SOFTWARE REQUIREMENT SPECIFICATIONS

FOR

A telemedical software to help patients suffering from depression and other related problems.

Table of contents :

Introduction :

The project is based on the telemedical application which will eventually help the patients who are suffering from depression and other anxiety issues.This application would guide patients to analyze themselves and accordingly take the necessary steps.

The main objective of this project is to provide a platform to people suffering from depression and provide support for their betterment.It will help them to take the best possible step to improve their mental health through a psychometric test.There's a questionnaire that will help the patient to determine the severity of the symptoms, as well as many articles and audio files that can help you better understand what they're experiencing.

Purpose:

The purpose of this project is to provide enough support to the patients dealing with mental health issues.This would help them to monitor themselves and get rid of the problem as soon as possible.

Need:

Mental illnesses affect 19% of the adult population, 46% of teenagers and 13% of children each year. People struggling with their mental health may be anyone, maybe our family members,our friends, anyone but it's not easy for them to come up and speak about it to others.This project is designed for them so that they can easily express themselves and get the best possible help online.

It's easy for this application to keep track of the patient's mental health and can easily keep a check on the patient on a regular basis.

Literature Survey

In this population-based cohort study, behavioral ratings were prospectively obtained from an individual - for inattention, hyperactivity, aggression-opposition, anxiety, and prosociality -and linked to Sex, Age, Marital status, Education, Employment, Income class. We used group-based trajectory modeling to estimate the probability of attaining a healthy social environment (for both people with mental illness as well as for normal healthy people) over time and multinomial logistic regression models to examine the association between an individual behaviour and trajectory group membership.

Sl. No.	Problem Statement	Existing System	Limitation	Your Outline
1	**Behavior in childhood is associated with romantic partnering patterns in adulthood**	**Children with behavioral problems are more likely to separate or to be unpartnered across early adulthood. This may have consequences for their psychological health and wellbeing and that of their families.**	**This model is limited to prediction of child future psychology.**	**We are providing a present healthy environment for any individual(mostly focused for mental ill patients).**
2	**How has cognitive behaviour therapy been adapted for adolescents with comorbid depression and chronic illness?**	**Depression becomes increasingly common in adolescence. Around 10%–20% of adolescents have a chronic illness, and they are more likely to experience depression. There is emerging evidence for cognitive behaviour therapy (CBT) interventions to treat depression in adolescents with chronic illnesses, yet no review has been undertaken of how these CBT interventions are delivered in practice.**	**CBT was typically delivered by trained professionals with expertise in working with adolescents, who worked under supervision.**	**There should be a self carrying system for regular mental health monitoring. In extreme cases trained professionals should be assigned.**

REQUIREMENTS

Functional Requirements:

Access the telemedical app

A user should be able to access a telemedical app. The access should not be restricted to registered users. Someone who is not registered should also be able to read the relevant information provided in the home page of the app.

User registration

A User must be able to register their credentials as doctor or patient.
They should also identify themselves the kind of users (mentioned under user characteristics) they are.

User Login

Given that a user is registered, the user will be able to log in to the app and a mail is sent for activation. The system maintains the user login information.

Data Entry

Doctors and patients should be able to fill in the necessary information. Some of the key data that should be entered by the user themselves are as follows:

Doctors: Name,Email,Phone no,Age,Degree,License no
Patients: Name,Email,Phone no,Age,Profession

Psychometric Test

There will be a form based test which will determine the stress levels and output a score based on which the user will be able to use the recommendation system and the therapy feature.
It contains behavioural and situational questions and that can be answered through the given options.

