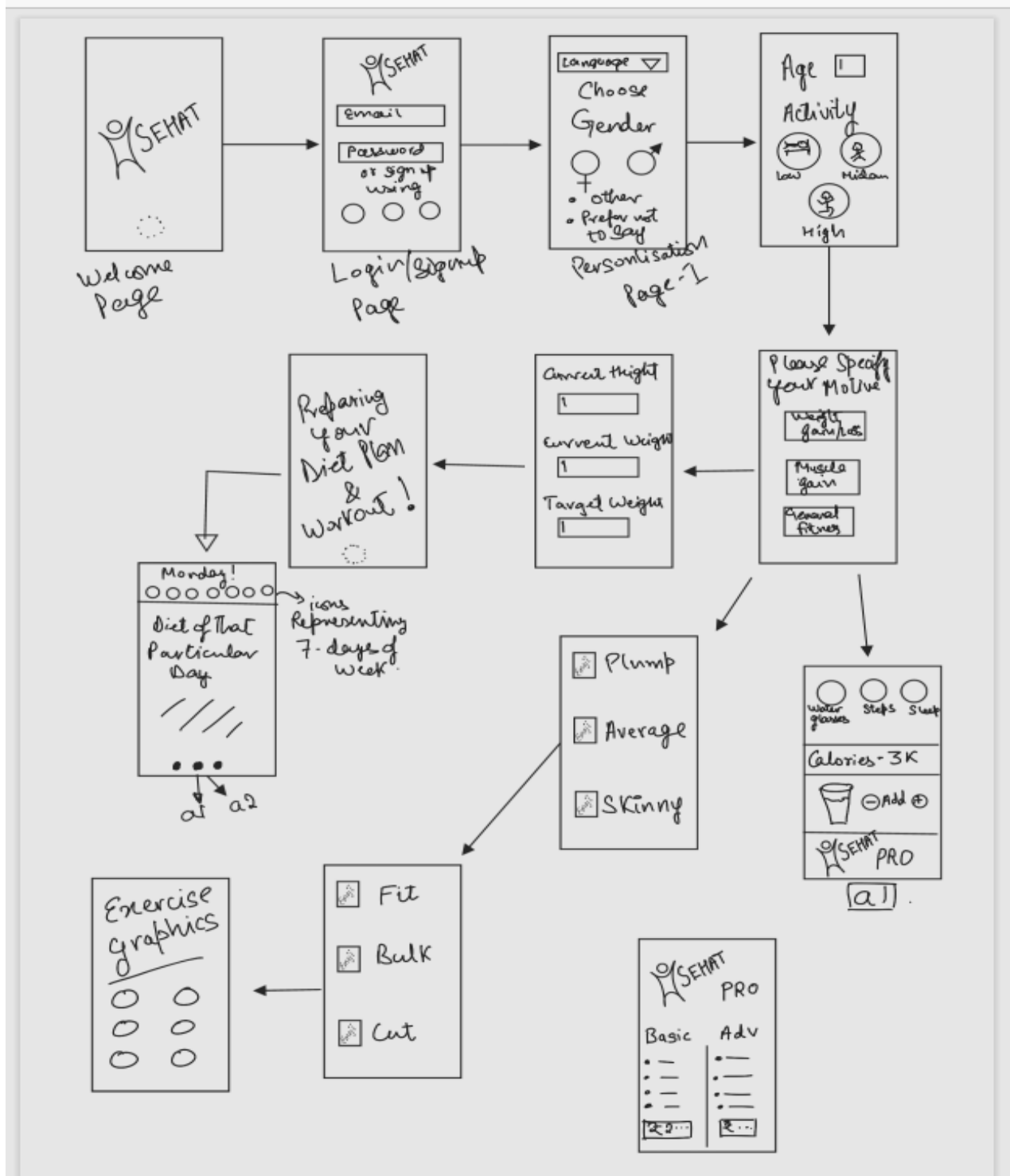
The above pictures show the flow of our app.

App Flow and Information Architecture

The following is the link to the information architecture plan that we made on Miro:
https://miro.com/app/board/uXjVOAlWqqI=/?invite_link_id=543558962640

Our app would function along the following lines:

- The first few screens of the app are the onboarding screens which aim to provide a walkthrough to introduce the users to the app and allow them to set up their profile on it.

