

INFSCI 2470 Interactive System Design

Health Check Application

Patient and Healthcare Provider App for Screening Patients - Dr. Jennifer Steel

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Introduction

As a part of Interactive System Design course at University of Pittsburgh, we are working on a project proposed by Dr. Jennifer Steel who is from UPMC. UPMC number one healthcare provider in Pittsburgh and biggest nongovernmental employer in Pennsylvania. UPMC has more than 92,000 employees and 40 hospitals. UPMC also work in collaboration with the University of Pittsburgh Schools of the Health Sciences.



Goal

The goal of this project is to design and develop a healthcare application for screening patients quickly and send the information confidentially to clinical team for further assessment.

Project Description

The application that we need to develop is for screening patients that are likely to have depression symptoms. To measure depression, we have something called CES-D which stands for Center for Epidemiological Studies-Depression. In 1977, CES-D was published by Radloff. The CES-D measure has 20 questions that are asked to the patients and they rate based on how they felt in past week with regards to the symptoms of depression. Each question has 4 options with a score associated with it. Based on the options selected by the patient in each question a score is calculated. This score might range from 0 to 60 where high score means depression symptoms. There is a cutoff score in CES-D which is 16 in our case. Score greater than 16 indicates possible

risk for clinical depression. The caregivers will be able to contact the patients in case of score greater than 16 for further analysis.

The application is to build from scratch as there is no existing application in place for this process. Screening patients here typically means that having patients fill the form and required personal details through the application and submit it. The clinical team will then process the response from the patient and respond accordingly. By screening patients through the app, it will save time for both patients and the doctor as they do not have to meet physically, and the initial screening can be done virtually. Some of the specific requirements are described below.

Requirements Specifications

In the process of requirement gathering in the first meeting with the client these are some of the identified requirements:

1. Patients should be able to fill the form in 2 sections - personal information and CES-D Information.
2. Caregivers should be able see the responses.
3. Upon submission of the form, Patients should be asked for permission for the information to be sent to clinical team and clinical team to contact the patient.
4. A score should be calculated based in the selections of the patient. (for each question score ranges from 0-3 based on the options selected out of 4)
5. All the information should be sent confidentially. The patient's data should be end to end encrypted/Hippa compliant.
6. The caregiver should be able to add/edit questions.
7. An email should be sent to an email address (UPMCBehavioralMed@upmc.edu) with calculated score and all the information of the patient in a text file.

Personas

As per the requirements we have identified 2 personas as described below-

- Patients – People who are likely to be depressed will fill the initial screening form.
- Caregiver – People who will be able to see the response from the patient and contact them.



Task Analysis

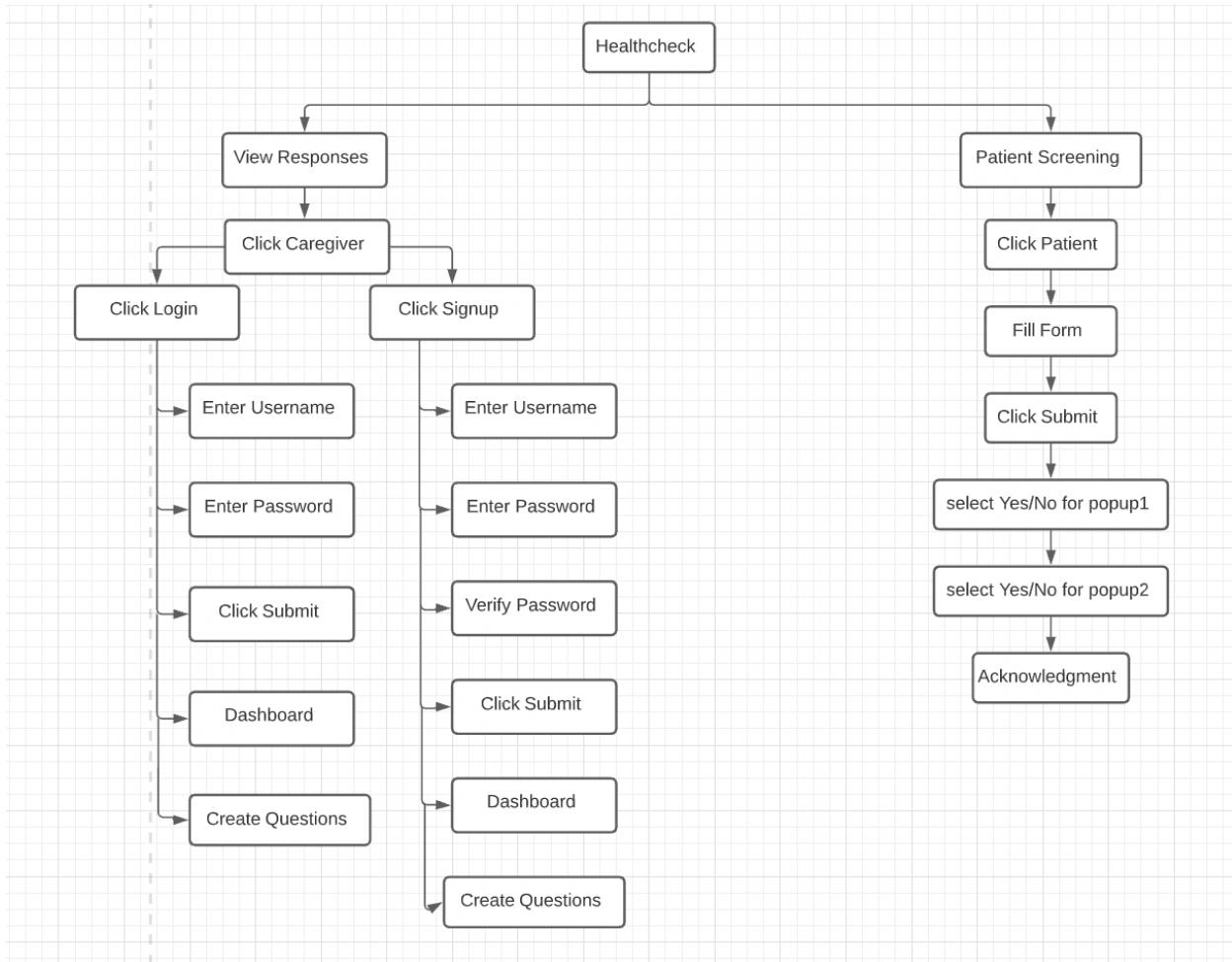
Task Analysis is the process that the users must follow to complete a task or a goal. In the below diagram, you can see there are 2 types of user's patient and caregivers. The task analysis helps identify what steps each user must follow to complete the task. The diagram shows step by step process for each user. There are tasks and subtasks for each process. This might help to identify some actions that are required to be specified or remove any unnecessary tasks from the process to minimize the actions that the users must perform. To create the task analysis diagram below are the steps that one must think of:

Step 1: Identify the Task that needs to be analyzed.

Step 2: Dividing the Task into smaller subtasks.

Step 3: Identifying the steps in Subtasks.

For our application we have 2 tasks either view the responses as a caregiver or doing patient screening as a patient. There are 2 subtasks when the caregiver tries to view responses. Either login or signup. Each of the tasks has step by step process defined in the task analysis diagram. The tool that we used for our task analysis diagram is lucidchart.



Link - https://lucid.app/lucidchart/07f2a30a-c999-4f70-b9ba-5122a6809ece/edit?page=0_0#

Design

For the design and prototyping we used Wireframe Pro tool.

Link-

<https://wireframepro.mockflow.com/editor.jsp?editor=off&perm=Owner&projectId=M2e28144496f57acac38f894305c492611616800087753&publicId=de97e086c399459395963529e32e57f2#/page/308ec096809f4e8b95240146367f63de>

Prototype version 1

This was an initial design proposal presented to the client. It consists of 2 journeys one patient and other as caregiver. If you click on patient, you will be presented with the Personal information form where the patient must fill in some information like first name, last name, email, phone, gender, date of birth with its corresponding datatype. Once the form is submitted, the patient is taken to another section of the form which has CES-D information. There will be 20 questions specific to CES-D and each with 4 options. These questions and options are in the form of table and radio button for options as only one selection is to be made from 4. Tabular form seemed to be appropriate as each question had same 4 options and hence it would be less repetitive. Once all the questions are answered and submitted 2 alerts will pop up back-to-back. One to allow UPMC to contact the patient and other to allow UPMC to share the information of the patient to the clinical team at UPMC. Each alert will have yes/no buttons. Lastly an acknowledgement will be given saying that all the information has been recorded. About the caregiver journey when the person clicks on caregiver a login/register page will appear. Once the caregiver has logged in successfully a dashboard will appear listing all the responses.

