

Relieve the Stress by using an Android Application

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Abstract: A key challenge for mobile health is to develop a new technology that can assist individuals in maintaining a healthy life style. Now a day's people are so busy in their daily schedules and not having enough time to contribute physically all joys & sorrows. At last they are out of society and finally nowhere in the world and went to depression. Peoples are taking odd steps in unnatural manner by facing any long depression, long frustration, cowardliness, and failures in life, related to study, related to married life as they are not getting any proper solution or consultation. If the patient is in depression status he/she has to visit hospital frequently it seems to be tiring and time consuming for both doctor and patients. Stay smiling app which will aid/assist the people who needs some counselling, the people who needs to be monitored, given special attention to come out of their stress/addiction/depression. It also aids/assists the psychiatrist or the counsellor to keep track of their patients moods, their feelings at frequent intervals through this app, give the patients motivational/inspirational videos/quotes, remind them and keep them in positive mood. When the patient repeats after 15days/1month,each and everyday's feelings/moods and all the questionnaires(formed by the counsellors) answered will be accessed, for better understanding of the pattern of mood swings and how the patients more coping-up during that period. If that patient goes to long depression he/she can chat with any consultant as per the different categories and share their views so that they can get out of taking any odd steps and patients take care of them.

Keywords: Long depression, cowardliness, stress/addiction/depression, psychiatrist, counselling, Counsellor, Android.

I. INTRODUCTION

Our lifestyle choices have a deep impact on our personal health. For example, our sleep, socialization and exercise patterns are connected to the presence of a wide range of health related problems such as, high-blood pressure, stress, anxiety, diabetes and depression [1].

Human stress represents an imbalanced state of an individual and is triggered when environmental demands exceed the regulatory capacity of the individual. Because of its unhealthy effects, stress detection is an ongoing research topic among both psychologists and engineers and has been applied to lie detection tests, emergency call identification, and the development of better human computer interfaces. Various features associated with stress, including hormone responses, physical appearance, speech, and physiological responses, have been utilized for stress detection. Among these stress features, physiological responses are attracting an increasing amount of attention. However, traditional physiological-based detection methods are contact methods, i.e., sensors must be attached to individuals during feature measurement, which is not convenient for operation [2].

Stress is a common term used by people when they encounter a problem in their life. This problem could be anything from the work environment to the death of a family member. However, when you hear someone mention that they are 'stressed out', the likelihood is that this person does not know the full extent of what stress actually is. Stress, in biological terms refers to the after effects of a person failing to respond properly to an event

that has occurred in their life, whether physical or emotional. Imagine a person encountering a problem and bottling up these emotions inside without releasing them. This behaviour brings stress upon the body and gets worse with time [3].

1.1 Overview of Stress

Stress is everywhere, but as a relatively new phenomenon. Stress is what you feel when you have to handle more than you are used to. When you are stressed, your body responds as though you are in danger. It makes hormones that speed up your heart, make you breathe faster, and give you a burst of energy. Some stress is normal and even useful. Stress can help if you need to work hard or react quickly. But if stress happens too often or lasts too long, it can cause health problems.

1.1.1 Defining Stress

The wider the usage of the term 'stress', the more exclusive its meaning. Modern definitions of stress all recognize that it is a personal experience caused by pressure or demands on an individual, and impacts upon the individual's ability to cope or rather, his/her perception of that ability. Work-related stress occurs when there is a mismatch between the demands of the job and the resources and capabilities of the individual worker to meet those demands. Stress is often described as a feeling of being overloaded, wound up tight, tense and worried. We all experience stress at times. It can sometimes help to motivate us to get a task finished, or perform well. But stress can also be harmful if we become over-stressed and

it interferes with our ability to get on with our normal life for too long.

1.1.2 Effects of Stress

Sometimes recognize the short-term effects of stress but may not be aware of how harmful the long-term effects can be[4].

➤ **Short-Term Effects**

- Mind becomes alert - ready to act or react
- Dilated pupils
- Dry mouth
- Tension in neck and shoulders
- Faster breathing
- Faster heart rate
- Higher blood pressure
- Sweaty palms

➤ **Long-Term Effects**

- Headaches
- Dizziness
- Blurred vision
- Ulcers
- Hyperventilation, asthma, palpitations
- High blood pressure
- Heart and artery disorders
- Nervous indigestion
- Disturbed sleep patterns

1.1.3 Symptoms of Stress

➤ **Common symptoms of stress include:**

- A fast heartbeat.
- A headache.
- A stiff neck and/or tight shoulders.
- Back pain.
- Fast breathing.
- Sweating, and sweaty palms.
- An upset stomach, nausea, or diarrhea.