- The app opens with a Welcome page that displays the app's name with a logo. It then brings the user to the sign-up page/login page. The user can log in through Instagram, Facebook, or Google. After the sign-up page, the user can fill in their details on the personalized page (Language, gender, age, etc.).

- Once in, the activity page is visible, in which the user can choose one out of three types (low, medium, high) of activity which they prefer.

- The app provides three types of workouts: weight training, muscle gain, and general fitness depending on the users' goals.

- After selecting the type of workout, the client is offered a planned diet and workout routine. The home page shows the days of the week along with the diet and workout plan for the day.

- The user can also go to Sehat pro for a personalized diet and workout session with a trainer at a cost-effective price.

- The user can also access their account and account settings from the home page to view their profile, their friends, connect to various social media, and change their account settings as per their convenience.
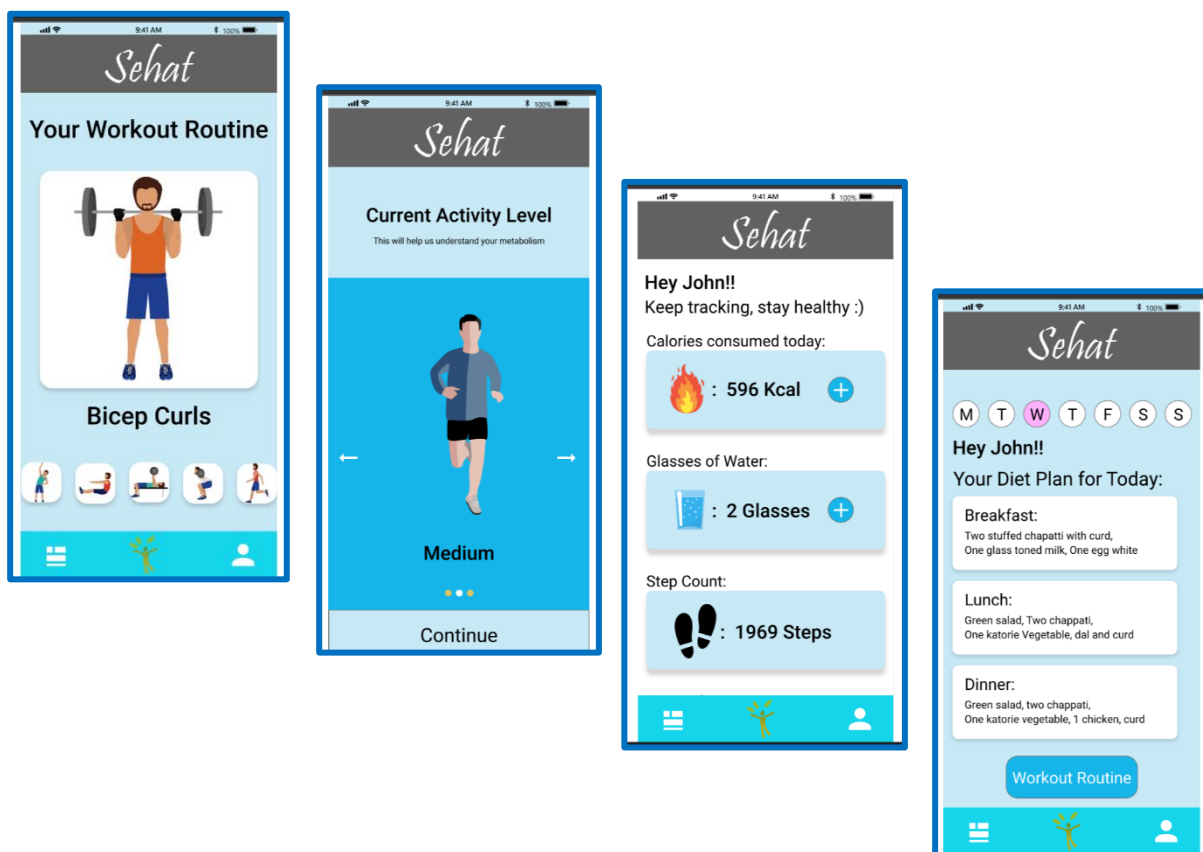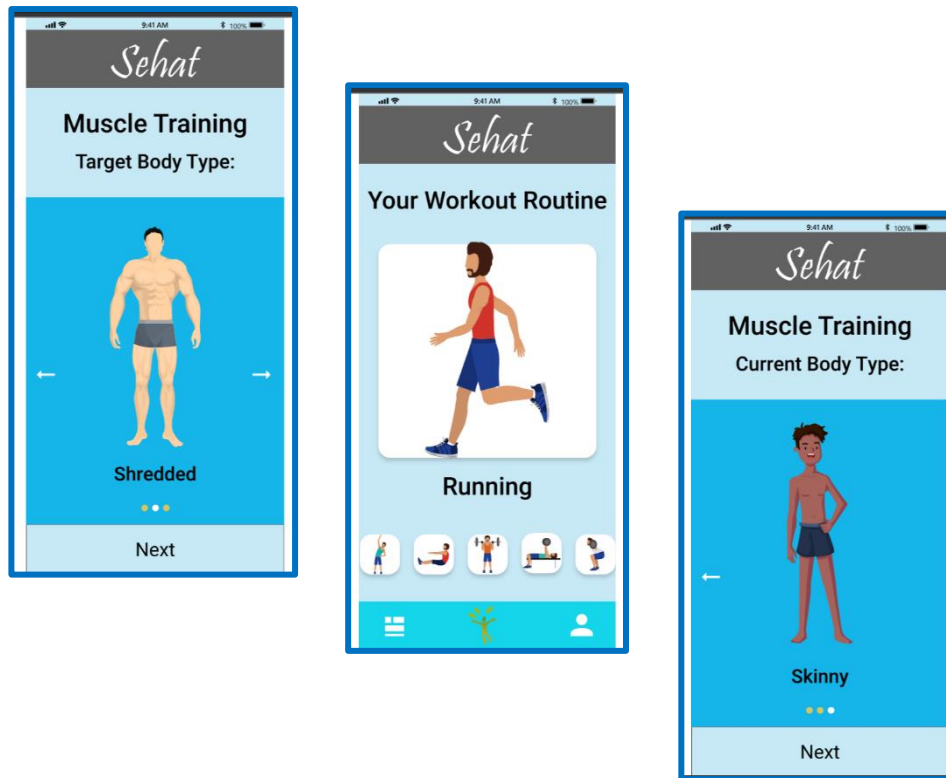
HIGH FI PROTOTYPE

