BATCH 12

VOICE BASED E-MAIL SYSTEM FOR BLIND PEOPLE

Software Design Document

By:

Pradeep - 19z338
Sanjai - 19z344
Venkata Gowtham - 19z360
Chandraprakash - 20z461
Mukesh – 20z462

Date: 08/03/2021

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1. INTRODUCTION

1.1 Purpose

The purpose of this Software Design Document is to provide a description of the design of a voice-based email system for blind people fully enough to allow for software development to proceed with an understanding of what is to be built and how it is expected to build.

1.2 Scope

The voice-based email system for blind people is mainly designed on the scope of providing the platform for the blind people to work with the existing e-mail system with different type of interface instead of working with the regular GUI concept.

1.3 Overview

This document first describes about the system architecture and the functionality of system, modules then followed by how the data is converted, stored and maintained in the system and the systematically code view of the functionality and component of the system. Finally the user interface design and description of the design

2. SYSTEM OVERVIEW

This system provides the interface which we can interact using the voice command. Receives the user credential and use the voice command to authenticate the user. Notifies the user current page or position that the user currently working with. After providing the e-mail contents and requirement the command is issued uses the SMTP protocol and the e-mail delivered through the SMTP server. Speech synthesis and voice recognition is used to implement the above functionality. system listens whether the new mail is received or not if any mail is received then the system notifies the user and read it out for the user

3. SYSTEM ARCHITECTURE

3.1 Architectural Design

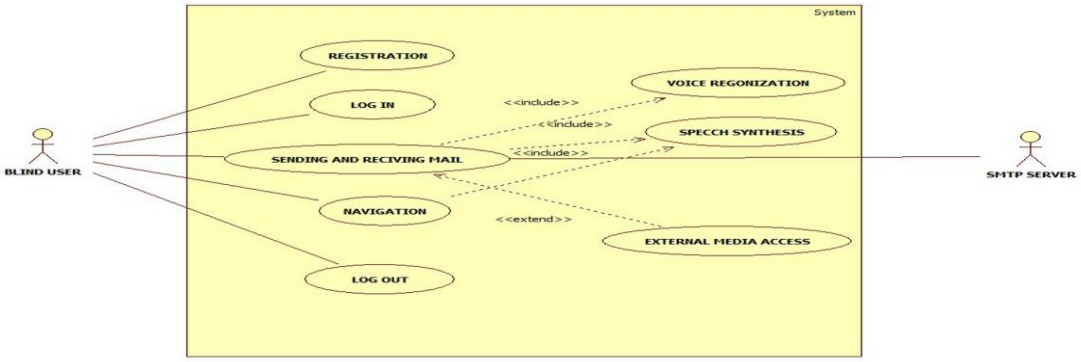

Fig 1: use-case diagram

First the blind user needs to registration the registration is taken care by the registration module. after successful registration the user need to login using provided user name password if the authentication is successful then the user is directed to the dashboard from here the user move to different page based on the action that the user need to perform. If the user needs to send or receive mail then the appropriate command is issued then the user is directed to the appropriate page. While moving from one page to other system notify the user about the current working page using the speech synthesis. In sending mail if the user needs to upload some file or data along with content of mail while composing the mail for this system provide the facility to access the external media file. When the new mail is sent to the user system receive the mail and inform that the new mail is received to the user and read out the mail details like from address, subject and content of mail. After completing the required task user can switch back to dashboard by using the appropriate command.

3.2 Decomposition Description

Registration:

This function enables the users to register with the application. It allows the user to fill in the required details. If the details authenticate then the system permits to create account. If the user is already registered. The user can directly login.

Log-in:

This function enables the users to log in the application. It allows the user to fill in the required details. Then it checks the given details if the given details match then permit the user to the dashboard. If the details provide by the user doesn't match then the system request the user to enter the correct details.

voice recognition:

This function provides the ability to the system to get the input in audio format. The audio input is given to the recognition engine it converts the audio input in to the digital data.

speech synthesis:

This function enables the system to interact with user using the artificial humanoid voice. The data or the output data is generated into the audio output.

Navigation:

This function notifies the user about the current working page. When the user move from one page to other the system indicate the user about their current page.

external media access:

This function enable the user to attach external data to mail. when the user needs to send some data which are not able to specify in content of mail this function

sending and receiving mail:

This function provides the facility of sending and receiving the mail using voice command to the user. The user needs to provide the credential for sending e-mail like recipient e-mail id and e-mail content. To receive the e-mail also the user needs to provide the credential like e-mail id and password. If there is any error in sending or receiving the email the system notifies user about the error using speech synthesis.