➤ **Over time, symptoms of stress are:**

- **Immune system:** Constant stress can make you more likely to get sick more often. And if you have a chronic illness such as AIDS, stress can make your symptoms worse.
- **Heart:** Stress is linked to high blood pressure, abnormal heartbeat (arrhythmia), blood clots, and hardening of the arteries (atherosclerosis). It's also linked to coronary artery disease, heart attack, and heart failure.
- **Muscles:** Constant tension from stress can lead to neck, shoulder, and low back pain.
- **Stomach:** If there is stomach problems, such as gastro esophageal reflux disease (GERD), peptic ulcer disease, or irritable bowel syndrome, stress can make your symptoms worse.
- **Reproductive organs:** Stress is linked to low fertility, erection problems, and problems during pregnancy, and painful menstrual periods.

- **Lungs:** Stress can make symptoms of asthma and chronic obstructive pulmonary disease (COPD) worse.

- **Skin:** Skin problems such as acne and psoriasis are made worse by stress.

➤ **Emotions or thinking symptoms of stress are**

- Feel cranky and unable to deal with even small problems.
- Feel frustrated, lose your temper more often, and yell at others for no reason.
- Feel jumpy or tired all the time.
- Find it hard to focus on tasks.
- Worry too much about small things.
- Feel that you are missing out on things because you can't act quickly.
- Imagine that bad things are happening or about to happen.

1.1.4 Causes of Stress

A lot of things can cause stress. stress when we go on a job interview, take a test, or run a race. These kinds of short-term stress are normal. Long-term (chronic) stress is caused by stressful situations or events that last over a long period of time, like problems at work or conflicts in your family. Over time, chronic stress can lead to severe health problems.

➤ **Personal problems that can cause stress**

- **Your health:** Especially if you have a chronic illness such as heart disease, diabetes, or arthritis
- **Emotional problems:** Such as anger you can't express, depression, grief, guilt, or low self-esteem
- **Your relationships:** Such as having problems with your relationships or feeling a lack of friendships or support in your life
- **Major life changes:** Such as dealing with the death of a parent or spouse, losing your job, getting married, or moving to a new city
- **Stress in your family:** Such as having a child, teen, or other family member who is under stress, or being a caregiver to a family member who is elderly or who has health problems
- **Conflicts with your beliefs and values:** For example, you may value family life, but you may not be able to spend as much time with your family as you want.

➤ **Social and job issues that can cause stress**

- **Your surroundings:** Living in an area where overcrowding, crime, pollution, or noise is a problem can create chronic stress.
- **Your social situation:** Not having enough money to cover your expenses, feeling lonely, or facing discrimination

based on your race, gender, age, or sexual orientation can add stress to your life.

- **Your job:** Being unhappy with your work or finding your job too demanding can lead to chronic stress. Learn how to manage job stress.
- **Unemployment:** Losing your job or not being able to find work can also add to your stress level.

1.1.5 Types Of Stress

The different types of stress are:

➤ Acute stress

It is the most common form of stress. It is induced as a reaction to an immediate threat, anticipated demands, or pressures of the recent past or of the near future. The threats or demands can be real or perceived. Examples include rushing to meet a project deadline, stressing over an exam, worrying about the fender-bender you just had, etc. Because it is short term, acute stress doesn't have enough time to do the extensive damage associated with long-term stress. However, it can pop up in anyone's life, but it is highly treatable & manageable.

➤ Chronic stress

It involves situations that are not short-lived. It is the perpetual stress that wears on people continuously. It often develops when the individual doesn't see a way out of a bad situation. Typically, when the individual has no hope, they stop looking for a solution. Examples of chronic stress include relationship problems, workplace pressures, & financial or health worries.

➤ Episodic Stress

It is the type of stress that develops when continuous disorganization, chaos, & crisis is a way of life for the individual. For example, Type A's generally suffered from episodic stress. These are the type of people who tend to always be in a rush, but always late. They often take on too many demands, & they can't organize the overabundance of tasks they have accumulated. Episodic stress can also ensue when an individual constantly worries. These individuals tend to be pessimistic, which causes them to be anxious & sometimes depressed.

