1   Software Required

Any web application front-end language of your choice.

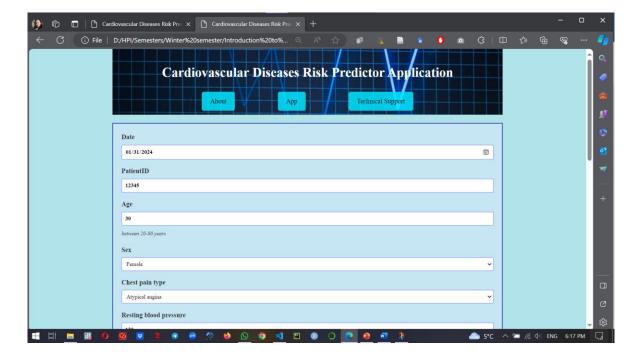I used HTML, CSS and Javascript as front-end language for building this web-application.
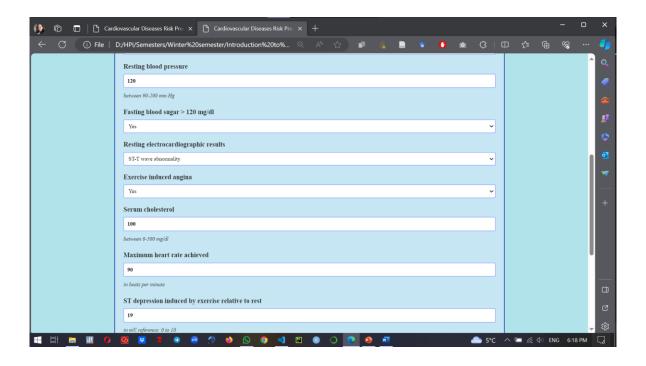
2   Tasks...

As a first step, please revisit your assignment theme as well as your model from Assignment #3 to decide what aspects of the front-end you would like to implement and why. If there are several please choose the one that is the most representative of the application you want to have.

Cardiovascular risk prediction application is designed to predict the likelihood of heart disease based on various health and clinical indicators. It could be used to predict risk of developing heart diseases among individuals without any cardiovascular diseases by health professionals during counselling sessions.

2.1   Implementation − 20 marks

Your implementation should be workable without the backend. So for instance, links should lead to the points envisaged. The design should also be aesthetically pleasing and colour schemes etc should obey standard web application design rules.
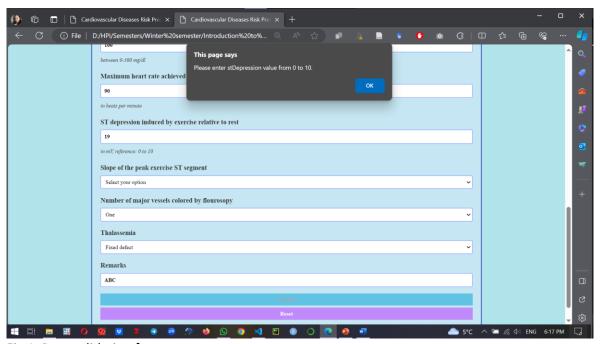
Fig 1: Data validation feature

ST depression induced by exercise relative to rest

10

in mV, reference: 0 to 10

Slope of the peak exercise ST segment

Select your option

Number of major vessels colored by flourosopy

One

Thalassemia

Fixed defect

Remarks

ABC

Predict

Reset

At low risk of cardiovascular disease

Suggest to maintain a healthy lifestyle to continue to stay at low risk.

Cardiovascular Diseases Risk Predictor Application

About   App   Technical Support

About the app

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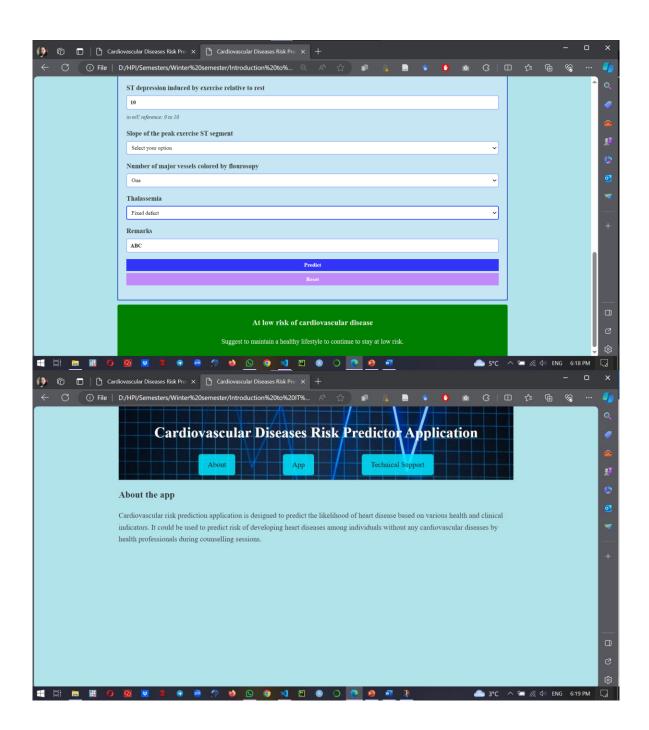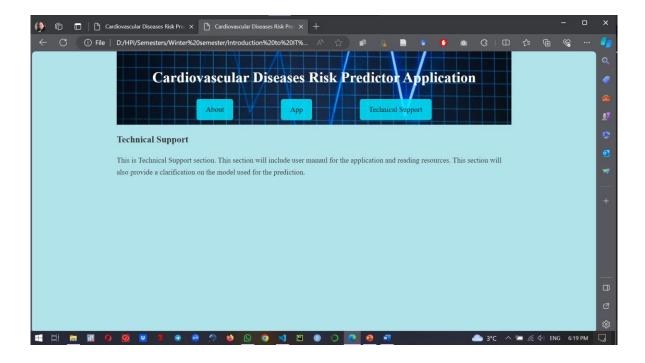
2.2 User Testing – 20 marks

