INTERNATIONAL CONFERENCE ON FUTURISTIC TECHNOLOGIES
(INCOFT 2022)

Implementation of Voice Based E-Mail System for Visually Challenged

Paper ID: 253

BHAVANI V PATIL

R V College of Engineering,Bangalore

Contents

1. Introduction
2. Proposed Methodology of voice based e-mail system for visually challenged
3. Implementation of voice based e-mail system for visually challenged
4. Results of voice based e-mail system for visually challenged
5. Conclusion
6. Future-Scope
7. References

Introduction

- Communication has become so easy in today's world due to integration of communication technologies with internet.

- And out of all methods available email is one of the most common forms of communication especially in the business world.

- Offering a quick and easy sharing of ideas of information .

- Provides a sense of privacy as the access to ones account is restricted .
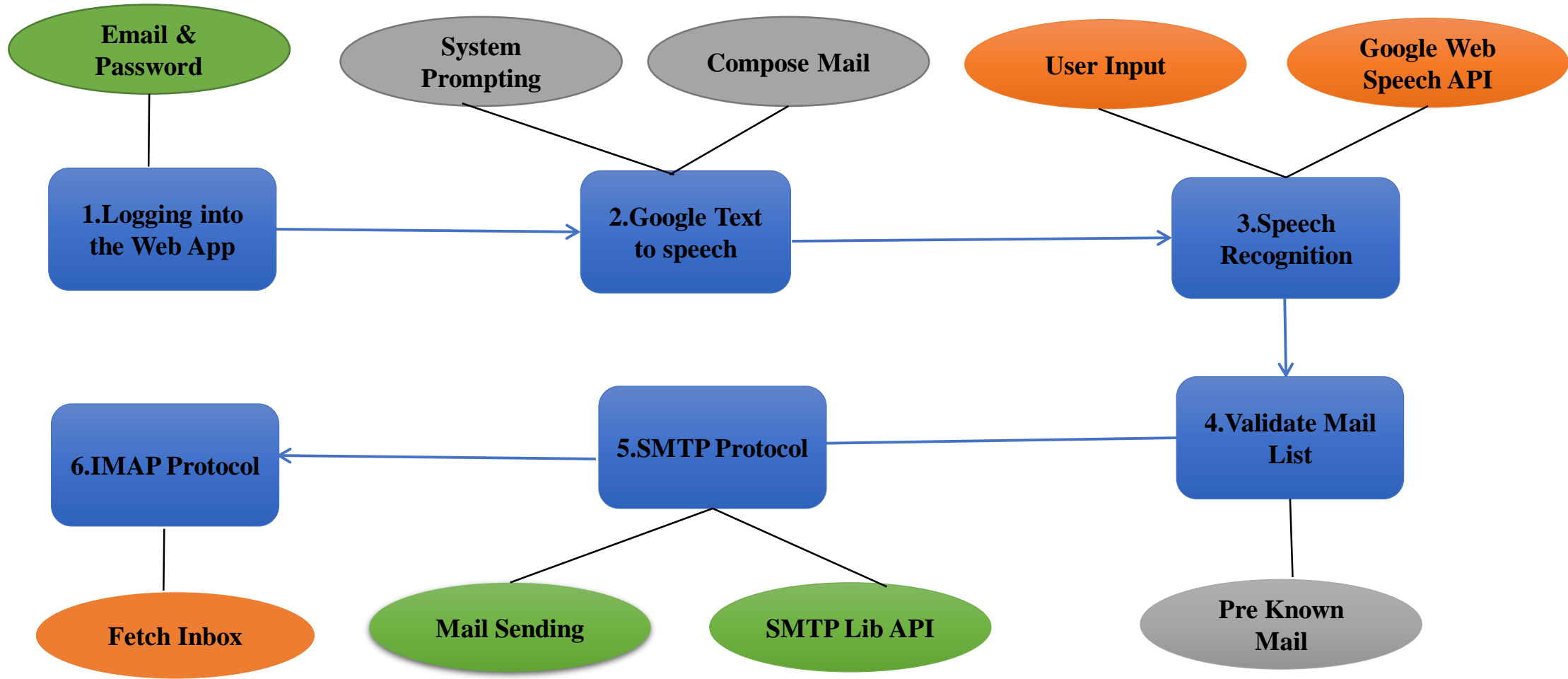
Proposed Methodology

Figure 1 :Work Flow of of voice based e-mail system for visually challenged
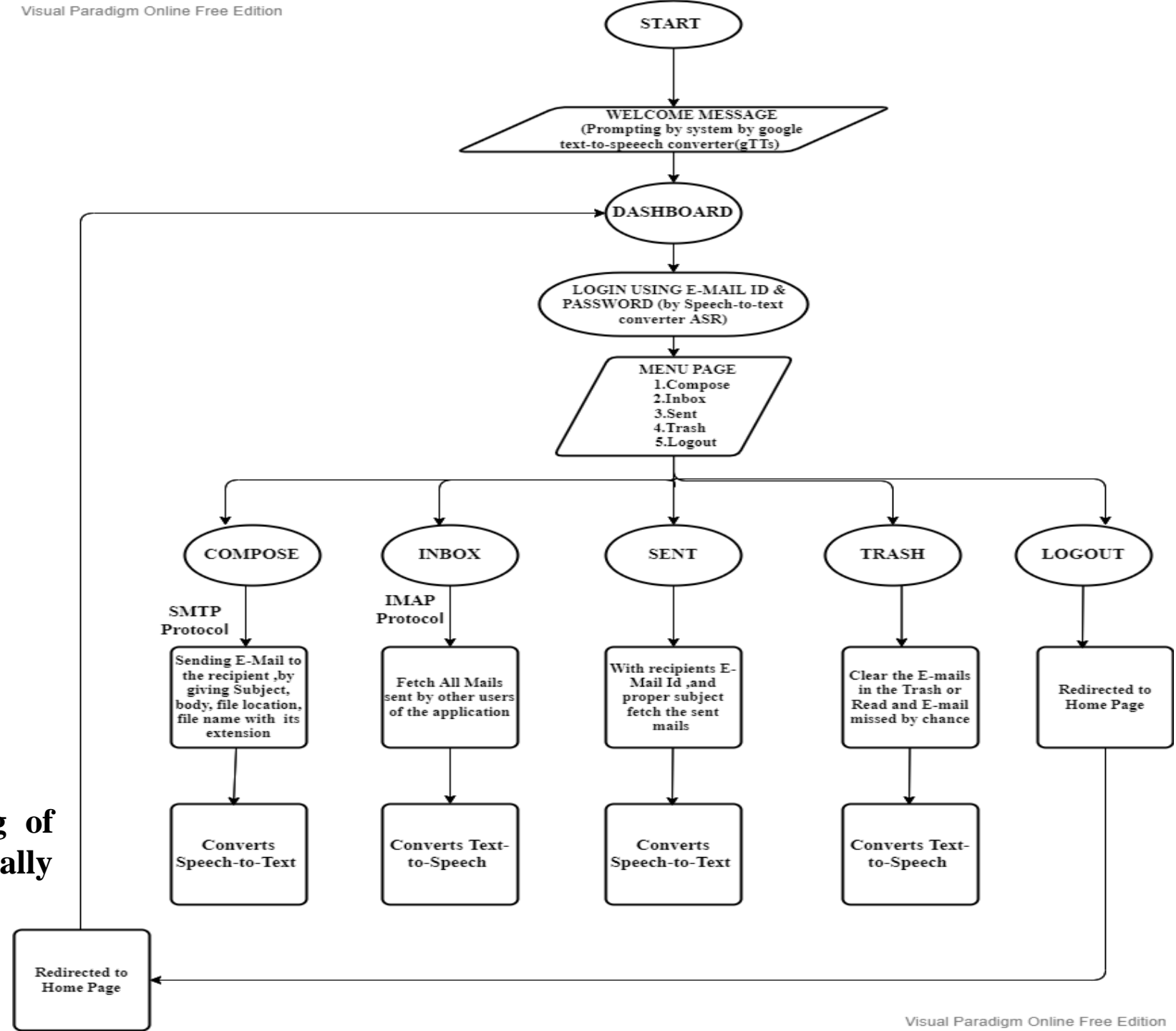
The Workflow of the System goes as follows:

Figure 2: Flow Chart on the working of voice based E-Mail system for visually cahllenged

The work flow of the system goes as follows:

•**Login:** This is the very first page and will ask user to enter login credentials. It will prompt user with voice command to enter user name.

After receiving user name it will prompt again for password. If valid, then user will be redirected to dashboard else will be sent back to login page.

•**Dashboard:** After successful login, user will be redirected to this page and this is the main page from where user can perform all the activities like, compose a new mail, check inbox, save to draft etc.

The Hardware and Software Specifications are :

H/W System Configuration:-

Processor   -   Dual Core

Speed   -   1.1 G Hz

RAM   -   4 GB (min)

Hard Disk   -   20 GB

S/W System Configuration:-

 Operating System   : Windows xp,7,8

Language(Backend): Python

Frontend   :   HTML, CSS,JS

 IDLE   :   Python 3.10

Framework   :   Django

Environment   :   Visual Studio Code

Tools Used: Apache HTTP Server, PHP for handling backend of web interface, HTML and CSS and JS for creating Web based UI, Google Speech-to-text and text-to-speech APIs.

Implementation:

1.Django Framework: It is used here for the Integration of Both Front-End and Back-End tools for the development of an interactive Web-Application.

Django is based on MVT (Model-View-Template) architecture. MVT is a software design pattern for developing a web application.
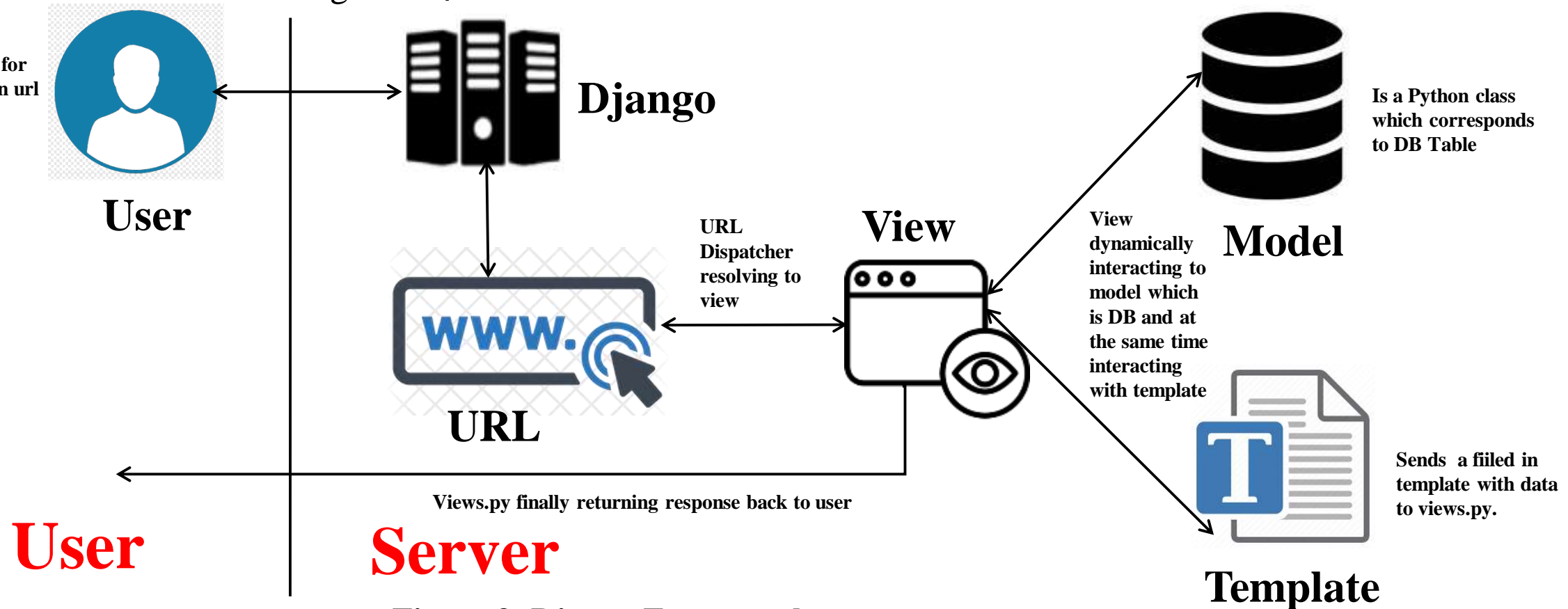
MVT Structure has the following three parts –

User requesting for
a website with an url

Django

User

URL
Dispatcher
resolving to
view

View

Is a Python class
which corresponds
to DB Table

Model

View
dynamically
interacting to
model which
is DB and at
the same time
interacting
with template

URL

User **Server**

Views.py finally returning response back to user

Sends a fiiled in
template with data
to views.py.

