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IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY
كلية علوم الحاسب وتقنية المعلومات
College of Computer Science and Information Technology

CIS422 - Human Computer Interaction

Academic Year (2022/2023)

Project Phase 1



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Section Number: Group (3)

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Diabetes

Introduction

As we know illness in general can affect anyone's psyche, and if the illness is permanent like diabetes patient may feel like a stranger to the community or unwanted because of the diabetes symptoms and the medications that will be attached to the patient for his/her entire life, so we decided to let these people know that they are not alone and there is nothing to feel embarrassed about.

Problem Statement

Although diabetes mellitus (DM) is a growing health problem. Diabetes patients can have an emotional and physical alienation. Many can feel isolated from the outer world when it comes to discussing topics related to "diabetes" like the insulin levels and diets related issues. A platform where they can share their thoughts, questions, and advice along with saving their own medical statistics in an organized way is clearly needed.

Proposed Solution

Mission: we aim to create a safe and cooperative diabetes community platform to share knowledge and motivate each other, along with connecting them to the closest social and medical events that is related to diabetes based on their current location.

This platform will provide:

- A timeline where members can share and exchange their daily meals and thoughts and questions regarding diabetes Supplies and Devices.
- Latest and upcoming diabetes events and gatherings.
- A blood sugar monitoring interface to track and be aware of the daily changes. Members will be able to see what makes their numbers go up or down, such as eating different foods, taking their medicines, or being physically active.
- Create a live chat room where patients can connect with one another
- flexibility to the doctor so he can make any changes and the patient will be informed immediately through notifications

Literature reviews of similar systems

1. Bezzy T2D

(Bezzy type 2 diabetes)

Users and tasks:

- Users can contact with other advocates and experts throughout live chat.
- Users can share (treatments, symptoms , daily living) and connect directly with others throughout forums.
- Users can browse in the application about shared experiences that can help and encourage them throughout discover articles and stories.

Usability characteristic:

Effectiveness: the application provides live chat that can user messaging directly.

Efficient: the application also provide instruction about how application work.

2. mySugr

user and tasks:

- users can record their blood glucose data.
- users can record also their meals and exercises and medicine.
- users can share their report with doctors.

usability characteristic:

Effectiveness: the application provides a feature that help the users to calculate insulin doses of diabetes patients.

Efficient: the application provides the gamification approach that the app offers a "monster companion" it is like a virtual friend that allow user to "tame" the monster day by day.

3. Diabetic Recipes

Users and tasks:

- User can browse and download recipe.
- User can search by ingredient or style in the library of the application.
- User can make shopping list easier by the application because it generates a shopping list to help the user on the grocery trip.

Usability characteristic:

Effectiveness: the application provides a built-in-carb counter

that the user can knows how much glucose he takes in the whole day.

Efficient: the application provides a how-to video.

User Analysis














Patient

- Age: 18-55 years
- Geography: Saudi Arabia and any other region that the application is available in.
- Gender: Male and female.
- Health condition: Patients with type 1 and type 2 diabetes, pre-diabetes and/or prediabetic conditions
- Tech savviness/familiarity with mobile app usage: Should have at least a basic familiarity with how to use mobile apps
- Attend the diabetes events that will be held.
- Share and exchange their knowledge and experiences.
- Provide assistance to each other by motivating each other and sharing their useful daily habits.
- Use the app to track their blood sugar, weight, blood pressure, medications to use this knowledge to improve their daily habits

Doctor:

- -Age: 30 and older
- -Gender: male and female
- -User Needs/Goals: To manage their diabetes better by tracking blood glucose levels, eating habits, physical activity and any other medical information they want to monitor in one easily accessible place.
- -Motivations: Managing diabetes can be difficult but users want a way to track all of their health information in order to stay on top of their condition, improve it, and hopefully reduce any complications that may arise as a result of diabetes.
- Geography: Saudi Arabia and any other region that the application is available in.

Task Analysis

	Register	Edit profile	Update	Appointment	Live Chat	Login
Admin						
Doctor						
Paitiont		 				

A. Tips on how to deal with diabetes:

- Give the patients some advice and information on how to deal with diabetes and lessen its effects.
- Give some book recommendations.
- Post inspirational massages every day.

B. Provide live chat room that the patients can communicate with each other:

- Give the patient private space so they can share knowledge and experiences.
- They can feel more comfortable to ask other patient and exchange advices.
- Get more details about their life style and how they can overcome and deal with the Diabetes.

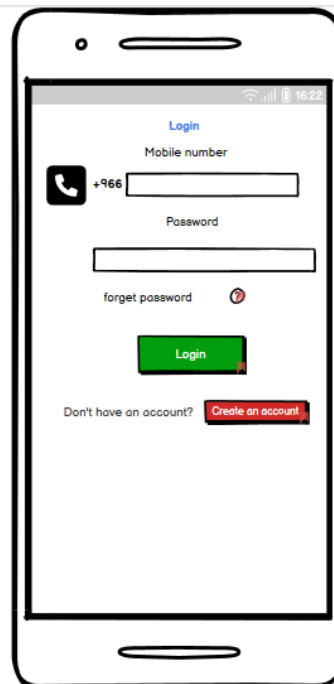
C. Provide monitoring interface for the patient:

- Provide a screen so the patient can follow up the tests and medications.
- Give notification to the patient when the doctor makes any changes.