After making a low-fi prototype of our app, we were able to identify the possible shortcomings of our proposed solutions. This helped us to further build upon our ideas, improve the functionality of our app, and shape our High-Fidelity prototype to its present form.

The following is an interactive version of our High-Fidelity Prototype which was created on the prototyping tool Adobe XD. This high-fidelity prototype reflects our final solution to the problem.

Link: https://xd.adobe.com/view/498543e8-6e01-4bc7-9994-4b4cb1243333-1cd6/

The following are a few key screens of our app:

The High-Fidelity Prototype was created keeping in mind all major design principles such as:

- Visibility
- Feedback
- Constraint
- Consistency
- Affordance

Our primary focus while making the high-fidelity prototype and coming out with the final product was to ensure that user experience shouldn't be at the cost of usability. Thus, we ensured that the app/product was both useful and enjoyable to use, and fulfilled its purpose to the core. The following are the key usability goals we focussed on:

- Effectiveness & Efficiency
- Safety
- Utility
- Memorability
- Learnability

EVALUATION

We took interviews of various people that fall under our target audience and showed them the hi-fidelity version of our app. We took interviews in order to record their live responses while browsing through the app. We assured them that their identity will not be revealed. We started off by giving them the link to our prototype so that they could browse around at their ease and then we started with the interviews where we asked them some questions.

Interview Links:

https://drive.google.com/file/d/186E6y6wv6_LFJuf38jqLerZoOSb0xuKg/view?ts=6247eaa1

https://drive.google.com/file/d/186gxH1013bdh3EQkdasgLlxfw2lYg1_6/view?ts=6247ea95

https://drive.google.com/file/d/18A5hw6054ZDloLtZO6xJxlMQvV53BRzw/view?ts=6247ea87

Q1. How would you rate the UI app on a scale of 1-10?

- We got an average rating of 8.5.

Q2 On a scale of 1-10 how much has this app helped you achieve your goals?

- We got an average rating of 8

Q3 What did you like most about our app?

- According to the interviews taken, the majority of people found our diet plans useful and beneficial. A popular opinion was that our app connected people to professional dieticians which aided them to reach their fitness goals and further motivated them.
- Second most liked thing about our app was how it categorized fitness plans according to different requirements by the user.

Q4. Do you think that the product's design matches its purpose?