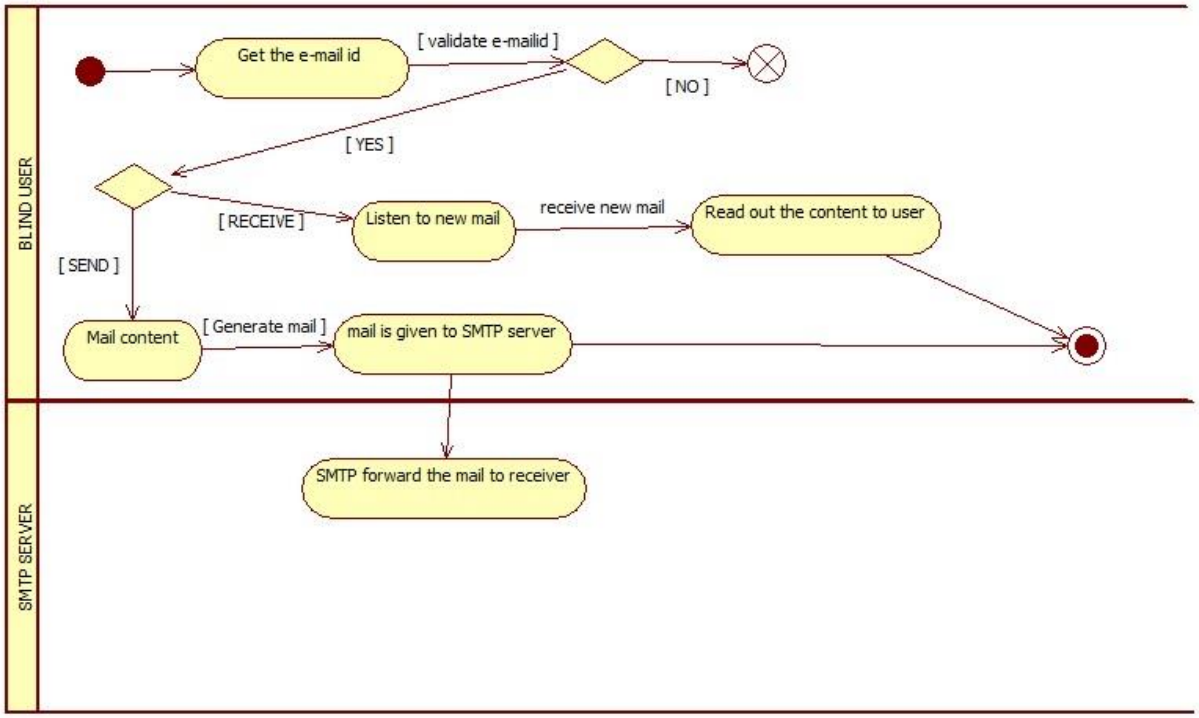

Fig 2: sending and receiving mail

4. DATA DESIGN

4.1 Data Description

The input data is taken in audio format and then the data is given to the speech recognition engine the SRE convert the audio input into digital data using the generated digital the system identifies the command. In term of speech synthesis, the digital need to provide to user is converted into audio format using artificial human voice. MSQL is used to store the authentication details and later restive it. The authentication data base is maintained locally in the system itself.

4.2 Data Dictionary

Registration: requires the user details to generate user name and password and provide the authentication details
Log-in: requires authentication details to permit the user
voice recognition: receives the input in audio format and convert it into digital data
speech synthesis: receives the digital input and convert it into audio output.
Navigation: on particular event gives audio output to user
sending and receiving mail: uses the voice recognition function and speech synthesis function to provide the facility to send and receive email using voice command

5. COMPONENT DESIGN

Speech Recognition:

The package or class used to implement speech recognition is System.speech.recognition. first we need to create a object for the class. Then using the object we can access the functions of the class

Syntax:

SpeechRecognitionEngine object_name = new SpeechRecognitionEngine();

Function for getting input audio and convert it into digital or sting date is RecognizeAsync.

Syntax:

Object_name.RecognizeAsync(RecognizeMode.Multiple);

Using the generated digital or string data we perform varies operation. We treat the string as command and perform apportion.

Speech synthesis:

The package or class used to implement speech recognition is System.Speech.Synthesis. first we need to create a object for the class. Then using the object we can access the functions of the class.

Syntax:

SpeechSynthesizer object_name = new SpeechSynthesizer();

Function used for generating the artificial human voice and convey the message to blind user is SpeakAsync.