D. Provide private room for patient with doctor:

- The patient can disclose his problem to the doctor comfortably.
- Encourages the patient to seek care and to be as honest as possible during the course of a health care visit.
- Respecting patient privacy.

Phase 2





A mobile app sign-up screen. At the top, there's a status bar with signal strength, Wi-Fi, and the time 16:22. The screen has a white background with a black border. The title "Sign up" is in blue. Below it, the label "name" is in black, followed by a white text input field. Then, the label "Mobile number" is in black, followed by a black telephone icon and the text "+966" in black, and then a white text input field. Below that, the label "Password" is in black, followed by a white text input field. Then, the label "confirm Password" is in black, followed by a white text input field. At the bottom, there's a green "Sign Up" button with a small red error icon on the right. Below the button, the text "have an account?" is in black, followed by a red "Login" button with a small red error icon on the right.

Sign up

name

Mobile number

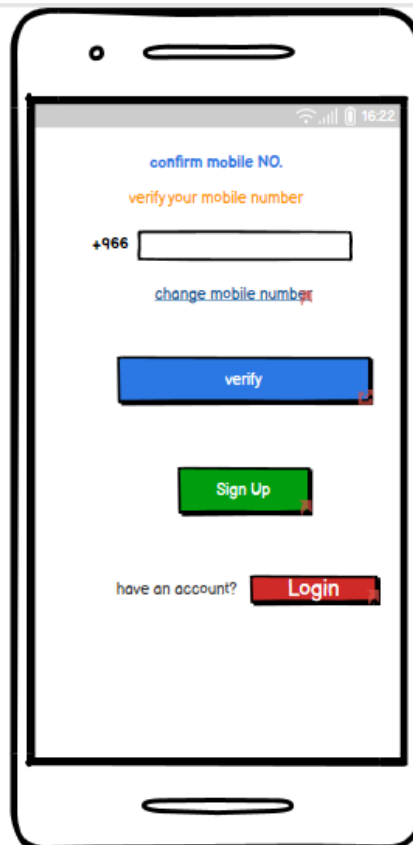
+966

Password

confirm Password

Sign Up

have an account? Login



A mobile app mobile number verification screen. At the top, there's a status bar with signal strength, Wi-Fi, and the time 16:22. The screen has a white background with a black border. The title "confirm mobile NO." is in blue. Below it, the text "verify your mobile number" is in orange. Then, the text "+966" is in black, followed by a white text input field. Below that, the text "change mobile number" is in blue with a red error icon on the right. At the bottom, there's a blue "verify" button with a small red error icon on the right. Below the button, there's a green "Sign Up" button with a small red error icon on the right. At the bottom, the text "have an account?" is in black, followed by a red "Login" button with a small red error icon on the right.

confirm mobile NO.

verify your mobile number

+966

change mobile number

verify

Sign Up

have an account? Login

A mobile app screen with a status bar at the top showing signal strength, Wi-Fi, and the time 16:22. The screen displays a question in blue text: "what type of diabetes do you have?". Below the question are five radio button options: "type 1", "type 2" (which is selected), "gestational diabetes (diabetes while pregnant).", "Pre-diabetes", and "I do not know". At the bottom center is a blue button with the text "Next".

what type of diabetes do you have?

☐ type 1

☒ type 2

☐ gestational diabetes (diabetes while pregnant).

☐ Pre-diabetes

☐ I do not know

Next

A mobile app screen with a status bar at the top showing signal strength, Wi-Fi, and the time 16:22. The screen displays a question in blue text: "what your goal with diabetes? (You can choose multiple goals)". Below the question are five checkbox options: "Blood sugar control", "understand the diabetes type1" (which is checked), "Communication with diabetics", "follow up the tests and medications" (which is checked), and "Reducing the risk of cardiovascular". Below these options is the text "Others:" followed by a text input field. At the bottom center is a blue button with the text "Done".

what your goal with diabetes? (You can choose multiple goals)

☐ Blood sugar control

☒ understand the diabetes type1

☐ Communication with diabetics

☒ follow up the tests and medications

☐ Reducing the risk of cardiovascular

Others:

Done

This information helps specialists write a treatment plan for your condition

Enter the history of diabetes

Enter the patient's date of birth

 / /

next

This is a mobile app screen with a white background and a black border. At the top, there is a status bar with a signal strength icon, a battery icon, and the time 16:22. Below the status bar, the text "This information helps specialists write a treatment plan for your condition" is displayed in a black font. Underneath, the prompt "Enter the history of diabetes" is shown in a blue font, followed by a white text input field. Below this, the prompt "Enter the patient's date of birth" is shown in a blue font, followed by a date input field with slashes and a calendar icon. At the bottom, there is a blue button with the text "next" in white.

This information helps specialists write a treatment plan for your condition

Enter the cumulative rate of sugar

save

next

This is a mobile app screen with a white background and a black border. At the top, there is a status bar with a signal strength icon, a battery icon, and the time 16:22. Below the status bar, the text "This information helps specialists write a treatment plan for your condition" is displayed in a black font. Underneath, the prompt "Enter the cumulative rate of sugar" is shown in a blue font, followed by a white text input field. Below this, there is a green button with the text "save" in white. At the bottom, there is a blue button with the text "next" in white.