Situations that are considered stress provoking are known as stressors. Stress is not always a bad thing. Stress is simply the body's response to changes that create taxing demands. Many professionals suggest that there is a difference between what we perceive as positive stress, and distress, which refers to negative stress. In daily life, we often use the term "stress" to describe negative situations.

➤ Positive stress

- **Characteristics:**
 - Motivates, focuses energy

- Is short-term
- Is perceived as within our coping abilities
- Feels exciting
- Improves performance

• Examples

- Receiving a promotion at work
- Starting a new job
- Marriage or commitment ceremony
- Buying a home
- Having a child

➤ Negative stress

• Characteristics:

- Causes anxiety or concern
- Can be short or long-term
- Is perceived as outside of our coping abilities
- Feels unpleasant
- Decreases performance
- Can lead to mental and physical problems

➤ Examples

- The death of a partner
- Filing for divorce
- Losing contact with loved ones
- The death of a family member
- Hospitalization (oneself or a family member)
- Injury or illness (oneself or a family member)
- Being abused or neglected

1.1 Objective of Project

The main goal of the project is to relieve the stress by using stay smiling app. It will give the motivational/inspirational videos/quotes to stress patients remind them and keep them in positive mood. When the patient repeats after 15days/1month,each and everyday's feelings/moods and all the questionnaires(formed by the counsellors) answered will be accessed, for better understanding of the pattern of mood swings and how the patients more coping-up during that period. If that patient goes to long depression he/she can chat with any consultant as per the different categories and share their views so that they can get out of taking any odd steps and patients take care of them.

1.2 Scope of project

In the existing system the mentally stressed patients were getting only relaxation skills and some meditation and exercise tips from those apps and they were not getting proper advises to relieve their stress but stay smiling app which will play major role in relieving the stress this app will give relaxation skills if the patient does not satisfy from this he/she can chat with the stress counsellors and they will get advises from stress counsellors to come out of their stress level.

1.3 Motivation

This app will be more benefit for stress patients. It involves 3 stages to relieve the stress for each patient that are:

- It will be having questionnaires and answers for patients to know about their stress level.
- It will give some online links to patients to watch motivational videos and read some inspirational quotes to come out of their stress level.
- This app is having chatting system the mentally stressed patients can chat with the stress counsellors and they get advises from them to relieve their stress.

In order to reduce the patients stress level and keep them always in positive mood by giving online links of motivational videos, songs and inspirational quotes. If they want more relaxation means they can chat with the stress counsellors to get advises from them.

II. LITERATURE SURVEY

- **A healthy way to handle work place stress through Yoga, Meditation and Soothing Humor [6]**

The most decisive factor is the productivity of the work force it is the success of an organization is concerned. The psychosocial well being of the employees is dependent on the productivity. Work and the workplace emphasizes many issues related to organizational psychology including job satisfaction, quality of work life, human factors, work conditions, performance appraisal, motivation and leadership, and the physical and mental health of workers. **SOURCES OF ACADEMIC STRESS – A STUDY ON MANAGEMENT STUDENTS[7]**

The objective of this study is to explore the components of academic stress among the post graduate management students. The study further tries to make an in-depth investigation into each component of academic stress such as curriculum and instruction, team work related issues, assessment, and placement, to identify the micro issues that are causing stress.

- **How is mortality affected by money, marriage, and stress?[8]**

It is believed that the length of a person's life depends on a mixture of economic and social factors. Yet the relative importance of these is still debated. We provide recent British evidence that marriage has a strong positive effect on longevity. Economics matters less. After controlling for health at the start of the 1990s, we cannot find reliable evidence that income affects the probability of death in the subsequent decade. Although marriage keeps people alive, it does not appear to work through a reduction of stress levels.

III. SYSTYEM ANALYSIS

System analysis is the study of the entities which are interacting including computer system analysis. This system analysis field is almost closely related to requirement analysis to make better decision and to identify a better course of action. It applies methodology to analysis of system involved to form an overall picture.

