**AIR University Islamabad**

Software Requirement Specification   
(SRS DOCUMENT)

for

**Machine Learning-Based Prediction of PTSD by Analyzing Textual Data**

Version 1.0

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**Supervisor Meeting Log:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Discussion | Task Assignment | Supervisor Signature |
| Meeting 01  Date: 8/7/2022 | Related to SRS document making.  Gave instructions on how to write modules and what should be written in actual. | SRS document completion |  |
| Meeting 02  Date: 9/27/2022 | Discussion on mistakes and their improvements. | Correct the mistakes and submit the document on time. |  |

**Application Evaluation History**

|  |  |
| --- | --- |
| **Comments (by committee)**  **\*Include the ones given at scope time both in doc and presentation** | **Action Taken** |
| Scope components not addressed | addressed |
| 1 use case, at least 13 or 30 should be there | 34 use cases now |
| FRs is less, modules are not properly defined, and NFR needs revision. | 34 FR, modules properly defined, NFR revised |
| Wrong product perspective, Don’t work on accuracy, | Corrected. |
| Add a prescription/recommendation by the PTSD checker, others: option can be given other than 3-5 checkboxes/select boxes in which the doctor can write by himself in Q/A, Patient interaction should be there. | Added |

**Supervised by**

**Mr. Tariq Naeem**

Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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# Introduction

This section of the Software Requirement Specification (SRS) document provides the purpose of the SRS, scope of the SRS, Modules of SRS, acronyms and abbreviations used in SRS, and an overview of the SRS document structure. The aim of this document is to gather and analyze and give an in-depth insight of the complete Web-Based PTSD predictor using Machine Learning by defining the problem statement in detail. Nevertheless, it also concentrates on the capabilities required by stakeholders and their needs while defining high-level product features. The detailed requirements of the Web-Based PTSD predictor using Machine Learning are provided in this document. The document will cover what the end-product is going to provide for its customers/users.

## Purpose

The purpose of this SRS document is to describe the requirements specifications of a customized web-based application for doctors that will be able to predict Post Traumatic Stress Disorder (PTSD). Doctors can give textual data for its processing, to predict the disorder. The results obtained after processing the data by using Machine Learning Model i.e. SVM. After prediction of PTSD, it will provide a proper web-based well managed remote

Perspective developers, technical-assessment personnel, testers, documentation writers, Supervisors, the Examiner Staff and interested end-users are the intended audience of this SRS document.

## Scope

The project aims the following:

* A web-based application that is used by doctors for the purpose of prediction of PTSD.
* A customized web application for PTSD which detects symptoms of PTSD in patients by taking data of patients in textual form and predicting the level of PTSD.
* A PTSD testing platform which will unite admin, patient and doctors on one platform to serve humanity especially people having PTSD.
* We are not trying to replace the doctor through this project but only helping them to do their tasks more efficiently.
* Doctors will take sessions and ask different questions to enter questionnaires so that results can be shown.
* With results there will be a box of different medicines listed to check which medicine is needed to be prescribed and which should not.
* Also, there will be two other options with the name of “prescriptions” & “others” to add more details about the treatment.

## Modules

Previously developed product was just a PTSD predictor with less than 90% accuracy, no front-end or other things. That is just an experimental study which is not used for medical purposes yet.   
Now, we are developing a predictor; which can be used in hospitals for the prediction of PTSD. Also, it has a user-friendly web interface which is easy for doctors to use. This tool takes textual data of patients (entered by doctors) and show all the statistics related to the symptoms of PTSD available in the patient. The uniqueness in it is that it is used in hospitals now.

This project has the following nine modules.

### 1.3.1 Admin management hospital

* signup
* login
* forget password
* logout

### 1.3.2 Receptionist management system

* create receptionist profile
* update receptionist profile
* create receptionist credentials
* assign role

### 1.3.3 Doctor management system

* doctor profile management
* add doctor
* search doctor
* update experience

### 1.3.4 Patient management system

* add/register patient
* schedule patient’s appointment
* view appointment
* update patient
* view patient

### 1.3.5 PTSD Recommendation system

* Model implementation
* model training

### 1.3.6 PTSD Detection Module

* system update
* view site
* fill questionnaires
* save results
* share results

### 1.3.7 Prescription module

* select prescription
* add prescription
* view prescription

### 1.3.8 Medicine system

* select medicines
* add medicines
* view medicines

### 1.3.9 Test system

* select test
* add test
* view test

## Definitions, Acronyms, and Abbreviations

|  |  |
| --- | --- |
| PTSD | Post-Traumatic Stress Disorder |
|  | An anxiety disorder which is caused by any stressful, frightening event. |
| SRS | Software Requirement Specification |
|  | Description of the intended environment and purpose of a software to be developed. |
| SVM | Support Vector Model |
|  | Machine learning algorithm used to analyze data for classification and regression analysis. |
| SDLC | Software Delivery Lifecycle |
|  | A process with defined processes for the production of low cost, high quality software. |
| UC | use case |
| FR | Functional requirements |
| NFR | Non-functional requirements |
| ML | Machine Learning |

**Table 1 show definitions, acronyms and abbreviations used in whole SRS document**

## Overview

The remaining sections of this document provide a general description, including characteristics of the users of this project, the product's hardware, and the functional and data requirements of the product.  General description of the project is discussed in section 2 of this document. Section 2 also gives the product’s perspective of the users of this predictor, user classes and characteristics, operating environment, Design and implementation constraints made while designing the Web-Based PTSD prediction platform.

Section 3 gives the requirement identifying technique. Section 4 gives the functional requirements of the predictor. Section 5 explains Non-Functional requirements. Section 6 also discusses the external interface requirements such as software interfaces, hardware interfaces, user interfaces and communication interfaces. Section 7 is for references and Section 8 is for Appendixes.

# Overall Description

This section of the SRS describes the general requirements that drive the design of the Platform. The goal is not to state specific requirements, but rather to provide context to make those requirements easier to understand.

## Product Perspective

The final result of this project is a product that is a member of the “health and wellness” application category. Some examples of applications in this family are: Healthians, HealthMap, Docsapp, WayuMD and so on. It is an entire new product, based on previously done research.

This product is going to be a modified version of already existing PTSD checkers. Previous PTSD checkers are web-based online and we are aiming to make this PTSD test available in hospitals. It will provide an ease to people of community and hospitals.

## User classes and characteristics

This PTSD predictor is intended to be used by doctors/physiatrists. A typical user should have some experience using web-based platforms. A basic knowledge of browser use is sufficient for the doctors to predict PTSD by this platform.