16:22

This information helps specialists write a treatment plan for your condition


Enter the patient weight (KG)

Enter the patient length (CM)


next

16:22

Home



Blood sugar



Event




Weight & blood pressure




Resource




Doctor appointment

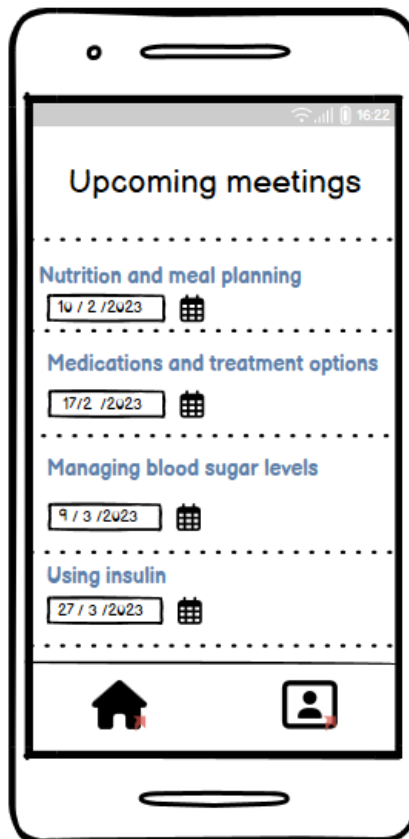
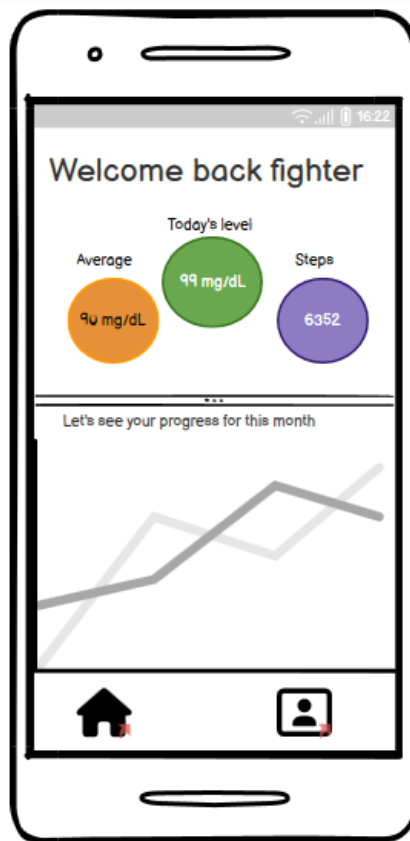