3.1 Existing System

A key challenge for mobile health is to develop a new technology that can assist individuals in maintaining a healthy life style. Now a day's peoples are so busy in their daily schedules and not having enough time to contribute physically all joys & sorrows. At last they are out of society and finally nowhere in the world and went to depression. Peoples are taking odd steps in unnatural manner by facing any long depression, long frustration, cowardliness, and failures in life, related to study, related to married life as they are not getting any proper solution or consultation.

If the patient is in depression status he/she has to visit hospital frequently it seems to be tiring and time consuming for both doctor and patients. Stay smiling app which will aid/assist the people who needs some counseling, the people who needs to be monitored, given special attention to come out of their stress/addiction/depression. It also aids/assists the psychiatrist or the counselor to keep track of their patients moods, their feelings at frequent intervals through this app, give the patients motivational/inspirational videos/quotes, remind them and keep them in positive mood. When the patient repeats after 15days/1month, each and everyday's feelings/moods and all the questionnaires (framed by the counselors) answered will be accessed, for better understanding of the pattern of mood swings and how the patients more coping-up during that period. If that patient goes to long depression he/she can chat with any consultant as per the different categories and share their views so that they can get out of taking any odd steps and patients take care of them. When the patients used to chat with counselor one timer will begin which will say how much time the consultant spent for the particular user as per the time billing will be calculated.

➤ eCBT

CBT Calm helps people who are feeling stressed and want to learn relaxation skills. It assesses your stress level, provides relaxation skills, and also includes links to online resources for stress and anxiety.

- **Disadvantages:** Chargeable

➤ Stress Tracker

Stress Tracker is a tool to help you take charge of your emotional, mental, and physical health. Track your stress and improve you coping skills with this useful app.

- **Disadvantages:** Chargeable for android mobiles and free for iphone

➤ Mindfulness Meditation

This app hosts "mindfulness-based technique for stress-reduction with scientifically proven health benefits. Guided mindfulness meditations written and narrated by Stephan Bodian, author of the Meditation for Dummies." This app includes short and long meditations, ranging from 5 minutes to 40 minutes. There are also deep relaxation exercises to help de-stress after a long day at school or at work. There is no previous experience with meditation necessary.

- **Disadvantages :** Chargeable and suggesting only meditation and exercise as solution to stress

3.1.2 Disadvantages of Existing System

- Stress patients were getting limited relaxation skills.
- The above applications are chargeable that's why people can't afford these applications.
- The stress patient were not satisfying for above relaxation skills if they were not getting proper solution to their stress.
- People were not knowing which type of the stress they are having and getting proper consultation.
- Patients were not getting contact with stress counsellors to clarify their health issues.

3.2 Proposed System

In my proposed system a stay smiling app which will aid/assist the people who needs some counselling and who needs to be monitored for relieve the stress

3.2.1 Advantages of Proposed System

- Behalf of the counsellors the app will interact with the patients/addicts through some basic questionnaires and answers to know their stress type.
- This app will give some online links to watch motivational or inspirational videos, quotes and songs to relieve the patient's stress.
- If the patient doesn't satisfy for questionnaires and answers or motivational videos, quotes, songs means he can go to next stage to contact the doctors.
- Stay Smiling app which will provide the peoples to chat with any nearby consultant as per the different categories and share their views so that they can get out of taking any odd steps.

IV. SYSTEM REQUIREMENTS AND SPECIFICATION

A software requirements specification (SRS) is complete description of the behavior of the system to be developed. The SRS document which describes what the proposed system should process without describing how software will do it. The SRS is a consistent formal document which is the output of the requirement analysis phase whose input is ideas in the mind of the users.

4.1 OVERALL DESCRIPTION

This section provides a description of the general factors that affects system and its requirements.

4.1.1 System Perspective

The aim towards the assurance is provided to help the stress patients to get relieve with chatting to counselor using the stay smiling app.

4.1.2 System Function

The key idea is overall system is divided into stress counsellor and patient (user) Home Screen. user will notify about the stress and send it to counselor. user will have the right to access list of counsellor, Notifying, and chatting. But the stress counselor has right to accept or deny notification of the patient.

4.1.3 Constraints

- User will login to the app
- User will obtain list of Counsellor by search option

- User will notify to counselor through questionnaires
- Counsellor get the notification of patient
- Counsellor will accept or deny the notification
- Counsellor chat with patient and also in order to relieve stress by motivational videos ,quotes.

