

# SIGN TO LANGUAGE

The "Sign To Language" application aims to assist users with hearing impairments in learning new signs and letters. Users can register, log in, and search for signs or letters within the application. The system fetches data from the internet to provide accurate and up-to-date information. Additionally, users have the option to save what they have learned, allowing them to review the content as needed.

Firstly for this system to function successfully, the Python programming language must be installed with the Selenium, Requests, OpenCV, Time, Tkinter, CustomTkinter, PIL, Random, OS, shutil libraries and modules in VSCode. Additionally, the JSON file format should be imported. Here's how to install the libraries, make sure to install of them before moving on to the project.

In the "Sign To Language" project, several key technologies and libraries are employed to enhance functionality and meet specific requirements. **Selenium** is utilized for both automated testing and web scraping, enabling the simulation of user interactions and data extraction from web pages. The **Requests** library facilitates communication with external resources through HTTP requests, making it valuable for retrieving data from APIs or web servers.

```
> pip install selenium
```

```
> pip install requests
```

For computer vision and image processing tasks, the project leverages **OpenCV** (or its successor, the Pillow library). OpenCV is instrumental in tasks such as gesture recognition, image enhancement, and object detection, contributing to a comprehensive understanding of sign language symbols through visual inputs.

```
pip install opencv-python
```

Both **Tkinter** and **Customtkinter** are utilized for building the graphical user interface (GUI) of the application. Tkinter serves as a standard GUI toolkit for Python, while Customtkinter likely extends its capabilities with custom-designed widgets and enhanced event handling tailored to the unique requirements of the "Sign To Language" application.

```
pip install tkinter
```

```
pip install customtkinter
```

The Pillow library, succeeding the **Python Imaging Library (PIL)**, plays a vital role in image processing tasks. It supports image loading, display, preprocessing, and enhancement, offering a versatile set of tools for managing visual content within the project.

```
pip install pillow
```

Lastly, the **Shutil** module provides a higher-level interface for file operations, offering efficient solutions for tasks such as file copying, moving, and removal. This contributes to streamlined file management within the "Sign To Language" project, enhancing overall efficiency and organization.

```
pip install shutil
```

And of course, the JSON file format to save all user log in informations.

```
pip install json
```

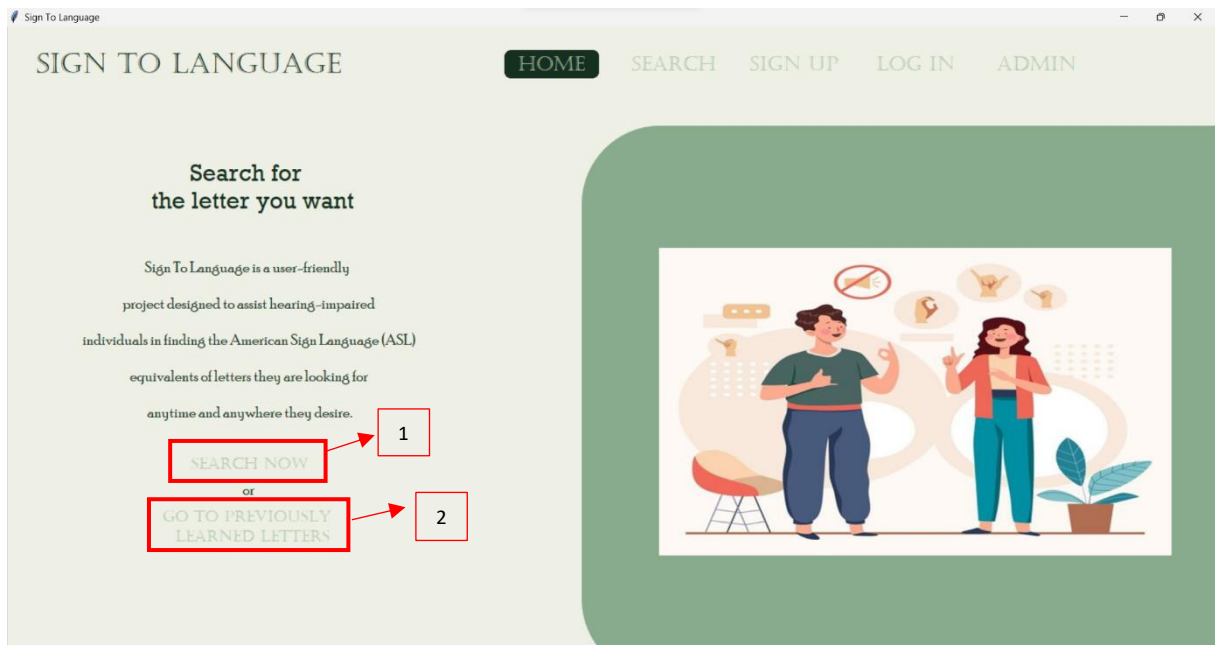
## User Manual

Upon launching the "Sign To Language" application, users are welcomed by the informative "Home" screen, which serves as an introduction to the purpose and functionality of the application. This screen provides an initial overview, setting the stage for users to explore the diverse features it offers.