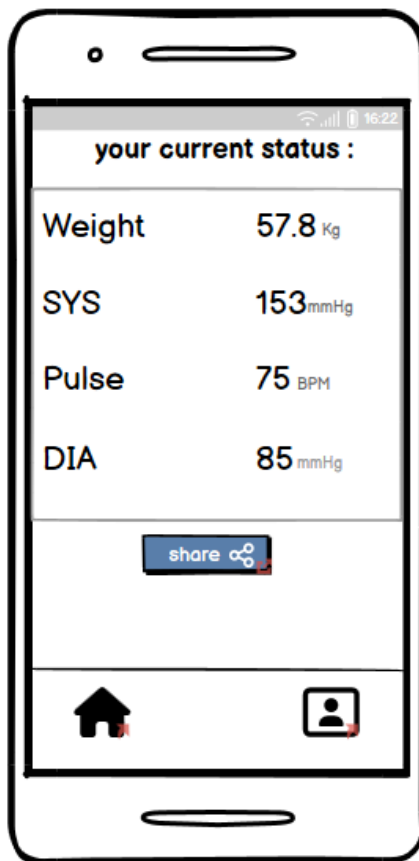
Insulin dose

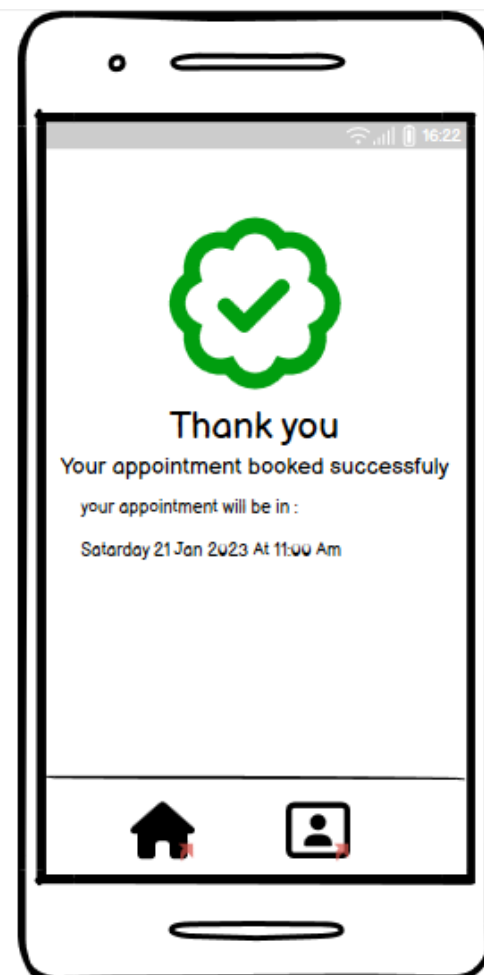
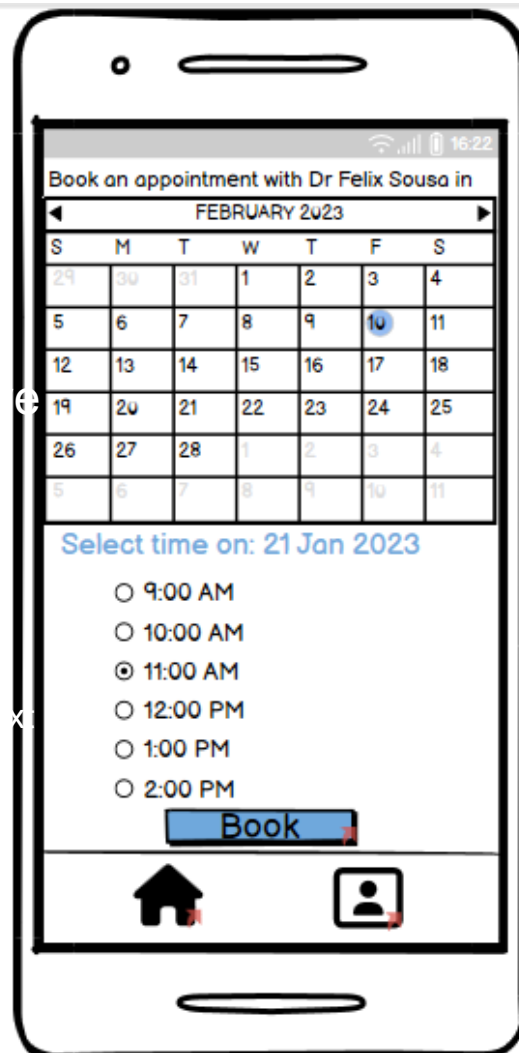


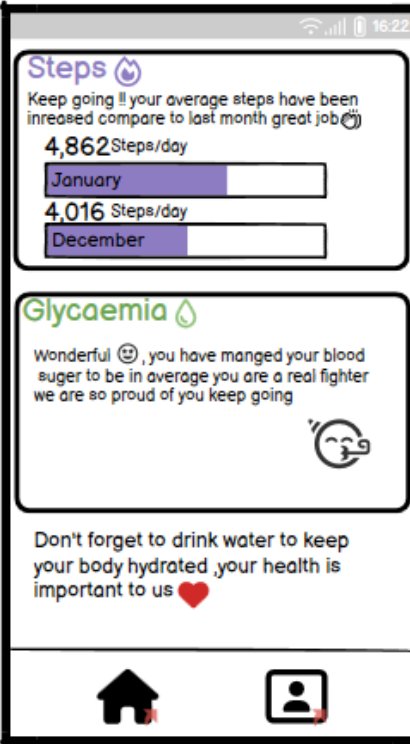
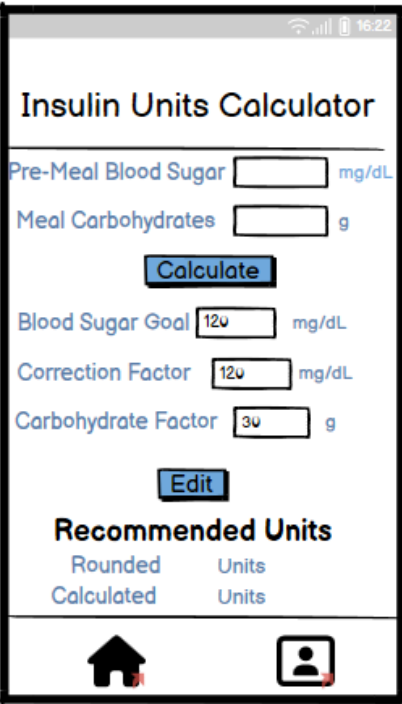
Reward