**Table 2 Show user classes and characteristic for Web-based PTSD Predictor**

|  |  |
| --- | --- |
| **User class** | **Description** |
| **Hospital Admin** | Hospital Admin would have full control to add users (sub admin, doctors, and patient) and provide credentials to them and set access levels accordingly. |
| **Patient** | A patient is someone who has PTSD. He will not be using this platform directly but indirectly. |
| **Doctor** | Sometimes there may arrive the situation when someone having mental disorder like PTSD is unaware of it and he goes to doctor for treatment rather than physiatrist, than it can be used by doctor to clear his doubt about what type of treatment the patient needs in actual. |
| **Physiatrist** | To save time and effort, before taking one-to-one sessions the patient physiatrist can use this predictor to check are even some symptoms of PTSD in the patient or not. If yes, verified by a predictor then he can take one-to-one sessions of patients for cure purposes. |
| **Receptionist** | Receptionist to register the new patient and check the details of the old patient. |
| **Developers** | Developers will give the platform to the hospital and update the system simultaneously. |

## Operating Environment

The application is speciﬁcally designed for use as a web application which will be built on ReactJS along with that we will use html, css, and JavaScript, so that it can be made available at a hospital for the ease of doctors. The patient’s data is stored in a database by the admin. An internet connection is mandatory for the working of the application. The platform is managed by a tech team.

***OE-1:*** *The System shall operate correctly with the following web browsers: Windows Internet Explorer versions 7, 8, and 9; Firefox versions 12 through 26; Google Chrome (all versions); and Apple Safari versions 4.0 through 8.0.*

## Design and Implementation Constraints

This application is developed by using the latest version of python and web languages. As for operational constraints it can only be used in hospitals via hospital’s computers. The operating system on which it runs would be windows 10.

*CON-1: The doctor enters data in the asked format.*

*CON-2: Each user should have his/her level of access to the platform. .*

*CON-3: Doctors must not rely 100% on this tool.*

*CON-4: All textual data used by the application is stored in the form of .csv files.*

*CON-5: All of the records will be saved in the hospital's database by admin even after the patient is fully cured.*

# Requirement Identifying Technique

## 3.1 Use case diagram

(use case diagram + detail use case) is an effective technique for interactive end-user applications.

 **Figure 1 Show Use case diagram of Web-based PTSD Predictor**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-1 |
| **Use Case Name:** | Signup |
| **Actors:** | Admin, receptionist, doctor |
| **Description:** | Actors will sign up by giving their details such as, username, email address, password, and hospital id. |
| **Trigger:** | The user wants to create his account to get access to this platform. |
| **Preconditions:** | PRE-1: The system is in idle state. |
| **Post conditions:** | POST-1: User is logging in the account.  POST-2: Users would be registered to access the functionalities of the platform. |
| **Normal Flow:** | The user will click the signup button on the display screen.  Username, password, repeat password, system ID will be filled.  After that, the login button will appear, click on it to get access to the system. |
| **Alternative Flows:** | None |

**Table 3 show UC-1 (signup)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-2 |
| **Use Case Name:** | Login |
| **Actors:** | hospital admin, patient, doctor, receptionist |
| **Description:** | After signup, the user enters the username and password with the respective format given in the web page. If typed in the wrong format, the system gives a notification to rewrite it. |
| **Trigger:** | The user wants to access the platform. |
| **Preconditions:** | PRE-1: Users signed up into the system. |
| **Post conditions:** | POST-1: users get access to the platform.  POST-2: users will use their respective functionalities to perform tasks within their access level. |
| **Normal Flow:** | User will enter username and password  Then click on login button  If credentials are accurate then he/she will have access of the platform |
| **Alternative Flows:** | If the wrong password is entered, “forgot password?” will pop up.  If you forget the password, “forgot password?” will pop up.  After clicking, it will ask for email and will ask you to change your password in email. |

**Table 4 show UC-2 (login)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-3 |
| **Use Case Name:** | create receptionist profile |
| **Actors:** | hospital admin |
| **Description:** | After accessing the platform, the hospital admin will also have to create a profile of the receptionist so that their personal details and duties will be maintained in the platform. |
| **Trigger:** | Receptionist should have a profile in which his/her personal details and assigned duties will be mentioned. |
| **Preconditions:** | PRE-1: The hospital admin has got access after logging in. |
| **Post conditions:** | POST-1: He will add credentials then.  POST-2: After that, the system will be updated for the receptionist profile.  POST-3: sub admin will be assigned his/her role. |
| **Normal Flow:** | After logging in, hospital admin will click on “Create Receptionist Profile”  Add personal details  Assign duties  Submit all these details  Profile will be created |
| **Alternative Flows:** | If no new profile is there to be added then directly login using credentials and access the platform |

**Table 5 show UC-3 (create receptionist profile)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-4 |
| **Use Case Name:** | create credentials |
| **Actors:** | hospital admin |
| **Description:** | This will create credentials of the receptionist so that he/she can access platform |
| **Trigger:** | Receptionist need some access to use platform |
| **Preconditions:** | PRE-1: hospital admin should be logged in before creating credentials of doctors and receptionists. |
| **Post conditions:** | POST-1: The credentials will be given to the respective actor according to its role. |
| **Normal Flow:** | After clicking on “Create Credential”  Credentials will be generated automatically  Credentials will be shared with the receptionist |
| **Alternative Flows:** | If credentials are already shared then no need to click on this “Create Credentials” button |

**Table 6 show UC-4 (create credentials)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-5 |
| **Use Case Name:** | update receptionist profile |
| **Actors:** | hospital admin |
| **Description:** | This will edit the existing profile and update the changings. |
| **Trigger:** | If any required changing should be made in the receptionist profile. |
| **Preconditions:** | PRE-1: After logging in, the receptionist profile will be created.  PRE-2: All necessary information will be added in it. |
| **Postconditions:** | POST-1: the receptionist profile will be saved in the system.  POST-2: Hospital admin will assign a role to the receptionist to perform their respective task such as, registration, appointment etc. |
| **Normal Flow:** | Open receptionist profile  Make necessary changing  Click on “Update Receptionist Profile” |
| **Alternative Flows:** | If there is not updating then this functionality will not be used and remaining functionalities will be performed according to the requirement. |

**Table 7 show UC-5 (update receptionist profile)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-6 |
| **Use Case Name:** | assign role |
| **Actors:** | hospital admin |
| **Description:** | This will help receptionists to know what their role/duty is so that they can perform it correctly. |
| **Trigger:** | Receptionist need to know what is their role/duty |
| **Preconditions:** | PRE-1: The hospital admin will save the profile of the receptionist.  PRE-2: He will assign a username and password to the receptionist. |
| **Postconditions:** | POST-1: Will monitor the system then. |
| **Normal Flow:** | Hospital admin will click on “Assign Role”  Roles will be selected among each receptionist  Receptionist will get to know about their role/duty |
| **Alternative Flows:** | If roles are already assigned then you can change otherwise remaining functionalities can performed |

**Table 8 show UC-6 (assign role)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-7 |
| **Use Case Name:** | add/register patient |
| **Actors:** | Receptionist |
| **Description:** | This will add/register new patients in the system so that further process of his/her treatment can take place. |
| **Trigger:** | A new patient visits the hospital for treatment. |
| **Preconditions:** | PRE-1: Receptionist will sign up to the system for the first time.  PRE-2: He will log in now every time after signing up once. |
| **Postconditions:** | POST-1: Patients registration is done and saved in the system.  POST-2: He will schedule a patient's appointment with the doctor. |
| **Normal Flow:** | Patient visit the hospital  He/she ask for treatment  He/she will be added/ registered in the database for further procedure. |
| **Alternative Flows:** | Patient is already registered in hospital  View patient list  If he/she exist in database then schedule appointment |

