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Advanced Database Management System

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## PTSD Identification System

### Introduction

Mental illnesses are widespread globally; for instance, 18.6% of US adults were suffering
from a mental illness in 2012 (Abuse and Administration, 2012). Post Traumatic Stress
disorder (PTSD) is one of the most common disorders, reaching up to 3.5% prevalence in a
12-month period in the US. However, these numbers are often under-estimates of the true
prevalence. One of the reasons of this being that those suffering from PTSD do not typically
seek help for their symptoms and partially due to imperfect methods that would identify the
symptoms as symptoms of PTSD.

In this project, we are to develop a software module to identify if a person is suffering with
PTSD. With this PTSD Identification application, we aim at making the first step towards
treating PTSD- its identification possible.  This app is designed for identifying if a patient has
PTSD based on a questionnaire. The records of a patient will be saved on a real-time database
(Firebase) and each patient's information will be kept strictly confidential.

Depending on the final report of the patient, it also provides opportunities for finding support.

### Related Work

The questions have been selected after a careful literature review of a number of research
papers on the given topic.

### Proposed approach

After thorough examination of a few research papers on PTSD and its symptoms, it was
decided that a PTSD identification app consisting of a questionnaire was to be built. We
selected a set of 20 questions. The questions were then categorized into two categories:
general questions and then the more specific questions. Once the user has answered all the
questions, a criticality score will be generated. Based on this criticality score, further actions
will be taken.

**LOGIN WITH GMAIL**

**CREATE ACCOUNT**

Answer the Questions below to know if you are suffering from PTSD.

Having Upsetting thought or images about the traumatic event that come into your head when you did not want them to.

○ Never

○ Rarely

○ Often

○ All the time

Having bad dreams or nightmares about the event.

○ Never

○ Rarely

**SUBMIT**

Sign Out

Answer the Questions below to know if you are suffering from PTSD.

Experiencing physical reactions when you are reminded of the traumatic event (sweating, increased heart rate.

◯ Never

◯ Rarely

◯ Often

◯ All the time

Trying not to think or talk about the traumatic event.

◯ Never

◯ Rarely

SUBMIT

Answer the Questions below to know if you are suffering from PTSD.

## Reliving the traumatic event

○ Never

○ Rarely

○ Often

○ All the time

## Feeling emotionally upset when you are reminded of the traumatic event.

○ Never

○ Rarely

○ Often

○ All the time

SUBMIT

**Algorithms proposed or selected**

The proposed algorithm for PTSD Identification System consists of:

A user who wishes to check himself for PTSD symptoms can simply sign in/sign up to our app using their Google accounts. On his permission, the user's personal information is saved on our database. He is presented with a questionnaire and each question has 4 answers that he can choose from. Each answer has a weight to it, which is not visible to the user. When he answers the question, it gets saved with all his other information. The weight of his choice of answer is added to the total score (which is equal to zero, initially).

Once the user has answered all the questions, his total score (the sum of all the weights of all his choices) is taken and the criticality score is calculated. The criticality score is calculated by taking the average of all the weights with respect to the number of questions in that category.

The patient's responses are stored as a .csv file and the average of his responses' weights is calculated.

- 4> criticality score>3: The patient is encouraged to use 7 cups: a website which provides online therapy and free support to people experiencing emotional distress by connecting them with trained listeners. The patient is asked if he would like professional help. Upon his consent, he is recommended to a psychiatrist nearby. His final report is also sent via mail to the concerned psychiatrist to brief him up about the patient's condition.
- 3>criticality score: The patient is encouraged to use 7 cups: a website which provides online therapy and free support to people experiencing emotional distress by connecting them with trained listeners.
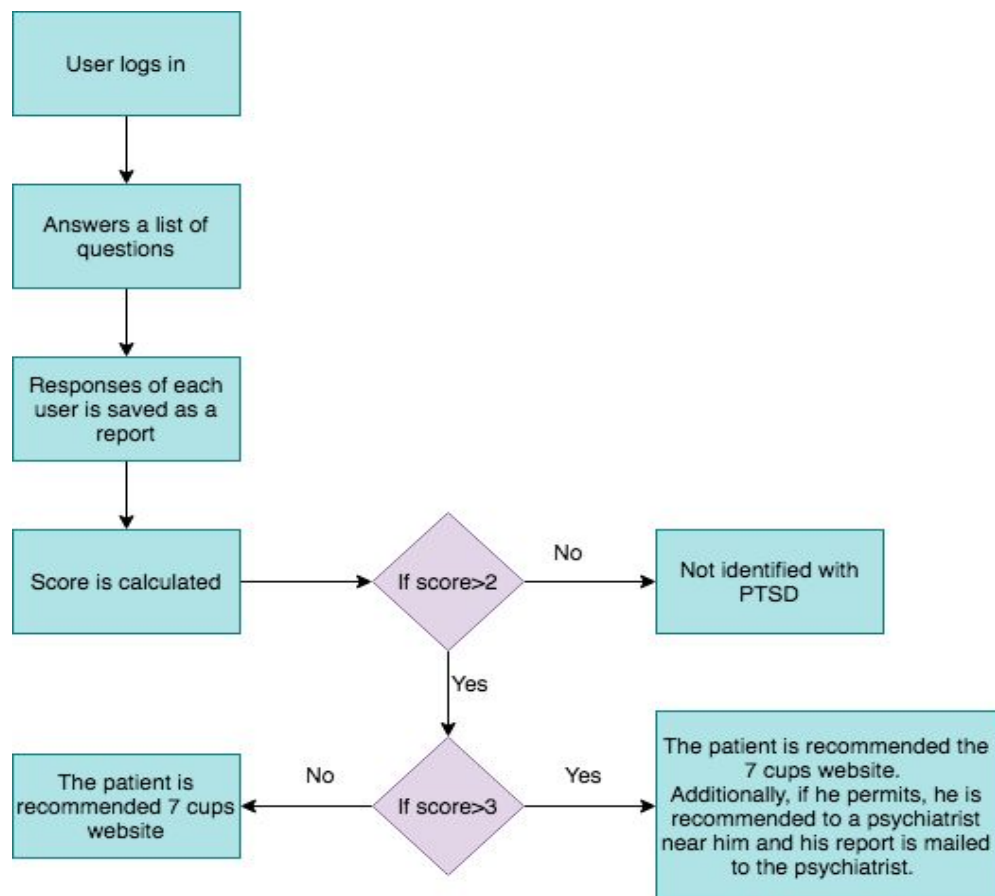
# Score : 0