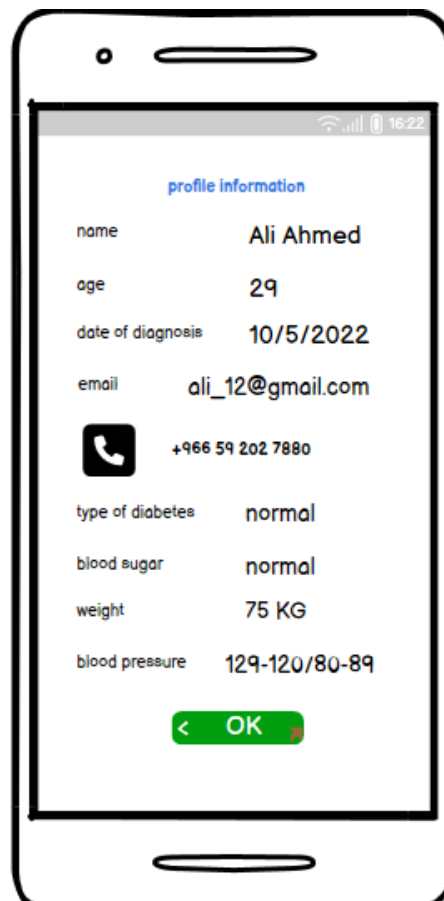
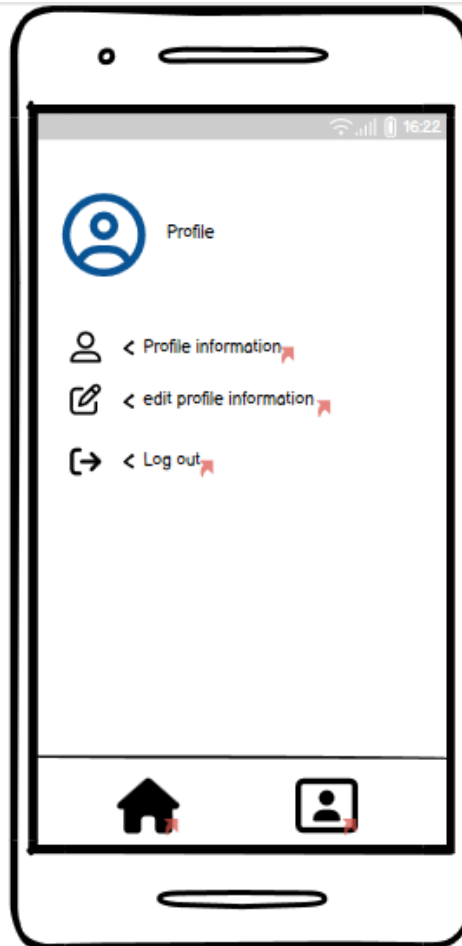












16:22

Edit profile information

name

age

date of diagnosis

email

+966

type of diabetes

blood sugar

weight

blood pressure

16:22

Profile

< Profile information

< edit profile information

< Log out

Are you sure you want to log out?

Phase 3

Welcome To DailySugar

Welcome to the diabetes community website, a platform designed for individuals affected by diabetes to connect, manage their health, and support each other. With features such as appointment scheduling, insulin calculation, and educational events, this site empowers and motivates you to better manage your diabetes. Join our community and take control of your health today.

[Sign up](#)[Login](#)

Enter your mobile number

 +966

Enter your password

[forget password](#)

[login](#)

dont have an account?

[sign up](#)

forget password Page

enter email

send email

have an account?

login

sign up Page

name



+966

mobile number

Enter your password

confirm your password

sign up

have an account?

login

verify your mobile number

+966

verify

Sign Up

have an account?

Log in

verify your mobile number

+966



[change the number](#)

A message will be sent to your phone to verify your number

Sign Up

have an account?

Log in

what type of diabetes do you have?

- ☐ type 1
- ☒ type 2
- ☐ gestational diabetes (diabetes while pregnant).
- ☐ Pre-diabetes
- ☐ I do not know

Next

what your goal with diabetes? (You can choose multiple goals)

- ☒ Blood sugar control
- ☒ understand the diabetes type1
- ☐ Communication with diabetics
- ☐ follow up the tests and medications
- ☐ Reducing the risk of cardiovascular

others

Next

This information helps specialists write a treatment plan for your condition so please give us some of your time and answer this questions :

Enter the history of diabetes:

Enter the patient's date of birth:

Next

This information helps specialists write a treatment plan for your condition so please give us some of your time and answer this questions :

Enter the history of diabetes:

Enter the patient's date of birth:

Next

This information helps specialists write a treatment plan for your condition so please give us some of your time and answer this questions :

Enter the patient weight :


KG


Enter the patient highet:

CM

Next

This information helps specialists write a treatment plan for your condition so please give us some of your time and answer this questions :