Patient journey

Screen 1 and 2

The image displays two wireframe prototypes of a mobile application interface for a patient journey. Both screens are titled "Healthcheck".

Screen 1 (Left): This screen is split vertically. On the left side, there is a placeholder for a "Caregiver" icon and a "Caregiver" label below it. On the right side, there is a placeholder for a "Patient" icon and a "Patient" label below it. At the top left, there is a "UPMC logo" button. At the top center, there is a placeholder for "Healthcheck (application name)".

Screen 2 (Right): This screen shows a more detailed form. At the top, it says "Personal information". Below that is a horizontal row with "First Name" and "Last Name" input fields. Underneath is an "Email" input field. A "Gender" dropdown menu is shown next. At the bottom of this row are "DOB" and "Phone number" input fields. Red arrows from the previous screen point to the "Patient" icon and the "Personal information" header.

Screen 3 and 4

Screen 5 (Left): CES-D information

No.	Question	Less than 1 day	1-2 Days	3-4 Days	5-7 days
1.	I was happy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	I felt lonely	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	I enjoyed life	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	I felt fearful	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	I felt depressed	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	I felt sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Screen 6 (Right): CES-D information

No.	Question	Less than 1 day	1-2 Days	3-4 Days	5-7 days
7.	I was happy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	I felt lonely	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
9.	I enjoyed life	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
10.	I felt fearful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
11.	I felt depressed	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	I felt sad	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Buttons: SUBMIT

Screen 5 and 6

Screen 7 (Left): Allow UPMC to access your information?

Allow UPMC to access your information?

Yes No

Screen 8 (Right): Allow UPMC/clinical team to contact you?

Allow UPMC/clinical team to contact you?

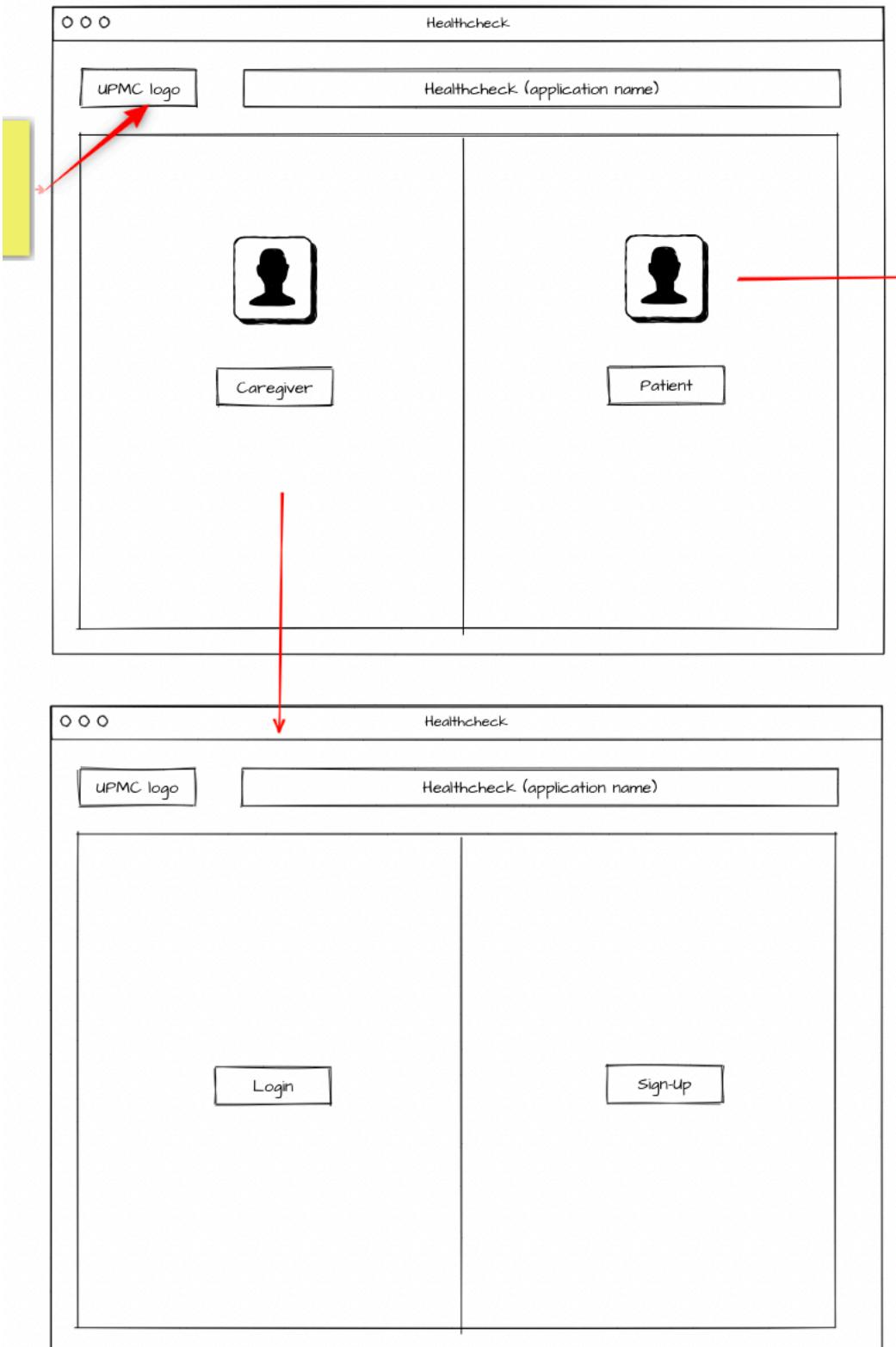
Yes No

Screen 7



Caregiver journey

Screen 1 and 2



Screen 3 and 4(either sign up or login in if you already have credentials)

Screen 5

Response No.	Date\Time	Name	Score	Contact
1.	03/25/2021 12:45:00 pm	ABC	12	+1 412-675-7678
2.	03/24/2021 12:45:00 pm	XYZ	17	+1 412-546-9765
3.	03/24/2021 11:55:00 am	DEF	20	+1 412-665-8787

Feedback

The overall design looked good to the client but there were some changes suggested by the client. First with the personal information section fields to be added were age, race, and cancer diagnosis. Also remove date of birth field as that was not required. Changes in the alert text from “Allow UPMC to access your information?” to “Allow UPMC to send information to

clinical team?” and “Allow UPMC/clinical team to contact you?” to “Allow the UPMC clinical team to contact you about your scores?”. We also asked for some branding information with respect to UPMC.

Prototype version 2

In the second iteration of the design, the changes were incorporated with respect to the feedback received in the first meeting with the client. The major changes were input fields, text changes, and some clarification on UPMC branding. Gender and race are picklist since they have more than 2 values. Cancer diagnosis field has radio buttons as it has only 2 values.

Patient Journey

Screen 1 and 2 (changes in 2)

The diagram shows two wireframe prototypes side-by-side. Both prototypes feature a header with the UPMC logo and the application name "Healthcheck".
Screen 1 (left) contains two user icons: "Caregiver" and "Patient".
Screen 2 (right) contains a section titled "Personal information" which includes fields for First Name, Last Name, Email, Gender (picklist), Race (picklist), Age, Phone number, and Previous Cancer Diagnosis (radio buttons). A red arrow points from the "Personal information" section of Screen 2 to the "Patient" icon on Screen 1, indicating that the "Patient" role is associated with this information.
A red arrow also points from the "Personal information" section of Screen 2 to the "UPMC logo" on Screen 1, highlighting the incorporation of UPMC branding.

Screen 3 and 4(changes in 3)

Screen 5 (Left): CES-D Information

Healthcheck

UPMC logo Healthcheck (application name)

CES-D Information

Below is a list of some of ways you may have felt or behaved before. Please check the box to indicate how often you have felt this way during the past week.

