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Vellore Institute of Technology

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SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
Winter Semester 2020-2021

Course Code : CSE4015
Programme : B.Tech
Course Name: Human-Computer Interaction
Slot: C1

Project Report

Project Title

Prototyping mindfulness

Details of the batch members

Name	Registration No.	Branch	Responsibility
Anvita Gupta	18BCB0005	CSE(specialization bioinformatics)	Review Study of 5 papers, prototyping, implementation of mental health website.
Rajat Sharma	18BCB0065	CSE(specialization bioinformatics)	Review Study of 5 papers, implementation of the mental health website and emotion detector.

Aim

To prototype and design a mental health and mindfulness website based on review study results.

Scope

Product Description	To prototype and design a mental health and mindfulness website.
Target Audience	People of all kinds, those who are suffering from some mental illness, or those who wish to feel better in their daily life and intend to practice the principles of mindfulness, meditation, and a general sense of calmness in everyday activities.
Project Requirements	Interactive design Should Cater to Universal Usability Offer informative feedback Prevent Errors Permit easy reversal of actions Exploit constraints Aesthetic and Minimalist design Flexibility and efficiency of use
Project Constraints	Whether the website will be successfully able to communicate its message to the user
Project Assumptions	Performance issues The interface will be able to communicate ideas very well to the user.
Project Deliverables	Mental health and mindfulness website
Project Acceptance Criteria	Successful completion of the website. Improvements based on user feedback to be incorporated.

Project Objective and Problem Statement

Objectives:

1. A review study of how concepts of Human-Computer Interaction can help in achieving '*Techno-Spirituality*' and '*Slow Design*', thus establishing a connection between mindfulness and technology.
2. Through utilizing the points found as a result of our review study we aim to develop a new digital mindfulness prototype designed for stress reduction and positive computing.

Abstract

In this paper, we aim to study how the concepts of Human-Computer Interaction (HCI) can help in achieving '*Techno-Spirituality*' and '*Slow Design*'. The first term '*Techno-Spirituality*' is the study of how technology can assist humans' spiritually. Its co-aspects explore areas such as mindfulness, meditation, positive computing, and the overall well-being of an individual. We will also be focusing on the second term called '*Slow Design*' which is believed to help facilitate self-reflection and relaxation.

Based on the grounds of what we find out through our review study, we aim to develop a digital mindfulness prototype designed for stress reduction and positive computing. We will try to provide a new prototype or redesign the existing technology for facilitating more better interaction between humans and computers. We will be exploring innovative ways to utilize technology to support the wellbeing of humans through the use of HCI concepts. In this process, we will also seek to find out the challenges faced when aiming for a successful partnership between technology and mindfulness.

Keywords

Human-Computer Interaction; Techno-spirituality; Slow design; Mindfulness; Positive computing; positive psychology; Well-being; Meditation

Methodology

Stage 1: Analysis

The first step to building a product is to identify correctly what the user needs/wants. For this, we are going to review research papers and study '*Techno-Spirituality*' and '*Slow Design*' and how these concepts can be deployed in HCI to improve user experience.

Stage 2: Design

In the second stage of the project, we aim to design a potential solution according to the design guidelines and principles. We will use the storyboarding method to accomplish this.

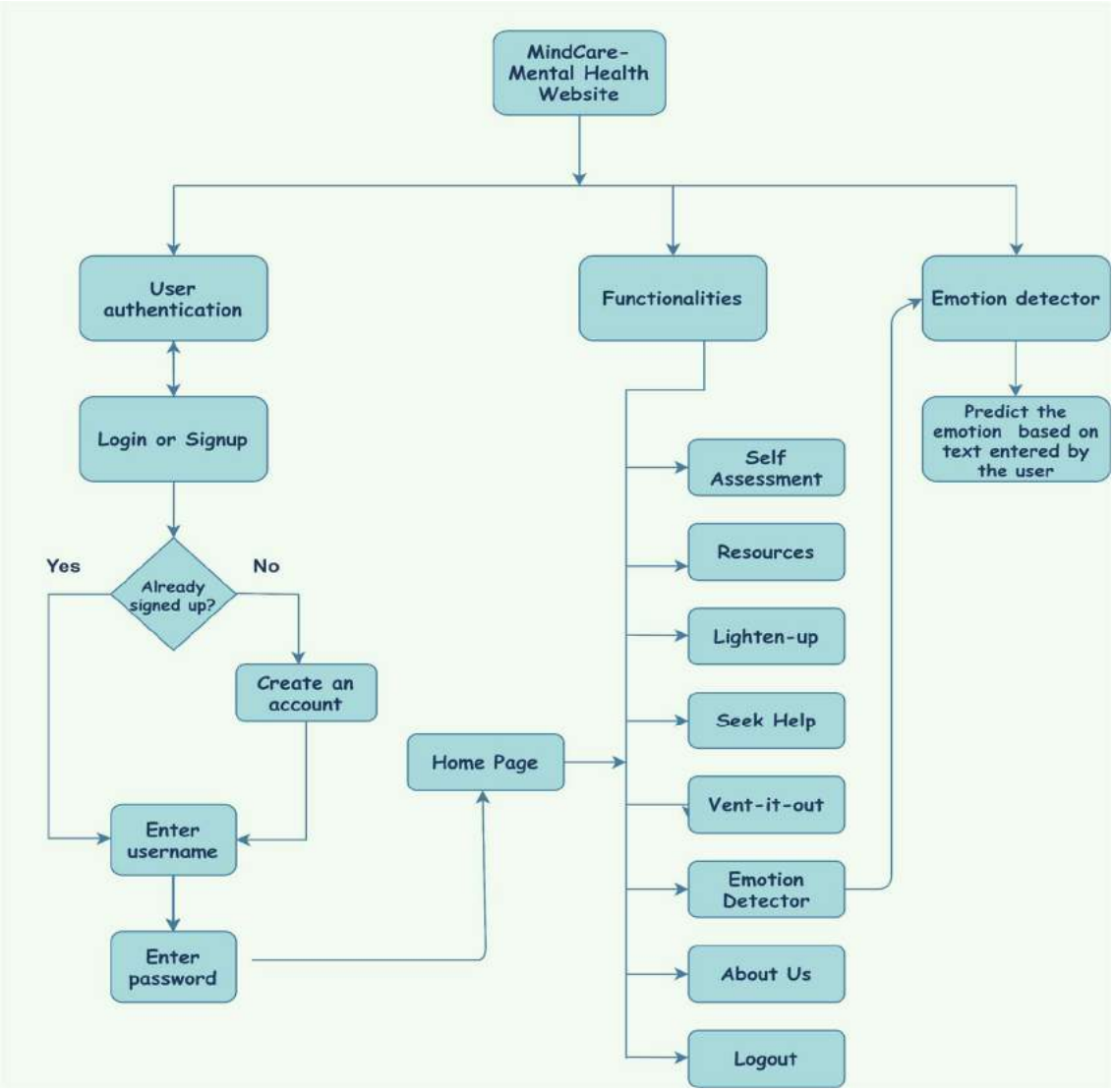
Stage 3: Prototype

The designed model will be further enhanced in this stage through evaluation and feedback by users.

Stage 4: Implement and deploy

The improved model will then be implemented and deployed.

Block diagram of the system (Design Model)



Hardware/Software and other requirements

Hardware Requirements:

1. **Processor** - with minimum 1.9 gigahertz (GHz) x86- or x64-bit dual-core processor with SSE2 instruction set
2. **Memory** - min 2 GB RAM
3. **Display** - Super VGA with a resolution of 1024 x 768

Software Requirements:

1. **Operating system**: Windows 7, Windows 8, Windows, Linux, and Mac compatible.
2. **Browser**: internet explorer, chrome firefox, and safari.

Network Requirements:

1. Bandwidth greater than 50 KBps (400 kbps)
2. Latency under 150 ms

Procedure:

1. Analysis and design:

Two terms that are gaining popularity in the areas of mindfulness and technology are '*Slow design'* and '*Techno-spirituality'.*

Whenever we hear of the term slow we associate it with how long it takes to build or do some task. Rather, slow design is a term that describes an expanded state of awareness, accountability for daily actions, and the potential for a richer spectrum of experience for individuals and communities.
Following are the principles of slow design:

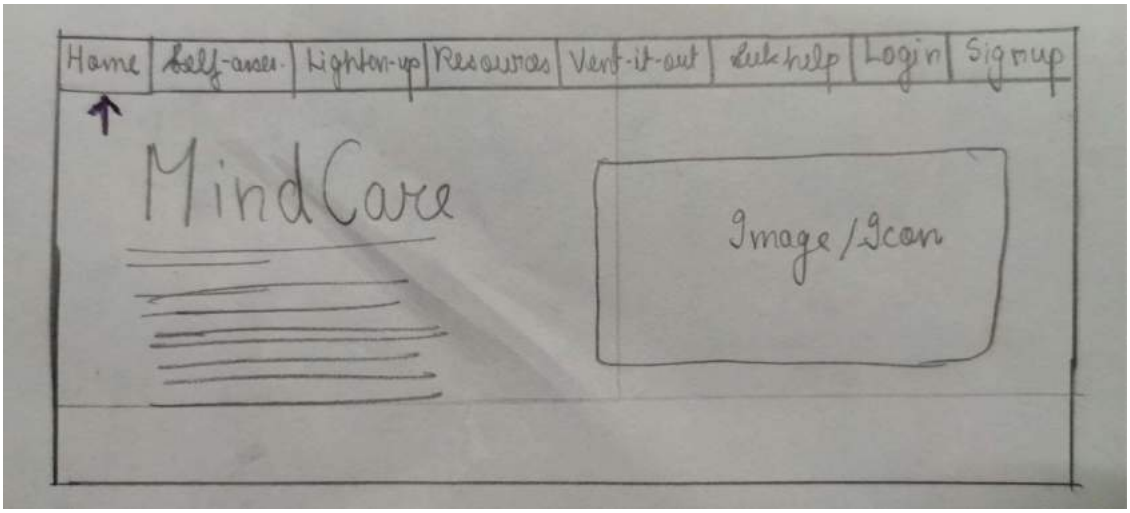
- Reveal
- Expand
- Reflect
- Engage
- Participate
- Evolve

This concept of slow design has not yet been applied to website designing. In our prototype, we will try to incorporate the above-mentioned principles.

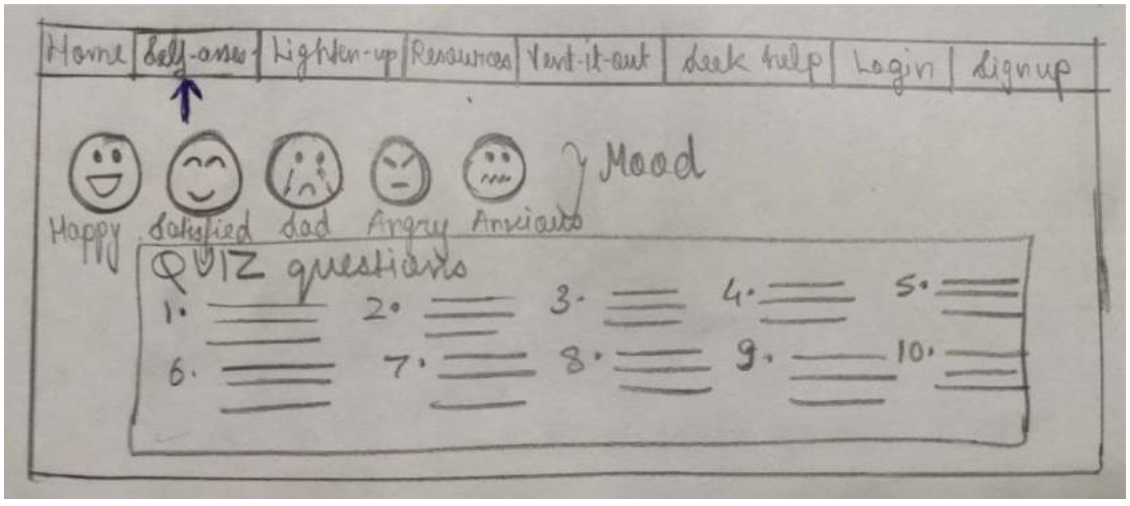
The second term, '*Techno-spirituality*' is defined as the concept of how spiritual practices are increasingly mediated through technology. Through the introduction of meditation music in our website prototype, we would like to take forward this concept and help the users gain a spiritual meaning in their lives. It would also help them cultivate calmness and peace in their daily lives.