Syntax:

Object_name.SpeakAsync("message need to convey to user");

6. HUMAN INTERFACE DESIGN

6.1 Overview of User Interface

There is only one user interface:

- Blind user interface

Blind user interface

The Blind user interface should contain all the features:

1. User login - This is the starting point of the system here there is two field to provide user name and password and the voice command is used for authentication

2. User navigation - When the user switches from one page to other the system need to indicate the current page.
3. Composing new mail – Here there is specific fields provided for receiver mail id and the content of the mail. The mail generation take place within the system boundary only the forwarding of the mail is given to the SMTP server.
4. Attaching external media – While composing the mail if there is the content or data which is not able specify in the content field then there is the facility for uploading the external media file from the system.
5. Receiving mail – Here there should be specific field for user's mail id and then the fields for user authentication and to provide the received mail content.

6.2 Screen Images

Science the scope of the system is to provide the interface for the blind user where they can operate and interact using voice command. So the GUI design is minimal in this system.

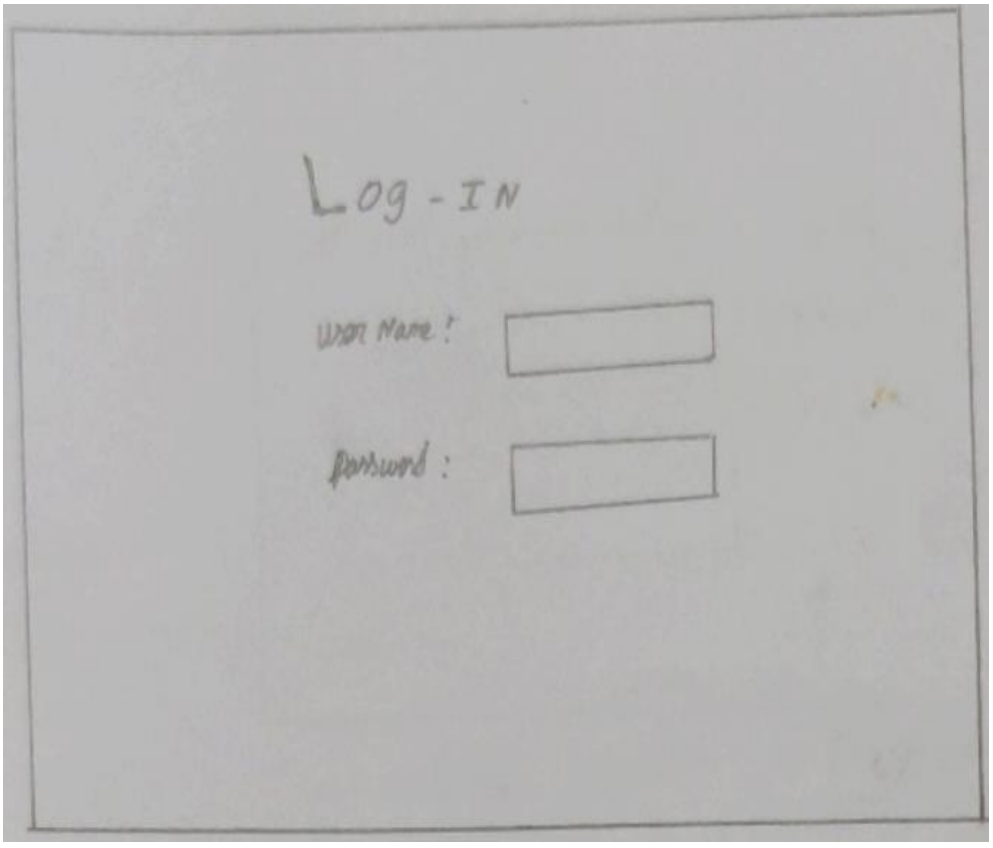

Fig 3: log-in page

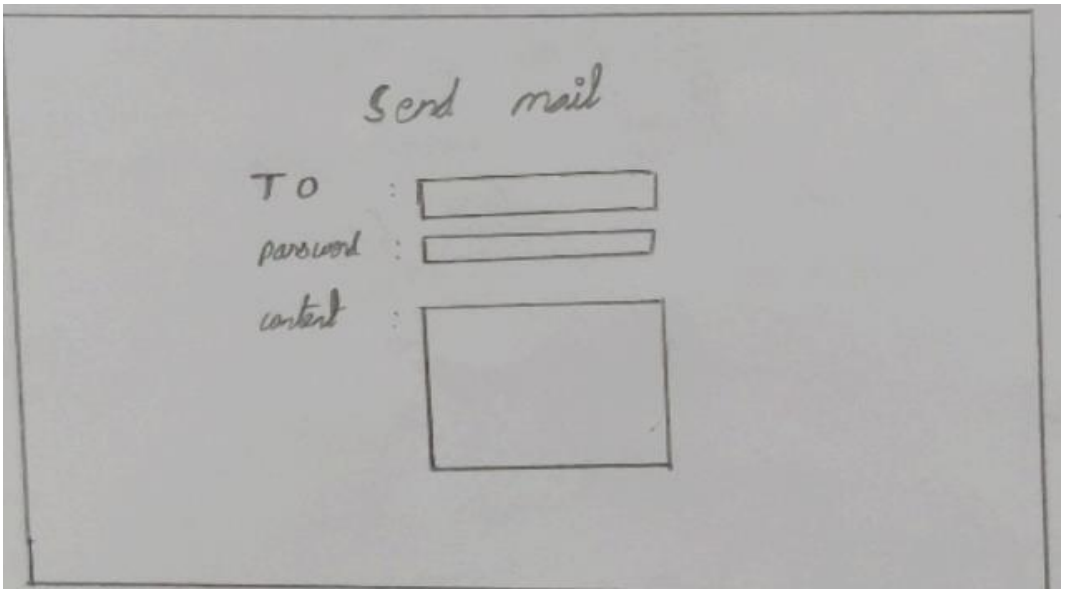

Fig 4: mail compose page

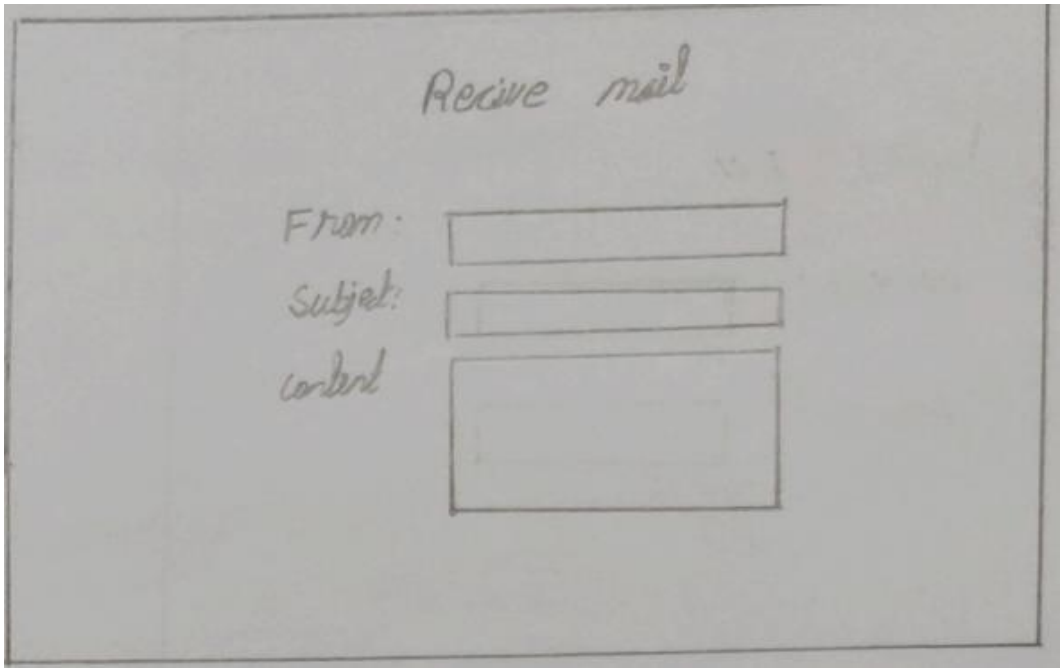

Fig 5: mail receive page

6.3 Screen Objects and Actions

Log-in page:

In this page there is two text box which is used to hold or get the username and password for authentication the operation is handled using voice command.

Mail compose page:

In this page there are three field one is for the receiver address and other two is for the password and the content of the mail. Like log-in page the operation are done by using voice command.

Mail receive page:

This page also contains three field one is for mail address of the user who like or need to check the mail. And other two fields are to display the subject and content of the mail.

7. REQUIREMENTS MATRIX

FUNCTIONAL REQUIREMENT	SYSTEM COMPUNENT WHICH STATISFYES THE REQUIREMENT
Authentication	Authenticating the user is taken care log-in module
Navigation	Notifying the user about their current working page is done by using the speech synthesis component.
Speech synthesis	The automated human voice generation and convert the given message is handled by SpeechSynthesizer().
Voice recognition	The component used to convert the input voice command into digital data is handled by SpeechRecognitionEngine().
Sending and Receiving mail	The component responsible for sending and receiving mail uses the both voice recognition and speech synthesis to done the given task and it use mailing component to done mail related operation.
External media access	It is the additional functionality of the composing module which is used to upload the external media or data file.