No.	Question	Less than 1 day	1-2 Days	3-4 Days	5-7 days
1.	I was happy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	I felt lonely	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	I enjoyed life	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	I felt fearful	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	I felt depressed	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	I felt sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

A red arrow points to the bottom right corner of this screen.

Screen 6 (Right): Summary Table

Healthcheck

UPMC logo Healthcheck (application name)

No.	Question	Less than 1 day	1-2 Days	3-4 Days	5-7 days
7.	I was happy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	I felt lonely	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
9.	I enjoyed life	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
10.	I felt fearful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
11.	I felt depressed	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	I felt sad	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

SUMMIT

Screen 5 and 6 (changes in both)

Screen 5 (Left): Consent Question

Healthcheck

UPMC logo Healthcheck (application name)

Allow UPMC to send information to clinical team?

Yes No

Screen 6 (Right): Consent Question

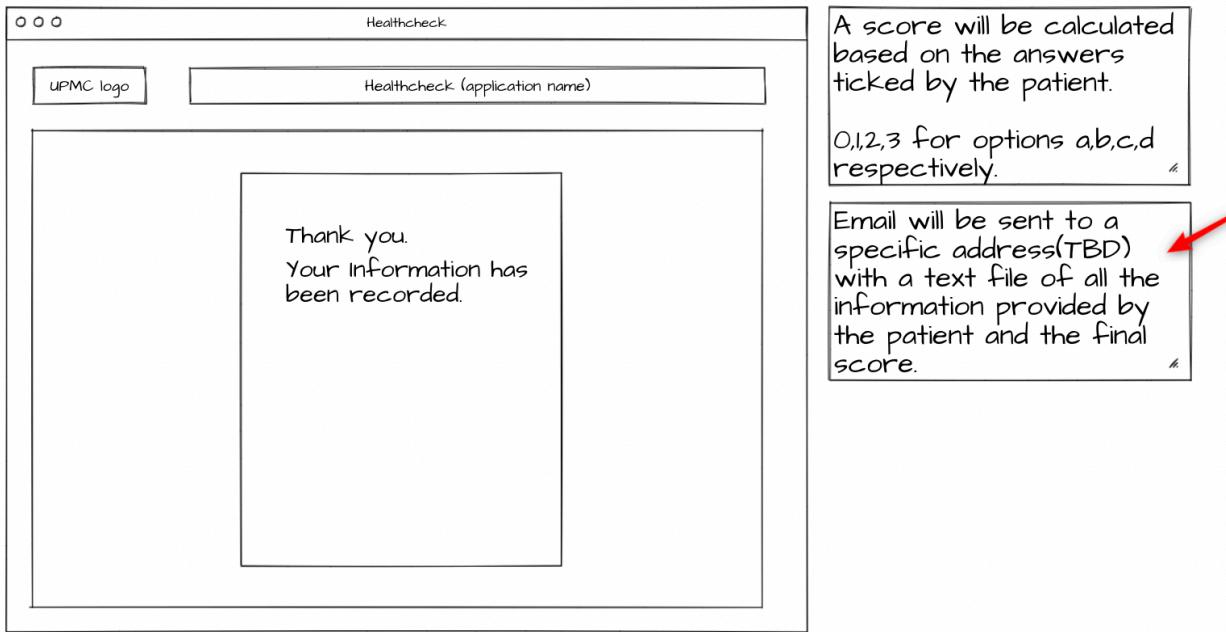
Healthcheck

UPMC logo Healthcheck (application name)

Allow UPMC clinical team to contact you about your scores?

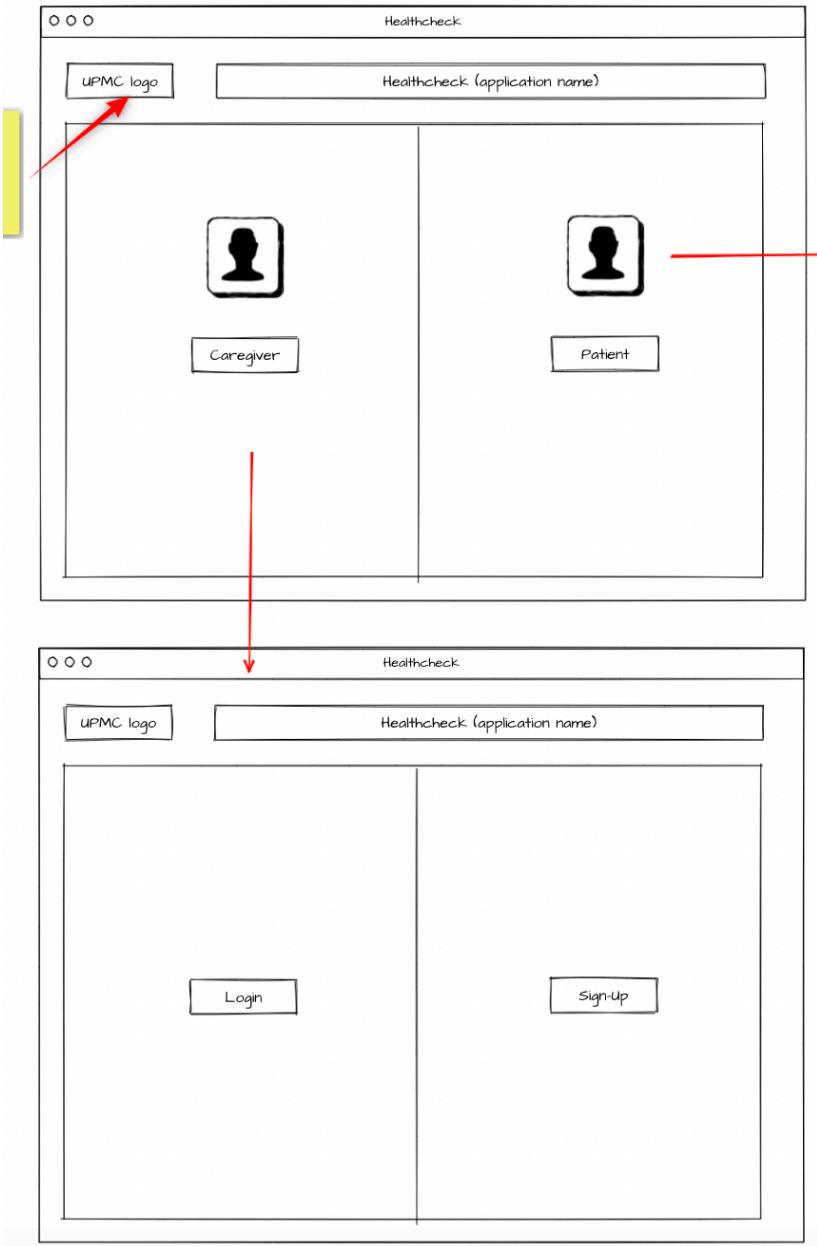
Yes No

Screen 7 (no changes)



Caregiver journey

Screen 1 and 2(no changes)



Screen 3 (no changes)

Screen 4 (no changes)

Response No	Date/Time	Name	Score	Contact
1.	09/25/2021 2:45:00 pm	ABC	12	+1 40-675-7678
2.	09/24/2021 2:45:00 pm	XYZ	77	+1 40-546-9765
3.	09/24/2021 1:50:00 am	DEF	20	+1 40-665-8787

Feedback

We had some brief conversation to finalize the picklist values for gender and race, name for the application. What fields are to be displayed on the dashboard in the frontend was finalized. Also, the client requested to be able to edit the form, so we decided to add another feature in the dashboard screen to be able to add questions for CES-D information so that the client does not have to make the changes in the code.

Final Prototype

For the final prototype we added the logo and name of the application that was finalized and approved by the client. Changed the field “previous cancer diagnosis” from radio button type

to dropdown. Client emailed the picklist values for gender and race to be added. Changed the left alignment of the personal information to center aligned. Colors to be used for the background are purple and white as per UPMC branding. Also, revised the dashboard for responses to have personal information displayed with the score. Added a screen in the caregiver journey to create questions for CES-D information.

Patient Journey

Note: Logo and name of the application is added in all the screens

Screen 1 and 2 (changes in 2)

Screen 1:

Healthcheck

UPMC LIFE CHANGING MEDICINE

Health Check Application

Caregiver

Patient

Screen 2:

Healthcheck

UPMC LIFE CHANGING MEDICINE

Health Check Application

Personal information

First Name *

Last Name *

Email *

Phone number *

Age *

Gender *

Race *

Previous Cancer Diagnosis *

Submit

Screen 3 and 4 (no changes)

Screen 3:

Healthcheck

UPMC LIFE CHANGING MEDICINE

Health Check Application

CES-D information

Below is a list of some of ways you may have felt or behaved before. Please check the box to indicate how often you have felt this way during the past week.