**Table 9 show UC-7 (add/register patient)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-8 |
| **Use Case Name:** | view patient |
| **Actors:** | Receptionist |
| **Description:** | This will view all the patients who are registered in the hospital |
| **Trigger:** | Receptionist wants to see if the patient is already registered or not. |
| **Preconditions:** | PRE-1: Receptionist got access to the system by creating an account.  PRE-2: He registers the patient. |
| **Postconditions:** | POST-1: If changes are made afterwards, the patient profile is updated.  POST-2: Patient appointment with the doctor is made. |
| **Normal Flow:** | Patient visit hospital  He says he is already registered  Receptionist view patient list to confirm  Then Schedule appointment for him/her |
| **Alternative Flows:** | If patient does not exist in the patient list then he/she would be registered |

**Table 10 show UC-8 (view patient)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-9 |
| **Use Case Name:** | update patient profile |
| **Actors:** | Receptionist |
| **Description:** | This will edit the existing profile and update the changings. |
| **Trigger:** | If any required changing should be made in the patient profile. |
| **Preconditions:** | PRE.1 Registration of patients. |
| **Postconditions:** | POST-1. The receptionist will schedule a meeting. |
| **Normal Flow:** | Open patient profile  Make necessary changing  Click on “Update Patient Profile” |
| **Alternative Flows:** | If there is not updating then this functionality will not be used and remaining functionalities will be performed according to the requirement. |

**Table 11 show UC-9 (update patient profile)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-10 |
| **Use Case Name:** | schedule patient’s appointment |
| **Actors:** | Receptionist |
| **Description:** | Patient wants to visit doctor for his/her treatment then he/she will ask receptionist to schedule appointment for him/her |
| **Trigger:** | Patient wants to visit doctor |
| **Preconditions:** | PRE-1: Take access to the system by logging in.  PRE-2: Receptionist will register the patient into the record.  PRE-3: Receptionist will check the availability of the doctors. |
| **Postconditions:** | POST-1. Receptionist will confirm the appointment.  POST-2. He will inform the patient and the doctor about the appointment. |
| **Normal Flow:** | Patient visit receptionist  Receptionist check doctors schedule  Then he schedule an appointment  Patient visit the doctor on allotted appointment |
| **Alternative Flows:** | none |

**Table 12 show UC-10 (schedule patients profile)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-11 |
| **Use Case Name:** | view appointment |
| **Actors:** | Receptionist |
| **Description:** | Already schedule appointments are viewed so that appointment for new patient can be scheduled |
| **Trigger:** | Patient want to visit doctor |
| **Preconditions:** | PRE-1: Registration of patients.  PRE-2: He will search for a doctor who is available.  PRE-3: He will give an appointment to the patient. |
| **Postconditions:** | POST-1: The patient will get in touch with the doctor at the appointment time. |
| **Normal Flow:** | Patient wants to visit doctor  Receptionist view appointments to schedule his/her appointment |
| **Alternative Flows:** | None |

**Table 13 show UC-11 (view appointment)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-12 |
| **Use Case Name:** | doctor’s profile management |
| **Actors:** | Receptionist |
| **Description:** | This consists of all the related details about the doctor along with his/her specialization and experience. |
| **Trigger:** | Doctor’s specialization and experience can be viewed before appointing patients to him/her so that if any patient's condition is worse can be appointed to a more experienced patient. |
| **Preconditions:** | PRE-1: Doctor’s record will be saved in the system. |
| **Postconditions:** | POST-1: New doctor is added afterwards.  POST-2: If the experience of a doctor is increased or has any degree, it will be added in the qualification. |
| **Normal Flow:** | If any updation occur in experience of doctor or new doctor join hospital  Profile is updated for existing doctor  New Profile is created for new doctors |
| **Alternative Flows:** | None |

**Table 14 show UC-12 (doctor’s profile management)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-13 |
| **Use Case Name:** | search doctor |
| **Actors:** | Receptionist |
| **Description:** | When we want to search for any specific doctor we use it. |
| **Trigger:** | Have to search doctor |
| **Preconditions:** | PRE-1: Patient registration is recorded in the system. |
| **Postconditions:** | POST-1: Doctor is added to the system if it does not exist in the system. |
| **Normal Flow:** | Receptionist enter doctor name  Click on “Search Doctor”  Required doctor will be searched |
| **Alternative Flows:** | none |

**Table 15 show UC-13 (search doctor)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-14 |
| **Use Case Name:** | add doctor |
| **Actors:** | Receptionist |
| **Description:** | If any new doctor joins hospital and he is not registered in the system then it is used |
| **Trigger:** | Details of new doctor should be added |
| **Preconditions:** | PRE-1: Doctor is searched  PRE-2: Doctor does not exist in the system |
| **Postconditions:** | POST-1: Doctor’s details can be shown while searching after adding data of new doctor |
| **Normal Flow:** | Add details of doctor  Click on “Add Doctor” |
| **Alternative Flows:** | None |

**Table 16 show UC-14 (add doctor)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-15 |
| **Use Case Name:** | update doctor experience |
| **Actors:** | Receptionist |
| **Description:** | Doctor experience has been increased |
| **Trigger:** | Have to update doctor’s experience |
| **Preconditions:** | PRE-1: Doctor is already registered  PRE-2: Doctor experience have been increased |
| **Postconditions:** | POST-1: Doctor experience have been updated |
| **Normal Flow:** | Open doctor’s profile  Edit doctor’s experience  Click on “Update Doctor Experience” |
| **Alternative Flows:** | None |

**Table 17 show UC-15 (update doctor experience)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-16 |
| **Use Case Name:** | model implementation |
| **Actors:** | Developers |
| **Description:** | It will train the platform and so that model can be implemented |
| **Trigger:** | To train platform |
| **Preconditions:** | PRE-1:Collection of data in the form of dataset  PRE-2: Select the model for implementation |
| **Postconditions:** | POST-1: Model training started |
| **Normal Flow:** | Select a particular model  Start implementing that model |
| **Alternative Flows:** | None |

**Table 18 show UC-16 (model implementation)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-17 |
| **Use Case Name:** | system update |
| **Actors:** | Developers |
| **Description:** | System is updated to resolve existing loopholes and adding new features |
| **Trigger:** | To apply changings in the system |
| **Preconditions:** | PRE-1: Platform user detect any loophole  PRE-2: Platform user wanted to demand to add new features |
| **Postconditions:** | POST-1: After updating the system user can also use those additional functionalities added.  POST-2: All loopholes will be fixed |
| **Normal Flow:** | Doctor and Patient give feedback  Work on loophole  Add new features  Click on “System Update” |
| **Alternative Flows:** | None |