2. Prototype:

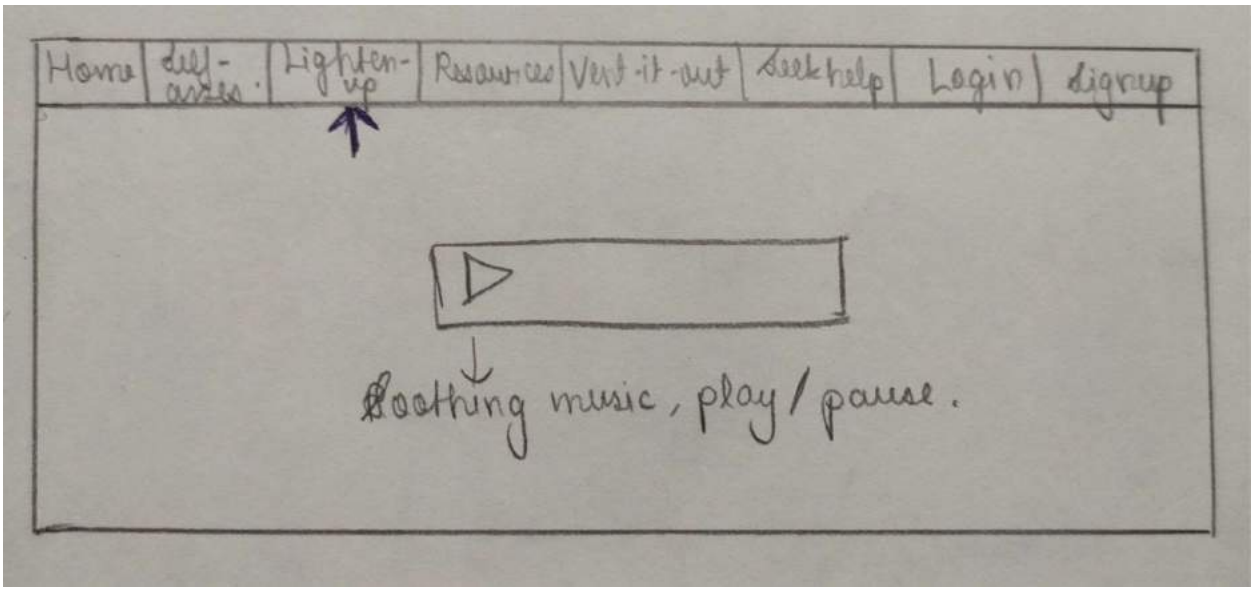
***StoryBoarding #1*:** Home page



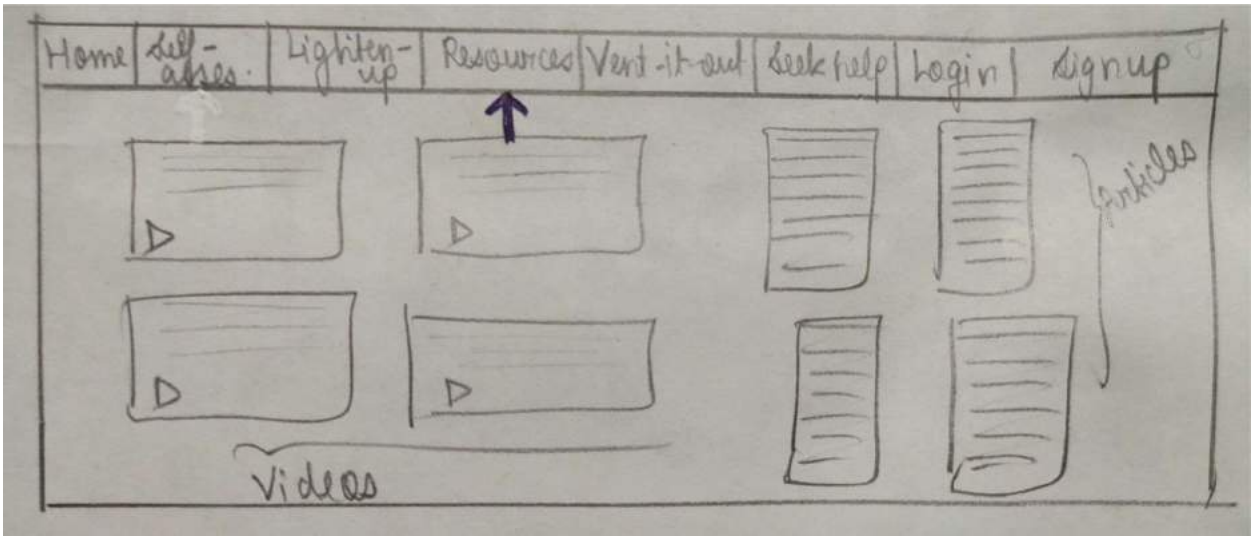
***StoryBoarding #2*:** Self-assessment



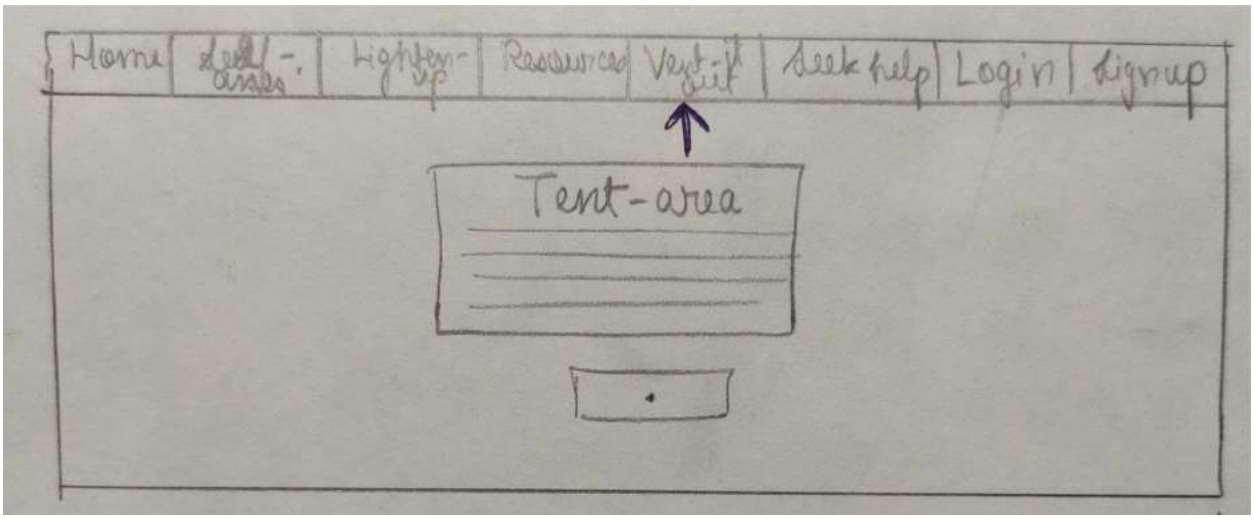
StoryBoarding #3 **:** Lighten-up



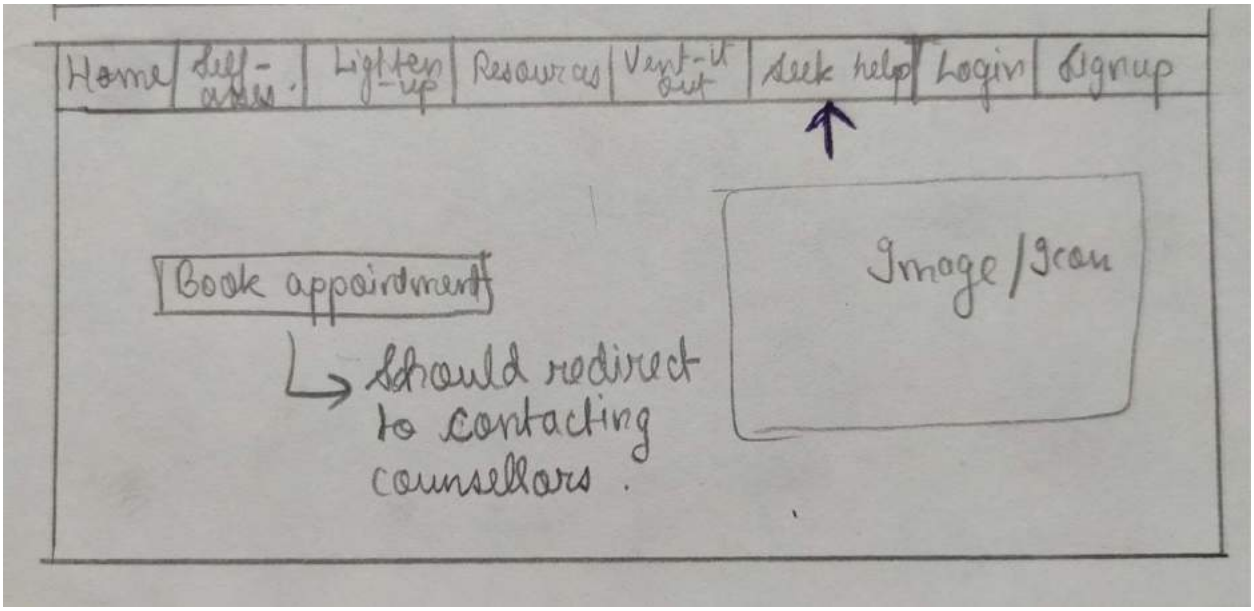
StoryBoarding #4**:** Resources



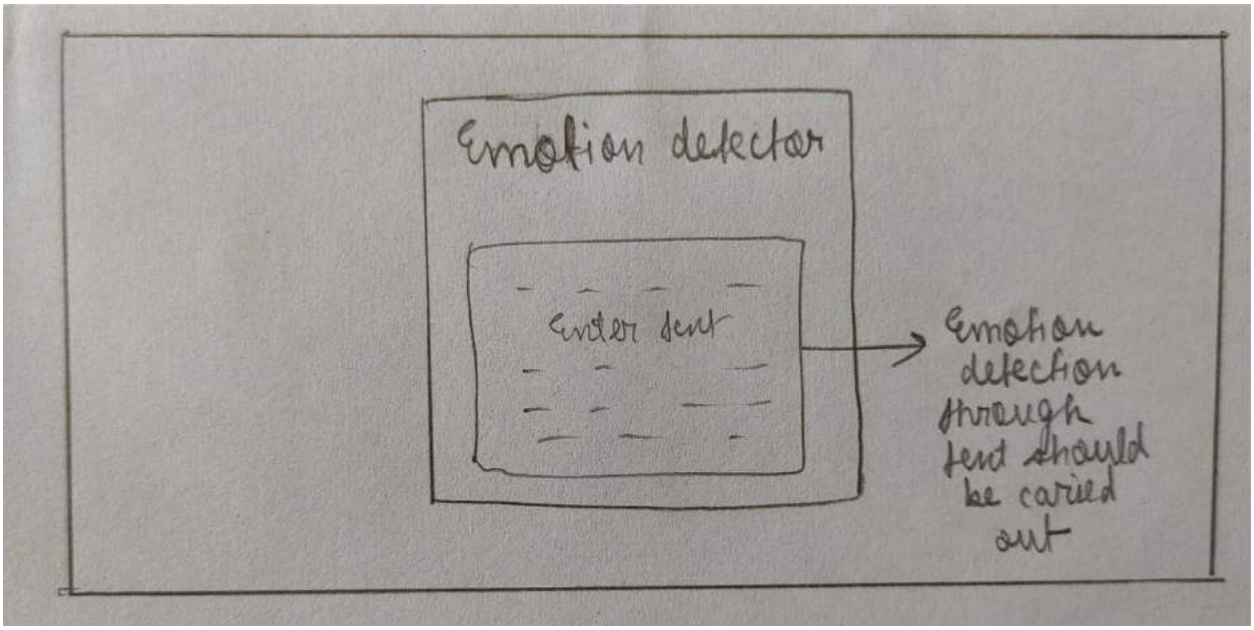
StoryBoarding #5 **:** Vent-it-out



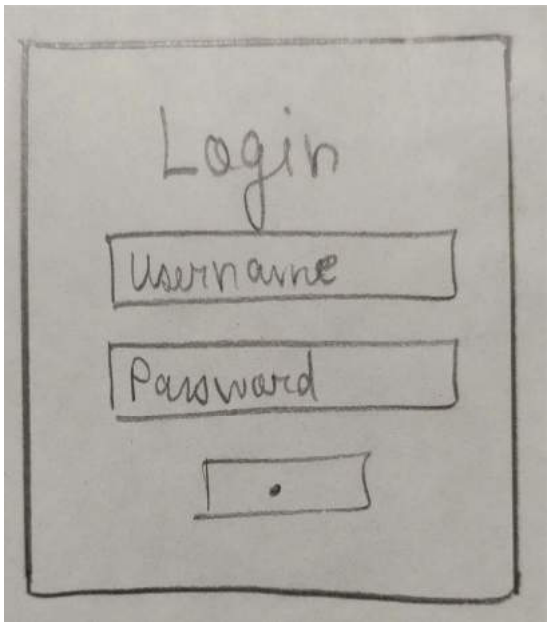
***StoryBoarding #6*:** Seek Help



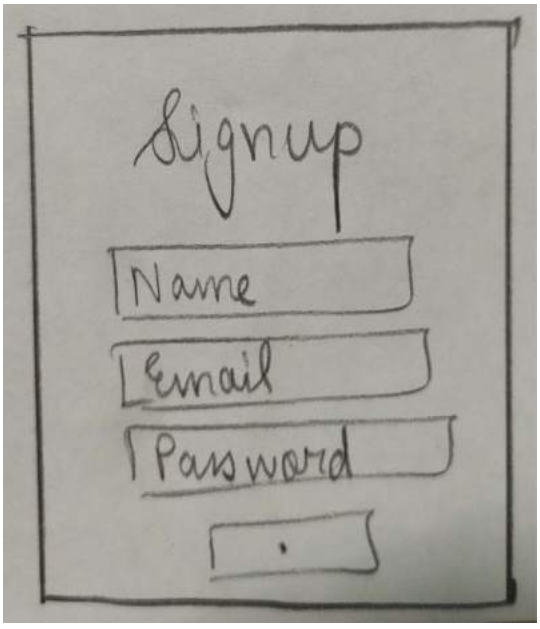
***StoryBoarding #8* :** Emotion detector



StoryBoarding #7 **:** Login



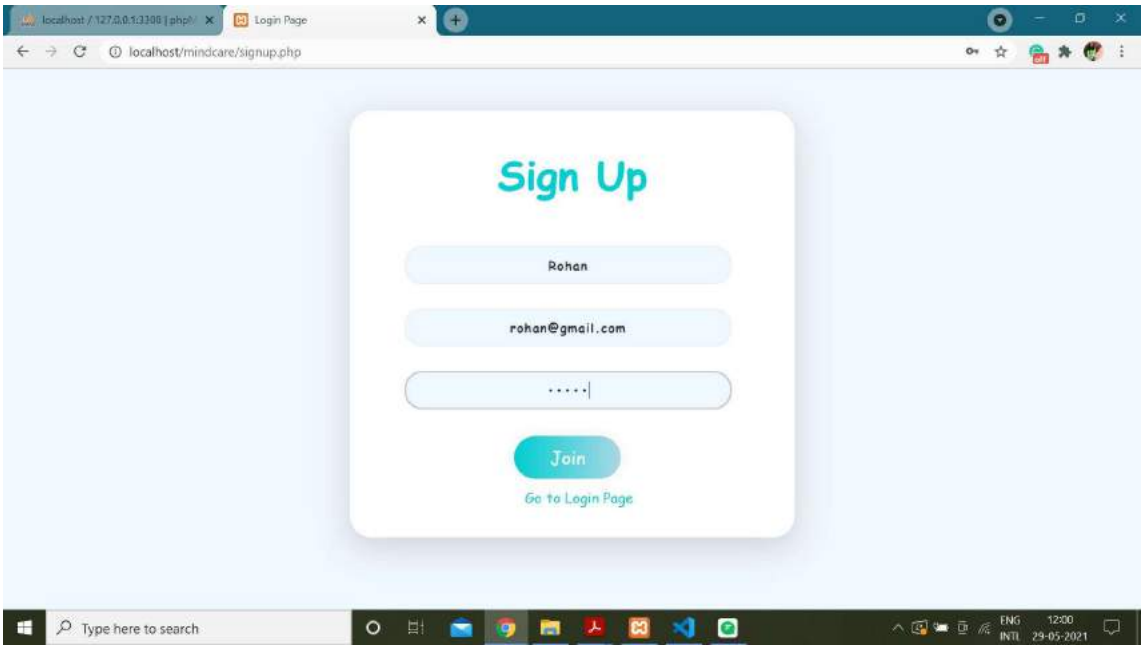
StoryBoarding #8 **:** Signup



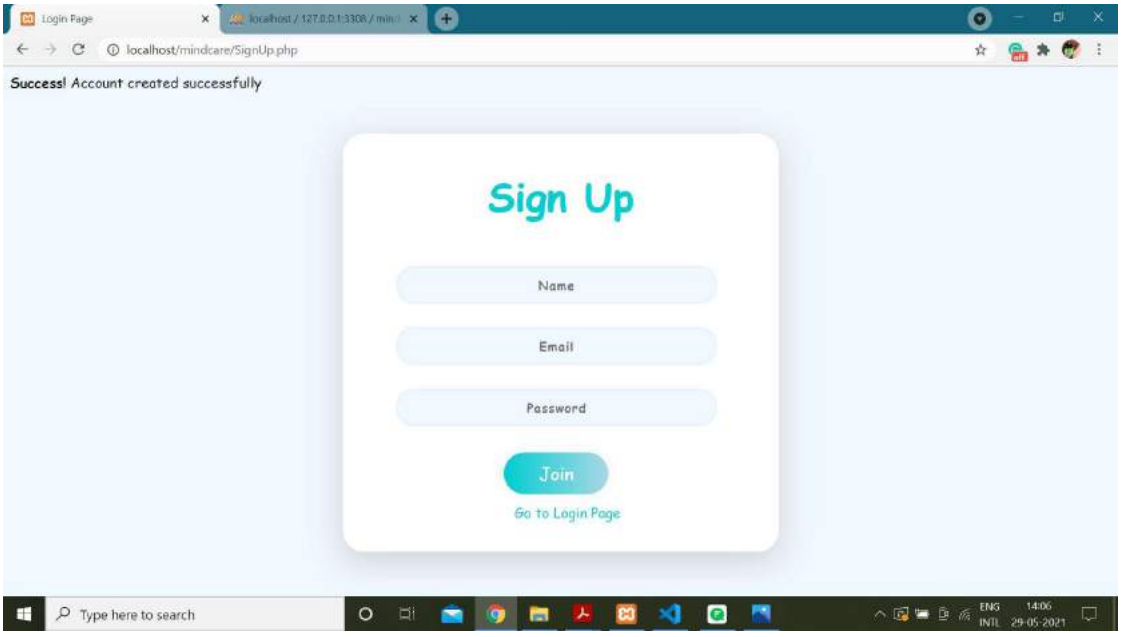
3. Results and Discussions

Signup page:

Creating a new account of the user:

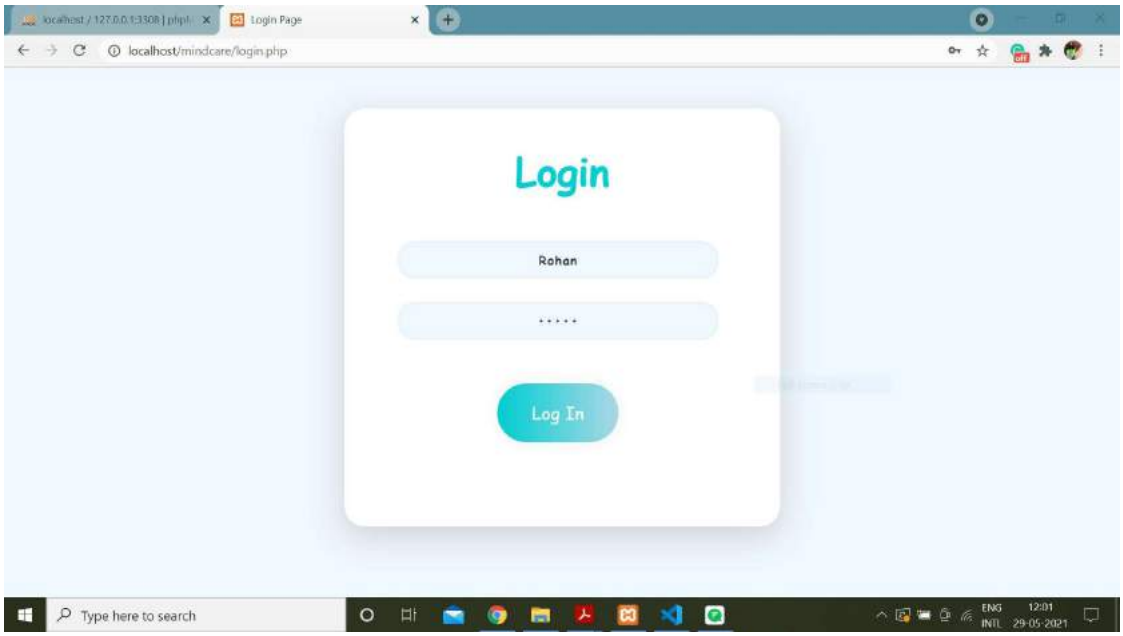


Signup successful:



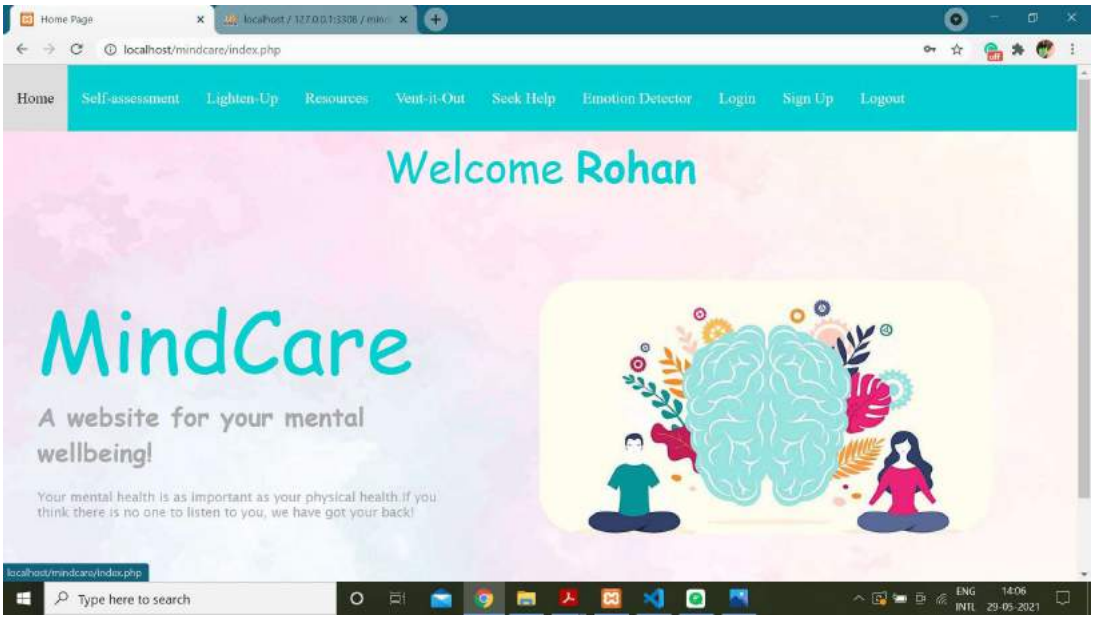
Login page:

Logging in with username and password:



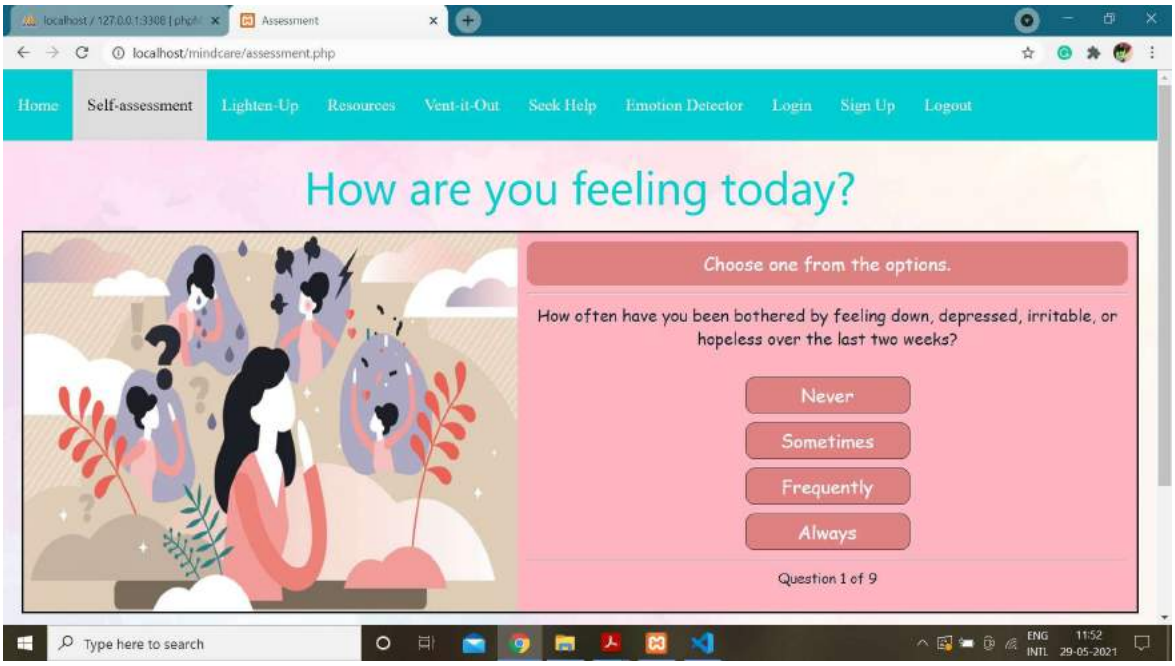
Home page:

Login successful and the user is redirected to Home Page:



Self-assessment:

In the self-assessment section the user is prompted to fill a standard quiz (consisting of 9 questions) to assess the mental health of the person:

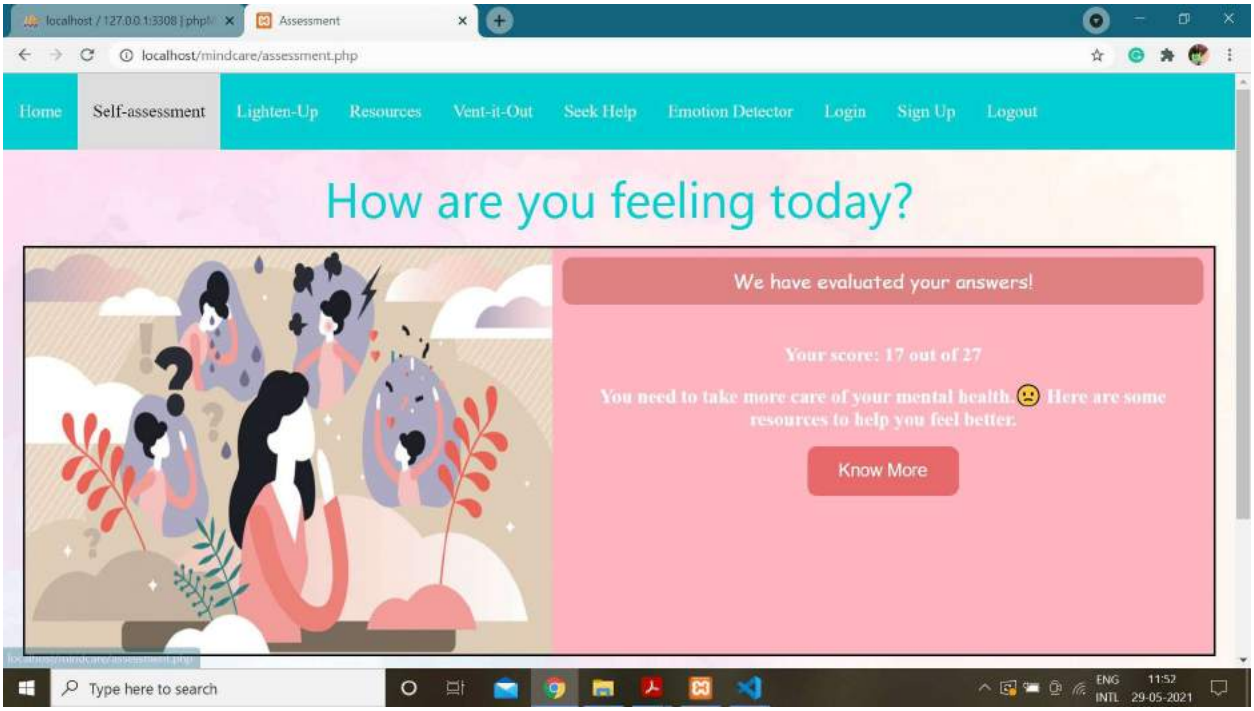


The score of the user is shown and then according to the obtained score the user is shown resources on clicking the “Know More” button. Following are the points for the option values:

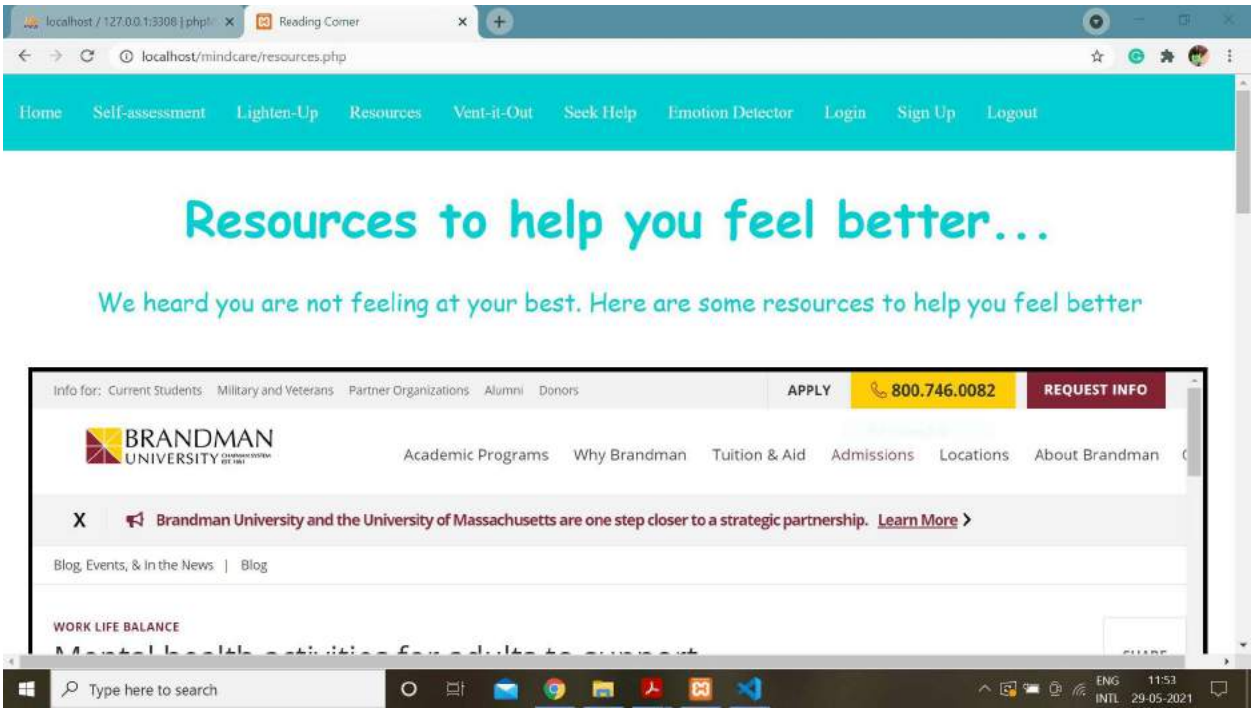
Never - 0
Sometimes - 1
Frequently - 2
Always -3