No.	Question	Less than 1 day	1-2 Days	3-4 Days	5-7 days
1.	I was happy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	I felt lonely	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	I enjoyed life	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	I felt fearful	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	I felt depressed	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	I felt sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Screen 4:

Healthcheck

UPMC LIFE CHANGING MEDICINE

Health Check Application

No.	Question	Less than 1 day	1-2 Days	3-4 Days	5-7 days
7.	I was happy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	I felt lonely	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	I enjoyed life	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
10.	I felt fearful	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
11.	I felt depressed	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	I felt sad	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

≡

SUBMIT

Screen 5 and 6 (no changes)

The image shows two side-by-side wireframe screens from a mobile application. Both screens have a header with the UPMC logo and the text "Healthcheck" and "Health Check Application".

Screen 1 (Left):

Text: "Allow UPMC to send information to clinical team?"

Buttons: "Yes" and "No"

Screen 2 (Right):

Text: "Allow the UPMC clinical team to contact you about your scores?"

Buttons: "Yes" and "No"

Screen 7 (no changes)

The image shows a wireframe screen from a mobile application. The header includes the UPMC logo and "Healthcheck" and "Health Check Application".

Main content: "Thank you. Your information has been recorded."

Note (Top Right):

A score will be calculated based on the answers ticked by the patient.

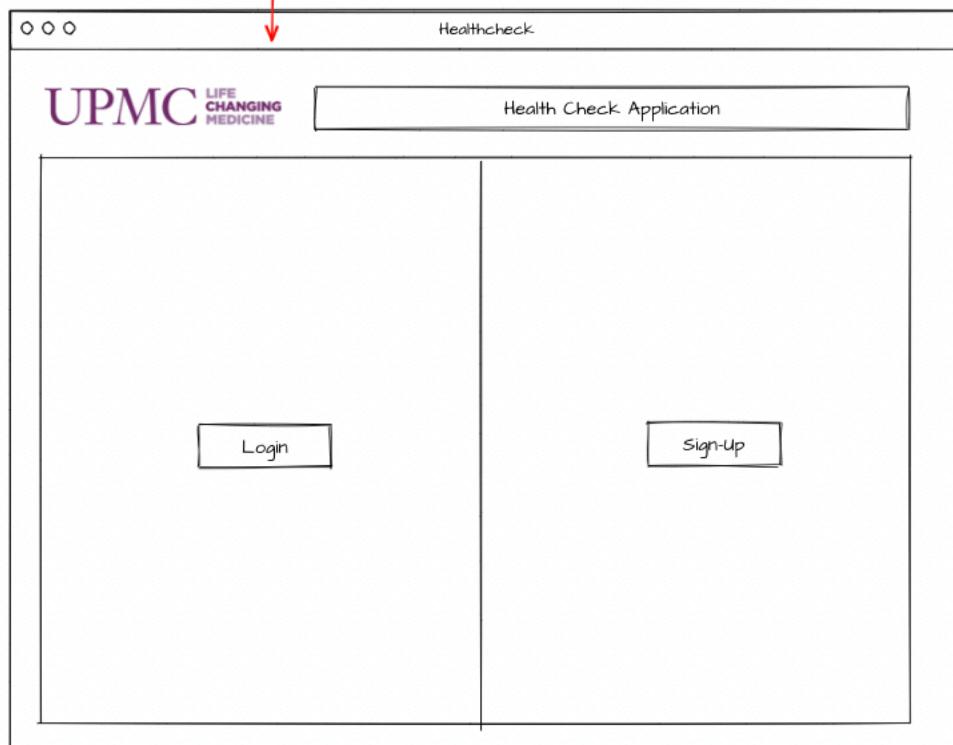
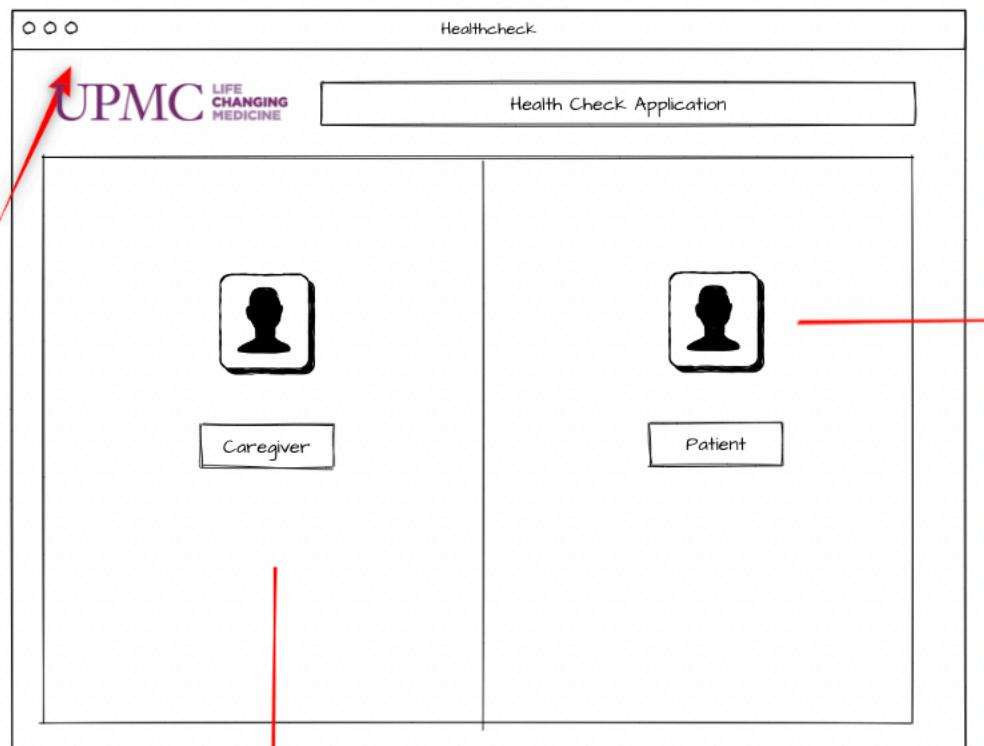
Note (Bottom Right):

0,1,2,3 for options a,b,c,d respectively.

Annotation: A red arrow points to the note about email: "Email will be sent to a specific address(TBD) with a text file of all the information provided by the patient and the final score."

Caregiver journey

Screen 1 and 2 (no changes)



Screen 3 and 4 (no changes)

Screen 4 and 5(changes in 4 and 5 added)

Response No.	Name	Contact	Email	Age	Gender	Race	Cancer Dag
1.	ABC	+1 402-675-7...	a@a.com	21	Male	Asian	No
2.	XYZ	+1 402-546...	b@b.com	38	Male	Asian	Yes
3.	DEF	+1 402-665-87...	c@c.com	27	Female	White	No

Feedback

This was a final and approved design by the client. No new changes were added.

Design Considerations

A form is a type of communication and in our case it's a conversation between the app and the user. Form structure is the backbone of the form and hence these are the design considerations for our form structure that we identified-

1. Asking only what is required – The input fields added in the form are precisely what the caregiver needs. No extra field is added.
2. Grouping similar information in a section – The form is divided into two sections grouping the similar information together one is the personal information section and other is the DES-D information section. Having too much information in one place can confuse the user and hence related information is grouped together to be different sections.
3. Logical arrangement of the information – The information is arranged in a logical order for example First Name and Last Name comes first before asking for email and phone.
4. Having one column layout instead of two – Two column layout is not suggested for a form filling. It simply creates a lot of confusion to the user as to go from left to right or top to bottom. In two columns approach the user must scroll back to the top of the page which can be tedious and complex. Having one column you just need to scroll in one direction, and you do not miss out on any information.
5. Specifying mandatory and optional fields – Specifying mandatory and optional fields allows the user to not miss out on any important information that is needed.
6. Avoiding default values in the input fields – default values are avoided since users scan online forms quickly and can easily skip on fields that already have value assigned unless you feel that maximum number of users are going to select that default value. This is not true in case of smart defaults. Smart defaults prefill the fields based in the user's information.
7. Help text wherever required – Help text is added for the fields that might be unclear to users. Hovering over the field will pop up a help text for that input field for more information.
8. Placeholder text on the input fields – Placeholder in an input field is set. It will disappear once the user selects that field for providing input. Although we do not require this for our forms as it is quite short and precise, it would be beneficial for the forms that are very long and have too much information.
9. Having inline field validations – Depending on the data type of the input field validations are added for eg. Name is a text type field, age and phone are numeric, email is email

datatype field etc. It will prevent user from adding text value in numeric field or writing the email correctly.