**Table 19 show UC-17 (system update)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-18 |
| **Use Case Name:** | view site |
| **Actors:** | Developers |
| **Description:** | Developers would be able to view whole site |
| **Trigger:** | Want to have look on site |
| **Preconditions:** | PRE-1: System have been updated |
| **Postconditions:** | POST-1: System is in idle state. |
| **Normal Flow:** | System can be viewed as a whole at a time  Click on “View Site” |
| **Alternative Flows:** | None |

**Table 20 show UC-18 (view site)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-19 |
| **Use Case Name:** | fill questionnaires |
| **Actors:** | Doctor |
| **Description:** | Doctor will fill the questionnaires within the session with the patient |
| **Trigger:** | Get to know the level of PTSD. |
| **Preconditions:** | PRE-1: Patient is appointed to the doctor  PRE-2: Session has been started between patient and doctor |
| **Postconditions:** | POST-1: Save the result  POST-2: Share the result with patient |
| **Normal Flow:** | Patient visit doctor  Doctor ask questions with patient  Doctor fill the questionnaires  Doctor save the result |
| **Alternative Flows:** | None |

**Table 21 show UC-19 (fill questionnaire)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-20 |
| **Use Case Name:** | save results |
| **Actors:** | Doctor |
| **Description:** | Doctor will save result which is generated after model training |
| **Trigger:** | Patient get to know result |
| **Preconditions:** | PRE-1: Doctor fill the questionnaires |
| **Postconditions:** | POST-1: Doctor share the result with the patient |
| **Normal Flow:** | Doctor fill the questionnaires  Click on save result |
| **Alternative Flows:** | Share result with patient |

**Table 22 show UC-20 (save results)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-21 |
| **Use Case Name:** | share results |
| **Actors:** | Doctor, Patient |
| **Description:** | Doctor will share result which is generated after model training |
| **Trigger:** | Patient get to know result |
| **Preconditions:** | PRE-1: Doctor fill the questionnaires  PRE-2: Result is saved by the doctor |
| **Postconditions:** | POST-1: Patient would be able to view his/her report |
| **Normal Flow:** | Doctor fill the questionnaires  Click on save result  Share result with patient |
| **Alternative Flows:** | View saved results on doctors PC. |

**Table 23 show UC-21 (share results)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-22 |
| **Use Case Name:** | select prescription |
| **Actors:** | Doctor |
| **Description:** | After examining result doctor select prescription |
| **Trigger:** | Doctor want to add prescription |
| **Preconditions:** | PRE-1: Result generated from the platform has been saved  PRE-2: Result generated from the platform has been shared to patient |
| **Postconditions:** | POST-1: Prescription has been added |
| **Normal Flow:** | Result have been saved and shared  Prescription will be selected |
| **Alternative Flows:** | Add prescription for the user |

**Table 24 show UC-22 (select prescription)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-23 |
| **Use Case Name:** | add prescription |
| **Actors:** | Doctor |
| **Description:** | Add any new prescription which does not exist earlier |
| **Trigger:** | User want to add new prescription |
| **Preconditions:** | PRE-1: Prescription has been selected |
| **Postconditions:** | POST-1: Added prescription would be viewed. |
| **Normal Flow:** | Result have been saved and shared  Prescription will be selected  New prescription will be added |
| **Alternative Flows:** | View already existing prescription |

**Table 25 show UC-23 (add prescription)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-24 |
| **Use Case Name:** | view prescription |
| **Actors:** | Doctor |
| **Description:** | This will view existing prescription |
| **Trigger:** | User want to view prescription list |
| **Preconditions:** | PRE-1: Prescription is added |
| **Postconditions:** | POST-1: medicine is selected whose directions are added in prescription |
| **Normal Flow:** | Result have been saved and shared  Prescription will be viewed |
| **Alternative Flows:** | Select required medicine |

**Table 26 show UC-24 (view prescription)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-25 |
| **Use Case Name:** | select medicine |
| **Actors:** | Doctor |
| **Description:** | After examining result doctor select medicine |
| **Trigger:** | Doctor want to add medicine |
| **Preconditions:** | PRE-1: Prescription is added  PRE-2: Prescription is viewed |
| **Postconditions:** | POST-1: Medicine is added |
| **Normal Flow:** | Result have been saved and shared  Medicine will be selected |
| **Alternative Flows:** | Add required medicine |

**Table 27 show UC-25 (select medicine)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-26 |
| **Use Case Name:** | add medicines |
| **Actors:** | Doctor |
| **Description:** | Add any new medicine which does not exist earlier |
| **Trigger:** | User want to add new medicine |
| **Preconditions:** | PRE-1: Medicines are selected |
| **Postconditions:** | POST-1: Medicines are viewed |
| **Normal Flow:** | Result have been saved and shared  Medicine will be selected  New medicine will be added |
| **Alternative Flows:** | View existing medicines |

**Table 28 show UC-26 (add medicine)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-27 |
| **Use Case Name:** | view medicines |
| **Actors:** | Doctor |
| **Description:** | This will view existing medicine |
| **Trigger:** | User want to view medicine list |
| **Preconditions:** | PRE-1: medicines are added |
| **Postconditions:** | POST-1: tests are selected |
| **Normal Flow:** | Result have been saved and shared  Medicine will be viewed |
| **Alternative Flows:** | Select required test |

**Table 29 show UC-27 (view medicine)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-28 |
| **Use Case Name:** | select test |
| **Actors:** | Doctor |
| **Description:** | After examining result doctor select test |
| **Trigger:** | Doctor want to add test |
| **Preconditions:** | PRE-1: medicines are viewed |
| **Postconditions:** | POST-1: tests are added |
| **Normal Flow:** | Result have been saved and shared  Test will be selected |
| **Alternative Flows:** | Add required test in existing system |

**Table 30 show UC-28 (select test)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-29 |
| **Use Case Name:** | add test |
| **Actors:** | Doctor |
| **Description:** | Add any test which does not exist earlier |
| **Trigger:** | User want to add new test |
| **Preconditions:** | PRE-1: tests are selected |
| **Postconditions:** | POST-1: tests are viewed |
| **Normal Flow:** | Result have been saved and shared  Test will be selected  New test will be added |
| **Alternative Flows:** | View existing tests |

**Table 31 show UC-29 (add test)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-30 |
| **Use Case Name:** | view test |
| **Actors:** | Doctor |
| **Description:** | This will view existing test |
| **Trigger:** | User want to view test list |
| **Preconditions:** | PRE-1: tests are added |
| **Postconditions:** | POST-1: Patient follow doctor directions |
| **Normal Flow:** | Result have been saved and shared  Test will be viewed |
| **Alternative Flows:** | None |