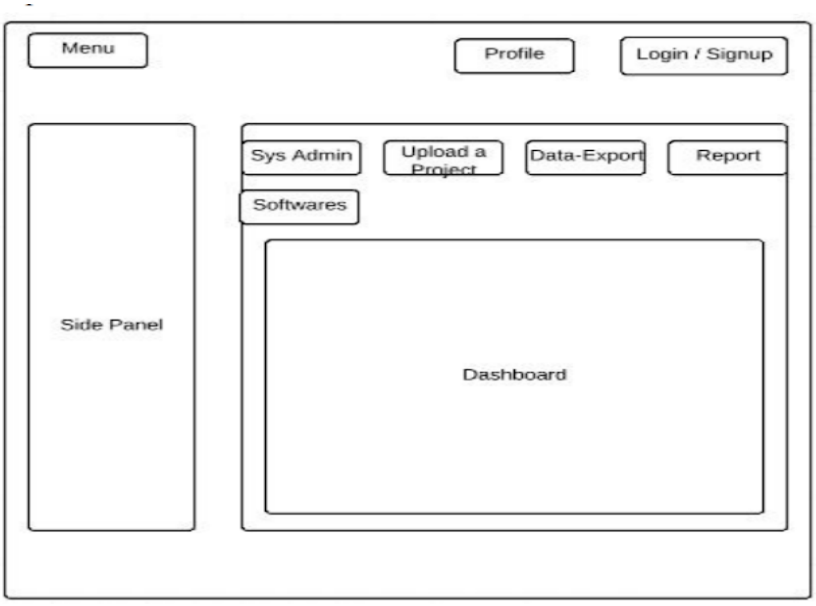
		Never	A few times	Sometimes	Often	Constantly
1.	I was very anxious, worried or scared about a lot of things in my life.	○	○	○	○	○
2.	I felt that my worry was out of my control.	○	○	○	○	○
3.	I felt restless, agitated, frantic, or tense.	○	○	○	○	○
4.	I had trouble sleeping - I could not fall or stay asleep, and/or didn't feel well-rested when I woke up.	○	○	○	○	○

Categorization, Indexing, and Linking

Indexing, categorization, and linking are performed to organize information. Indexing is a critical method in achieving fast and accurate searching. It is the problem of assigning labels to cases or other information to ensure that the right information and knowledge can be retrieved at appropriate time. All the eHealth related information should be categorized by some criteria. Linking means to establish connections between relevant information so that everything related to a specific disease in the system be located through interconnected links.

Maintenance

The system will keep receiving new health information and knowledge, and also periodically removes what are replicated and outdated.



Non-Functional Requirements:

Security:

● Patient Identification: The system needs the user to recognize herself or himself with his/her phone no and Email.

● Login ID: Any users who make use of the system need to hold a Login ID and password.

● Modifications: Any modifications like insert, delete, update, etc. for the database can be synchronized quickly and executed only by the system administrator.

● Support: The staff in the front desk can view the psychometric score and payment status but they don't have any rights to alter any data in it.

● Administrator rights: The administrator can add/delete users.

Performance:

● Response Time: The system provides acknowledgment in just one second once the 'patient's information is checked.

● Capacity: The system needs to support at least 1000 people at once.

● User-Interface: The user interface acknowledges within five seconds.

● Conformity: The system needs to ensure that the guidelines of the Microsoft accessibilities are followed.

Maintainability:

● Back-Up: The system offers the efficiency for data back up.

● Errors: The system will track every mistake as well as keep a log of it.

● Update: The system will be updated time to time to squash bugs and polish up to make it faster and better than ever.

Reliability:

● Availability: The system is available all the time.