10. Avoid multiple action buttons – multiple action buttons are avoided as it confuses and distracts the user from successful completion of the form.

Development

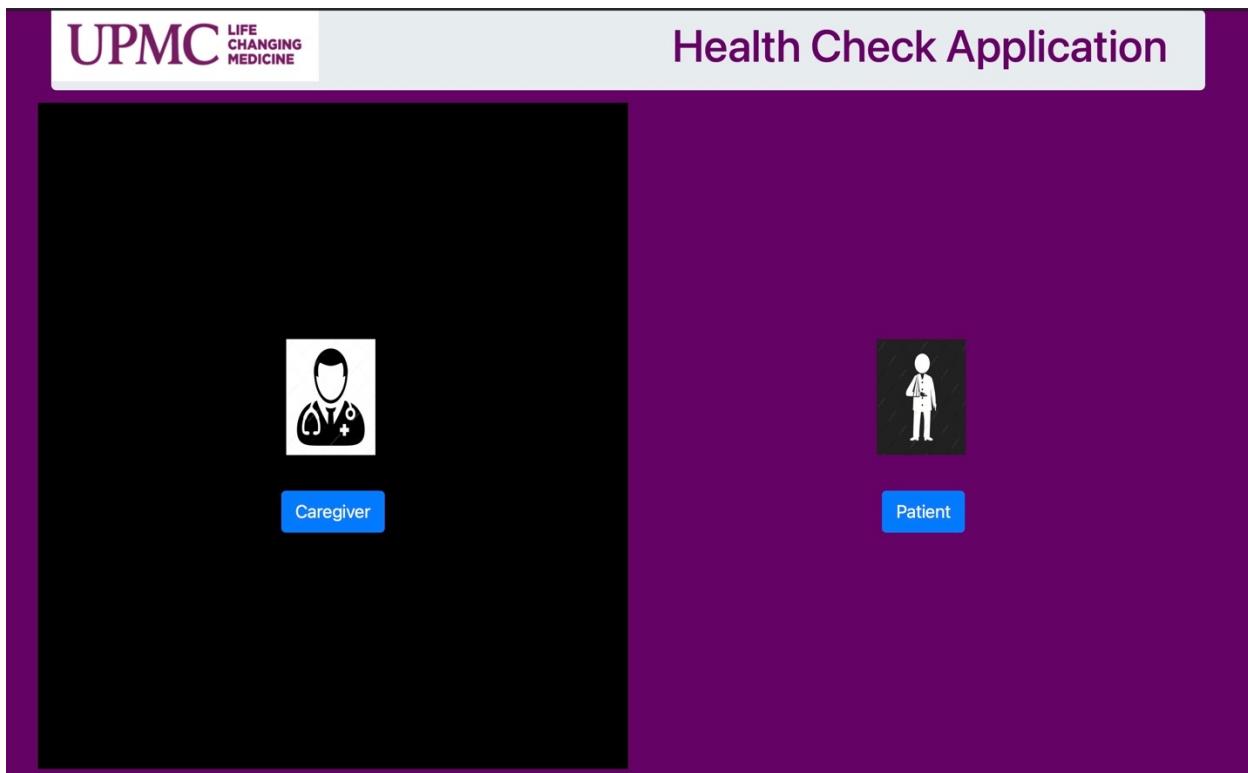
Technologies used for development-

- HTML
- PHP
- Javascript
- Nodejs
- CSS
- MySQL

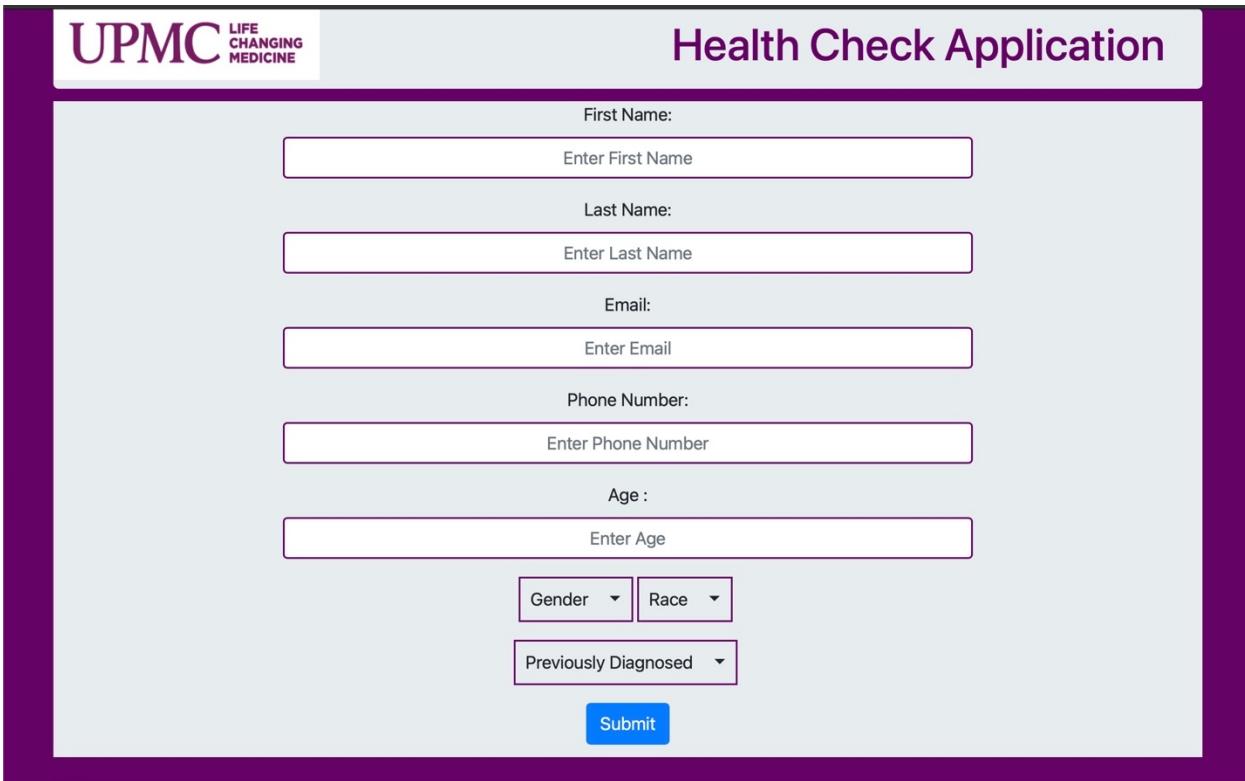
Version 1

Patient journey

Screen 1



Screen 2 (Personal Information)



The screenshot shows the second screen of a UPMC Health Check Application. The header features the UPMC logo with the tagline "LIFE CHANGING MEDICINE" and the title "Health Check Application". The form contains fields for personal information: First Name (text input), Last Name (text input), Email (text input), Phone Number (text input), Age (text input), Gender (dropdown menu), Race (dropdown menu), and Previously Diagnosed (dropdown menu). A blue "Submit" button is located at the bottom right.