**Table 32 show UC-30 (view test)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-31 |
| **Use Case Name:** | chat bot |
| **Actors:** | Patient, Doctor |
| **Description:** | Patients can join chat bot to ask the doctor about the queries and can also ask for next session timing and availability of doctor. |
| **Trigger:** | Patients have some query to ask so to communicate he/she will use this chatbot. |
| **Preconditions:** | PRE-1: Patient is already registered  PRE-2: Patient is logged in this platform |
| **Postconditions:** | POST-1: Patient type queries in the chat bot.  POST-2: Query is send to doctor  POST-3: Doctor resolve those queries |
| **Normal Flow:** | Patient caught into some issue  Ask doctor for his/her queries  Doctor guide him/her |
| **Alternative Flows:** | None |

**Table 33 show UC-31 (chat bot)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-32 |
| **Use Case Name:** | Feedback |
| **Actors:** | Doctor, Patient |
| **Description:** | Users decide to give feedback or not on the basis of his/her experience with the platform. |
| **Trigger:** | Allow the users to leave their opinion which will help us to improve any loophole or any other recommendation to improve the features of the platform. |
| **Preconditions:** | PRE-1: Patient and doctor checkup session has completed |
| **Postconditions:** | POST-1: Users will be able share feedback. |
| **Normal Flow:** | After using platform  Patient and doctor have to communicate to resolve queries |
| **Alternative Flows:** | None |

**Table 34 show UC-32 (feedback)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-33 |
| **Use Case Name:** | Help |
| **Actors:** | Hospital Admin, Doctor, Receptionist |
| **Description:** | If any help is required for platform usage this help button will be pressed. |
| **Trigger:** | Unable to use platform |
| **Preconditions:** | PRE-1: if user need any platform related help |
| **Postconditions:** | POST-1: user will get the instructions to resolve his/her problem faced while using platform |
| **Normal Flow:** | User using platform  Face some issue  Issue would be resolved |
| **Alternative Flows:** | None |

**Table 35 show UC-33 (help)**

|  |  |
| --- | --- |
| **Use Case ID:** | UC-34 |
| **Use Case Name:** | Logout |
| **Actors:** | Hospital Admin, Doctor, Receptionist, Patient |
| **Description:** | It will turn off the system |
| **Trigger:** | When required action has been completed |
| **Preconditions:** | PRE-1: user has completed his tasks for which he/she was using this platform |
| **Postconditions:** | POST-1: System would be in idle state |
| **Normal Flow:** | User perform necessary functionalities  System is turned off |
| **Alternative Flows:** | None |

**Table 36 show UC-34 (logout)**

# Functional Requirements

This section describes the functional requirements of the system expressed in the natural language style.

## Functional Requirement

**Table 37: Description of FR-1**

|  |  |
| --- | --- |
| **Identifier** | FR-1 |
| **Title** | Signup |
| **Requirement** | **User perspective**  The user i.e. admin hospital, receptionist, doctor enters username, email, system ID, and password and repeat password.  **System perspective**  If the password is weak, the system shall pop up a notification to enter a complex password with at least 1 numeric value and 1 capital letter.  If the input keys entered are incorrect for e.g., format of system ID i.e., digits, error notification popped up. |
| **Source** | This requirement comes from hospital admin, receptionist, doctor. |
| **Rationale** | To make sure any unknown person other than a doctor does not enter.  To access the web based PTSD predictor. |
| **Dependencies** | All other FR are dependent on FR-1. |
| **Priority** | High |

**Table 38: Description of FR-2**

|  |  |
| --- | --- |
| **Identifier** | FR-2 |
| **Title** | Log in |
| **Requirement** | **user perspective**  After signup, the hospital admin, receptionist and doctor enters the username and password with the respective format given in the web page.  **system perspective**  If typed in the wrong format, the system gives a notification to rewrite it. |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | Only authorized users can access the platform. |
| **Dependencies** | All FR’S except FR-1 are dependent on FR-2. |
| **Priority** | High |

**Table 39: Description of FR-3**

|  |  |
| --- | --- |
| **Identifier** | FR-3 |
| **Title** | create receptionist profile |
| **Requirement** | **user perspective**  Admin hospital creates a receptionist profile which includes their personal details and duties assigned to them.  **system perspective**  The system updates the profile if a new receptionist comes into the job.  system shall pop up notification if details are entered in the wrong format such as cnic, phone no., email etc. |
| **Source** | This requirement comes from the hospital admin. |
| **Rationale** | it will save the record of all the receptionists. |
| **Dependencies** | FR-4, FR-5,-FR-6 |
| **Priority** | Medium |

**Table 40: Description of FR-4**

|  |  |
| --- | --- |
| **Identifier** | FR-4 |
| **Title** | create credentials |
| **Requirement** | **user perspective**  Admin hospital creates credentials i.e. username and password for receptionist.  **system perspective**  system save the credential and give it to the receptionist. The system doesn't give access to receptionists with unknown usernames. |
| **Source** | This requirement comes from the hospital admin. |
| **Rationale** | To keep track to the record of the receptionist and keep an eye on them. |
| **Dependencies** | FR-7, FR-8, FR-9, FR-10, FR-11, FR-12, FR-13, FR-14, FR15 |
| **Priority** | High |

**Table 41: Description of FR-5**

|  |  |
| --- | --- |
| **Identifier** | FR-5 |
| **Title** | update receptionist profile |
| **Requirement** | **user perspective**  If a new receptionist has entered or we have to change any personal details or assigned role for them, an update option is available for that.  **system perspective**  System updates the previous receptionist without creating its new profile. |
| **Source** | This requirement comes from the hospital admin. |
| **Rationale** | it will prevent the system from creating new profiles of the existing receptionist. |
| **Dependencies** | FR-3, FR-4 |
| **Priority** | Low |

**Table 42: Description of FR-6**

|  |  |
| --- | --- |
| **Identifier** | FR-6 |
| **Title** | assign role |
| **Requirement** | **user perspective**  Hospital admin will assign roles like registration, appointment role to the receptionist.  **system perspective**  The receptionist shall not do its task on the system until it is assigned. |
| **Source** | This requirement comes from the hospital admin. |
| **Rationale** | It prevents the receptionist from doing other tasks. |
| **Dependencies** | FR-7, FR-10, FR-12 |
| **Priority** | Medium |

**Table 43: Description of FR-7**

|  |  |
| --- | --- |
| **Identifier** | FR-7 |
| **Title** | add/register Patient |
| **Requirement** | **user perspective**  The receptionist will enter the patient in the system by clicking on registration.  He enters the patient's personal details then.  **system perspective**  system shall pop up notification if details are entered in the wrong format such as cnic, phone no., email etc. |
| **Source** | This requirement comes from the receptionist. |
| **Rationale** | If the receptionist does not enter the patient, appointment can not be taken and PTSD prediction can not be done. |
| **Dependencies** | FR-8, FR-9, FR-10, FR-11, FR-21, FR-31, FR-32 |
| **Priority** | High |

**Table 44: Description of FR-8**

|  |  |
| --- | --- |
| **Identifier** | FR-8 |
| **Title** | view patient |
| **Requirement** | **user perspective**  After the registration of the patient, the receptionist views the patient registration.  **system perspective**  System displays the patient registration after confirming the details. |
| **Source** | This requirement comes from the receptionist. |
| **Rationale** | View the patient's details after registration is done so that the receptionist can make sure no mistake has been done while writing. |
| **Dependencies** | - |
| **Priority** | low |