4.2 Specific Requirements

This section of the SRS should contain all the software requirements to a level of detail that is sufficient to enable designers to design a system to satisfy those requirements. It also helps tester to design their test cases to verify whether system satisfy those requirements. There are requirements like functionality requirements; non-functionality requirements design constraints and different interfaces to the project.

4.2.1 Functional Requirements

Functionality requirements are those that refer to the functionality of the system. That is, what services it will provide to the user. Non-functional (supplementary) requirements pertain to other information needed to produce the correct system and are detailed separately.

- User login to system
- User can view all questionnaires
- User has list of counselor
- User notify counselor for chatting
- Counsellor will login to system
- Counsellor will get notification sent by user
- Counsellor has to accept the notification by obtaining data about the patient
- Counselor chat with the patient based questionnaires and feedback to the user about the stress.

4.2.2 Non functional Requirements

These are requirements that are not functional in nature; these are constraints within which the system must work.

- **Security:** The user and counsellor is validated by their username and password
- **Usability:** There is continuous use of internet connection
- The program must be self contained so that it can easily be moved from one system to another system
- The system should always have internet connection
- The system should be scalable to support multi authority
- Capacity, Data confidentiality, availability

4.3 Software Requirements

- Android Studio
- Android SDK 5.0.8/4.X
- SQLITE
- Dream viewer
- Xampp

4.4 Hardware Requirements

- Android Mobile
- Version- 4.4.2
- RAM-1GB
- ROM-8GB

V SYSTEM DESIGN AND DEVELOPMENT

Design is one of the important phases of software development. The purpose of design phase is to plan a solution of the problem specified by the requirement document. This phase is the first step in moving from problem domain to solution domain. The design of the system is perhaps is most critical factor affecting the quality of the software and has a major impact on the later phases, particularly testing and maintenance. The output of this phase is design document

5.1 Design Considerations

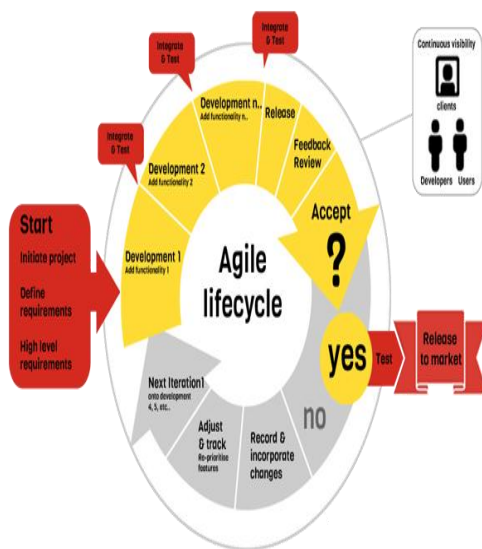
This section describes many of the issues which are needed to be addressed.

5.1.1 General Consideration

- Our system runs on android mobile
- All the requests and replies are having predefined formats

5.1.2 Development Method

The development method followed in this project is agile method. Agile SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about one to three weeks. Every iteration involves cross functional teams working simultaneously on various areas like planning, requirements analysis, design, coding, unit testing, and acceptance testing. At the end of the iteration a working product is displayed to the customer and important stakeholders.



- Following are the Agile Manifest principles:
 - **Individuals and interactions:** In agile development, self-organization and motivation are important, as are interactions like co-location and pair programming.
 - **Working software:** Demo working software is considered the best means of communication with the customer to understand their requirement, instead of just depending on documentation.

- **Customer collaboration:** As the requirements cannot be gathered completely in the beginning of the project due to various factors, continuous customer interaction is very important to get proper product requirements.
- **Responding to change:** Agile development is focused on quick responses to change and continuous development.
- Advantages of Agile Methodology
 - The team does not have to invest time and effort and finally find that by the time they delivered the product, the requirement of the customer has changed.
 - Frequent communication with customer representative leaves no space for guesswork.
 - The documentation is crisp and to the point to save time.
 - The end result is the high quality software in least possible time duration and satisfied customer

5.2 Architectural Strategies

This section describes decision and strategies that affect the overall organization of the system and its higher level structures. These strategies will provide into the key abstraction and mechanisms used in the system architecture