● Security: User’s details security is of prior importance

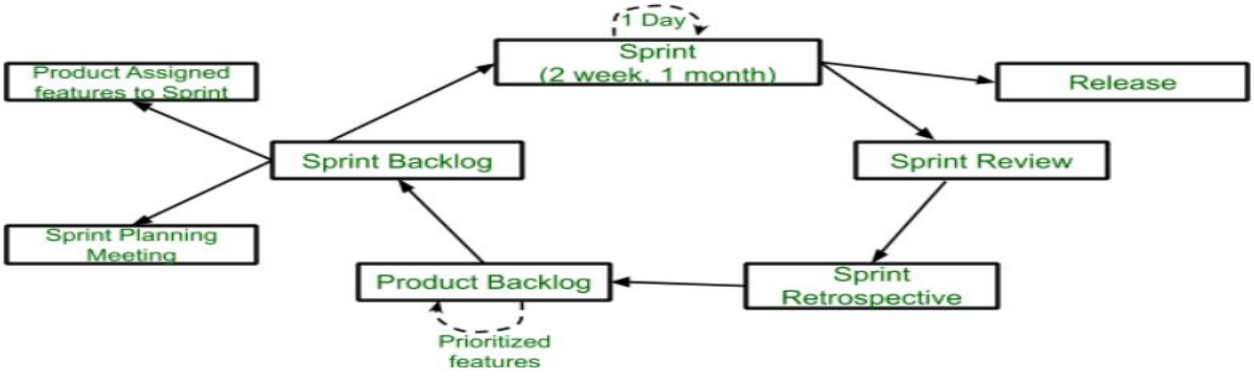
HARDWARE REQUIREMENTS

- RAM:- 4GB
- GPU :- NVidia or AMD
- Android & ios
- 1 TB hard disk space
- Processor: i5-i9 10th Gen

SOFTWARE REQUIREMENTS

- Web browser : google chrome, firefox
- Flutter for App Development/Design
- Android Studio 9/10
- Firebase for backend
- Postgresql (database)
- Django, Tensorflow, Docker for deployment of applications.
- Google cloud for deploying the application for the user base so that it will be capable of handling huge traffic at any day.
- GCP or AWS for uploading databases to the cloud for better efficiency and distribution.
- REST API for communication
- Jupyter Notebook
- Lucid Chart
- Draw.io
- Operating system windows 10

AGILE SCRUM FRAMEWORK



Scrum is a framework within which people can address complex adaptive problems while productivity and creativity of delivering product is at highest possible values. Scrum uses an Iterative process.Here, sprint is a time-box of one month or less. A new sprint starts immediately after the completion of the previous sprint.

In the beginning of this project, faults were not detected in early stages. We choose scrum so that with initial knowledge we can start working on the designing process and then can easily encounter faults if any.As scrum works by dividing the large product into small sub-products its easy for the team to divide the work into small units and work independently.

This project targets at providing help to the patients suffering from depression so continuous feedback from the patients are must so that the application can be designed in the best possible way.It should be very compatible and efficient for the users, so scrum provides us the ways to receive feedback from our users and develop the application for best experiences.

FEASIBILITY STUDY

The prime focus of feasibility is evaluating the practicality of the proposed system keeping in mind a number of factors. The following factors are taken into account:

ECONOMIC FEASIBILITY :-

In this cost and benefit of the project is analyzed. Under this a detailed analysis is carried out of what will be the cost of the project for development which includes all required costs for final development like hardware and software resources, design and development cost, and operational cost and so on. After that it is analyzed whether the project will be beneficial in terms of finance for organization or not.

TECHNICAL FEASIBILITY :-

In this both hardware and software resources along with required technology are analyzed to develop the project. This study gives a report whether there exists correct required resources and technologies which will be used for project development. Along with this, feasibility study also analyzes technical skills and capabilities of technical

team, maintenance and up-gradation is easy or not for chosen technology.