Recruit two groups of users. One group will be used to test your application. For this, you will need to design a testing protocol and ask the users to use this to determine if your application is working as it should be. Errors must be noted and rectified. The second group, will be used to provide feedback on the ergonomics of your application. For instance, in terms of whether or not certain features are easy to access or even understandable in the way that you had envisaged during the design stage.

Developed Testing Protocol for Cardiovascular Disease Risk Predictor Application:

1. Click the About button, Help button and Recommendation button
2. About Button includes of the Brief instruction about the application.
3. Help Button includes of the User instruction and clarification for the input fields.
4. Recommendation button to access the reading materials for the recommended instruction health worker can provide to the patient.
5. Input the data in the fields for numbers, text and from drop-down menu.
6. Some of the fields contains instructions for the range of the data to be entered.
7. After you entered all the data inputs, click the "Predict" button. At the moment the prediction is made on random as there is no model developed yet for the prediction.
8. As you have an output, you may also refer to the provided recommendation.

1st Group included of 3 people who had background of health science.

<u>Summary of the feedbacks while testing protocol</u>

- A very practical web application and could potentially use by staff in healthcare industries to predict the risk.
- Navigable buttons on the webpage, however, still color correction might be required to easily locate the buttons.
- Some challenges while entering the few inputs given that reference to enter the data were not provided
- Some of the fields also took inputs than those which are specified, eg: ST Depression field was intended to input only numeric values; however, string values could also be entered.
- Predict button did returned some output randomly along with the specified color.
- Put details about the dataset used to generate the model and also info about the model and accuracy percentage for the prediction made. This could be inserted in the About section.

2nd Group also included of 3 people who had background of health science.

<u>Summary of the feedback on the ergonomics of the application</u>

- Use of moderate color scheme
- Rephrase the headings of the Webpage (Help -> Technical Support) for more clear instruction, else might be misleading.
- Insertion of the reset button, so that all the values are cleared and there won't be any confusion for the new set of values to be entered.
- Field width should be equal and more hover effects on those for aesthetic appearance.
- Mention of data entry range info below each input fields.
- Further validate input fields, a prompt message displaying about the error would be helpful to make correction immediately.
- Categorize similar input fields, add additional options like "Others" in "Sex" field.
- User instruction guideline in the Technical Support section
- Narrow down the field input width and try to accommodate all in 2 table formats.

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Written Feedbacks

User 1: A very practical web application for staff in healthcare industries to predict the risk. Nice! Color of predictions can have better contrast. Color of Header buttons need to have better contrast. Change the "Help" button to "Technical Support" which would be more clear instruction for the user.	User 2: • Probably put the reset button. • Define what data input as number is taken by ST depression. At the moment it has text. input.	User 5: • Open About, Help and Recommendation tab when clicked. • Put details about the dataset used to generate the model and also info about the model and accuracy percentage for the prediction made.
User 3: • Very detailed page to fillout for predictions • Nice color scheme • Could be used to identify causes of cardiovascular diseases • Like the option to scroll down • Show hint to make sure that no wrong values are entered • Really like that you wrote so much code yourself and made the HTML design unique. • Have diverse option? Not in data inputs. • Make prompt that some inputs are not possible • Option "not provided" • Fields should only take the number/letters/symbols	User 4: • Bigger value text • Align input fields • Make the contrast higher (especially end message) • Include error message why older, younger and diverse patients can't use it. • Put chapters like demographics data/ blood test • Put field for additional notes • About Help and Recommendation have to be more visible • Fields should be packed together • Predict with different button/ Color the predict button • Include some of the health message	User 6: • Change the order of the input fields based on the similar characteristics of the input fields. • Probably change the current name of the html file

	• Nice ways of inputting data • Very clear and structured • Nice background for header • Very retro design, nice	

Rectified errors after the user testing:
- Made color for About tab, Technical Support, Reading Materials lighter.
- Opens New Tabs like About, Technical Support, Reading Materials however these sections still require to be filled with the content
- Changed the color to darker theme and font size of the "Predict Button".
- Color contrast was changed for the result appearance.
- Validated input fields for some of the fields like "ST Depression".
- Changed the order of the input fields based on similarity.
- Fields were packed together.
- Fields width was made same across all the input fields.
- Reset button was inserted and it worked! However, results did not clear.
- Field for additional notes was created.
- New options for "Sex" like others.
- Since, I am yet to develop a model for the prediction to be made, I have left the prediction to be done at 50%.
- Considerations to fit all the fields in two table frames so user don't have to scroll down much.
- Considerations to put information about dataset and developed model on the "About" section.
- Considerations to add user manual for the users in the "Technical Support" section to refer to the input fields.