- The response that came from the interviews indicated that the app's design matched with its purpose of striving towards a healthy lifestyle. Some mentioned that people's rating helped motivate them whereas others got motivated by the professional help provided and daily analysis of their routine.

Q5. Do you have any suggestions or recommendations for improving our app?

- A common concern was how the app did not have enough weight/muscle training recommended exercises for women. Approximately 50% of the users are females and

they too require proper guidance and an exercise plan. A common stereotype is that women don't lift weights or do muscle training, however, that is not true.

- The app should be gender inclusive and have proper exercise routines/plans for all.
- The app does not allow the user to quit or pause in the middle of a fitness plan which can be annoying. Some users first just want to try and explore all sorts of exercises/ diet plans and then choose the one which suits best for them.
- Some users wanted to

High Fidelity Prototype: After Evaluation

The following is a link to our final high fidelity after making the required changes to our app from the feedback received after conducting the evaluation:

https://xd.adobe.com/view/d30fa54e-c5fb-44e0-995c-d3d003aee363-865c/?fullscreen

Changes we made to our high-fidelity prototype after conducting the evaluation:

1) Added a personal instructor for more personalized help and instructions

2) Added a user info page through which you can change your account's password

3) Added some stats on user info page such as Total time spent exercising and current daily exercise streak

ANALYSIS AND FUTURE WORK

A general observation found by exploring the problem space was that most people were aware of the importance of physical fitness and the harsh consequences of a sedentary lifestyle. However, they lacked in an appropriate and effortless method and plan to keep up with their fitness routine and healthy diet plans.

A comparative study of various existing fitness apps revealed certain limitations which curbed their use and popularity. Also, all our observations were corroborated by factual data collected through a survey which indicated a general inclination and eagerness towards maintaining a healthy lifestyle by achieving a good physique complemented with healthy eating habits.

Hence the app proposed by us was based on our observations and data analysis through various surveys, personal interviews and other methods of requirement gathering. The primary goal of

our proposed solution was to build a user-friendly app which would guide the users at each and every step of their fitness journey.

The future work of the app and our proposed solutions involves including more features and functionality with time. It also includes some of the limitations of our proposed solutions that we couldn't fully overcome in the course of the project due to the paucity of time. Some of the future work would involve:

- Adding voice-based commands by the user to the app.
- Adding a new safety feature, which would alert the user if some exercise is not being done in a correct manner and may be harmful to the user.
- Adding more exercises which suited female body types
- Further, making improvements in the user-interface, enhancing the interaction process of the users with the app.
- Coming up with new features such as dark-mode, generating new colour schemes etc.

CONCLUSION

Physical fitness is imperative for a fulfilling and holistic life. Although, the importance of a healthy lifestyle is well recognized, one still struggles to look for ways to achieve and follow their fitness goals. A variety of apps help to achieve the much sought-after physique, however, a complete, easy to use flexibly monitored app was still not present.

Thus, our proposed solution and app takes care of all special features that are lacking in the already existing apps. Some of the key features of our proposed solution were assigning of a fitness trainer for one-to-one advice, reward points/streaks, feasible exercises for users, minimal and focussed design.

Design and development of the Low and High-Fidelity prototype based on the data gathered from surveys and interviews, followed by user evaluation and guerrilla testing helped us to constantly iterate and improve on our existing designs and prototypes along with identifying the shortcomings of our solution.

Hence, it can be emphasized here that our app is going to facilitate people of all age groups to keep up with their goals with ease and enthusiasm. Our app also offers a lot of scope for future work, and improvements which we are constantly making depending on the user feedbacks.

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Image References

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11) https://www.freepik.com/free-vector/set-man-doing-excercise_4767465.htm
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INDIVIDUAL CONTRIBUTIONS

Ayush Chauhan: Worked on Hi-Fi prototype, information architecture, demo video

Mahima Chopra: Requirement gatherings, interviews, survey form, evaluation plan/interviews

Srijan Kar: Target Users/Stakeholders, Evaluation plan, interviews

Srimant Mohanty: Mind-mapping, App comparison, Project report writing and compilation

Yajat Gupta: Requirement gatherings, interviews, survey form, low fi prototyping, mind-mapping, demo video

Yaksh Patel: Research and write-up on Limitations of existing Apps/solutions, low fi prototyping

Apart from the above-mentioned contributions, each and every member helped with the ideation process at every stage of the project and also researched on various topics included in the project report.