SEE ANALYTICS

RECOMMENDATIONS

# Score : 69

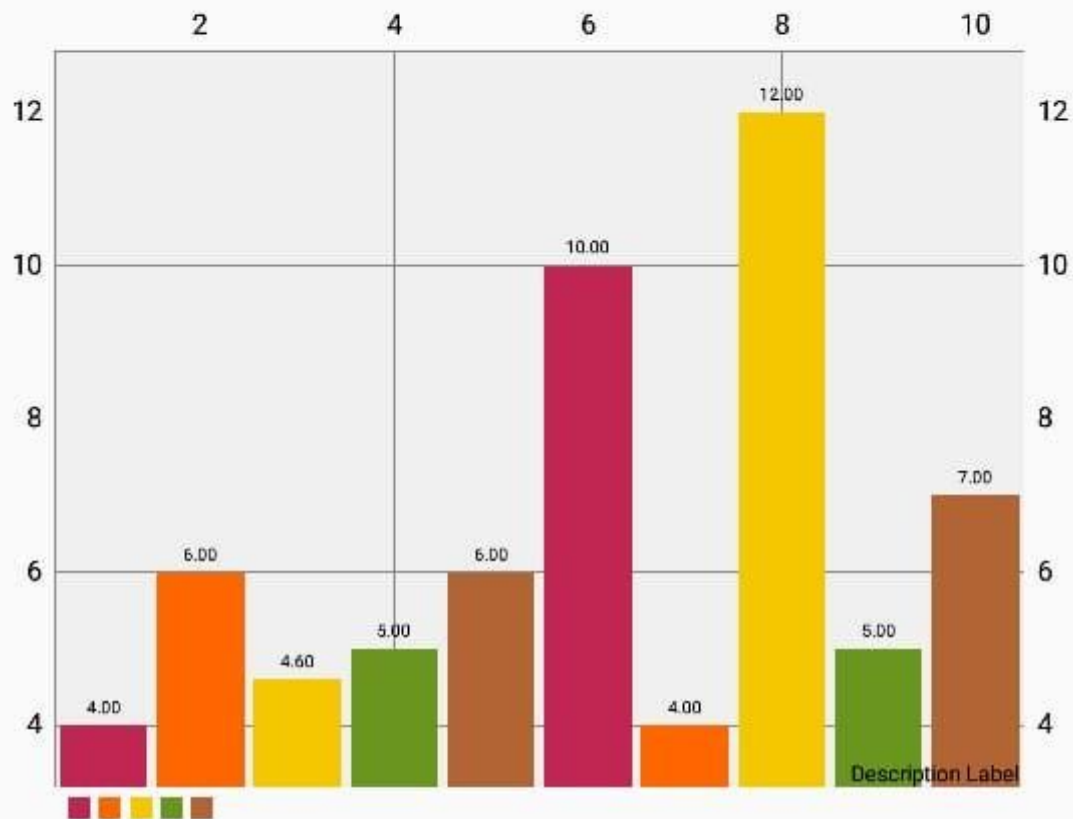**SEE ANALYTICS**

**RECOMMENDATIONS**

**Implementation and Results**

The app's front-end is kept simple, neat and clean taking into consideration that it's a PTSD identification app. We integrated Google sign-in using Firebase to make the app more accessible. Incorporating this feature also enables us to store the user's information and present it to him with his criticality score in the form of a .csv file. The .csv file can also be mailed to a nearby psychiatrist (should the need arise).

# Analytics



Description Label



| | | |
|---|---|---|
| 11.01 | 6.29 | |
| Question 8 | Question 1 | 9.43 |
| 7.86 | | Question 2 |
| Question 9 | | |
| | | 7.86 |
| | | Question 4 |
| | | 9.43 |
| 6.29 | | Question 5 |
| Question 7 | 15.72 | |
| | Question 6 | |

Description Label

## Conclusion and Limitations

One issue that came up while working on this project was to ensure that each and every patient's information was kept fully confidential and safe. Firebase was chosen as the preferred database because it offers a secure architecture to work on. Firebase is hosted on SSL (**Secure Sockets Layer**) is a typical security technology used to establish encrypted link between a server (Host) & client (Browser). It is a real-time database system and is easy to integrate with Android.

## References

http://aclweb.org/anthology/W15-1205

https://www.mirecc.va.gov/docs/visn6/3_ptsd_checklist_and_scoring.pdf