**Table 45: Description of FR-9**

|  |  |
| --- | --- |
| **Identifier** | FR-9 |
| **Title** | Update patient profile |
| **Requirement** | **user perspective**  The receptionist updates the previous patient profile if they want to change any personal details of the patient.  **system perspective**  system display update button after changes are done by the receptionist. |
| **Source** | This requirement comes from the receptionist. |
| **Rationale** | It saves the receptionist time by not adding the previous patient as a new patient with the required changes. |
| **Dependencies** | FR-4, FR-7 |
| **Priority** | medium |

**Table 46: Description of FR-10**

|  |  |
| --- | --- |
| **Identifier** | FR-10 |
| **Title** | schedule patient’s appointment |
| **Requirement** | **user perspective**  Receptionist shall enter the schedule appointment button to schedule the appointment on the basis of doctor’s availability.  date and time is checked of availability of doctor and is assigned to the patient.  **system perspective**  system shall give a pop up notification of the appointment to the doctor as a reminder. |
| **Source** | This requirement comes from the receptionist. |
| **Rationale** | system will save all the records of the appointments that are scheduled in a day. |
| **Dependencies** | FR- 7, FR-11 |
| **Priority** | high |

**Table 47: Description of FR-11**

|  |  |
| --- | --- |
| **Identifier** | FR-11 |
| **Title** | view appointment |
| **Requirement** | **user perspective**  After scheduling an appointment, the receptionist views the appointment.  **system perspective**  system displays the patient appointment to patient and doctor after confirming the details. |
| **Source** | This requirement comes from the receptionist, patient, doctor. |
| **Rationale** | View the patient's appointment after scheduling is done so that the receptionist can make sure no mistake has been done while writing. |
| **Dependencies** | - |
| **Priority** | low |

**Table 48: Description of FR-12**

|  |  |
| --- | --- |
| **Identifier** | FR-12 |
| **Title** | doctor’s profile management |
| **Requirement** | **user perspective**  The receptionist manages the doctor’s profile which includes their record and their patient’s record.  **system perspective**  - |
| **Source** | This requirement comes from the receptionist. |
| **Rationale** | It will keep an eye on the doctor’s profile and do upgrades. |
| **Dependencies** | - |
| **Priority** | medium |

**Table 49: Description of FR-13**

|  |  |
| --- | --- |
| **Identifier** | FR-13 |
| **Title** | Search doctor |
| **Requirement** | **user perspective**  The receptionist can search the already present doctor to set the appointment of the patient.  **system perspective**  System shall have a search bar option where the doctor's name can be searched. |
| **Source** | This requirement comes from the receptionist. |
| **Rationale** | It is made for the ease of receptionist, it reduces the time of the receptionist to find the doctor name in the long lists. |
| **Dependencies** | FR-15 |
| **Priority** | low |

**Table 50: Description of FR-14**

|  |  |
| --- | --- |
| **Identifier** | FR-14 |
| **Title** | add doctor |
| **Requirement** | **user perspective**  The receptionist will enter the new doctor in the system by clicking on the add doctor button.  He enters the doctor's personal details and qualification then.  **system perspective**  system shall pop up notification if details are entered in the wrong format such as cnic, phone no., email, qualification etc. |
| **Source** | This requirement comes from the receptionist. |
| **Rationale** | If the receptionist does not enter the doctor, appointment can not be taken and PTSD prediction can not be done of the patient. |
| **Dependencies** | FR-19, FR-20, FR-21, FR-22, FR-23, FR-24, FR-25, FR-36, FR-27, FR-28, FR-29, FR-30, FR-31, FR-32 |
| **Priority** | high |

**Table 51: Description of FR-15**

|  |  |
| --- | --- |
| **Identifier** | FR-15 |
| **Title** | update experience |
| **Requirement** | **user perspective**  The receptionist shall enter the upgraded experience or qualification of the doctor afterwards.  **system perspective**  system shall have the option of upgradation every time. |
| **Source** | This requirement comes from the receptionist. |
| **Rationale** | It helps doctors to maintain a good profile and have a good post. |
| **Dependencies** | FR-12 |
| **Priority** | Medium |

**Table 52: Description of FR-16**

|  |  |
| --- | --- |
| **Identifier** | FR-16 |
| **Title** | model implementation |
| **Requirement** | **user perspective**  developers take a data set and implement an ML model on it.  system shall train itself for the PTSD prediction.  **system perspective**  if end results are not accurate, the system shall pop up error notification. |
| **Source** | This requirement comes from the developer. |
| **Rationale** | prediction of PTSD i.e. the main aspect of our project is done by implementing the model. |
| **Dependencies** | FR-20, FR-22, FR-23, FR-25, FR-26, FR-28, FR-29 |
| **Priority** | High |

**Table 53: Description of FR-17**

|  |  |
| --- | --- |
| **Identifier** | FR-17 |
| **Title** | system update |
| **Requirement** | **user perspective**  developers shall update the system time to time to have new features in the web based platform.  **system perspective**  system shall maintain itself and save it from any attack and bugs, notification shall be displayed in case of these. |
| **Source** | This requirement comes from the developer. |
| **Rationale** | It prevents cyber-attacks and bugs in the system. |
| **Dependencies** | Nil |
| **Priority** | Medium |

**Table 54: Description of FR-18**

|  |  |
| --- | --- |
| **Identifier** | FR-18 |
| **Title** | view site |
| **Requirement** | user perspective  developers shall view the whole site of the platform but can not edit anything.  system perspective  system shall detect if any unusual activity is going on the platform such as texts in chatbot. |
| **Source** | This requirement comes from the developer. |
| **Rationale** | It is necessary for safety purposes. |
| **Dependencies** | Nil |
| **Priority** | Low |

**Table 55: Description of FR-19**

|  |  |
| --- | --- |
| **Identifier** | FR-19 |
| **Title** | fill questionnaires |
| **Requirement** | **user perspective**  The doctor fills the Q/A form after communicating with the patient in the meeting.  **system perspective**  system shall pop up ‘fill the box’, if any question is left un attempted |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | It helps the doctor to detect PTSD in the patient by showing the results. |
| **Dependencies** | FR-20, FR-22, FR-25, FR-28 |
| **Priority** | High |

**Table 56: Description of FR-20**

|  |  |
| --- | --- |
| **Identifier** | FR-20 |
| **Title** | save results |
| **Requirement** | **user perspective**  the doctor saves results by clicking on the button.  The result show the level of PTSD the patient has or if there are no PTSD symptoms.  **system perspective**  system shall display saved messages on the screen to confirm that results are saved. |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | saving the PTSD record of the patient is necessary for future checkups of patients. |
| **Dependencies** | FR-21 |
| **Priority** | High |