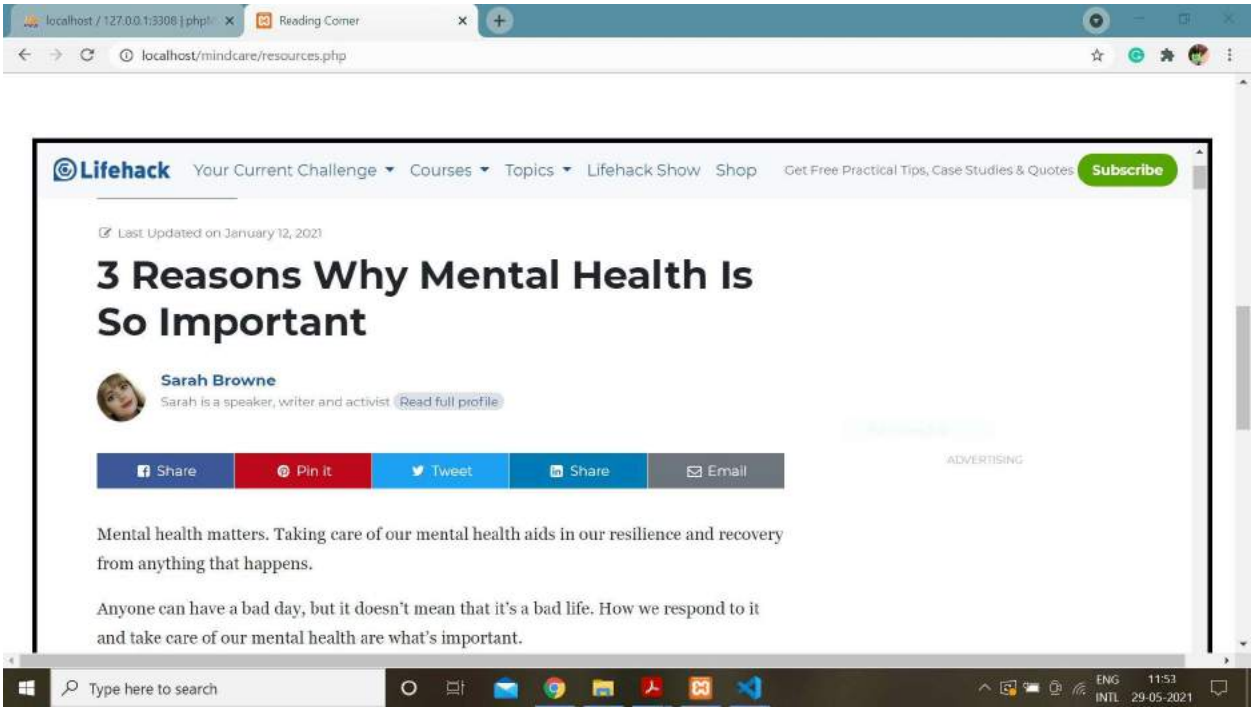
The condition of the mental health of the user is decided using the below metrics:

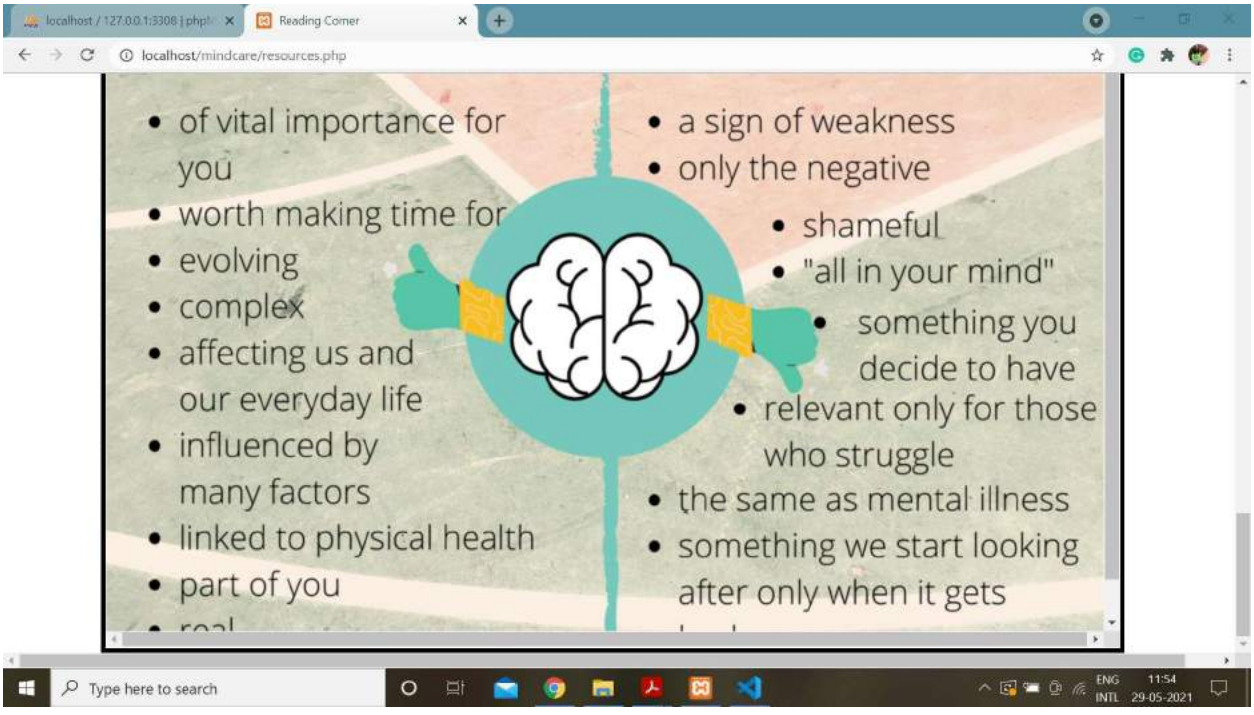
Quiz Score	Mental health condition
0 <= score <5	Absolutely fit
5 <= score <=9	Normal
9 < score <=18	Below average
18 < score <=27	Poor



Upon clicking the “Know More” button the user is directed to the resources page and is shown content according to the score:




localhost / 127.0.0.1:3308 | phpM
Reading Corner
localhost/mindcare/resources.php
Lifehack
Your Current Challenge
Courses
Topics
Lifehack Show
Shop
Get Free Practical Tips, Case Studies & Quotes
Subscribe
Last Updated on January 12, 2021
3 Reasons Why Mental Health Is So Important
Sarah Browne
Sarah is a speaker, writer and activist
Read full profile
Share
Pin it
Tweet
Share
Email
ADVERTISING
Mental health matters. Taking care of our mental health aids in our resilience and recovery from anything that happens.
Anyone can have a bad day, but it doesn't mean that it's a bad life. How we respond to it and take care of our mental health are what's important.
Type here to search
ENG
INTL
11:53
29-05-2021


localhost / 127.0.0.1:3308 | phpM
Reading Corner
localhost/mindcare/resources.php
of vital importance for you
worth making time for
evolving
complex
affecting us and our everyday life
influenced by many factors
linked to physical health
part of you
a sign of weakness
only the negative
shameful
"all in your mind"
something you decide to have
relevant only for those who struggle
the same as mental illness
something we start looking after only when it gets
Type here to search
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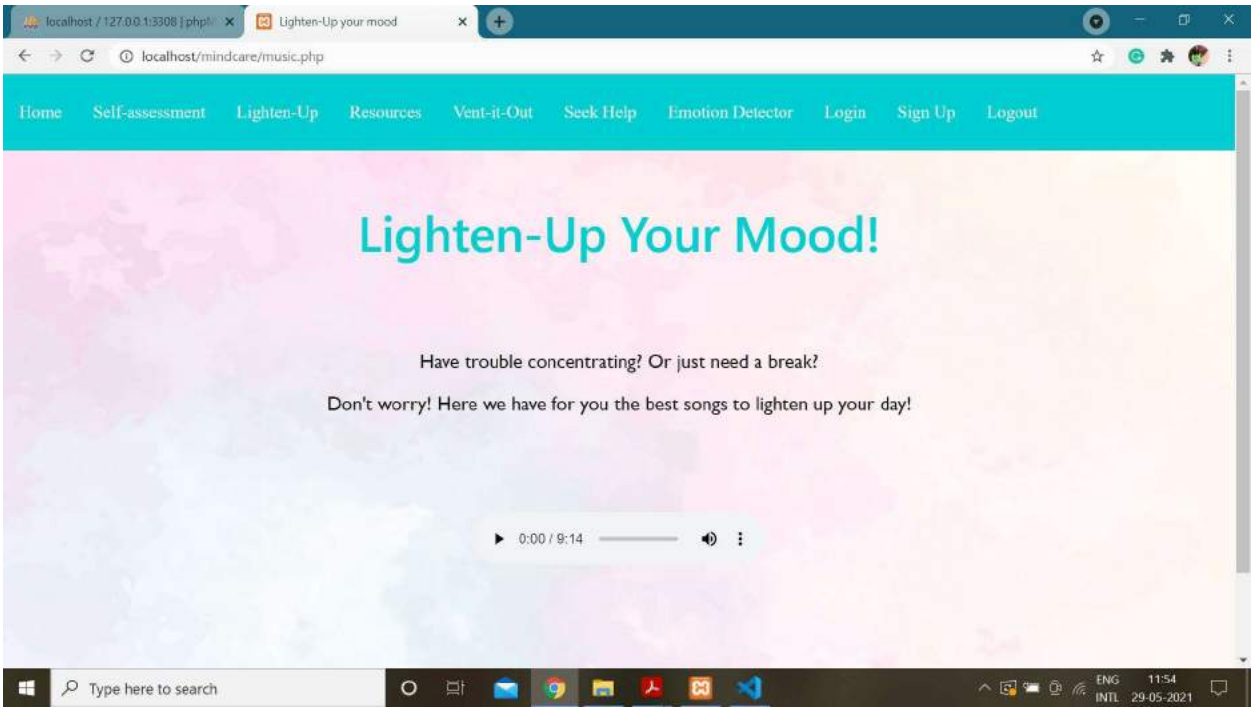
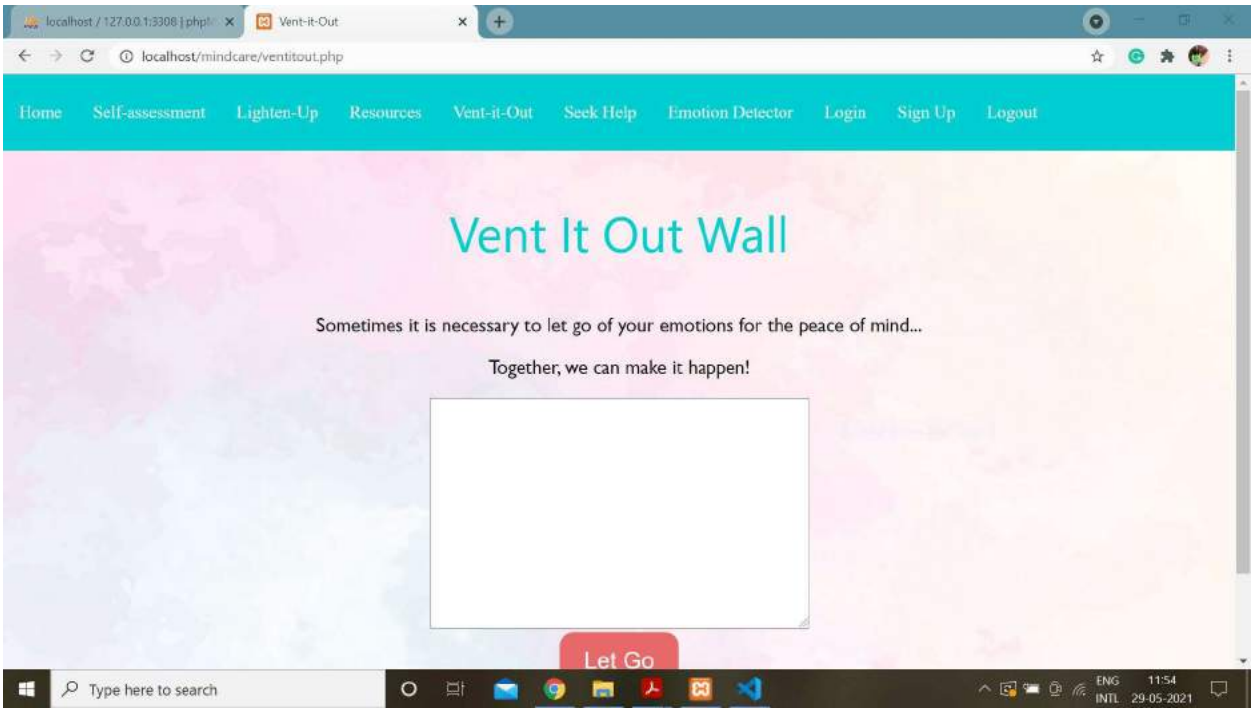
29-05-2021

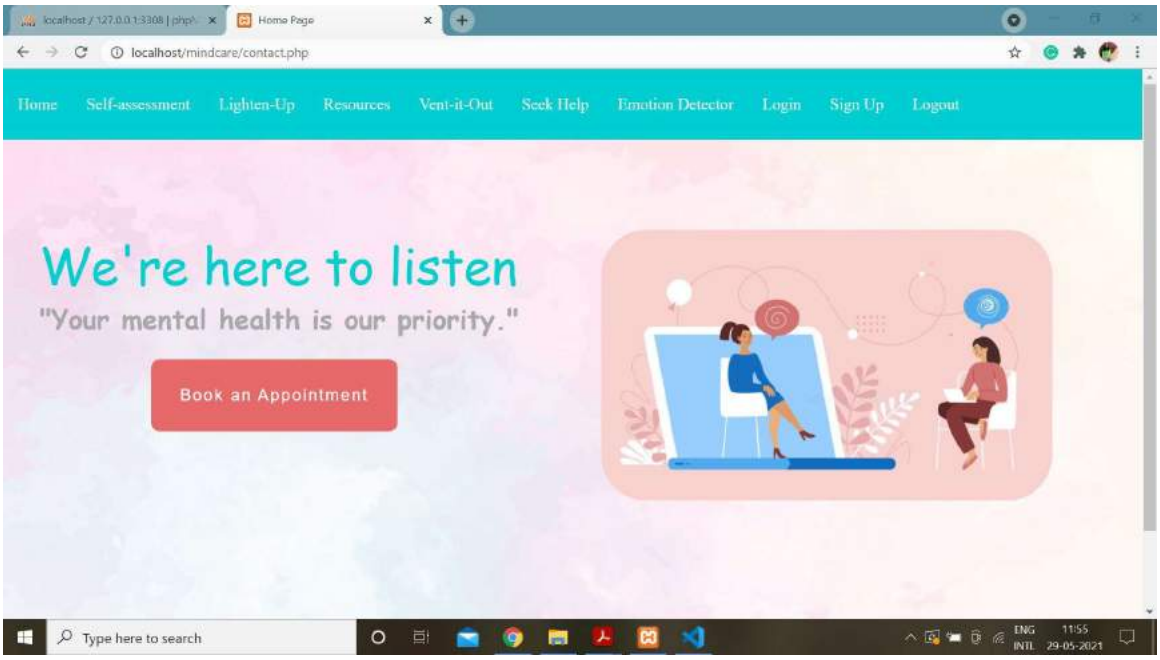
Lighten-up your mood page:



Vent-it out wall:

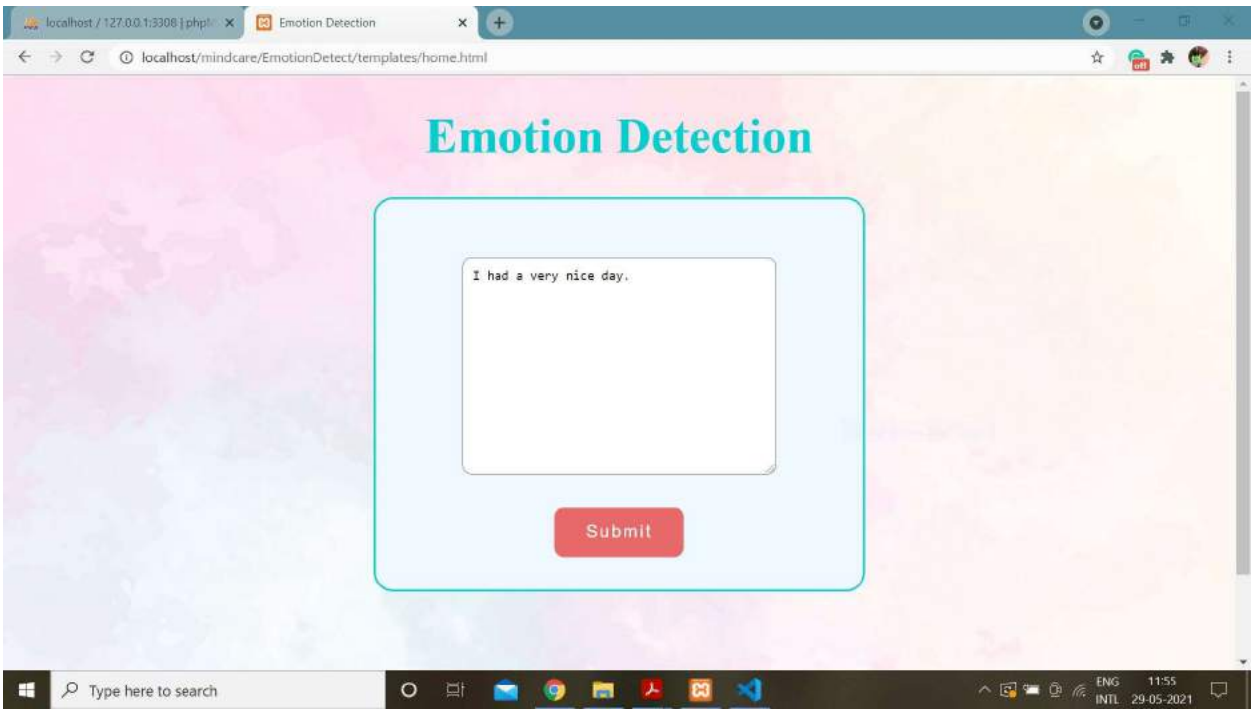


Seek help page:

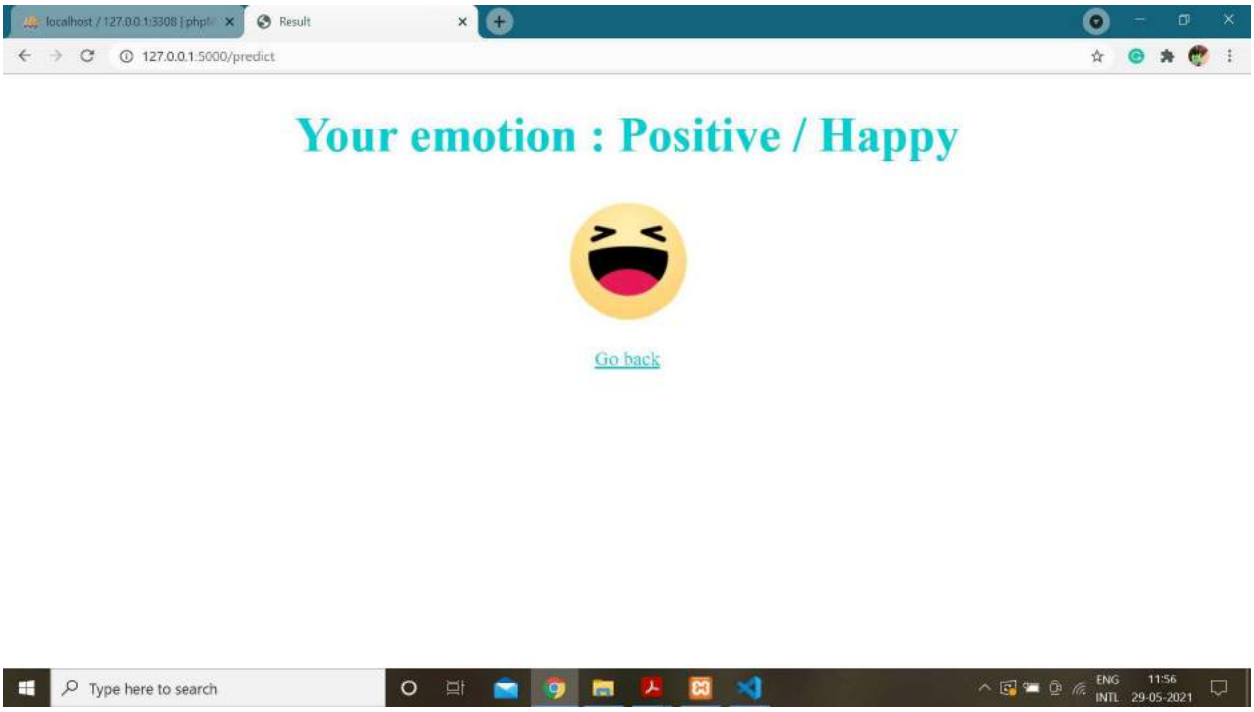


Emotion detector:

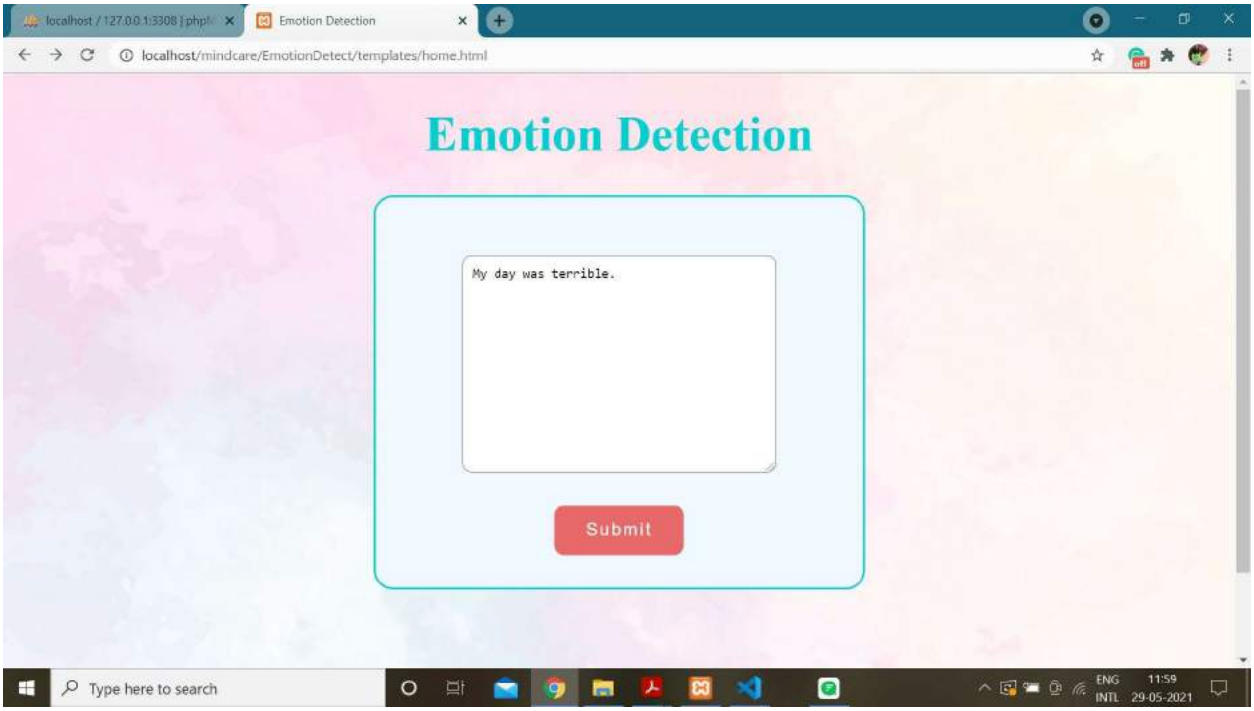
On entering the text “I had a very nice day”



The emotion of the user is detected as “Positive/Happy”.



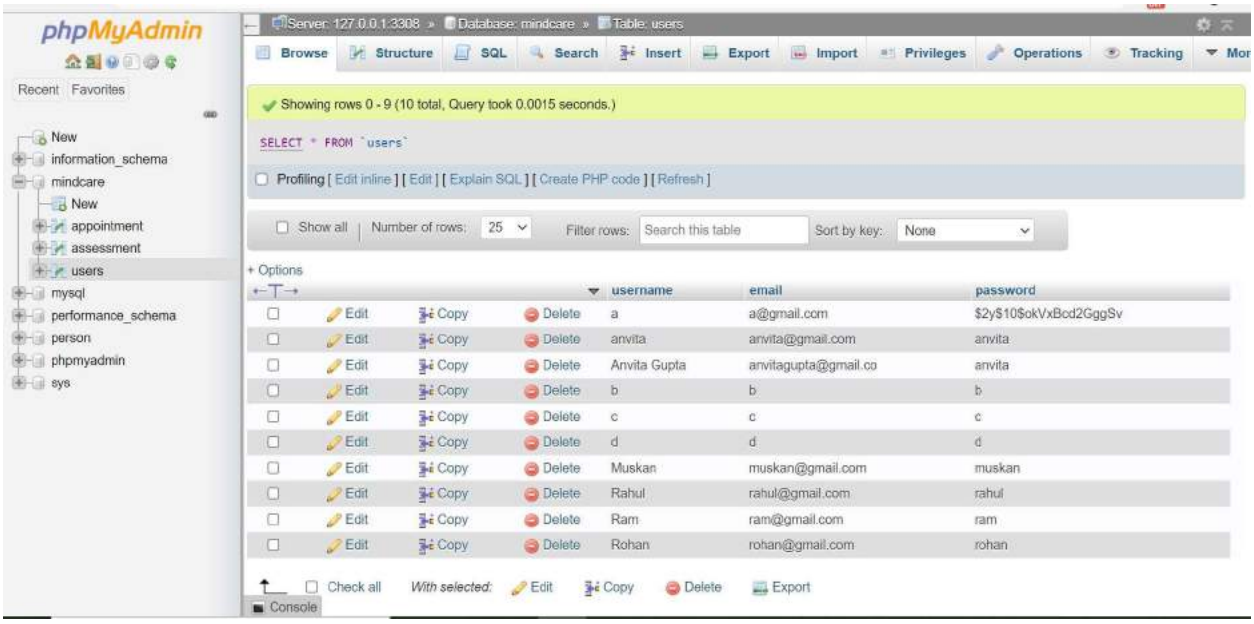
On entering the text “My day was terrible”.



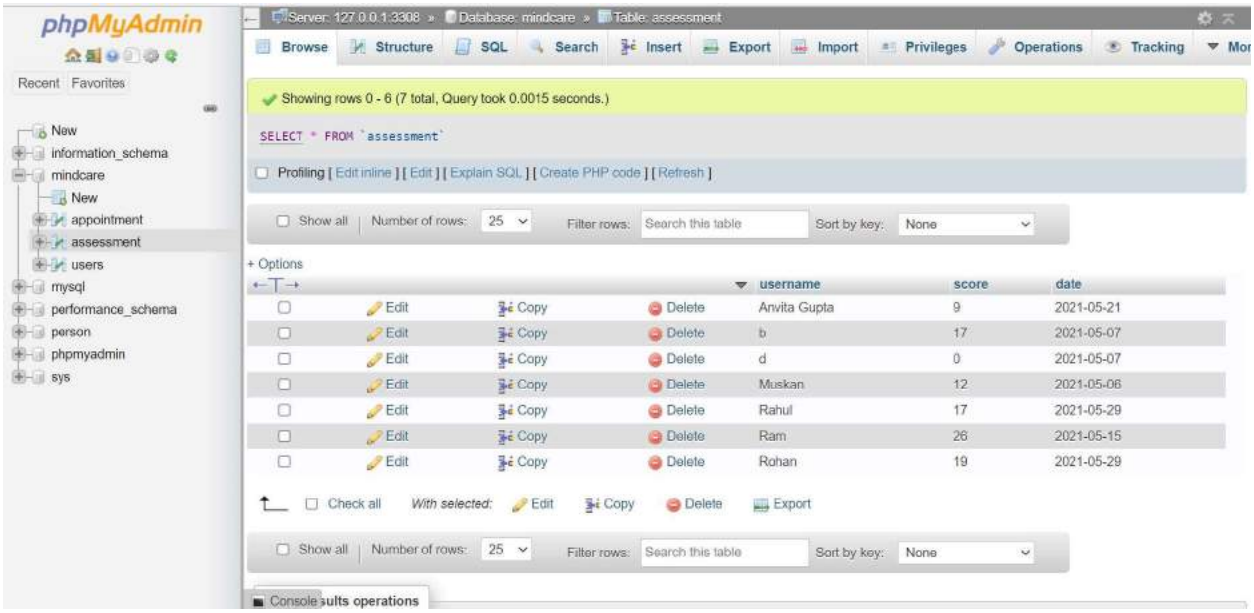
The emotion of the user is detected as Negative/Sad.