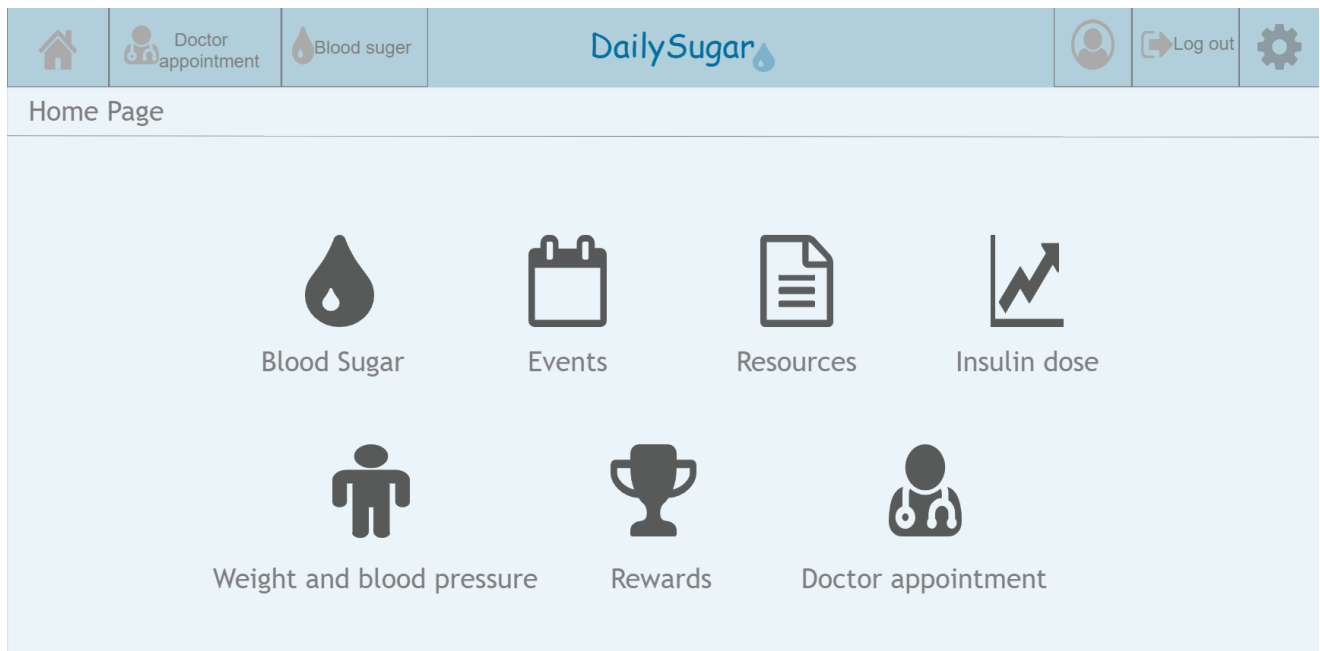


Enter the current blood sugar

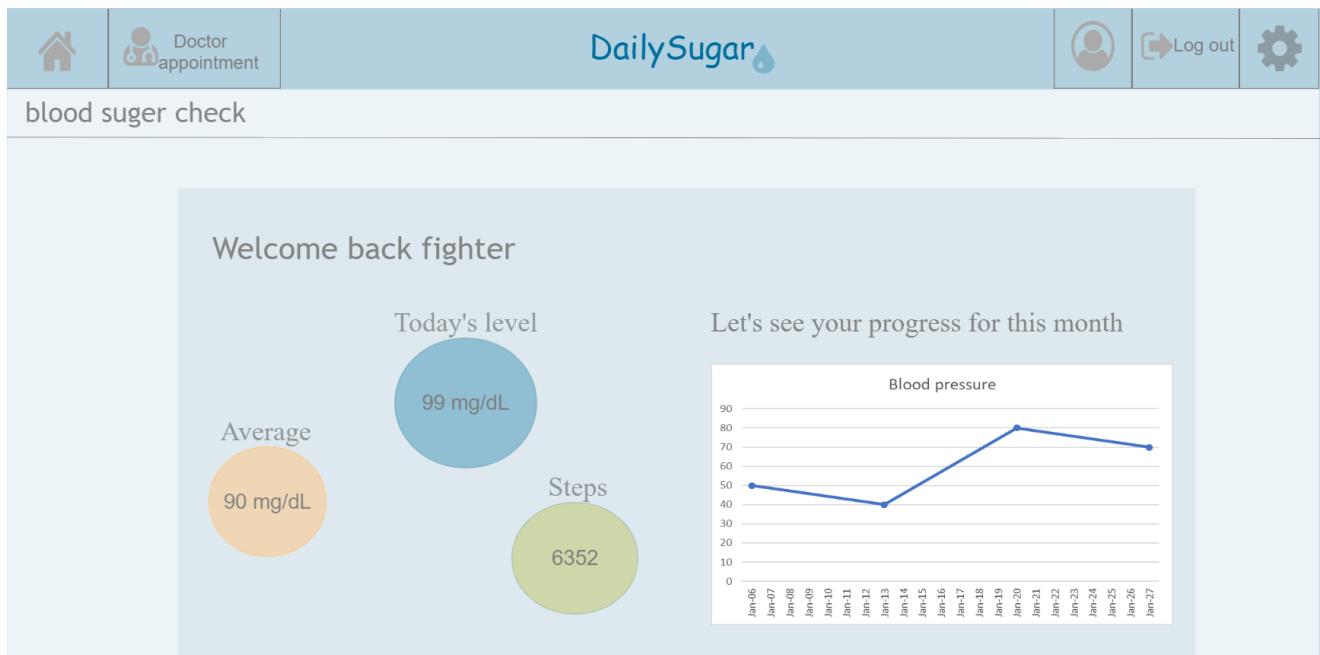
mg/dL

Save

Your information saved successfully. Welcome to mysuger



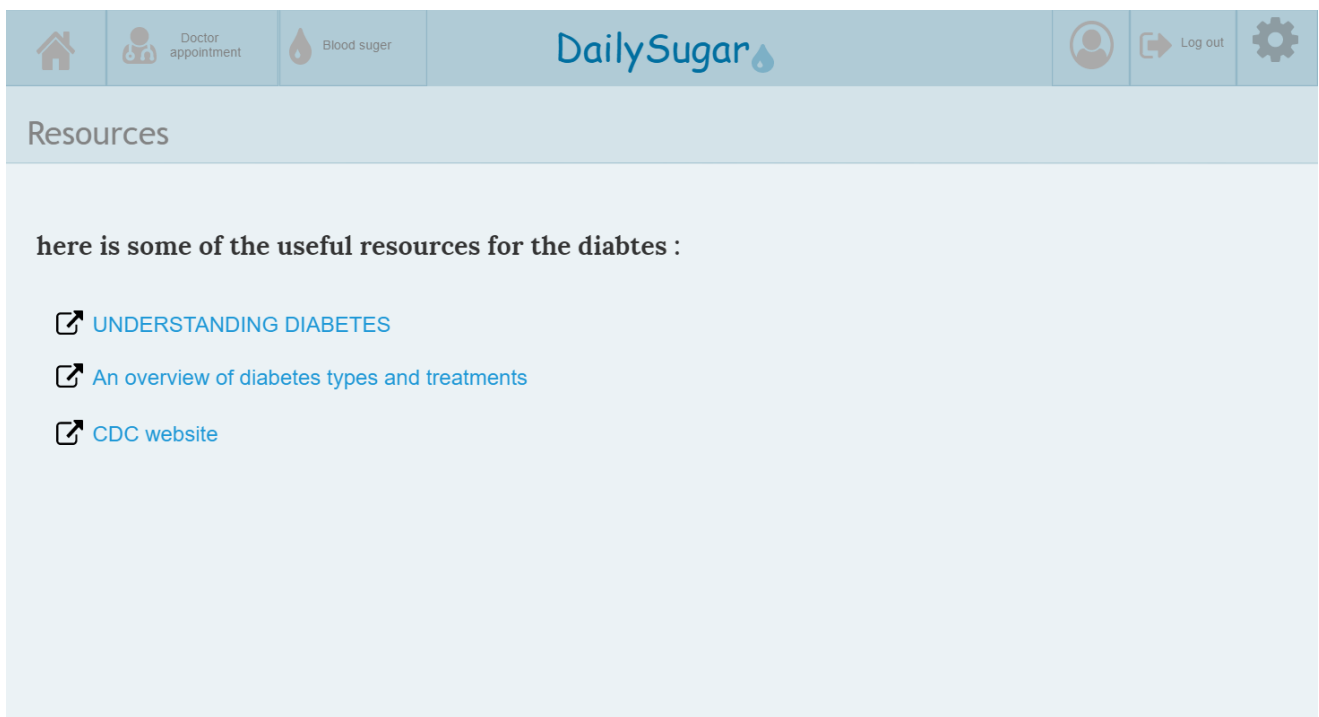
The home interface of the diabetes community website provides a centralized access point to the platform's key features, including tracking of blood sugar, access to events and resources, insulin calculation, weight and blood pressure tracking, and appointment scheduling with a doctor. The interface presents users with a clear and user-friendly interface that makes it easy to manage their diabetes and connect with others in the community.



The blood sugar check interface allows users to track their daily blood sugar levels and monitor their progress. The interface displays the current level, daily average, and a line chart showing progress over the past month, providing a visual representation of the user's blood sugar levels. This feature helps individuals affected by diabetes better manage their condition and achieve better health outcomes.



The events interface provides users with information about upcoming events related to diabetes. The interface displays the date and name of each event, allowing users to stay informed and connected with their local diabetes community. This feature provides users with opportunities to learn, connect with others, and take control of their diabetes management, helping to create a supportive and informed diabetes community.



The resources interface provides access to a vast library of educational content on diabetes management, including articles and multimedia resources. This interface is a valuable tool for individuals seeking to educate themselves on diabetes and improve their overall health.