**Table 57: Description of FR-21**

|  |  |
| --- | --- |
| **Identifier** | FR-21 |
| **Title** | share results |
| **Requirement** | **user perspective**  The doctor shares results with the patient.  **system perspective**  If patient can not view the results, he can refresh the web platform. |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | patient should view his/her PTSD results. |
| **Dependencies** | Nil |
| **Priority** | Medium |

**Table 58: Description of FR-22**

|  |  |
| --- | --- |
| **Identifier** | FR-22 |
| **Title** | select prescription |
| **Requirement** | **user perspective**  The doctor checks the check boxes in which different prescriptions are written for the patient.  **system perspective**  system shall display all the prescriptions and view prescriptions to the patient checked by the doctor. |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | It saved the doctor time and helped him to prescribe things on the platform instead of writing on the paper. |
| **Dependencies** | FR-20 |
| **Priority** | Medium |

**Table 59: Description of FR-23**

|  |  |
| --- | --- |
| **Identifier** | FR-23 |
| **Title** | add prescription |
| **Requirement** | **user perspective**  a doctor can prescribe any other thing that is not present in the check box list and is necessary for the patient.  **system perspective**  system shall display “other:\_\_\_” option for doctor to prescribe something. no error will be generated if not filled. |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | a doctor can add his/her prescription too. |
| **Dependencies** | FR-20 |
| **Priority** | Medium |

**Table 60: Description of FR-24**

|  |  |
| --- | --- |
| **Identifier** | FR-24 |
| **Title** | view prescription |
| **Requirement** | **user perspective**  The doctor views the prescription list and then it will be displayed to the patient.  **system perspective**  system shall display an “ok” button to confirm the list before the patient can view it. |
| **Source** | This requirement comes from the doctor, patient. |
| **Rationale** | the patient and doctor can view the list. |
| **Dependencies** | FR-22, FR-23 |
| **Priority** | Low |

**Table 61: Description of FR-25**

|  |  |
| --- | --- |
| **Identifier** | FR-25 |
| **Title** | select medicine |
| **Requirement** | **user perspective**  The doctor checks the check boxes in which different medicines are written for the patient.  **system perspective**  system shall display all the medicines and view medicines to the patient checked by the doctor. |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | It saved the doctor time and helped him to prescribe medicines on the platform instead of writing on the paper. |
| **Dependencies** | FR-20 |
| **Priority** | Medium |

**Table 62: Description of FR-26**

|  |  |
| --- | --- |
| **Identifier** | FR-26 |
| **Title** | add medicines |
| **Requirement** | **user perspective**  a doctor can add any other medicine that is not present in the check box list and is necessary for the patient.  **system perspective**  system shall display “other:\_\_\_” option for the doctor to add any other medicine.  no error will be generated if not filled. |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | doctor can add his/her medicine too. |
| **Dependencies** | FR-20 |
| **Priority** | Medium |

**Table 63: Description of FR-27**

|  |  |
| --- | --- |
| **Identifier** | FR-27 |
| **Title** | view medicine |
| **Requirement** | **user perspective**  The doctor views the medicine list and then it will be displayed to the patient.  **system perspective**  system shall display an “ok” button to confirm the list before the patient can view it. |
| **Source** | This requirement comes from the doctor, patient. |
| **Rationale** | the patient and doctor can view the list. |
| **Dependencies** | FR-25, FR-26 |
| **Priority** | Low |

**Table 64: Description of FR-28**

|  |  |
| --- | --- |
| **Identifier** | FR-28 |
| **Title** | select test |
| **Requirement** | **user perspective**  The doctor checks the check boxes in which different tests are written for the patient.  **system perspective**  system shall display all the tests and view tests to the patient checked by the doctor. |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | It saved the doctor time and helped him to prescribe tests on the platform instead of writing on the paper. |
| **Dependencies** | FR-20 |
| **Priority** | Medium |

**Table 65: Description of FR-29**

|  |  |
| --- | --- |
| **Identifier** | FR-29 |
| **Title** | add test |
| **Requirement** | **user perspective**  a doctor can add any other test that is not present in the check box list and is necessary for the patient.  **system perspective**  system shall display “other:\_\_\_” option for the doctor to add any other test.  no error will be generated if not filled. |
| **Source** | This requirement comes from the doctor. |
| **Rationale** | a doctor can add his/her test too. |
| **Dependencies** | FR-20 |
| **Priority** | Medium |

**Table 66: Description of FR-30**

|  |  |
| --- | --- |
| **Identifier** | FR-30 |
| **Title** | View test |
| **Requirement** | **user perspective**  The doctor views the test list and then it will be displayed to the patient.  **system perspective**  system shall display an “ok” button to confirm the list before the patient can view it. |
| **Source** | This requirement comes from the doctor, patient. |
| **Rationale** | the patient and doctor can view the list. |
| **Dependencies** | FR-28, FR29 |
| **Priority** | Low |

**Table 67: Description of FR-31**

|  |  |
| --- | --- |
| **Identifier** | FR-31 |
| **Title** | Chatbot |
| **Requirement** | **user perspective**  a patient can ask any query related to consultation via chatbot.  **system perspective**  if any foul language is used, the system shall block/report the patient.  if used by the doctor, it shall be taken in notice. |
| **Source** | This requirement comes from the doctor, patient. |
| **Rationale** | a patient can ask a query anytime after the live session with the doctor. |
| **Dependencies** | Nil |
| **Priority** | Low |

**Table 68: Description of FR-32**

|  |  |
| --- | --- |
| **Identifier** | FR-32 |
| **Title** | Feedback |
| **Requirement** | user perspective  the doctor and patient provide feedback after the consultation.  system perspective  system shall display feedback as a start rating and a textual box to the respective actor i.e. doctor and patient after the checkup to improve the system. |
| **Source** | This requirement comes from the doctor, patient. |
| **Rationale** | It helps to improve the system and communication. |
| **Dependencies** | Nil |
| **Priority** | Medium |

**Table 69: Description of FR-33**

|  |  |
| --- | --- |
| **Identifier** | FR-33 |
| **Title** | Help |
| **Requirement** | user perspective  hospital admin, receptionist and doctor can see help instructions if they find it difficult to use the platform.  system perspective  The help button is displayed, so that if there is any query about how to use the system, it can be looked at from the instructions that will be displayed on the screen after clicking. |
| **Source** | This requirement comes from the hospital admin, receptionist and doctor. |
| **Rationale** | it provides ease in the usage of the platform. |
| **Dependencies** | Nil |
| **Priority** | Low |

**Table 70: Description of FR-34**

|  |  |
| --- | --- |
| **Identifier** | FR-34 |
| **Title** | Logout |
| **Requirement** | user perspective  all users should log out from the platform after using it.  system perspective  system shall be in idle state after clicking on ‘logout’ button. |
| **Source** | This requirement comes from the hospital admin, receptionist, doctor, and patient. |
| **Rationale** | for security purposes, so that any other user can not use your laptop, PC in your absence. |
| **Dependencies** | High |
| **Priority** | FR-2 |

# Non-Functional Requirements

This section outlines the nonfunctional requirements other than limitations, which are listed in section 2.3, and the requirements for external interfaces, which are listed in section 7. These standards for quality have to be precise, quantifiable, and testable. More details regarding these quality characteristic criteria are provided in the chapter "beyond functionality," along with several examples. The examples of documentation guidelines are as follows:

## Reliability

As the algorithm is pre-developed, the application is likely to not fail. No definition of failure is currently known and no mean time between failures is recognized.