Tables in the database:

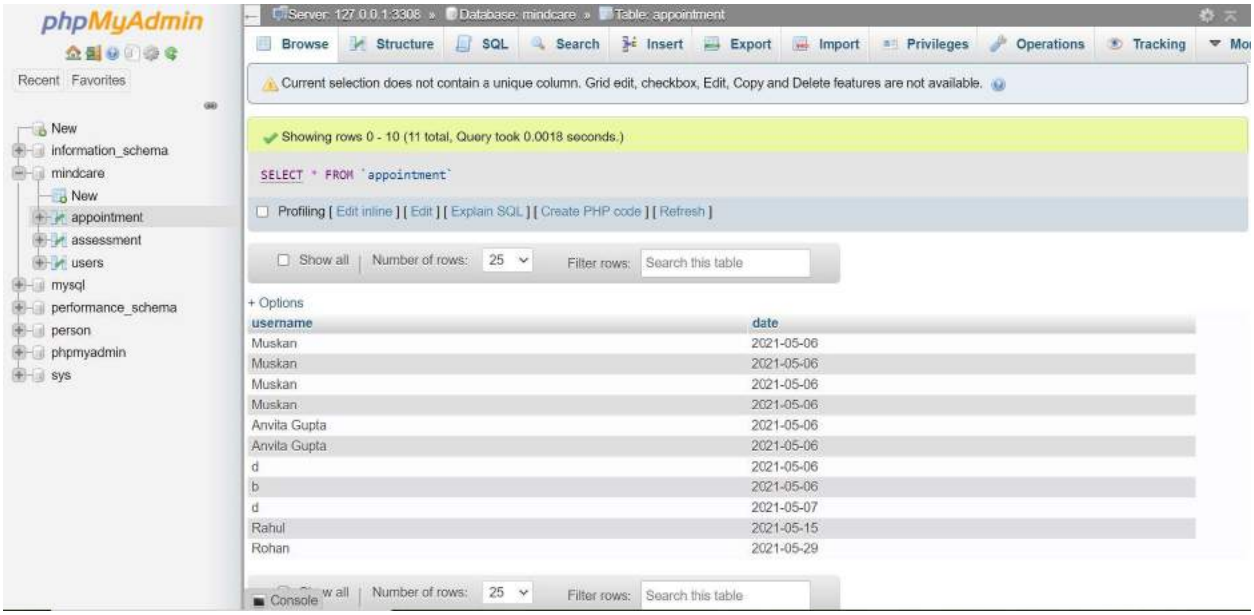
users table:



assessment table:



appointment table:



Conclusion

MindCare, a mental health website, included various features which would enhance the user's mental wellbeing, bringing calm and peace to their lives. It aims to give its users a calming experience and help them stay strong in tough times. It will make them aware of their current mental health conditions and also suggest the next steps according to their condition. This will help them to take steps to improve or sustain their mental health.

This website was prototyped and designed keeping in mind the principles of techno-spirituality and slow computing.

The website interface was designed applying the following principles of HCI: Interactive design, should cater to universal usability, offer informative feedback, prevent errors, permit easy reversal of actions, exploit constraints, aesthetic and minimalist design, flexibility and efficiency of use.

The novelty of our project is the Emotion Detector, which is integrated into our website. The emotion detector aims to detect the emotion of the user using text entered by the user. Having this functionality in the website interface will prove to be beneficial for the users as it will make the user aware of his/her mental condition. Awareness is the first step towards improving on something.

After the user is aware of how he/she feels through the emotion detector and the self-assessment, they can view resources according to how they are feeling and also listen to music. They can contact counselors if they feel the need to talk. There can also share their feelings in the Vent-it-out wall wherein we promise to ensure their privacy. Utilizing all these features will give the users a positive and holistic experience.

References

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A Process Evaluation of a Web-Based Mental Health Portal (WalkAlong) Using Google Analytics
JMIR Mental Health 2018;5(3):e50
URL: https://mental.jmir.org/2018/3/e50
DOI: 10.2196/mental.8594

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Prototyping mindfulness

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***Abstract*— In this paper, we aim to study how the concepts of Human-Computer Interaction (HCI) can help in achieving '*Techno-Spirituality*' and '*Slow Design*'. The first term '*Techno-Spirituality*' is the study of how technology can assist humans' spiritually. Its co-aspects explore areas such as mindfulness, meditation, positive computing, and the overall well-being of an individual. We will also be focusing on the second term called '*Slow Design*' which is believed to help facilitate self-reflection and relaxation.**

Based on the grounds of what we find out through our review study, we aim to develop a digital mindfulness prototype designed for stress reduction and positive computing. We will try to provide a new prototype or redesign the existing technology for facilitating more better interaction between humans and computers. We will be exploring innovative ways to utilize technology to support the wellbeing of humans through the use of HCI concepts. In this process, we will also seek to find out the challenges faced when aiming for a successful partnership between technology and mindfulness.

Keywords— Human-Computer Interaction; Techno-spirituality; Slow design; Mindfulness; Positive computing; positive psychology; Wellbeing; Meditation

I. INTRODUCTION

Based on our study we have made a website incorporating all the factors that we found was required to make a fully equipped website that aims to provide mindfulness and tries to lower stress for the users. Our study resulted into numerous factors that can be used to provide mindfulness and well being for a person and so we have selected the top seven features out of it and incorporated into our website. With this we aim to provide techno spirituality and mindfulness to all the users.

II. LITERATURE SURVEY

Two terms that are gaining popularity in the areas of mindfulness and technology are '*Slow design'* and '*Techno-spirituality'.*

Whenever we hear of the term slow we associate it with how long it takes to build or do some task. Rather, slow design is a term that describes an expanded state of awareness, accountability for daily actions, and the potential for a richer spectrum of experience for individuals and communities.
Following are the principles of slow design:

- Reveal
- Expand
- Reflect
- Engage
- Participate
- Evolve

This concept of slow design has not yet been applied to website designing. In our prototype, we will try to incorporate the above-mentioned principles.

The second term, '*Techno-spirituality*' is defined as the concept of how spiritual practices are increasingly mediated through technology. Through the introduction of meditation music in our website prototype, we would like to take forward this concept and

help the users gain a spiritual meaning in their lives. It would also help them cultivate calmness and peace in their daily lives.

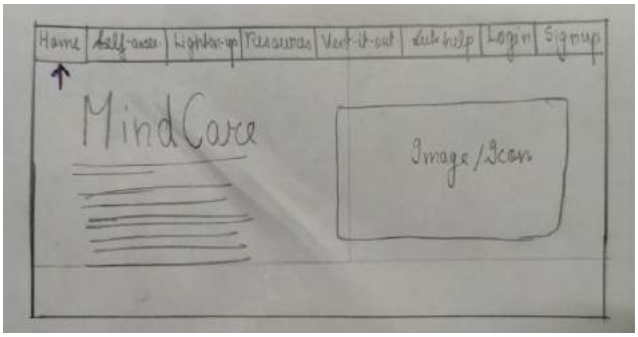
III. METHODOLOGY

1.Analysis and Design

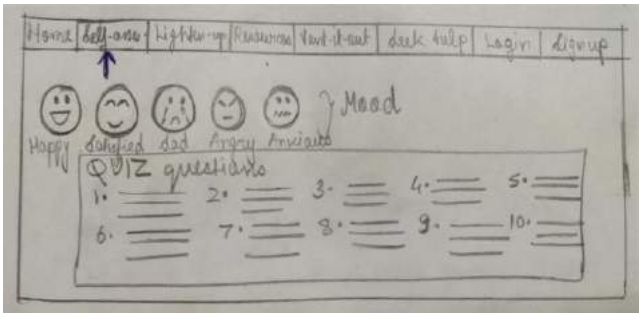
The concepts of slow design and techno-spirituality were analyzed and thoroughly as shown in the literature survey and then according to these principles prototyping for the website was conducted.

2. Prototype:

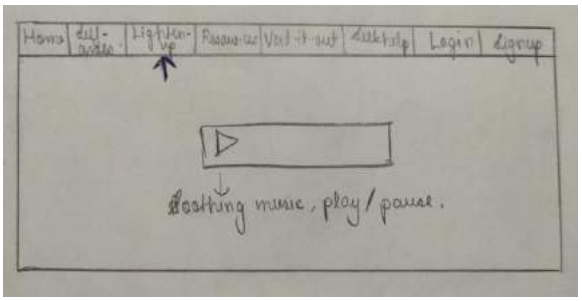
***StoryBoarding #1*:** Home page



***StoryBoarding #2*:** Self-assessment



***StoryBoarding #3* :** Lighten-up



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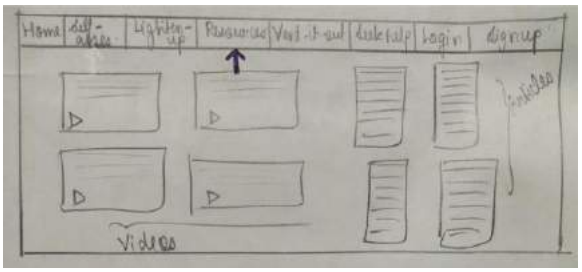
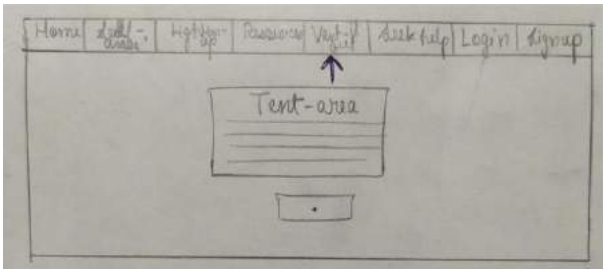
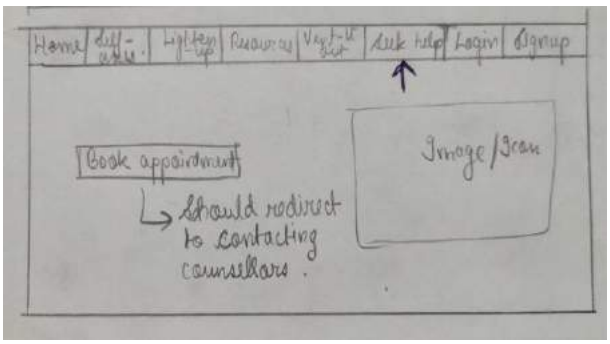


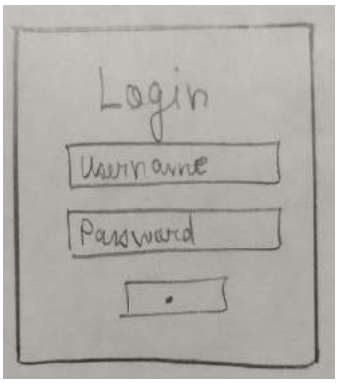
***StoryBoarding #5* :** Vent-it-out



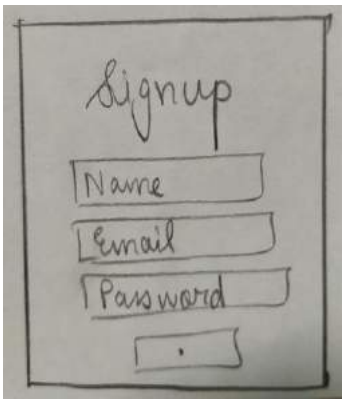
***StoryBoarding #6*:** Seek Help



***StoryBoarding #7* :** Login



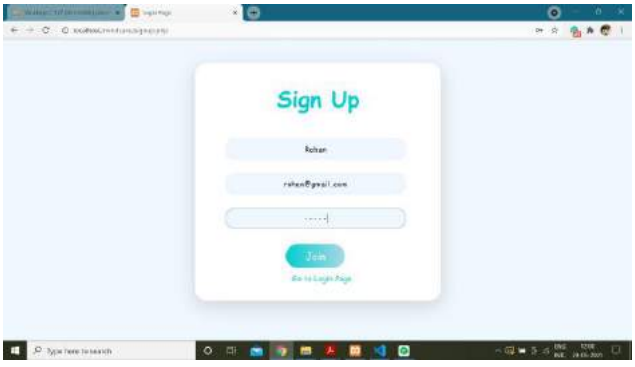
***StoryBoarding #8* :** Signup



IV. Results and Discussions

Signup page:

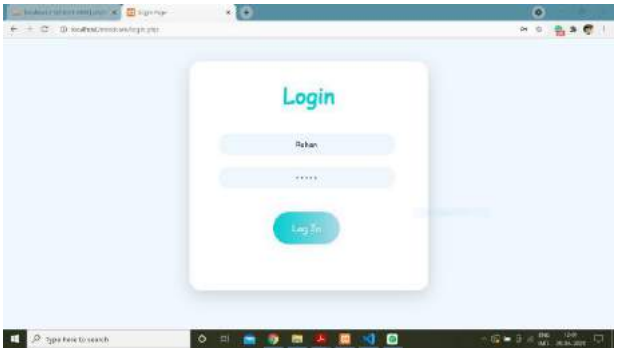
Creating a new account of the user:



Signup successful:

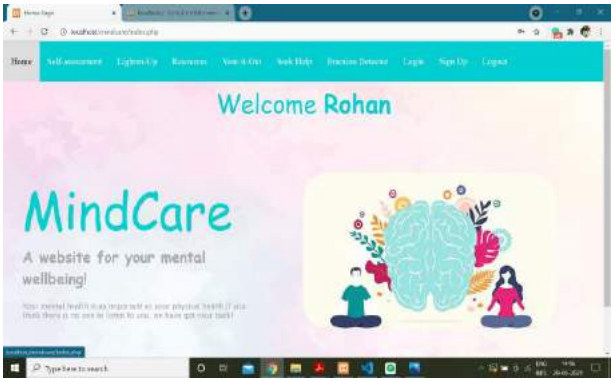
Login page:

Logging in with username and password:



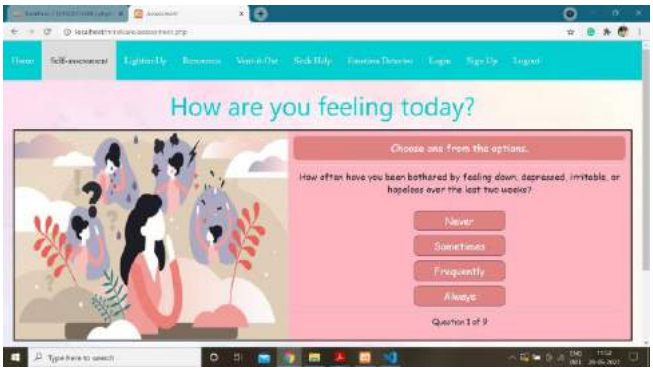
Home page:

Login successful and the user is redirected to Home Page:



Self-assessment:

In the self-assessment section, the user is prompted to fill a standard quiz (consisting of 9 questions) to assess the mental health of the person:

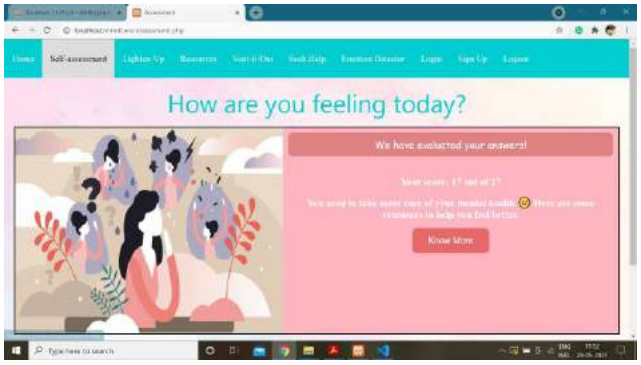


The score of the user is shown and then according to the obtained score the user is shown resources on clicking the “Know More” button. Following are the points for the option values:

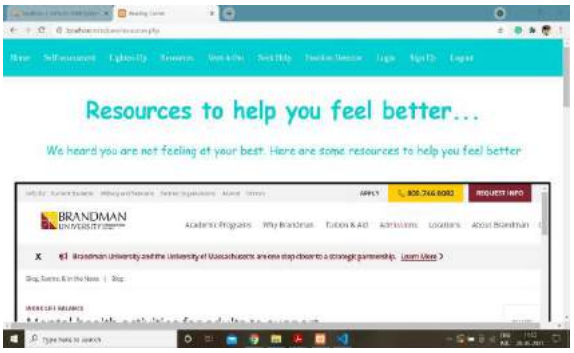
Never - 0
Sometimes - 1
Frequently - 2
Always -3

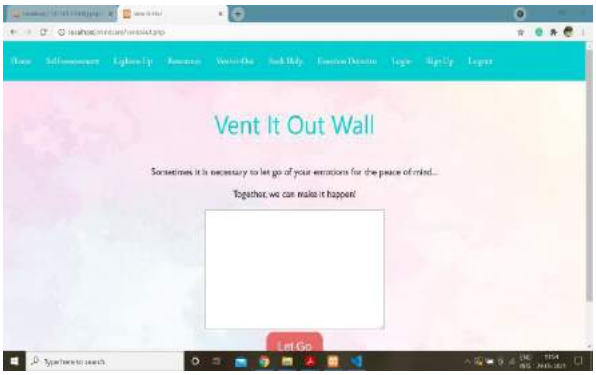
The condition of the mental health of the user is decided using the below metrics:

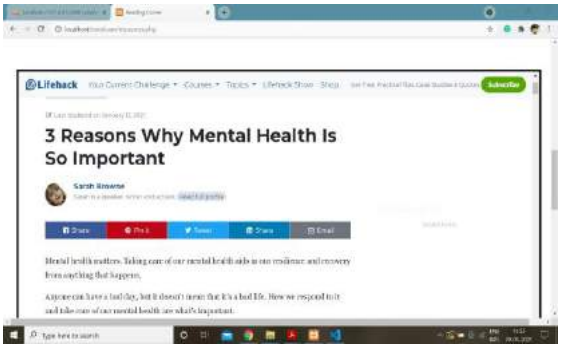
Quiz Score	Mental health condition
0 <= score <5	Absolutely fit
5 <= score <=9	Normal
9 < score <=18	Below average
18 < score <=27	Poor



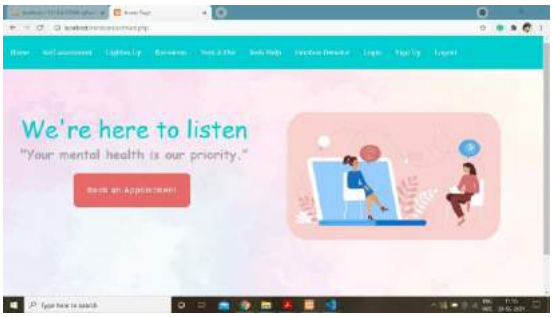
Upon clicking the “Know More” button the user is directed to the resources page and is shown content according to the score:

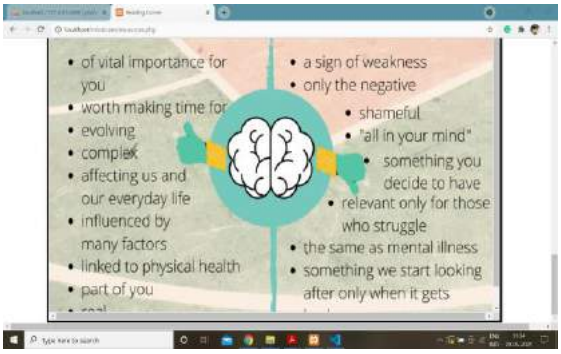






Seek help page:



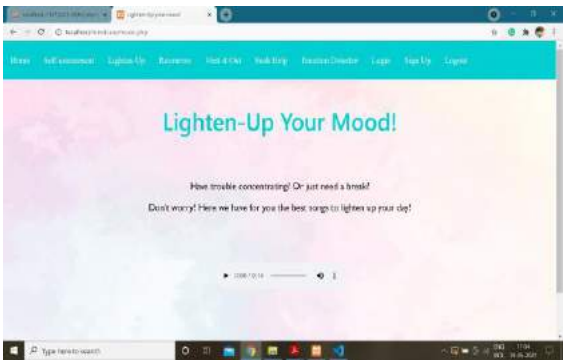


Emotion detector:

We have created a new algorithm that takes adverb, verb and adjectives into considerations while determining whether a sentence is positive or negative. The name that we have given to our algorithm is SAPSI that stands for **S**entiment **A**nalysis through **P**olarity **S**ubjectivity and **I**ntensity. The Polarity value ranges from -1 to 1 and the subjectivity value ranges from 0 to 1 same applies for the intensity value. The sentiment is analyzed with the help of these scores.

The SAPSI algorithm multiplies the intensity value of an adverb to the subjectivity value of the verb and then the average of this and the polarity is calculated. The resulting value then decides whether it's a positive or negative and up till what extend depending on the score generated.

Lighten-up your mood page:

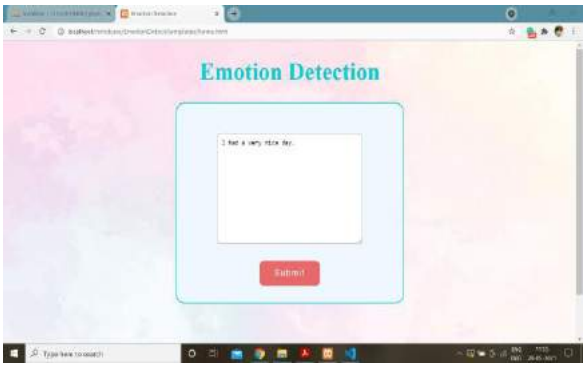



```
Score= (polarity + (intensity x subjectivity))/2
```

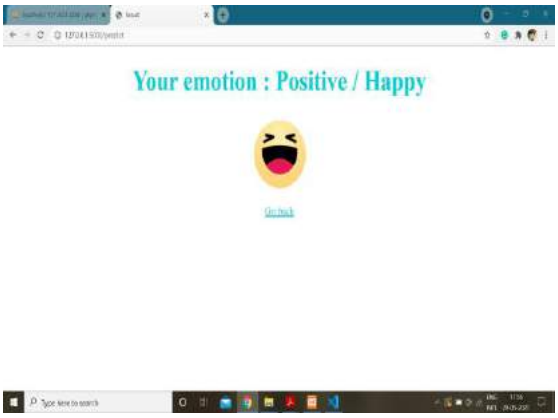
```
-1 to 0  ----> negative/sad
0 to 1   ----> positive/happy
```

On entering the text "I had a very nice day"

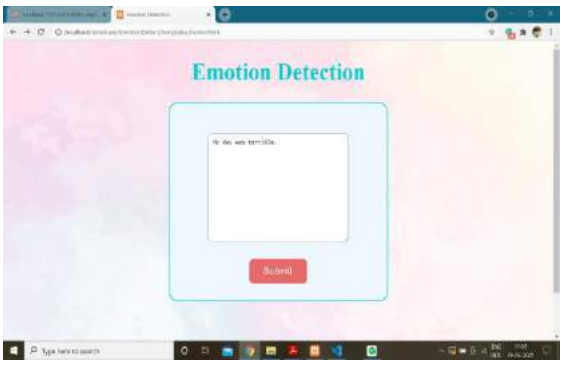
Vent-it out wall:



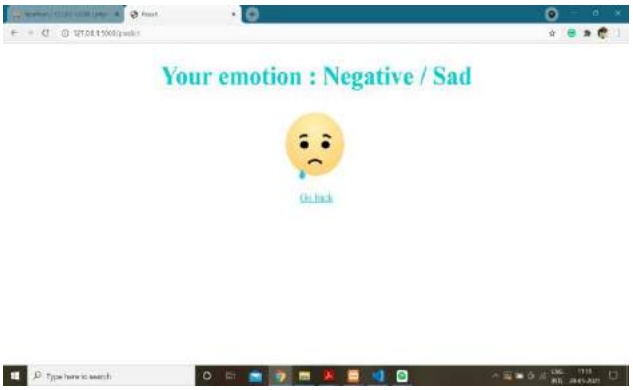
The emotion of the user is detected as “Positive/Happy”.



On entering the text “My day was terrible”.

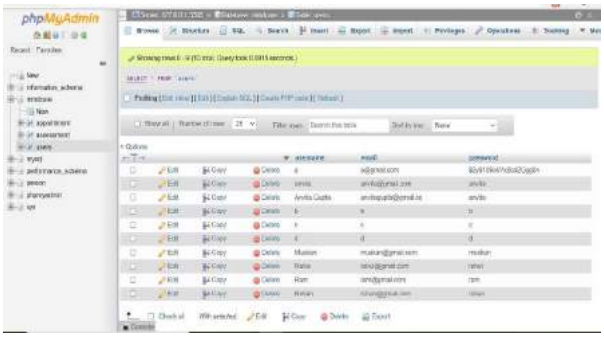


The emotion of the user is detected as Negative/Sad.

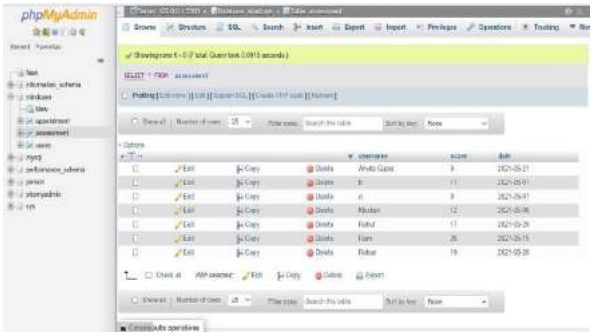


Tables in the database:

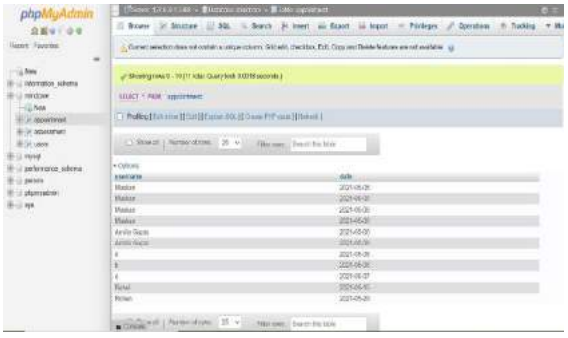
users table:



assessment table:



appointment table:



V. Conclusion

MindCare, a mental health website, included various features which would enhance the user's mental wellbeing, bringing calm and peace to their lives. It aims to give its users a calming experience and help them stay strong in tough times. It will make them aware of their current mental health conditions and also suggest the next steps according to their condition. This will help them to take steps to improve or sustain their mental health.
This website was prototyped and designed keeping in mind the principles of techno-spirituality and slow computing.

The website interface was designed applying the following principles of HCI: Interactive design, should cater to universal usability, offer informative feedback, prevent errors, permit easy reversal of actions, exploit constraints, aesthetic and minimalist design, flexibility and efficiency of use.

The novelty of our project is the Emotion Detector, which is integrated into our website. The emotion detector aims to detect the emotion of the user using text entered by the user. Having this functionality in the website interface will prove to be beneficial for the users as it will make the user aware of his/her mental condition. Awareness is the first step towards improving on something.
After the user is aware of how he/she feels through the emotion detector and the self-assessment, they can view resources according to how they are feeling and also listen to music. They can contact counselors if they feel the need to talk. There can also share their feelings in the Vent-it-out wall wherein we promise to ensure their privacy. Utilizing all these features will give the users a positive and holistic experience.

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Prototyping mindfulness

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Abstract— In this paper, we aim to study how the concepts of Human-Computer Interaction (HCI) can help in achieving 'Techno-Spirituality' and 'Slow Design'. The first term 'Techno-Spirituality' is the study of how technology can assist humans' spiritually. Its co-aspects explore areas such as mindfulness, meditation, positive computing, and the overall well-being of an individual. We will also be focusing on the second term called 'Slow Design' which is believed to help facilitate self-reflection and relaxation.[6]

Based on the grounds of what we find out through our review study, we aim to develop a digital mindfulness prototype designed for stress reduction and positive computing. We will try to provide a new prototype or redesign the existing technology for facilitating more better interaction between humans and computers. We will be exploring innovative ways to utilize technology to support the wellbeing of humans through the use of HCI concepts. In this process, we will also seek to find out the challenges faced when aiming for a successful partnership between technology and mindfulness.

Keywords— Human-Computer Interaction; Techno-spirituality; Slow design; Mindfulness; Positive computing; positive psychology; Wellbeing; Meditation

I. INTRODUCTION

Based on our study we have made a website incorporating all the factors that we found was required to make a fully equipped website that aims to provide mindfulness and tries to lower stress for the users. Our study resulted into numerous factors that can be used to provide mindfulness and well being for a person and so we have selected the top seven features out of it and incorporated into our website. With this we aim to provide techno spirituality and mindfulness to all the users.

II. LITERATURE SURVEY

Two terms that are gaining popularity in the areas of mindfulness and technology are 'Slow design' and 'Techno-spirituality'.

Whenever we hear of the term slow we associate it with how long it takes to build or do some task. Rather, slow design is a term that describes an expanded state of awareness, accountability for daily actions, and the potential for a richer spectrum of experience for individuals and communities.
Following are the principles of slow design:

- Reveal
- Expand
- Reflect
- Engage
- Participate
- Evolve

This concept of slow design has not yet been applied to website designing. In our prototype, we will try to incorporate the above-mentioned principles.

The second term, 'Techno-spirituality' is defined as the concept of how spiritual practices are increasingly mediated through technology. Through the introduction of meditation music in our website prototype, we would like to take forward this concept and

help the users gain a spiritual meaning in their lives. It would also help them cultivate calmness and peace in their daily lives.