First Name:
Enter First Name

Last Name:
Enter Last Name

Email:
Enter Email

Phone Number:
Enter Phone Number

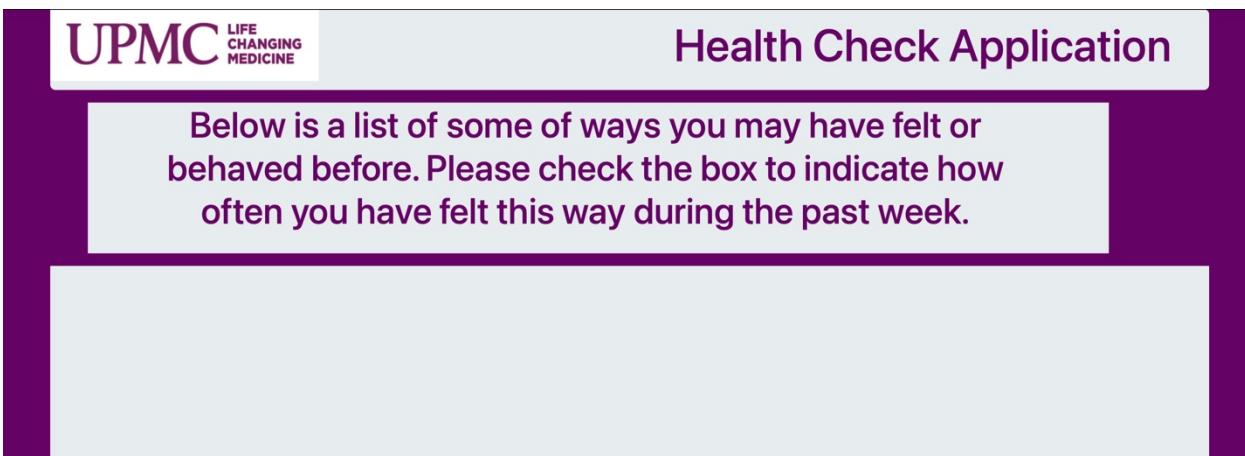
Age :
Enter Age

Gender ▾ Race ▾

Previously Diagnosed ▾

Submit

Screen 3 (CES-D Information)



The screenshot shows the third screen of the UPMC Health Check Application. The header features the UPMC logo with the tagline "LIFE CHANGING MEDICINE" and the title "Health Check Application". A callout box contains the text: "Below is a list of some of ways you may have felt or behaved before. Please check the box to indicate how often you have felt this way during the past week." The main area below the callout is currently empty.

Below is a list of some of ways you may have felt or behaved before. Please check the box to indicate how often you have felt this way during the past week.

Question Number	Question	Less Than 1 Day	1-2 Days	3-4 Days	5-7 Days
1	a	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	a	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	asxas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	vhjvhjh	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	asxas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	vhjvhjh	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	how are you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	Are you fine?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	what is your name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	do you have a name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	what is your name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	do you have a name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	What are you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	What day is it?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	What are you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	What day is it?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	Are you good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	What day it it?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

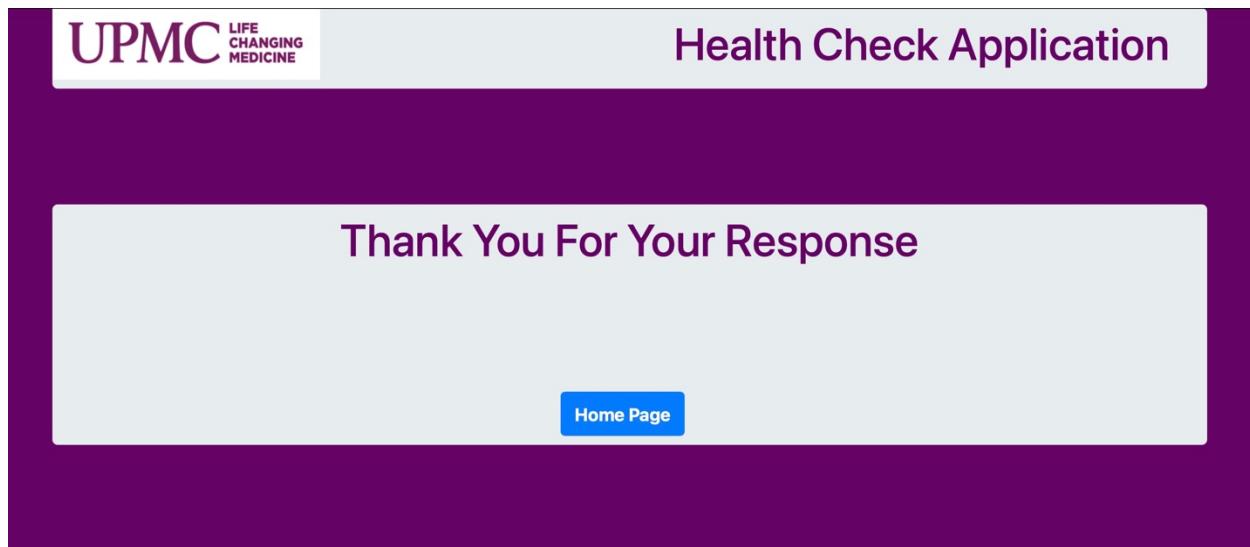
Submit

You can select the options for each question

Question Number	Question	Less Than 1 Day	1-2 Days	3-4 Days	5-7 Days
1	a	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
2	a	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	asxas	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	vhjvhjh	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	asxas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
6	vhjvhjh	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
7	how are you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
8	Are you fine?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
9	what is your name	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
10	do you have a name	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	what is your name	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	do you have a name	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	What are you	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	What day is it?	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	What are you	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
16	What day is it?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
17	Are you good	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	What day it it?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