Template

Figure 3: Django Framework

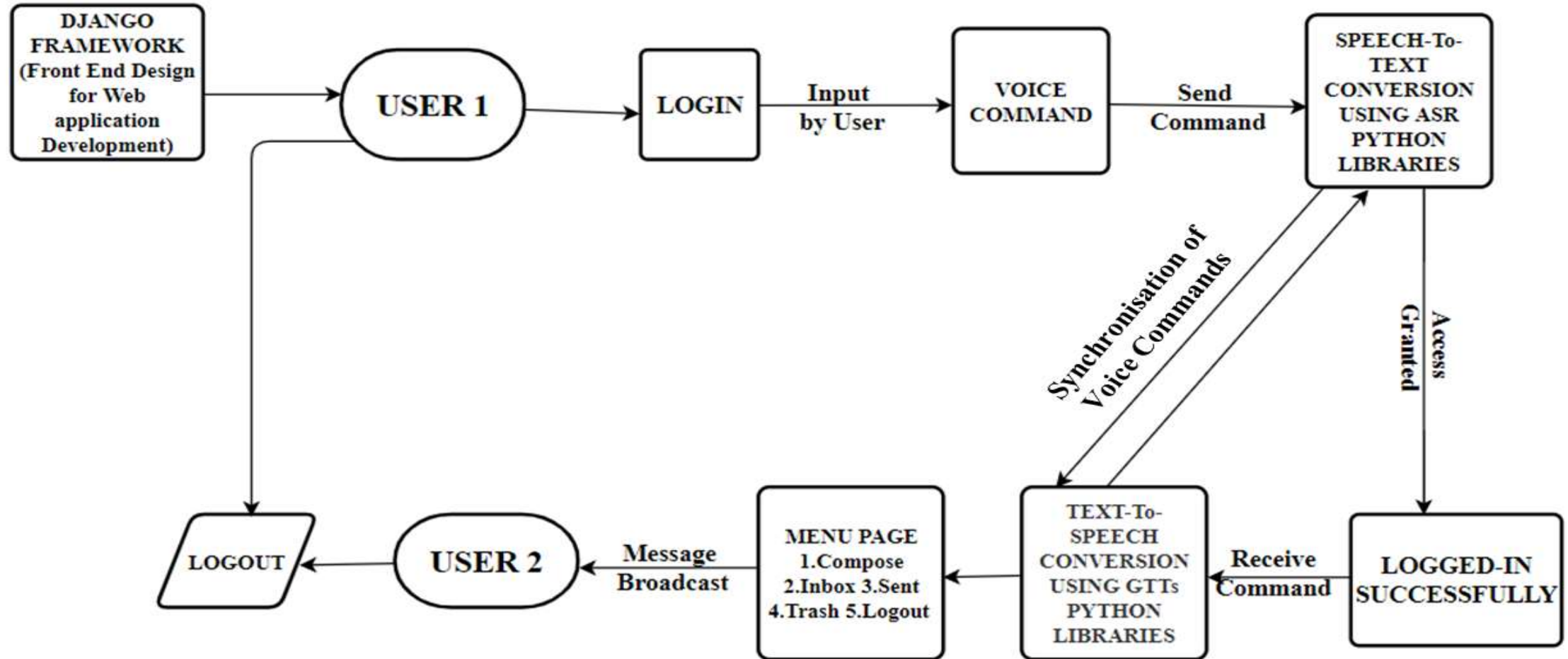## 2.Data Flow Daigram Of Voice Based EMail:

Figure 4: Data flow Diagram of Voice based E-mail for visually Challenged

3. Text-to-Speech Converter Module:

API to convert text-to-Speech is the Google Text to Speech API commonly known as the gTTS API.

gTTS is a very easy to use tool which converts the text entered, into audio which can be saved as a mp3 file.

The gTTS API supports several languages including English, Hindi, Tamil, French, German and many more.

4. Speech-to-Text Converter Module:

Speech recognition system or Speech-to-text converter basically translates spoken languages into text.

This is done with the help of the "Speech Recognition" API and "PyAudio" library.

Here Google speech recognition API is used and installing using python library.
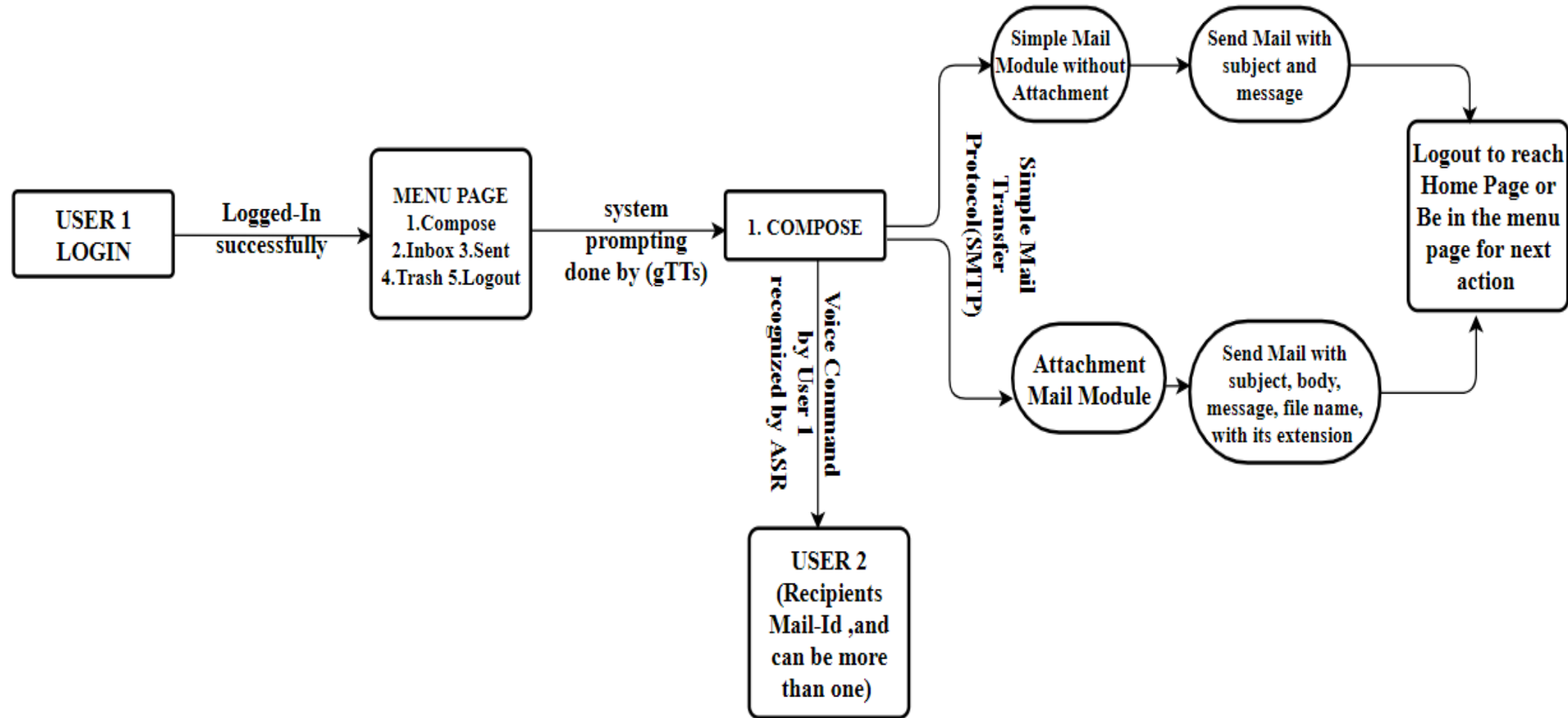
5. Composing an E-Mail:

Figure 5: Data Flow Diagram of Composing and E-Mail

For Composing an E-Mail the steps are:

1. Set up a G-Mail account with an app generated password by enabling 2-step verification method.

2. Import standard email and smptlib packages.

3. Define an email message object as MIME(Multipurpose Internet Mail Extensions).
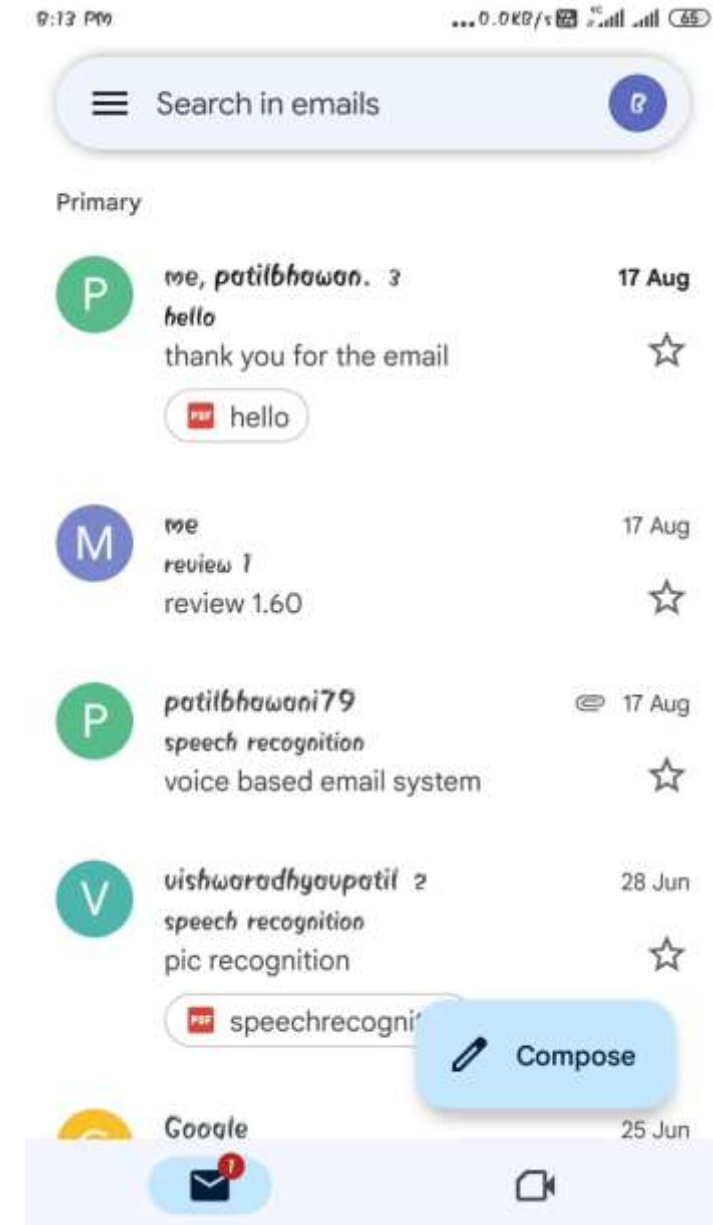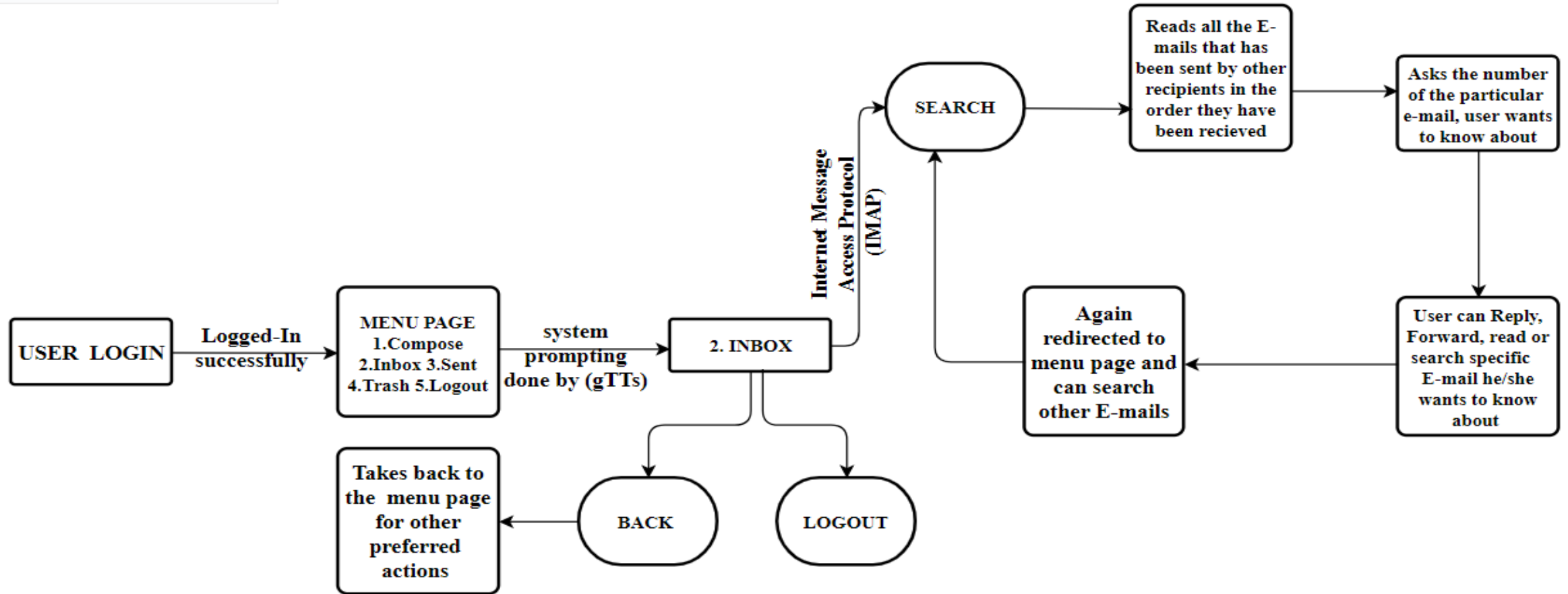

Figure 6 :App generated password snapshot

Figure7 :E-Mail Composed Snapshot

6. Fetching Mails from the Inbox E-Mail:

The protocol used for accessing the E-mails from the inbox is: **Internet Message Access Protocol (IMAP).**

Figure 8: Data Flow Diagram of Fetching Mails from the Inbox

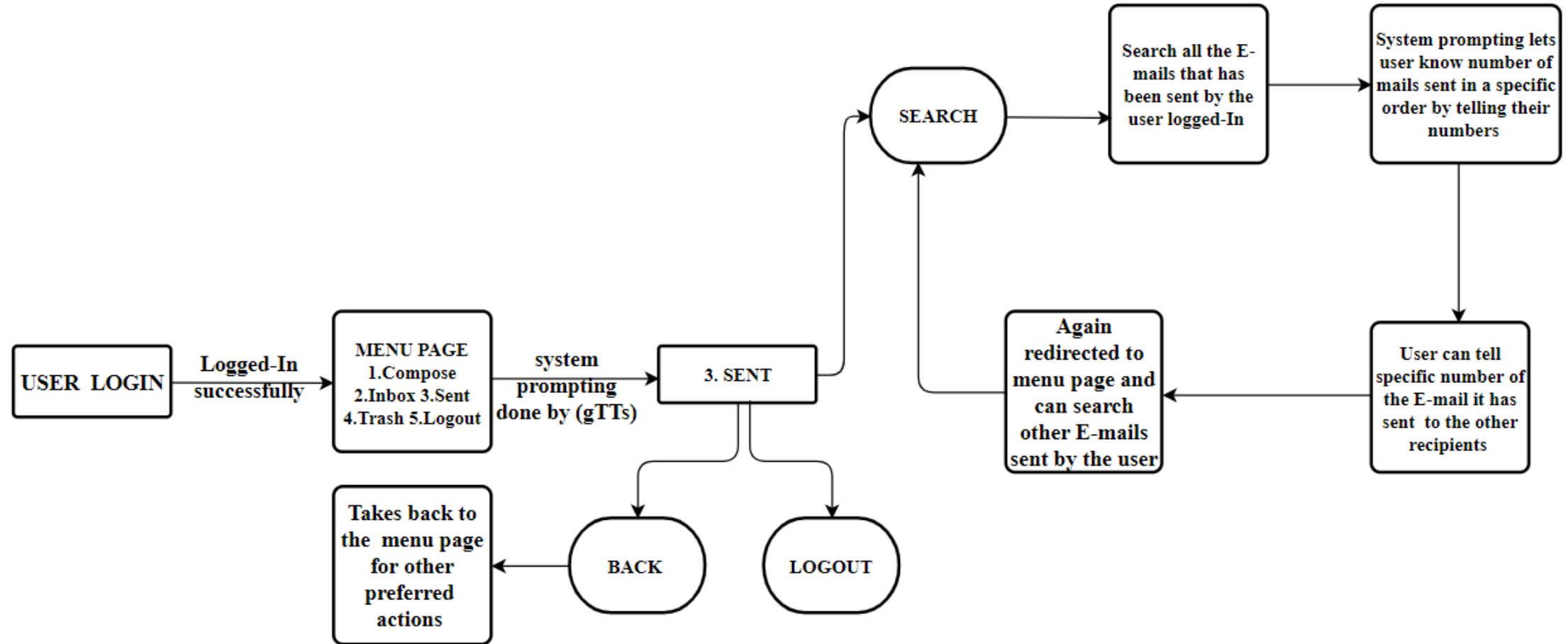# 7. Searching of sent Mails from the Sent folder:

Figure 9: Data Flow Diagram of Searching Mails from the sent folder

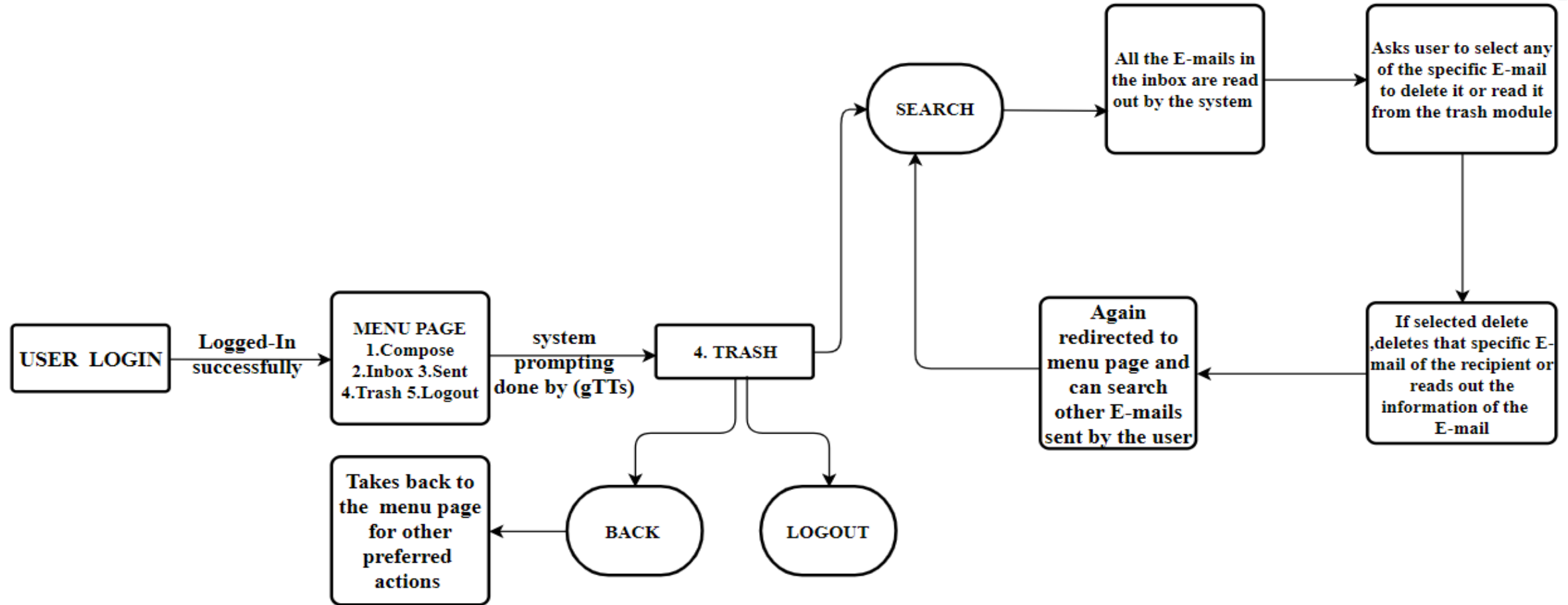# 8. Deleting E-Mails from the Trash folder:

Figure 10: Data Flow Diagram of Searching Mails from the sent folder
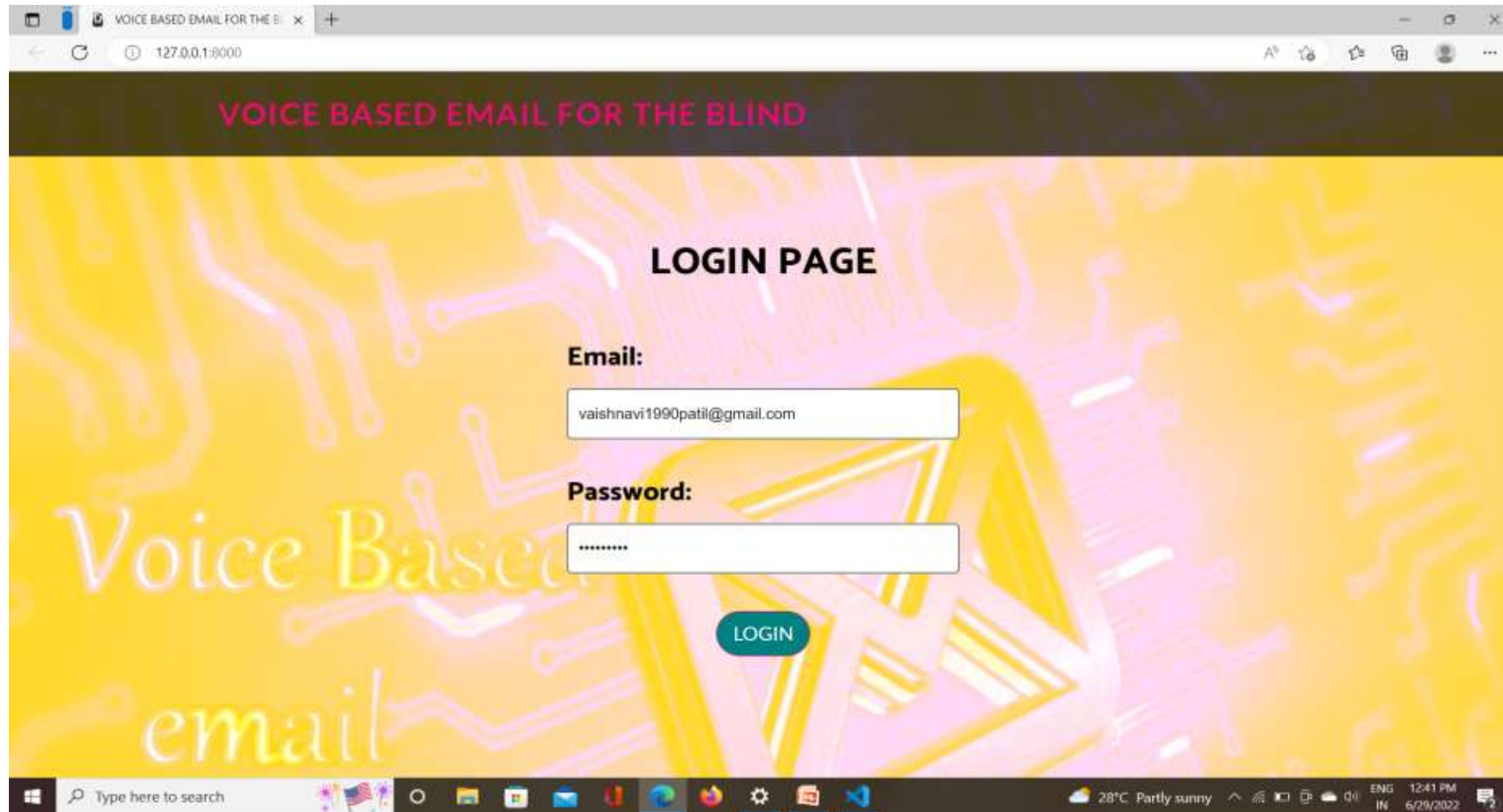
Results of Voice Based E-Mail System:

Figure 11: Login Page for the user to login into G-Mail account using his/her E-Mail ID and Password through voice commands
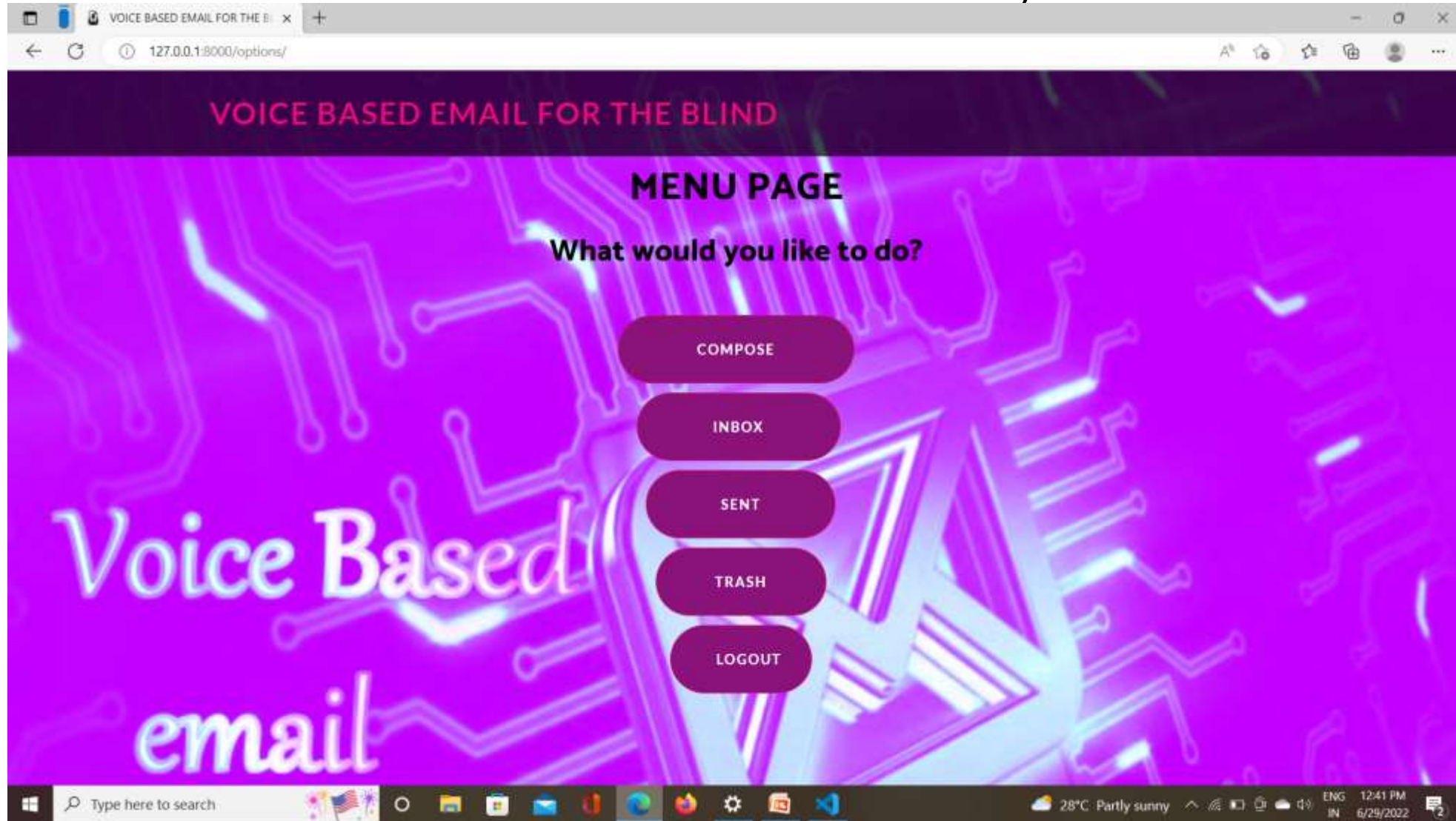
Results of Voice Based E-Mail System:

Figure 12: Menu Page with E-mail Options-Compose, Inbox, Sent, Trash, Logout

Results of Voice Based E-Mail System:

Figure 13: Compose Folder with options - Recipients E-mail Id, subject and body of the E-mail, Attachments with voice recording or by telling the file name with extension

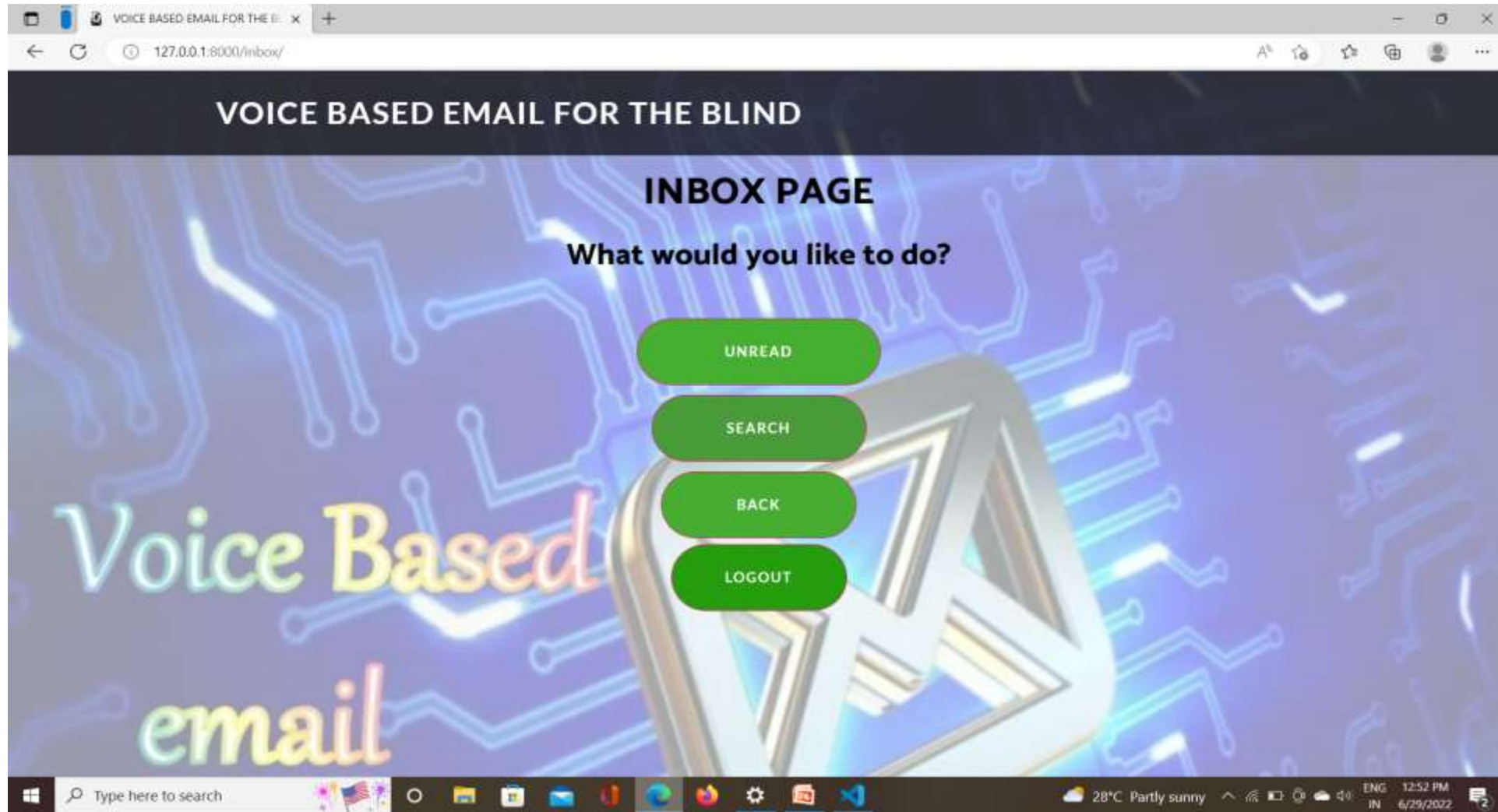# Results of Voice Based E-Mail System:

Figure 14: Inbox Folder options for reading Unread E-mails

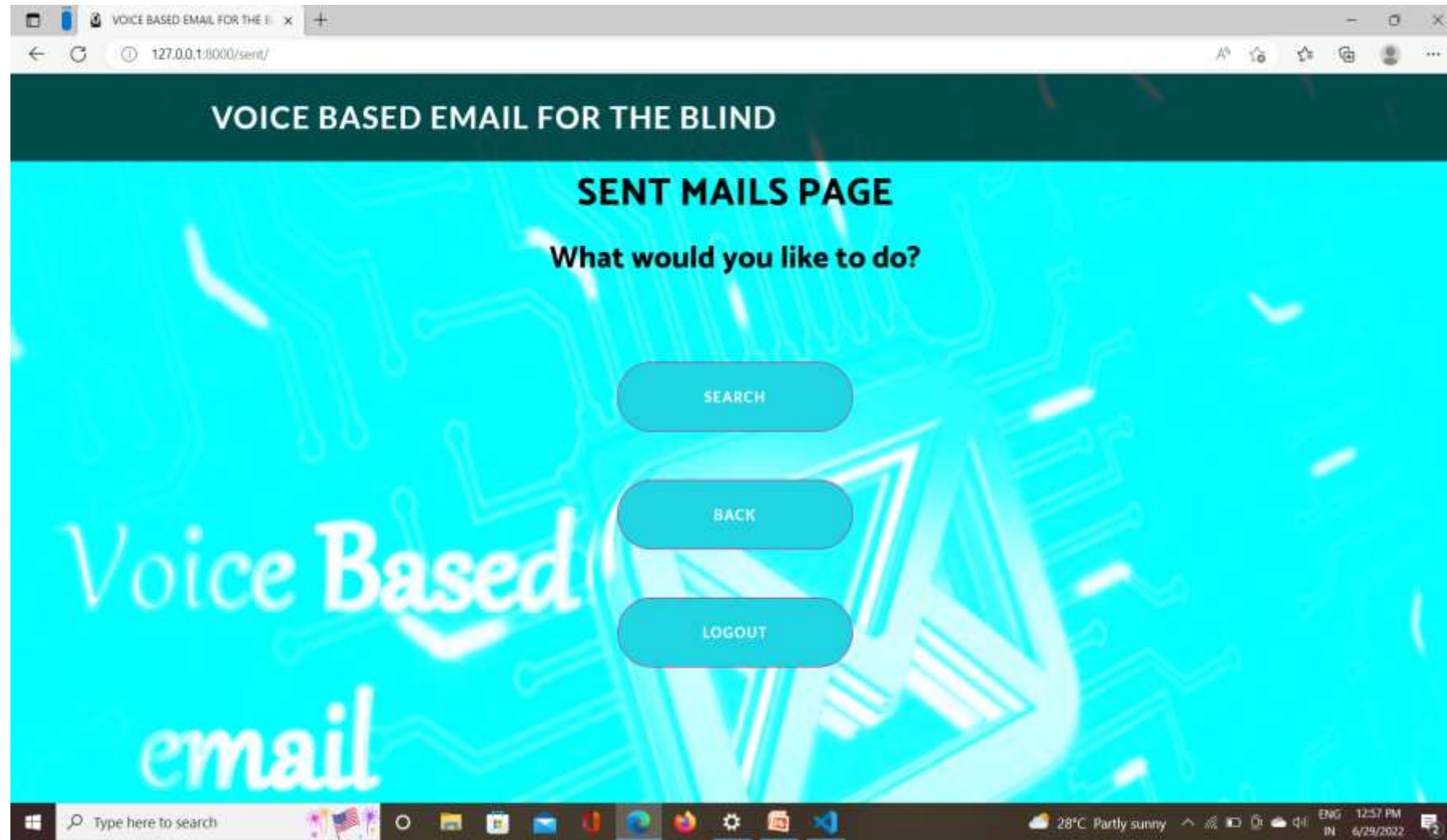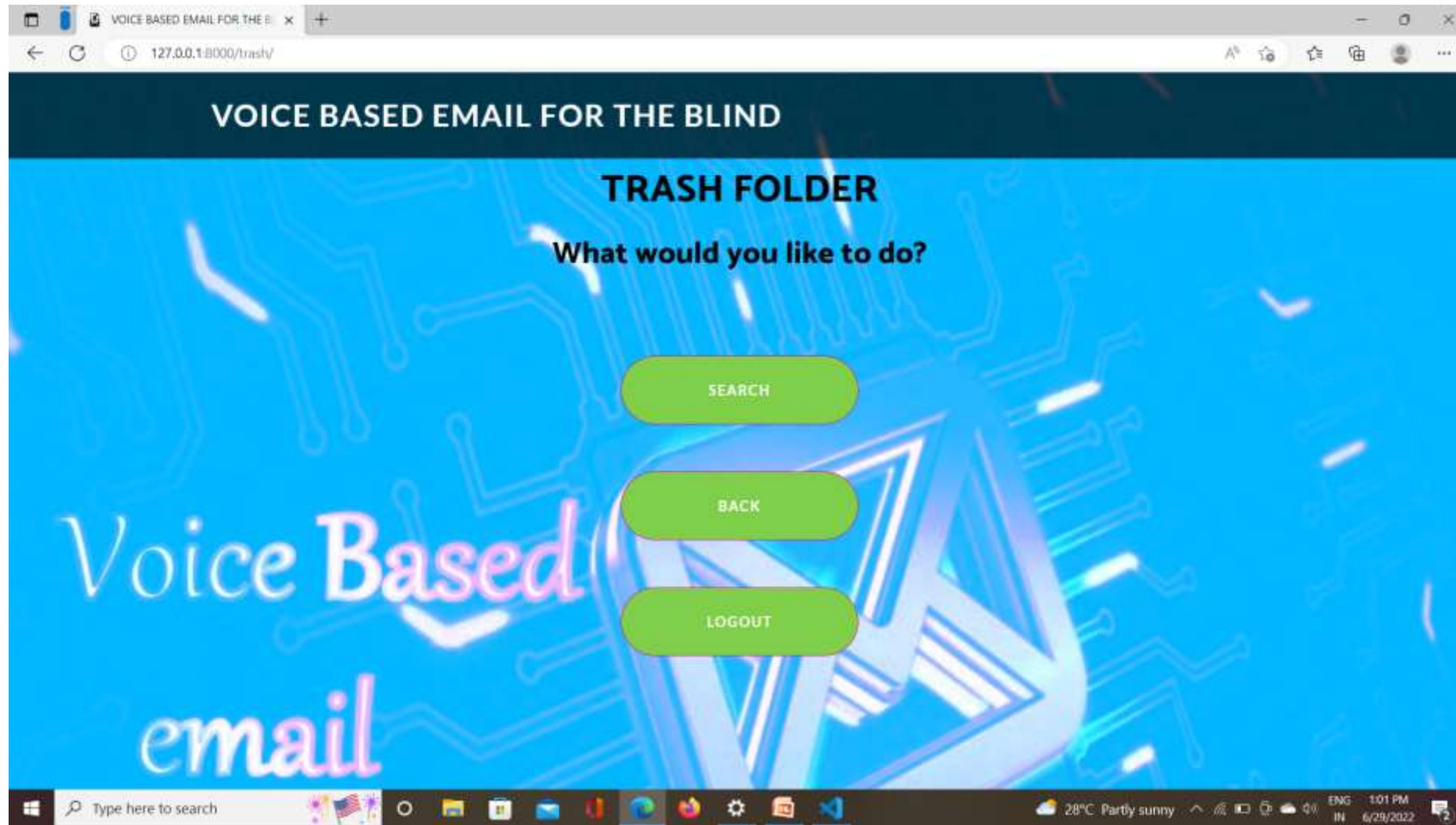# Results of Voice Based E-Mail System:

Figure 15: Sent Folder options, to check the mails sent by the user that have logged-In

Results of Voice Based E-Mail System:

Figure 16: Trash Folder Options ,searching and Deleting Mails from the Trash Folder

Conclusion:

A voice-based email system that will aid the visually impaired by making it easier for them to access, send, and receive emails with attachments is implmented . The system is purely voice-based and the use of a mouse is eliminated. Despite the fact that the primary objective of this work is to assist the visually impaired, it is also valuable to nonvisually impaired users due to its simplicity, security, and effectiveness (including illiterates).

This technology can assist regular people in sending and receiving attachment-laden emails by using voice instructions.The implementation successfully overcame some of the drawbacks of previous researches such as including attachment with mail and making the system completely voice based.

Future-Scope:

Technological development like voice based email with attachment will boost the confidence of visually impaired and blind people. Future scope of the implementation is that more regional languages can be added, other feature of mail (spam, archieve, sent mail and etc) can be added, controlling fonts and indentation with voice and adding cc (carbon copy) field and bcc (blind carbon copy) field in mail with voice.And also the visually Impaired person sitting in front of the system,rather than he/she logging-In to the system with voice commanding, can be made to Login using face recognition ,where the login will be easy.

References:

Serial No	References
[1]	P. Bose, A. Malpthak, U. Bansal and A. Harsola, "Digital assistant for the blind,*" IEEE 2017 2nd International Conference for Convergence in Technology (I2CT)*, 2017, pp. 1250-1253, doi: 10.1109/I2CT.2017.8226327.
[2]	B. Huo, Y. Long and J. Wu, "A Secure Web Email System Based on IBC," *IEEE 2017 13th International Conference on Computational Intelligence and Security (CIS)*, 2017, pp. 578-581, doi: 10.1109/CIS.2017.00134.
[3]	M. S. Kandhari, F. Zulkemine and H. Isah, "A Voice Controlled E-Commerce Web Application," *2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, 2018, pp. 118-124, doi: 10.1109/IEMCON.2018.8614771.
[4]	S. Gamm, R. Haeb-Umbach and D. Langmann, "Findings with the design of a command-based speech interface for a voice mail system,"*2018 IEEE Proceedings of IVTTA '96. Workshop on Interactive Voice Technology for Telecommunications Applications*, pp. 93-96, doi: 10.1109/IVTTA.1996.552769.

References:

Serial No	References
[5]	Carmel Mary Belinda M.J, Rupavathy.N , Mahalakshmi N R, "A voice based text mail system for visually impaired ", *2018 IEEE International Journal of Engineering and Technology(IJET),* Vol 7, No 1.7 Article ID: 10633, doi: 10.14419/ijet.v7i1.7.10633.
[6]	Ajai Verma ," Voice based Electronic Mail system for Visually Challenged Individuals",*2019 International Journal of Innovative Technology and Exploring Engineering (IJITEE)*, ISSN: 2278-3075, Volume-8 Issue-12S, Retrieval Number: L103010812S19/2019©BEIESP ,doi: 10.35940/ijitee.L1030.10812S19
[7]	S. K. Sonbhadra, S. Agarwal, M. Syafrullah and K. Adiyarta, "Email classification via intention-based segmentation," *2020 7th International Conference on Electrical Engineering, Computer Sciences and Informatics (EECSI)*, 2020, pp. 38-44, doi: 10.23919/EECSI50503.2020.9251306.
[8]	Rijwan Khan; Pawan Kumar Sharma; Sumit Raj; Sushil Kr. Verma; Sparsh Katiyar," Voice Based E-Mail System using Artificial Intelligence ",*2020,IEEE International Journal of Engineering and Advanced Technology (IJEAT)*, ISSN: 2249-8958,Volume-9 Issue-3, Retrieval Number: C5930029320/2020©BEIESP doi: 10.35940/ijeat.C5930.029320.

References:

Serial No	References
[9]	Nivedita Bhore, Shraddha Mahala, 2021,'' Email System for Visually Impaired People'', *IEEE 2020, INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT)* NTASU – 2020 (Volume 09 – Issue 03), Paper ID **:** IJERTCONV9IS03062.
[10]	S. Noel, "Human computer interaction(HCI) based Smart Voice Email (Vmail) Application - Assistant for Visually Impaired Users (VIU)," *IEEE 2020 Third International Conference on Smart Systems and Inventive Technology (ICSSIT)*, 2020, pp. 895-900, doi: 10.1109/ICSSIT48917.2020.9214139.
[11]	S. Kumar, Y. R. and R. Aishwarya, "Voice Email Based On SMTP For Physically Handicapped," *IEEE 2021 5th International Conference on Intelligent Computing and Control Systems (ICICCS)*, 2021, pp. 1323-1326, doi: 10.1109/ICICCS51141.2021.9432206.
[12]	H. D. Shah, A. Sundas and S. Sharma, "Controlling Email System Using Audio with Speech Recognition and Text to Speech," *IEEE 2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO)*, 2021, pp. 1-7, doi: 10.1109/ICRITO51393.2021.9596293.

Thank You