OPERATIONAL FEASIBILITY :-

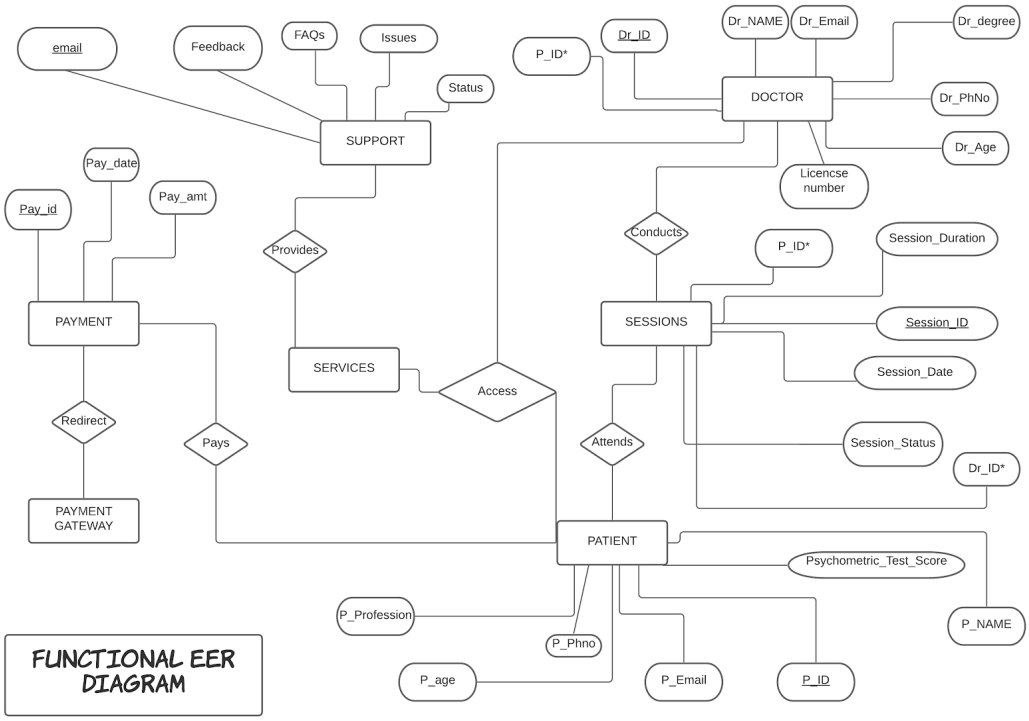
The operational feasibility degree of providing service to requirements is analyzed along with how easy the product will be to operate and maintenance after deployment.

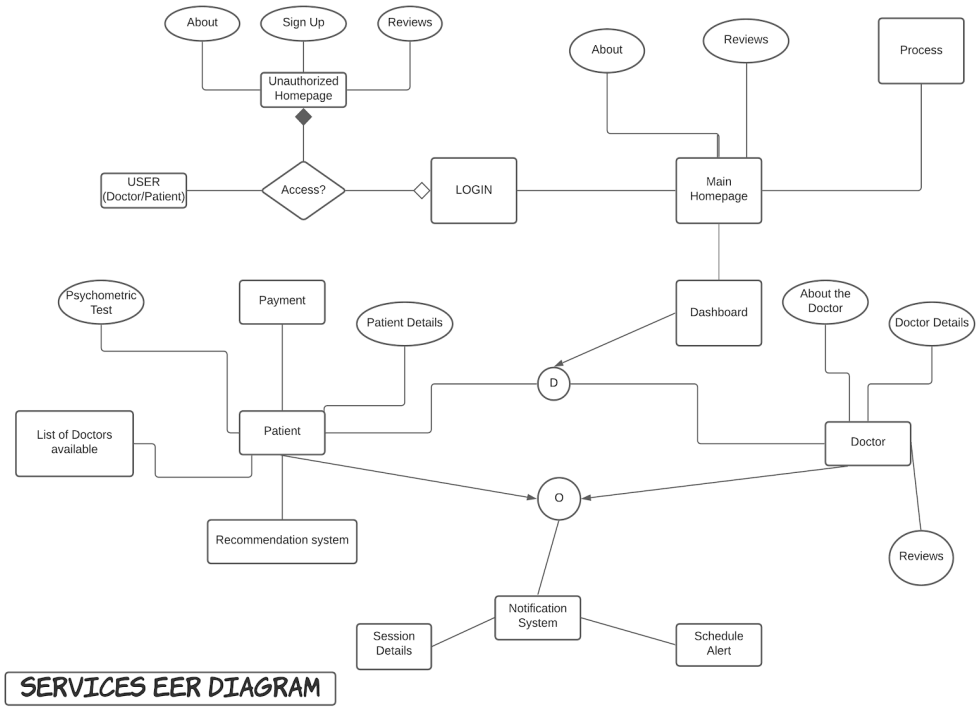
LEGAL FEASIBILITY :-

In legal feasibility we analyze if proposed projects conform to legal and ethical requirements or not. This includes analyzing barriers of legal implementation of a project, data protection acts(whether the user data is secured or not), license, copyright etc.