From the "Home" screen, users have the flexibility to perform searches without the need for registration. For those who wish to track their progress and personalize their experience, the option to become a registered user is seamlessly integrated. After signing in, users can easily access their previously saved words and letters, allowing them to monitor and revisit their learning journey.

1- "Search Now" button for directing user to "Search" page

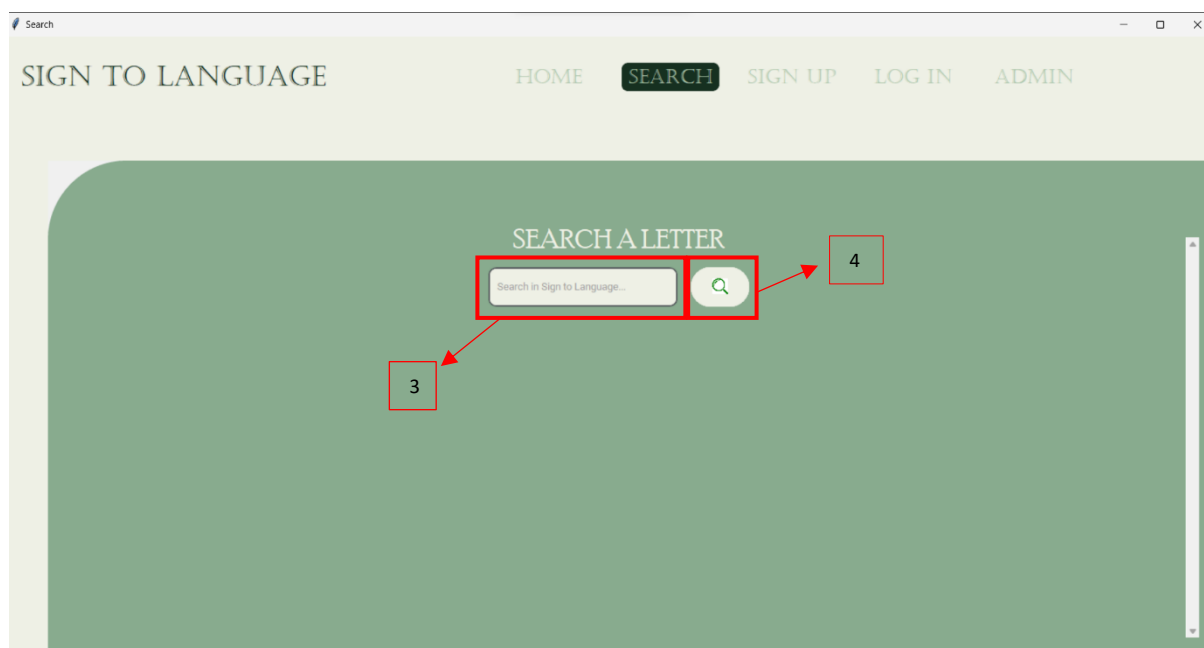
2- "Previously Learned Letters" button for directing user to "Previously Learned" page



The "Search" page serves as a dynamic platform where users can input their desired queries, whether it be words or letters. This feature ensures a user-friendly and interactive search experience, providing relevant and up-to-date information sourced from the internet.