5.2.1 User Interface Paradigm

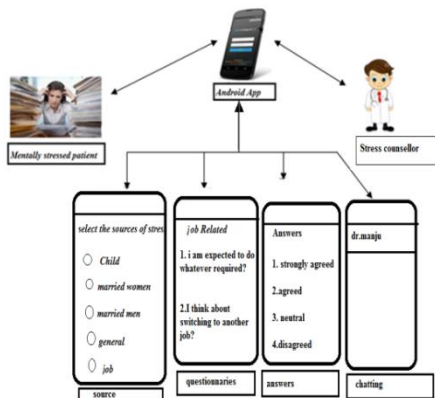
The GUI of application contains separate home screen for user and counsellor .the user Login Screen, counsellor Home Screen, counsellor Login Screen, counsellor Home Screen, Cloud server.

5.2.2 Error Detection and Recovery

Android SDK (AVD Manager) helps us to fix the build errors more quickly. The Error log window displays a list of errors generated during build; Android SDK has an integrated debugger to correct errors.

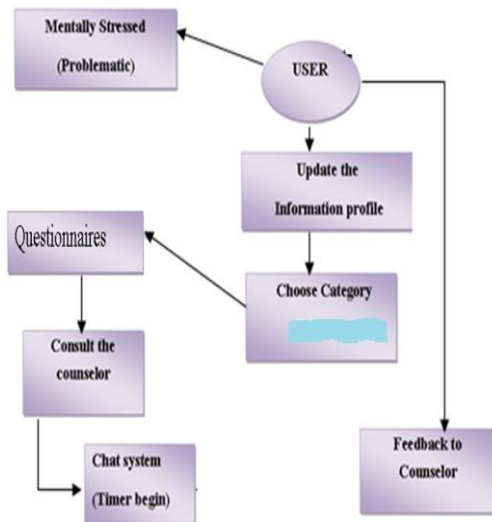
5.3 System Architecture

The architecture design process is concerned with establishing a basic structural framework for a system. It involves identifying the major components of the system and communications between these components. Large systems are always decomposed into sub-systems that provide some related set of services. The initial design process of identifying these subsystems and establishing a framework for subsystem control and communication is called architecture design and the output of this design process is a description of the software architecture

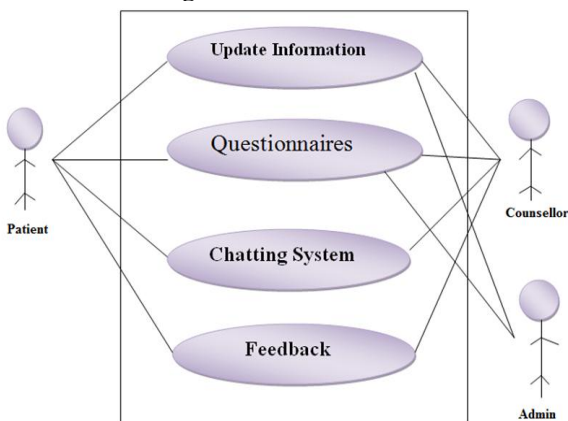


5.4 Dataflow Diagram

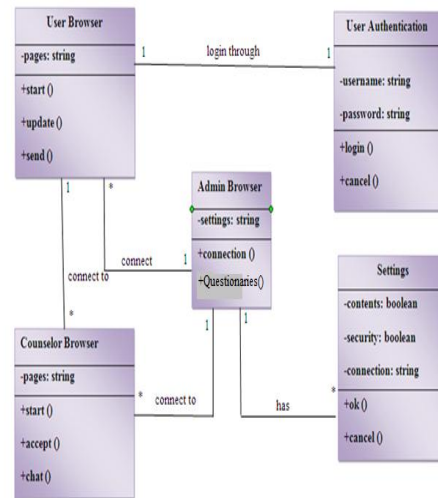
A Data Flow Diagram (DFD) is a graphical representation of the flow of data through an information system. Data flow models are used to show how data flows through a sequence of processing steps. The data is transformed at each step before moving on to next step.



5.6 Use Case Diagram



5.7 Class Diagram



VI. CONCLUSION

This app will be more benefit for stress patients. It involves 3 stages to relieve the stress for each patient that are:

- It will be having questionnaires and answers for patients to know about their stress level.
- It will give some online links to patients to watch motivational videos and read some inspirational quotes to come out of their stress level.
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