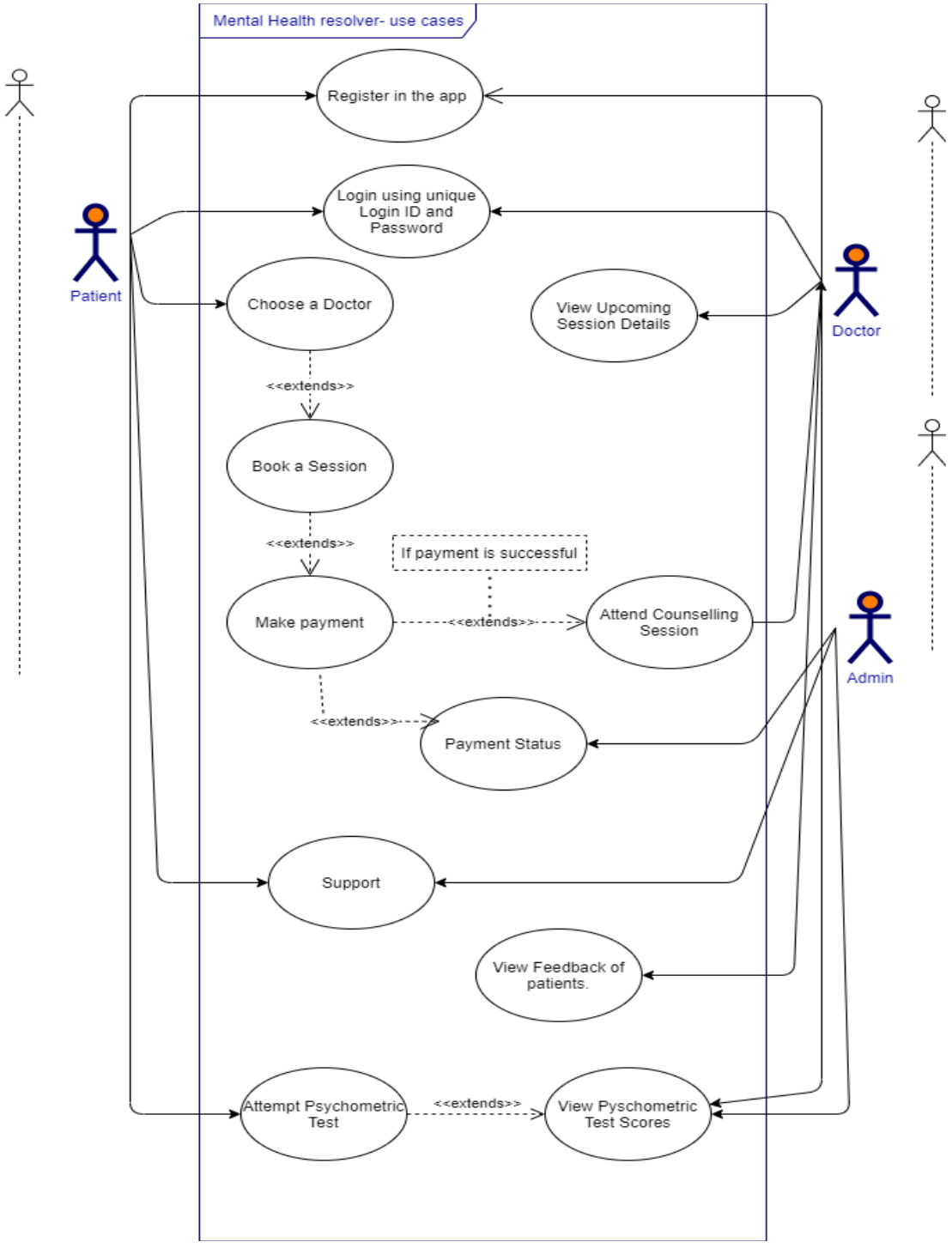
DESIGN & IMPLEMENTATION

EER DIAGRAM

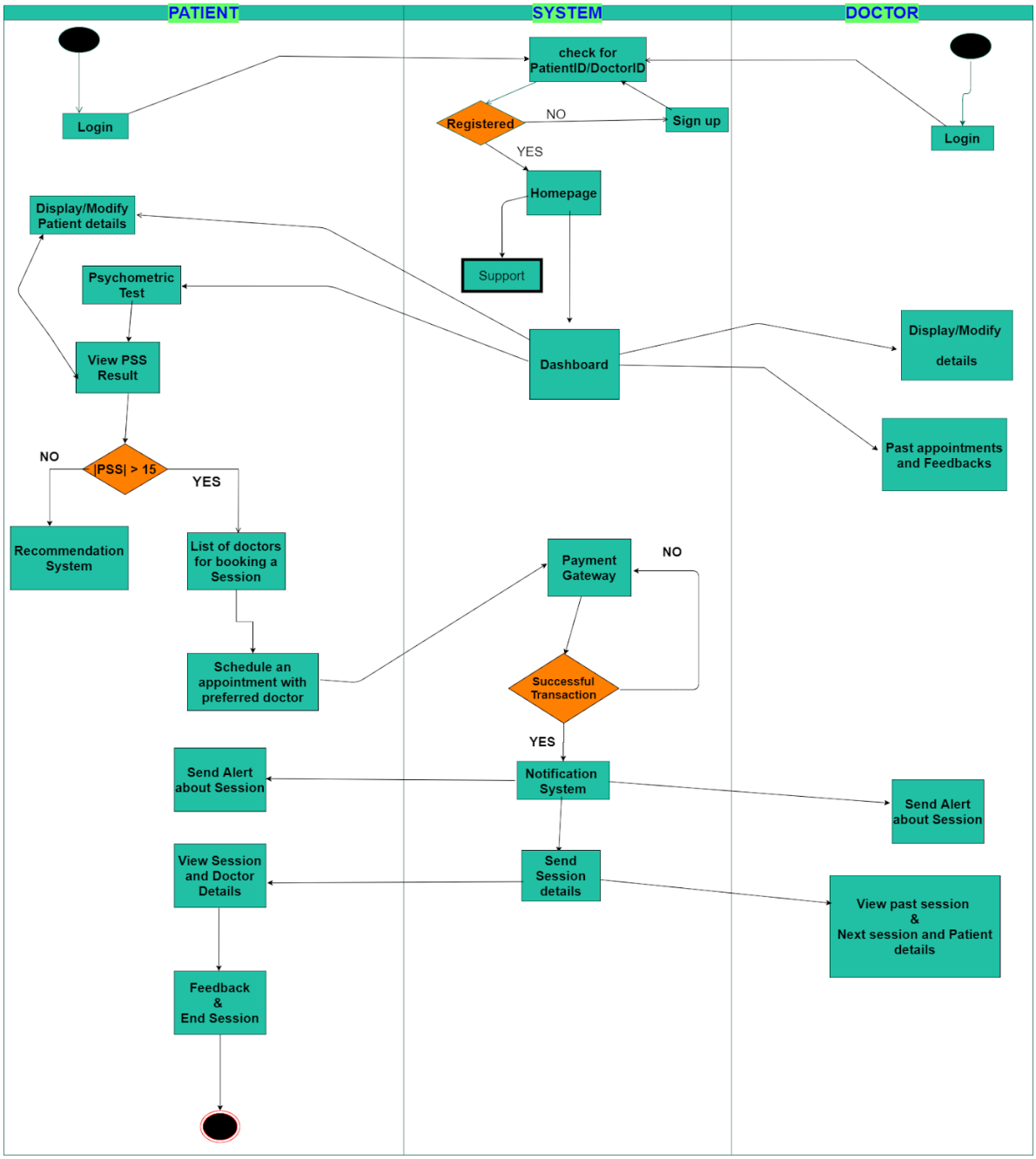




USE CASE DIAGRAM



ACTIVITY DIAGRAM



Tests And Results

Testing is done most importantly to find errors in our software , no matter how carefully one design a software there is always a possibility of errors , these errors can do minor damage to the software or even can result in whole software to go in scrap, it is therefore mandatory to test a software thoroughly so that it can be made error free and help the developers to provide appropriate software to the stakeholders. Testing is the only phase in a software development where we are keen to find an error , catching errors accurately provides efficiency of testing phase, the correction of errors is handled in the debugging phase after testing.