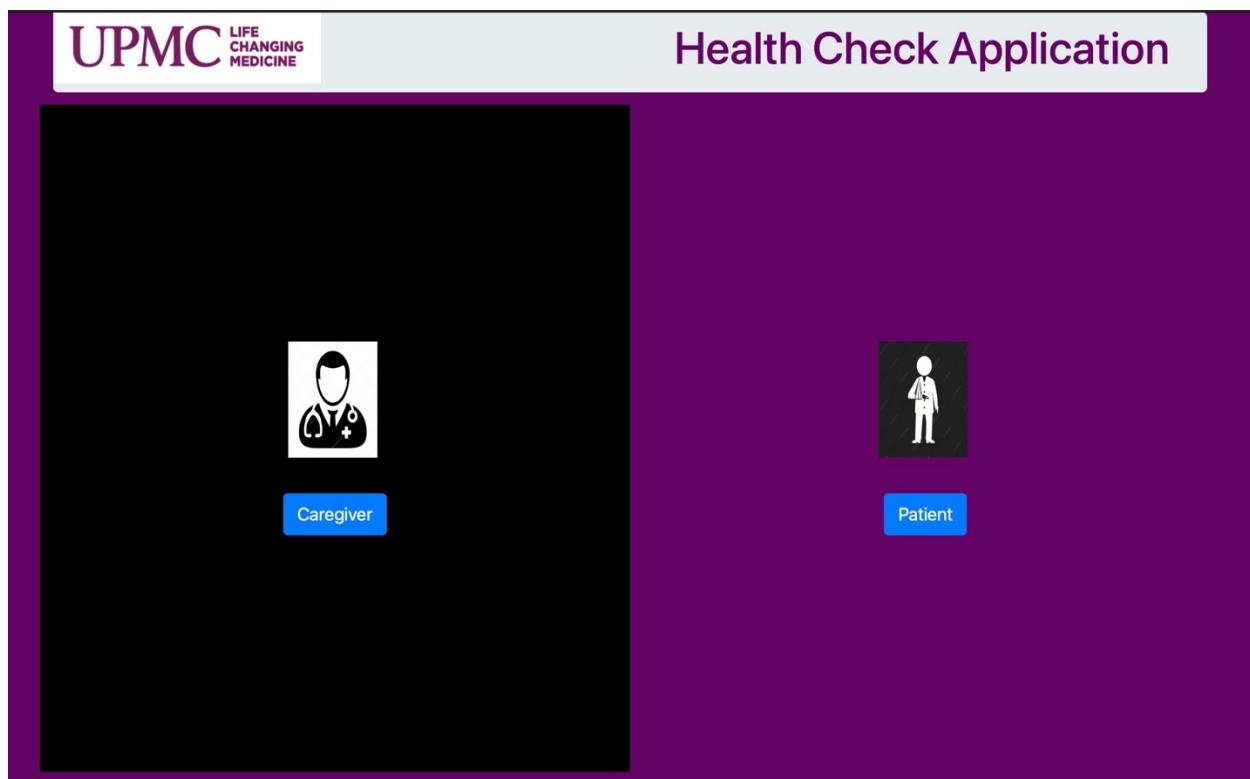
Submit

Screen 4

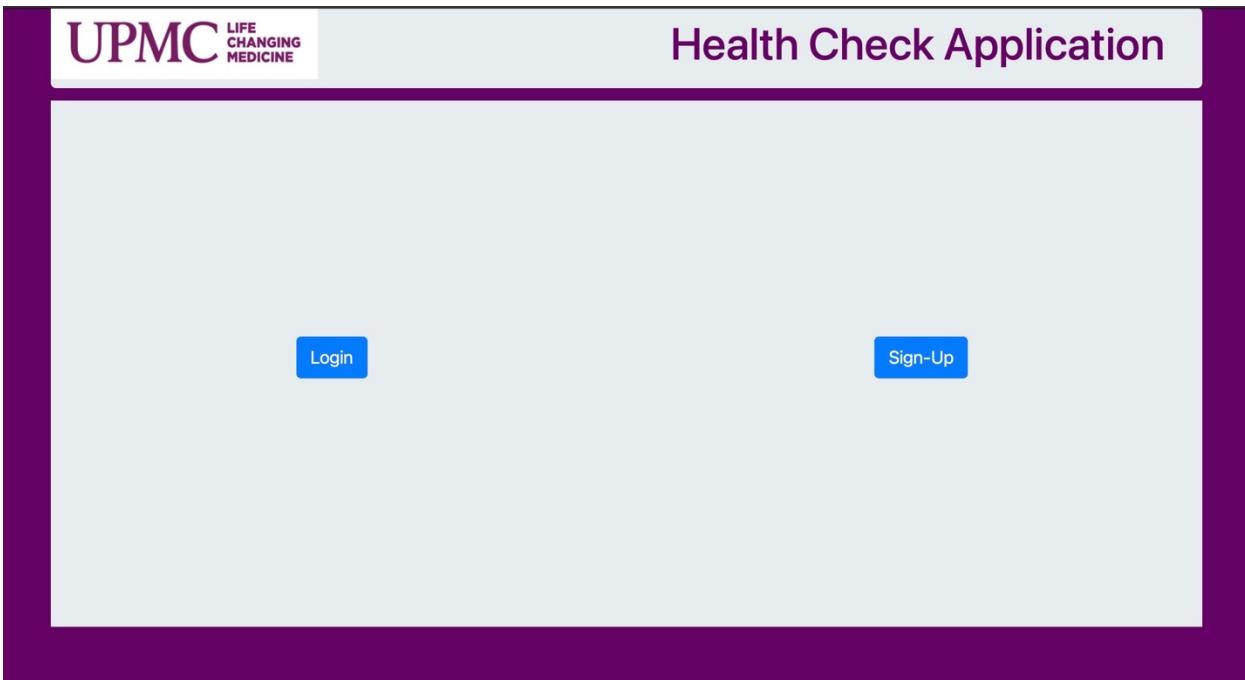


Caregiver journey

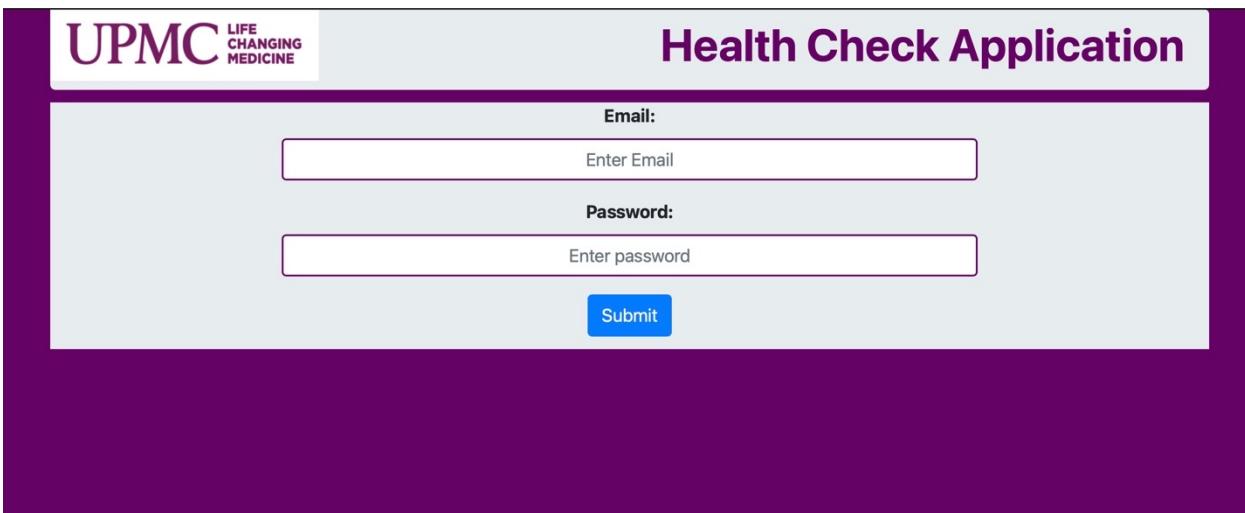
Screen 1



Screen 2



Screen 3 (login)



Screen 4(Sign up)

The screenshot shows the UPMC Health Check Application sign-up page. The header features the UPMC logo with the tagline "LIFE CHANGING MEDICINE". The main title is "Health Check Application". The form contains fields for First Name, Last Name, Email, Password, and Confirm Password. Each field has a placeholder text and a red validation message indicating it is required. A blue "Submit" button is at the bottom.

First Name:
Enter First Name

Last Name:
Enter Last Name

Email:
Enter Email

Password:
Enter Password

Password Strength:

Confirm Password:
Enter Password Again

Submit

Screen 5(Validations for fields on Sign up)

This screenshot shows the same sign-up page as Screen 5, but with all fields now marked as required (indicated by a red question mark icon in the top right corner of each input field). The validation messages "Please fill out this field." are now displayed below each respective field.

First Name:
Enter First Name ⓘ
Please fill out this field.

Last Name:
Enter Last Name ⓘ
Please fill out this field.

Email:
Enter Email ⓘ
Please fill out this field.

Password:
Enter Password ⓘ
Please fill out this field.

Password Strength:

Confirm Password:
Enter Password Again ⓘ
Please fill out this field.

Submit

Screen 6

My Patients

[Create Questions](#)
[Show Scores](#)
[Home Page](#)

Patient_id	Firstname	Lastname	Email	Gender	Race	Age	Contact	Previous_Diagnosis
1	abc	abc	abc@abc	M	Indian	15	1234567890	Y
2	x	x	x@x	Male	American	12	12	No
3	c	c	c@c	Male	Asian	12	12	Yes
4	d	d	d@d	Female	American	12	123	No
5	e	e	e@e	Female	Asian	12	123	Yes
6	b	b	b@b	Male	American	123	123	Yes
7	m	m	m@m	Female	American	123	123	Yes
8	ab	ab	a@ab	Male	American	12	12	No
9	r	r	r@r	Male	Asian	12	123	Yes
10	t	t	t@t	Male	Asian	123	1234	No
11	t	t	t@t	Male	Asian	123	1234	No
12	t	t	t@t	Male	Asian	123	1234	No

Screen 7 (add questions by clicking on Create questions on screen 6)

Question:

Option-A:

Option-B:

Option-C:

Option-D:

[Submit](#)

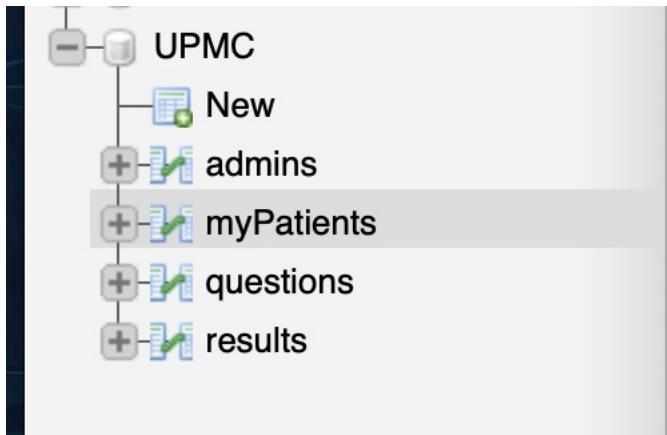
Screen 8 (See the scores by clicking on Show Scores on screen 6)

The screenshot shows a web application interface for a "Health Check Application". At the top left is the UPMC logo with the tagline "LIFE CHANGING MEDICINE". The main title "Health Check Application" is centered at the top. Below it, a section titled "My Patients" displays a table of patient data. A blue "Home Page" button is located above the table. The table has columns: Result_ID, Patient_ID, Firstname, Lastname, Email, Contact, Previous_Diagnosis, and Score. The data is as follows:

Result_ID	Patient_ID	Firstname	Lastname	Email	Contact	Previous_Diagnosis	Score
60	60	q	q	qqq@mn	123	Yes	18
1	1	abc	abc	abc@abc	1234567890	Y	0
61	61	Prof	Peter	prof@peter	123	Yes	18

Database Setup

Tables-



phpMyAdmin

Server: localhost » Database: UPMC » Table: admins

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Showing rows 0 - 5 (6 total, Query took 0.0009 seconds.)