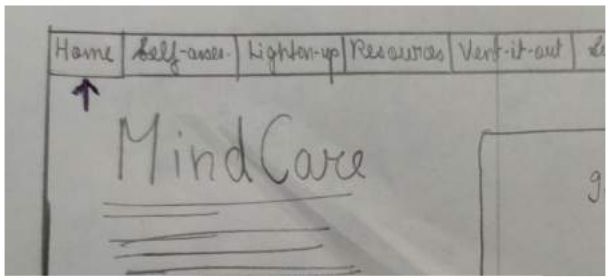
III. METHODOLOGY

1.Analysis and Design

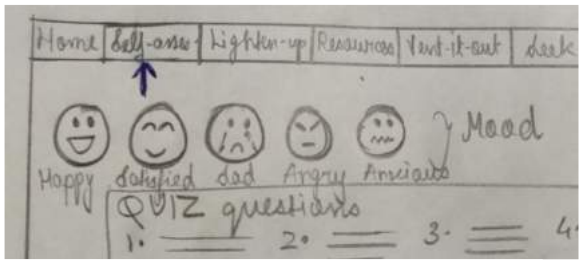
The concepts of slow design and techno-spirituality were analyzed and thoroughly as shown in the literature survey and then according to these principles prototyping for the website was conducted.

2. Prototype:

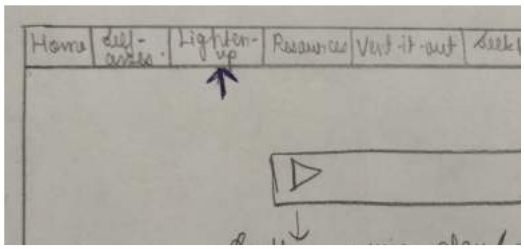
StoryBoarding #1: Home page



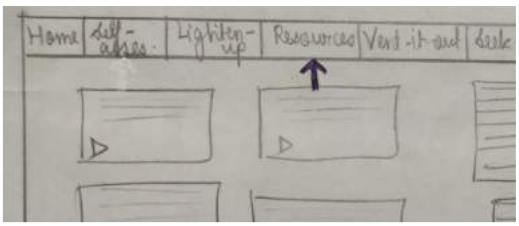
StoryBoarding #2: Self-assessment



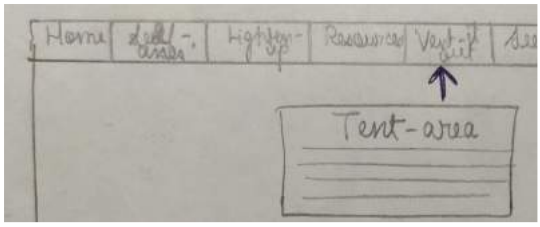
StoryBoarding #3 : Lighten-up



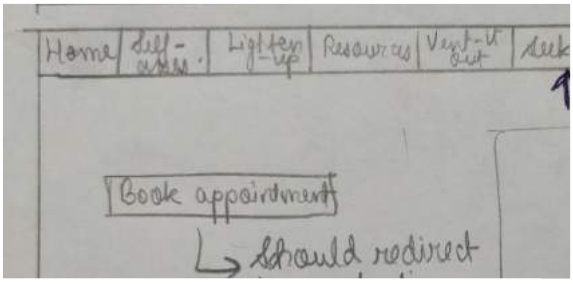
StoryBoarding #4: Resources



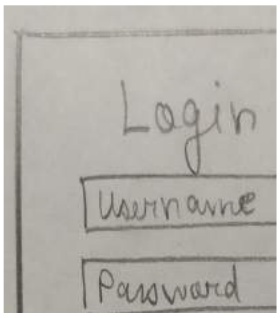
StoryBoarding #5 : Vent-it-out



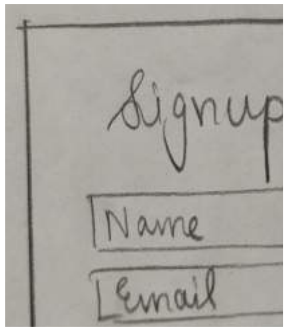
StoryBoarding #6: Seek Help



StoryBoarding #7 : Login



StoryBoarding #8 : Signup



IV. Results and Discussions

Signup page:

Creating a new account of the user:

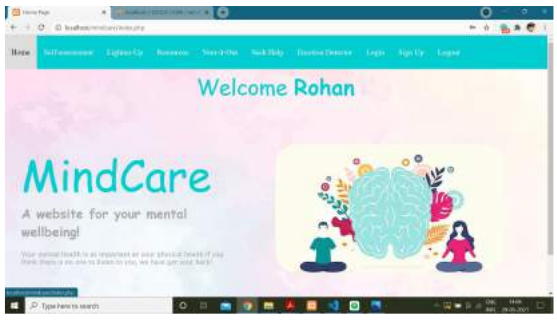
Signup successful:

Login page:

Logging in with username and password:

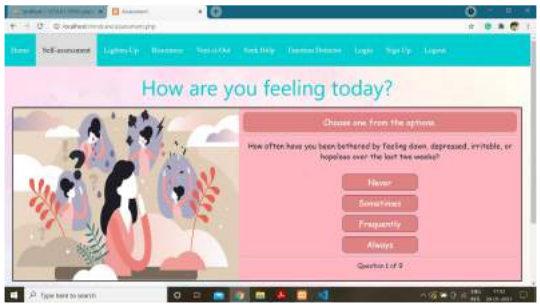
Home page:

Login successful and the user is redirected to Home Page:



Self-assessment:

In the self-assessment section, the user is prompted to fill a standard quiz (consisting of 9 questions) to assess the mental health of the person:

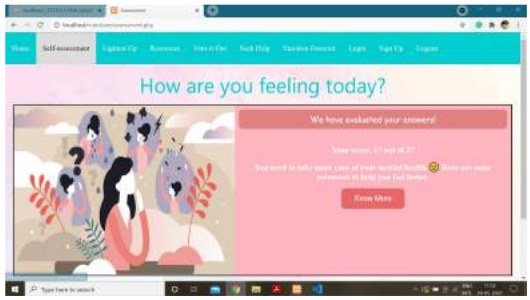


The score of the user is shown and then according to the obtained score the user is shown resources on clicking the “Know More” button. Following are the points for the option values:

Never - 0
Sometimes - 1
Frequently - 2
Always -3

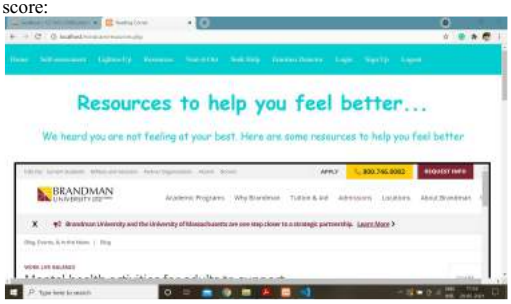
The condition of the mental health of the user is decided using the below metrics:

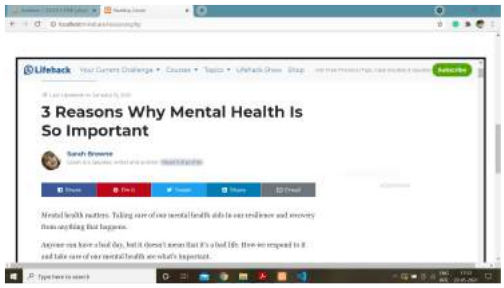
Quiz Score	Mental health condition
0 = score 5	Absolutely fit
5 = score =9	Normal
9 score =18	Below average
18 score =27	Poor



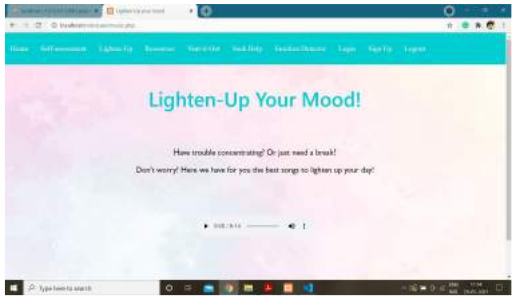
Upon clicking the “Know More” button the user is directed to the resources page and is shown content according to the

score:

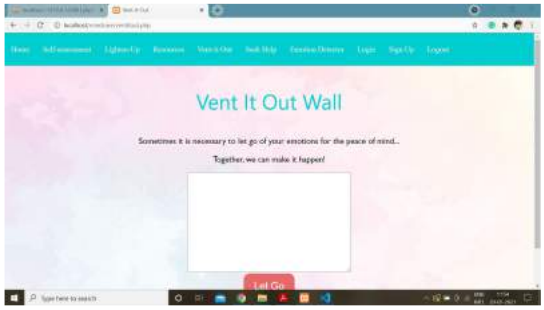




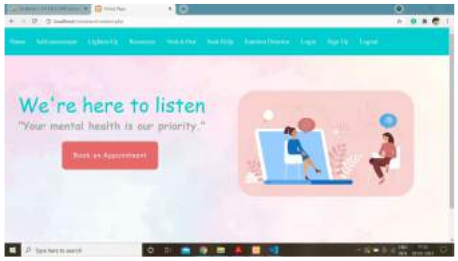
Lighten-up your mood page:



Vent-it out wall:



Seek help page:



Emotion detector:

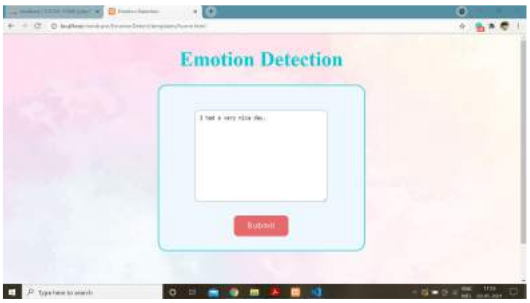
We have created a new algorithm that takes adverb, verb and adjectives into considerations while determining whether a sentence is positive or negative. The name that we have given to our algorithm is SAPSI that stands for Sentiment Analysis through Polarity Subjectivity and Intensity. The Polarity value ranges from -1 to 1 and the subjectivity value ranges from 0 to 1 same applies for the intensity value. The sentiment is analyzed with the help of these scores.

The SAPSI algorithm multiplies the intensity value of an adverb to the subjectivity value of the verb and then the average of this and the polarity is calculated. The resulting value then decides whether it's a positive or negative and up till what extend depending on the score generated.

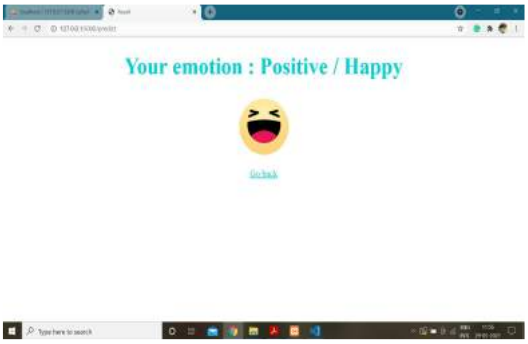
```
Score= (polarity + (intensity x subjectivity))/2
```

```
-1 to 0  ----> negative/sad
0 to 1   ----> positive/happy
```

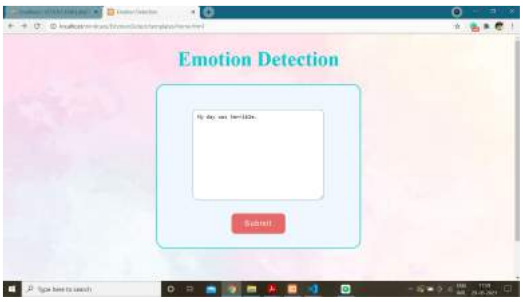
On entering the text “I had a very nice day”



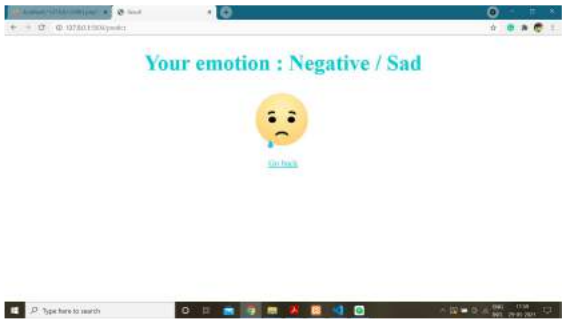
The emotion of the user is detected as “Positive/Happy”.



On entering the text “My day was terrible”.

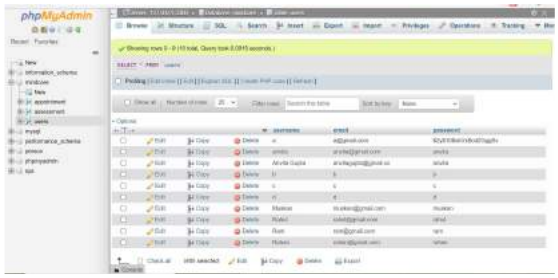


The emotion of the user is detected as Negative/Sad.

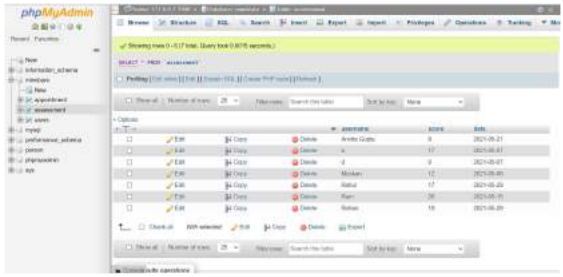


Tables in the database:

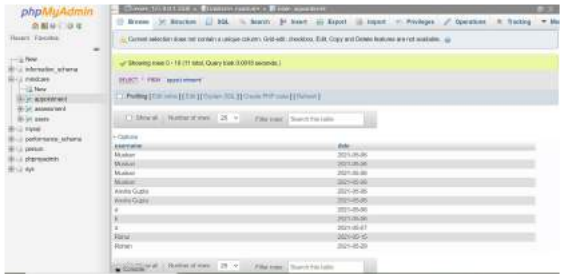
users table:



assessment table:



appointment table:



V. Conclusion

MindCare, a mental health website, included various features which would enhance the user's mental wellbeing, bringing calm and peace to their lives. It aims to give its users a calming experience and help them stay strong in tough times. It will make them aware of their current mental health conditions and also suggest the next steps according to their condition. This will help them to take steps to improve or sustain their mental health.
This website was prototyped and designed keeping in mind the principles of techno-spirituality and slow computing.

The website interface was designed applying the following principles of HCI: Interactive design, should cater to universal usability, offer informative feedback, prevent errors, permit easy reversal of actions, exploit constraints, aesthetic and minimalist design, flexibility and efficiency of use.

The novelty of our project is the Emotion Detector, which is integrated into our website. The emotion detector aims to detect the emotion of the user using text entered by the user. Having this functionality in the website interface will prove to be beneficial for the users as it will make the user aware of his/her mental condition. Awareness is the first step towards improving on something.
After the user is aware of how he/she feels through the emotion detector and the self-assessment, they can view resources according to how they are feeling and also listen to music. They can contact counselors if they feel the need to talk. There can also share their feelings in the Vent-it-out wall wherein we promise to ensure their privacy. Utilizing all these features will give the users a positive and holistic experience.

VI. References

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