Test cases were devised with a purpose in mind. A test case is a set of data that a system will process as normal input. The software units developed in the system are modules and routines that are assembled and integrated to perform the required function of the system. Test results once gathered and evaluated, provide a qualitative indication of the software quality and reliability and serve as the basis for design modification if required.

❖ Unit Testing

- ➢ In this we have tested the code segment of different modules at the completion of each module. In this way we are able to identify the errors occurring in each and every module and hence ensuring that it doesn't carry to other modules it not only helps in providing integrity but it also helps us as a software developers by making the task easier.

❖ Black Box Testing

- ➢ As the name suggests this phase of testing is like testing a black box . we don't know what is in the box here we just test the module by putting in some values as input and the test is passed if the desired output is given by the module. The test cases are made keeping the equivalence class partitioning followed by boundary value analysis rather than assigning random values to test cases.
- ➢ The result obtained by this test is analysed whether the desired output is being generated or not and then is passed on to the next phase of testing.

❖ White Box Testing

- ➢ After we are done with black box testing now it is time to open the black box and take a look inside , in the white box testing phase we look into the structure which is being used in a module and test its performance.
- ➢ As white box testing tests for the correct functionality of internal structure of a module we decided to go with coverage based testing as it allows us to to target specific program elements to test these specific areas are called testing criterion of the strategy.
- ➢ Firstly we started with statement coverage in which we assured every statement is executed at least once this technique is important as we can’t determine the correctness of a program until and unless it is executed.
- ➢ Next we moved to branch coverage followed by multiple condition coverage and this was the last phase of white box testing .

❖ Integration Testing

- ➢ The basic idea behind integration testing is to ensure the functionality of each module when they are collaborated as one unit to work as one software unit which the stakeholders have demanded.
- ➢ The major aspect of integration testing is to check whether different modules of a program interface with each other properly, i.e there should be no errors during parameter passing when one module invokes the functionality of other modules.
- ➢ In this testing the most suitable approach is the big bang approach as it is not a very large scale software so it is suitable to use this approach .

CONCLUSION

A telemedical app to help patients suffering from depression and other related problems is based on the telemedical application which will eventually help the patients who are suffering from depression and other anxiety issues.This application would guide patients to analyze themselves and accordingly take the necessary steps which is crucial for their recovery.

Here we intend to develop an interactive system which interacts with the end user and gathers all the information it receives from them, then processes it to provide crucial solutions and suggestions to the user to help him recover.

Our platform will help them to take the best possible step to improve their mental health through a psychometric test and questionnaire that will help the patient to determine the severity of the symptoms, as well as many articles and audio files and also doctor's guidance that can help us better understand what they're experiencing through which we provide necessary steps towards there speedy and healthy recovery, ultimately helping them through rehabilitation.

BIBLIOGRAPHY

- **https://krazytech.com/projects/software-requirements-specification-report**

- **https://www.tutorialspoint.com/software_engineering/software_requirements.htm**

- **https://www.geeksforgeeks.org/types-of-feasibility-study-in-software-project-development/**

- **https://acamh.onlinelibrary.wiley.com/doi/full/10.1111/jcpp.13329**

- **https://acamh.onlinelibrary.wiley.com/doi/10.1111/camh.12421**
- **https://app.diagrams.net/index.html**
- **https://www.psychologytoday.com/intl/tests/health/mental-health-assessment**

SUBMITTED BY :

Sl.No	Name of Student	Roll No.
1	Prerana Sen	1828179
2	Samudraneel Banerjee	1828188
3	Samyak Kumar Sahoo	1828189
4	Shalini Basak	1828192
5	Shashwat Jha	1828194
6	Shikhar Saxena	1828195
7	Shivam Chanda	1828197
8	Shivam Singh	1828200
9	Utkarsh Jaiswal	1828217
10	Vivek Raj Rout	1828219