The screenshot shows the "Calculator" section of the DailySugar app. It features a sub-header "Insulin Units Calculator". Below this, there is a form with the text "Enter your body weight in kilograms:" followed by an input field. To the right of the input field is a dropdown menu currently showing "fixed" with "0.55" selected below it. Further right is a blue button labeled "calculate" and the word "Units". Below the input fields, there is a text block that reads: "Based on our calculations, it is recommended that you take 1/3 of your total daily insulin units in the evening and 2/3 in the morning."

The Insulin Units Calculator interface is a tool that allows users to calculate their daily insulin

Doctor appointment

Blood suger

Log out

motivation

Here we show you some stories of influential people in the field of diabetes

Story of Teenager with Type 1 Diabetes

Sophia details her experience with finding out she has T1D - Type 1 Diabetes. At the time of this talk, Sophia is a 9th grader attending Treasure Mountain Junior High in Park City

The Surprising Lesson Diabetes Taught Me.

One man's personal triumph in managing diabetes has ignited a passion within him to share his knowledge and experience. Through the revolutionary '5-pillar approach', Harrisberg encourages people to take control of their health, so that like him, they can live a fuller, happier and healthier life. Drew Harrisburg is the creator of Drew's

Blood suger

Log out

Book an appointment with Dr Felix Sousa in

choice a day

August

S	M	T	W	T	F	S
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Select time:

☐ 09:00 AM

☐ 10:00 AM

☐ 11:00 AM

☒ 12:00 PM

☐ 1:00 PM

☐ 2:00 PM

Book

Blood suger

DailySugar

Log out

Book an appointment with Dr Felix Sousa in

choice a day

July 13 2023

Your appointment booked successfully

Select time:

☐ 09:00 AM

☐ 10:00 AM

☐ 11:00 AM

☒ 12:00 PM

☐ 1:00 PM

☐ 2:00 PM

Book

Doctor appointment

Blood suger

DailySugar

Log out

Profile

profile information

profile information

edit profile information

log out

name

Ali Ahmed

age

29

date of diagnosis

10/5/2022

email

ali_12@gmail.com

+966

59 202 7880

type of diabetes

normal

blood suger


normal

weight


75 KG


blood pressure


129-120/80-89




Doctor appointment



DailySugar



Log out



Edit profile information

name

age

1

date of diagnosis

email

+966

type of diabetes


blood sugar

weight


1


blood pressure


Update




Doctor appointment




DailySugar



Log out



Settings



Notification

A notification for the doctor appointments and events page informs the user about changes or updates to their schedule. This includes reminders, changes, and new event notifications.

Font size

A 0 100 A

Dark mode

The website will feature a light color scheme for text, icons, and graphical user interface, with an emphasis on a bright and easily readable design.

Language

English



Doctor
appointment



Blood suger

DailySugar



Log out



log out Page

Are you sure you want to
log out ?

yes

no

Implications

1 What are the issues faced by that organization which are going to be solved through your application/website?

The organization that is developing the website for the diabetes community is facing several issues that can be solved through the implementation of this project. These include:

1. Difficulty in managing diabetes: Many diabetics may struggle to manage their condition due to a lack of knowledge and support. This website provides resources such as the ability to calculate insulin and a page with useful information for diabetics, helping them to better manage their condition.
2. Isolation: Diabetics can often feel isolated and lack a sense of community. The website provides a platform for diabetics to connect with each other, hold meetings, and benefit from each other's experiences, reducing their sense of isolation.
3. Difficulty in staying motivated: Managing diabetes can be challenging and diabetics may struggle to stay motivated. The website offers a page designed to motivate patients, with rewards and recognition for their efforts.

2 What are the technological features that you have included in the application/website to solve these problems?

The following technological features have been included in the website to address the issues faced by the organization and the diabetes community:

1. Appointment booking system: A platform for users to book appointments with doctors, making it easier for them to access medical services.
2. Blood sugar tracking: A system that allows users to track their blood sugar levels, helping them to manage their condition.
3. Insulin calculator: A tool that helps users calculate the amount of insulin they need, making it easier for them to manage their diabetes.
4. Community platform: A platform for users to connect with each other, hold meetings, and benefit from each other's experiences, reducing their sense of isolation.

3. List down additional problems/challenges which may result due to your system?

While the website for the diabetes community has been designed to address several important issues, there may be additional challenges that arise as a result of the system. Some of these challenges include:

1. Data privacy and security: With sensitive medical information being stored and shared on the platform, there may be concerns about data privacy and security. The organization must ensure that adequate measures are in place to protect user data, such as encryption and secure servers.
2. Technical issues: As with any complex system, there may be technical issues that arise with the website. The organization must have a plan in place for addressing and resolving any technical difficulties that may occur.

4. How the tools used in phase 2 and phase 3 helped you to design an appropriate system?

The tools used in phase 2 and phase 3, Balsamiq and Axure, helped the team design an appropriate system by allowing them to create and refine detailed mockups and prototypes of the website.

Balsamiq, a wireframe tool, was used in phase 2 to create low-fidelity prototypes of the website. This allowed the team to quickly and easily experiment with different design ideas, making it possible to test different approaches and identify the best solutions for the website's features and functionality. The simple, straightforward interface of Balsamiq allowed the team to focus on the overall user experience and user flow, without getting bogged down in visual design details.

Axure, a prototyping tool, was used in phase 3 to create high-fidelity prototypes of the website. This allowed the team to refine and improve upon the design concepts developed in phase 2, incorporating more detailed visual design elements and interactions. Axure also made it possible to test the website's functionality and user experience in a more realistic way, simulating how the website will behave when it is built and deployed.

Together, Balsamiq and Axure provided the team with a comprehensive and iterative design process, allowing them to develop and refine the website's design in a systematic and effective manner. The ability to quickly and easily experiment with different design solutions, as well as test and validate the website's functionality, helped the team to design an appropriate system that meets the needs of the diabetes community.

Conclusion

In conclusion, the website for the diabetes community is a valuable tool designed to address the needs and challenges faced by those affected by diabetes. With features such as the ability to calculate insulin, book appointments with doctors, communicate with them, and participate in educational and support events, the website offers a comprehensive platform for the diabetes community to connect, share knowledge, and support each other. The technology features included in the website, such as secure data storage, appointment scheduling, and geolocation-based event recommendations, make it possible to meet the unique needs of the diabetes community and improve the overall management of their health. The website's design process, utilizing tools such as Balsamiq and Axure, ensured that the website was developed systematically and effectively, considering the challenges and opportunities presented by the diabetes community. Overall, the website has the potential to make a meaningful impact on the lives of those affected by diabetes by providing them with a supportive and empowering platform to manage their health and connect with others.[1]

References

- [1] . “Press releases: U.S. senator Tammy Baldwin of Wisconsin,” *U.S. Senator Tammy Baldwin*. [Online]. Available: <https://www.baldwin.senate.gov/news/press-releases>. [Accessed: 11-Feb-2023].