SELECT * FROM `admins`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

	Edit	Copy	Delete	id	firstname	lastname	email	password
<input type="checkbox"/>				1	ab	cd	ab@cd	abcd
<input type="checkbox"/>				2	a	a	a@a	aa
<input type="checkbox"/>				3	b	b	b@b	b
<input type="checkbox"/>				4	qw	qw	qw@qw	qw
<input type="checkbox"/>				5	Sweta	Rawal	swr@pitt.edu	ab
<input type="checkbox"/>				6	Prof	Peter	prof@prof	But

Check all With selected: Edit Copy Delete Export

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

phpMyAdmin

Server: localhost » Database: UPMC » Table: myPatients

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Showing rows 0 - 61 (62 total, Query took 0.0012 seconds.)

SELECT * FROM `myPatients`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 500 Filter rows: Search this table Sort by key: None

+ Options

	Edit	Copy	Delete	id	firstname	lastname	email	gender	race	age	phone_no	prev_diag
<input type="checkbox"/>				1	abc	abc	abc@abc	M	Indian	15	1234567890	Y
<input type="checkbox"/>				2	x	x	x@x	Male	American	12	12	No
<input type="checkbox"/>				3	c	c	c@c	Male	Asian	12	12	Yes
<input type="checkbox"/>				4	d	d	d@d	Female	American	12	123	No
<input type="checkbox"/>				5	e	e	e@e	Female	Asian	12	123	Yes
<input type="checkbox"/>				6	b	b	b@b	Male	American	123	123	Yes
<input type="checkbox"/>				7	m	m	m@m	Female	American	123	123	Yes
<input type="checkbox"/>				8	ab	ab	a@ab	Male	American	12	12	No
<input type="checkbox"/>				9	r	r	r@r	Male	Asian	12	123	Yes
<input type="checkbox"/>				10	t	t	t@t	Male	Asian	123	1234	No
<input type="checkbox"/>				11	t	t	t@t	Male	Asian	123	1234	No
<input type="checkbox"/>				12	t	t	t@t	Male	Asian	123	1234	No
<input type="checkbox"/>				13	a	b	c@def	Female	Asian	12	123	Yes
<input type="checkbox"/>				14	adszf	vgbvsv	fsd@sfg	Male	American	12	2131	Yes
<input type="checkbox"/>				15	n	n	n@n	Male	American	13	12312	Yes
<input type="checkbox"/>				16	n	n	n@n	Male	American	13	12312	Yes
<input type="checkbox"/>				17	qwq	qwq	qwq@qwq	Male	Asian	13	1231	Yes
<input type="checkbox"/>				18	a	a	asd@adadas	Male	American	12	2341	No
<input type="checkbox"/>				19	asca	fa	fff@fff	Male	Asian	31	13221	Yes
<input type="checkbox"/>				20	add	dada	ff@f	Male	Indian	123	32	Yes
<input type="checkbox"/>				21	a	a	a@f	Female	Indian	12	312	Yes
<input type="checkbox"/>				22	as	acg	c@a	Male	Indian	12	12	Yes
<input type="checkbox"/>				23	asd	andas@fa	as@fa	Female	Indian	12	123	Yes

Console

phpMyAdmin

Server: localhost > Database: UPMC > Table: questions

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Showing rows 0 - 17 (18 total, Query took 0.00010 seconds.)

SELECT * FROM `questions`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options	id	question	option1	option2	option3	option4
Edit Copy Delete	1	a	a	a	a	a
Edit Copy Delete	2	a	xls	asd	asd	ad
Edit Copy Delete	3	asxas	bbhjb	hjv	vjv	viv
Edit Copy Delete	4	vhjvhjh	vjvh	hjv	vjvhvh	vjvh
Edit Copy Delete	5	asxas	bbhjb	hjv	vjv	viv
Edit Copy Delete	6	vhjvhjh	vjvh	hjv	vjvhvh	vjvh
Edit Copy Delete	7	how are you	good	better	best	donno
Edit Copy Delete	8	Are you fine?	Yes	No	donno	Maybe
Edit Copy Delete	9	what is your name	donno	a	b	x
Edit Copy Delete	10	do you have a name	yes	no	donno	maybe
Edit Copy Delete	11	what is your name	donno	a	b	x
Edit Copy Delete	12	do you have a name	yes	no	donno	maybe
Edit Copy Delete	13	What are you	Human	monkey	mountain	star
Edit Copy Delete	14	What day is it?	Today	Yesterday	Anyday	Everyday
Edit Copy Delete	15	What are you	Human	monkey	mountain	star
Edit Copy Delete	16	What day is it?	Today	Yesterday	Anyday	Everyday
Edit Copy Delete	17	Are you good	yes	no	no	ok
Edit Copy Delete	18	What day is it?	Yesterday	Today	Today	Tomorrow

Check all With selected: [Edit](#) [Copy](#) [Delete](#) [Export](#)

phpMyAdmin

Server: localhost > Database: UPMC > Table: results

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Showing rows 0 - 3 (4 total, Query took 0.00009 seconds.)

SELECT * FROM `results`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options	id	patient	score
Edit Copy Delete	1	60	18
Edit Copy Delete	2	1	0
Edit Copy Delete	3	61	18
Edit Copy Delete	4	62	28

Check all With selected: [Edit](#) [Copy](#) [Delete](#) [Export](#)

Query results operations

[Print](#) [Copy to clipboard](#) [Export](#) [Display chart](#) [Create view](#)

Bookmark this SQL query

Label: Let every user access this bookmark

Bookmark this SQL query

The screenshot shows the phpMyAdmin interface for a MySQL database named 'UPMC'. The left sidebar lists various databases and their structures. The main panel shows a table of four existing tables: 'admins', 'myPatients', 'questions', and 'results'. Each table has a row count, type (InnoDB), collation (utf8mb4_general_ci), size, and overhead. Below the table list is a 'Create table' form with fields for 'Name:' (set to 'patients') and 'Number of columns:' (set to 4). A 'Go' button is present at the bottom of the form.

[Demo Link](#)

The app is uploaded on youtube and below is the link-

https://youtu.be/eToJDZ_iPWs

Usability Testing

As we had to build the application from scratch, we had a few iterations in the design phase. After having the final design prototype ready we moved on to development. Due to restrictive timeline and 2 people in the group we were able to make slow progress on this project's actual development. Hence, we did not get a chance to have an actual user feedback. However, we did have the demo reviewed from some of the students and got a feedback from them with a survey (<https://forms.gle/po1H1FaHPVe2WgFcA>) We received some good and bad feedback from them which we can consider for the future development of this project.

The overall rating we received for this app was 8/10.

Good Comments-

“Good design on the navigation part by keeping it simple and not complex. I was able to navigate through the form easily”

“The form is structured nicely and has precise information. It does not have any field that I did not understand.”

Room for improvement-

“The dashboard interface can be improved design wise and adding time/date of response received will be helpful as well”

“The cesd information section has too many questions they can be handled by having one question at a time and having a progress bar to track the completion of the form”

Conclusion

In conclusion, we followed an iterative designing approach that consisted of different design as well as build stages. This approach helped us improve our design model as we were building the application from scratch. For the build part we also had an iterative approach that helped with having a usable interface and gave us good results. It was a good experience to interact with our client, take their feedback and make improvements in our implementation design. The one requirement of sending an email to the doctor with HIPPA compliance is something that the next team can take forward for this application. We hope that this application will prove to be helpful to the client and our client will be using this application for screening patients in future when it is fully developed.