**SRS01 Availability**

The system shall be available all the time

## Usability

Usability requirements deal with ease of learning, ease of use, error avoidance and recovery, the efficiency of interactions, and accessibility. The usability requirements specified here help the user interface designer create the optimum user experience.

*USE-1: The PTSD detection tool allows a patient to access his previous medical history with a single interaction.*

*USE-2: Help button is there so doctors can use the web page easily.*

*USE-3: The web page provides a uniform look and feel between all the web pages.*

*USE-4: The web page provides a user-friendly interface.*

*USE-5: database will maintain all of the information even of the patients who are no more patients.*

*USE-6: The admin would be able to approve new users*

*USE-7: The admin would be able to approve new users*

## Performance

**SRS02 Response Time**

The system shall give responses in 1 second after checking the patient’s information.

**SRS 03 Capacity**

The System must support 1000 people at a time.

**SRS04 User-interface**

The user-interface screen shall respond within 5 seconds.

**SRS05 Conformity**

The systems must conform to the Microsoft Accessibility guideline

## Security

The system is being built on Android and Firebase database systems. It will have all the built-in security and protection provided by both Android OS and Firebase. No external security, such as physical firewalls or software protection is being used in the system.

**STS06 Patient identification**

The system requires the patient to identify himself/herself using login credentials

**SRS07 Login ID**

Any user who uses the system shall have a login ID and Password

**SRS08 Modification**

Any modification (insert, delete, update) for the Database shall be synchronized and done only by the administrator

**SRS09 Front Desk staff Rights in the ward.**

Front Desk staff shall be able to view all information in the hospital's database, add new patients to hospitals database but shall not be able to modify any information in it.

**RS010 Administrators' Rights**

Administrators shall be able to view and modify all information in hospital’s database

## Maintainability

**SRS011 Backup**

The system shall provide the capability to back-up the Data

**SRS012 Errors**

The system shall keep a log of all the errors

# External Interface Requirements

This section provides information to ensure that the system communicates properly with users and with external hardware or software elements. A complicated system with several subcomponents should have its own interface or system architectural standard.

## User Interfaces Requirements

Post-Traumatic Stress Disorder (PTSD) Prediction and consultation system uses a web-based platform mainly a customized application which is accessed by only authorized hospitals to detect the trauma level. This helps in proceeding towards the cure of PTSD.

The user interface is a fundamental part of every software, hardware, or hybrid system (UI). The ease of use of the product is the main factor influencing user adoption. Only the user interface of this system may be understood by users. The following are our application's user interface and logistical features.

### 6.1.1 Simple interface

The user experience for our programme is straightforward and engaging. The software doesn't use a lot of graphics, and each screen has a consistent user interface (UI) with carefully placed text views, edit messages, buttons, photos, and icons.

### 6.1.3 Display

PTSD prediction tool, statistics of the symptoms detected in patients and results.

### 6.1.4 Buttons

Login, signup, forget password, enter data, predict and help on how to use the platform.

Every screen has buttons, each having a distinct function and purpose. Every button has a function and may be clicked. After confirming that all of the given information is accurate and in the right format, clicking the Signup button registers the user.

The login button verifies in the database that the user has provided the right credentials before allowing access to the application.

## Software interfaces

The software interface can be the application which is used to interact with users which can be a doctor or hospital administration. The tools which can be used for the development of this application in prediction of PTSD are Jupiter notebook, etc. We can download them from the internet for research and development. Many of them may be free and many may not. We use the one which would be best suitable for us and easy to understand because this is a completely new thing which we are going to explore more and more for its better understanding. In case of a subscription plan, we request the university to help us with it or we can manage it by ourselves too.

SI-1: *PTSD Predictor*

## Hardware interfaces

We are building up a Software, there are no such Hardware Interface requirements for our project.

The only Hardware we’ll be needing are:

i) A GPU required to train the deep learning model. Google CoLab or a Physical GPU that supports CUDA (minimum Nvidia GTX 1050 ti) is required.

ii) Around 10iGB Storage to store dataset, required for training and displaying on the website. A scalable database storage that expands as the user base grows.

iii) We use a laptop, personal computer or similar device for this application. Device should have a RAM of 8GB, an SSD card for better performance and speed, and if anyone has a GTX NVIDIA graphics card then it’s also beneficial.

iv) All of these components are available in the market. There are different prices but we can also get this type of laptop for about Rs.90000 minimum but its maximum price can go up to 300, 000.

## Communications interfaces

A good quality internet is a basic requirement which helps to run the application. The communication standards used for this application are HTTP, FTP and SMTP.

*CI-1: The Communication Interface we are using will send a user a verification email with a verification code on his email address whether he is trying to create an account on our website.*

*This will ensure no third person is trying to register using anyone else’s email.*

## Workload Division

**Table 71: Description of workloads**

|  |  |
| --- | --- |
| **Student Reg #** | **Use Cases** |
| 191389 | UC 2, UC 4, UC 7, UC 12, UC 16, UC 18, UC 21, UC 22, UC 25, UC 28, UC 31 |
| 191390 | UC 1, UC 5, UC 8, UC 11, UC 13, UC 15, UC 19, UC 23, UC 26, UC 29, UC 32, UC 35 |
| 191379 | UC 3, UC 6 ,UC 9, UC 10, UC 14, UC 17, UC 20, UC 24, UC 27, UC 30, UC 33, , UC 34 |

# References

Lyda M.S. Lau, Jayne Curson, Richard Drew, Peter Dew and Christine Leigh, (1999), Use Of VSP Resource Rooms to Support Group Work in a Learning Environment, ACM 99, pp-2. **(Journal paper example)**

Hideyuki Nakanishi, Chikara Yoshida, Toshikazu Nishmora and TuruIshada, (1996), FreeWalk: Supporting Casual Meetings in a Network, pp 308-314 **(paper on web)** http://www.acm.org/pubs/articles/proceedings/cscw/240080/p308-nakanishi.pdf

Ali Behforooz& Frederick J.Hudson, (1996), Software Engineering Fundamentals, Oxford University Press. Chapter 8, page 255-235. **(book reference example)**

Page Author, Page Title, http://www.bt.com/bttj/archive.htm, Last date accessed**. (web site)**

Schultebraucks, Katharina, Vijay Yadav, Arieh Y. Shalev, George A. Bonanno, and Isaac R. Galatzer-Levy. "Deep learning-based classification of posttraumatic stress disorder and depression following trauma utilizing visual and auditory markers of arousal and mood." *Psychological Medicine* 52, no. 5 (2022): 957-967. (**Base research paper**)