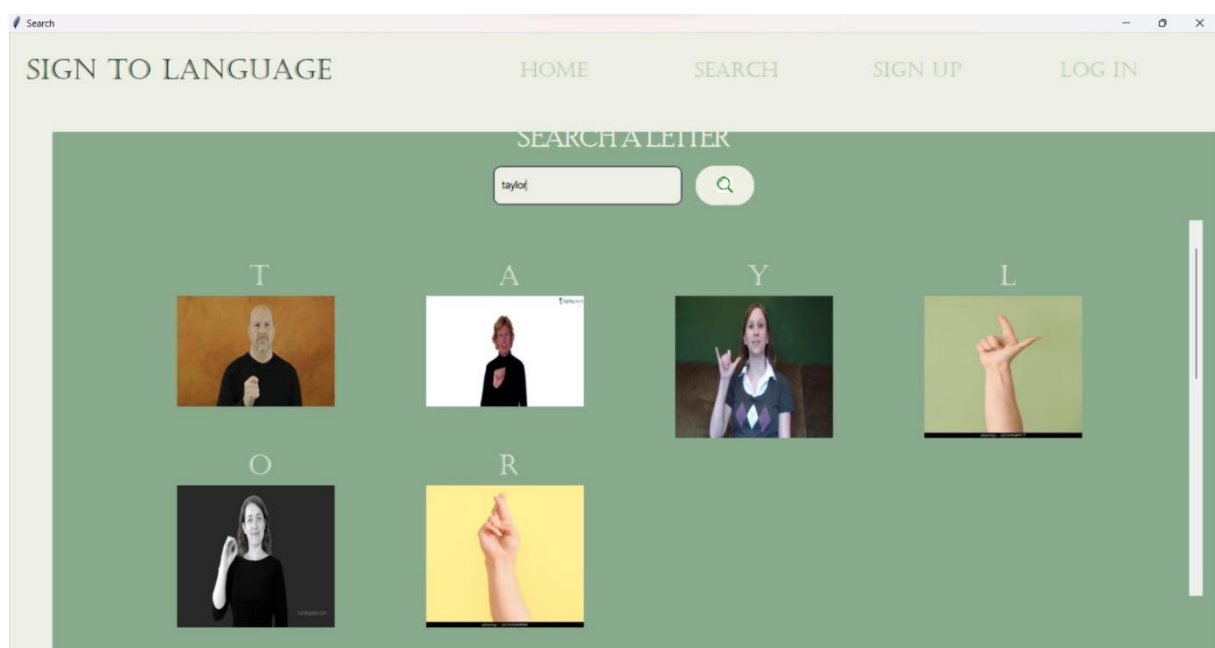
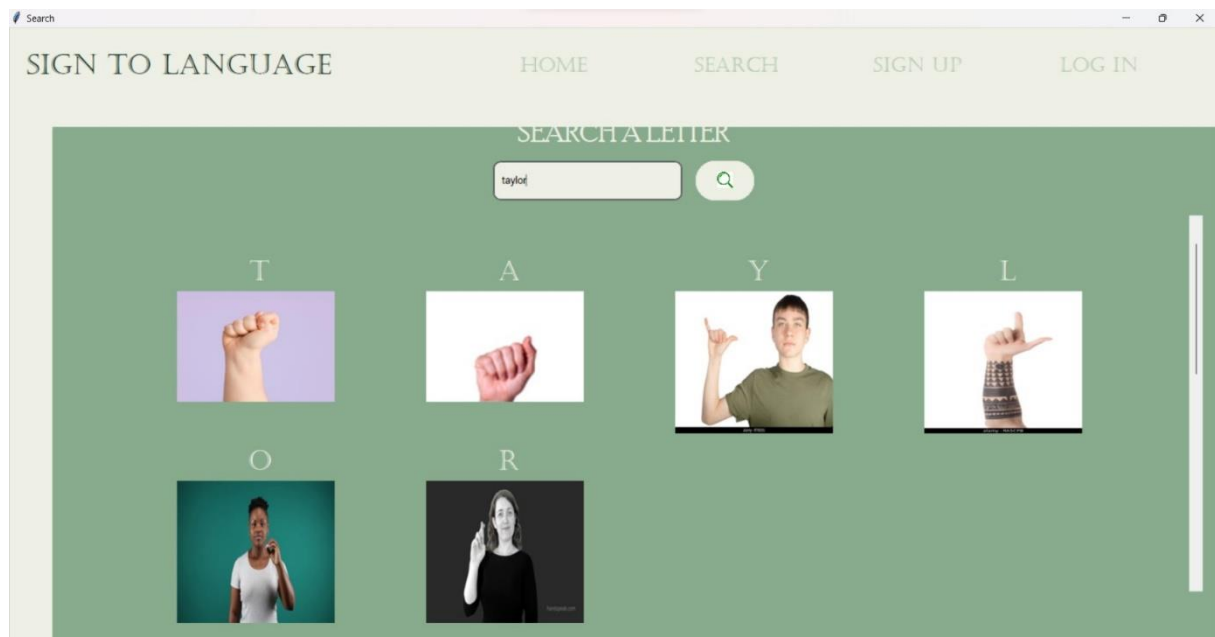
3- On the search page, you will find a search bar. Enter your search query in the search bar.

4- Click the “Search” button.

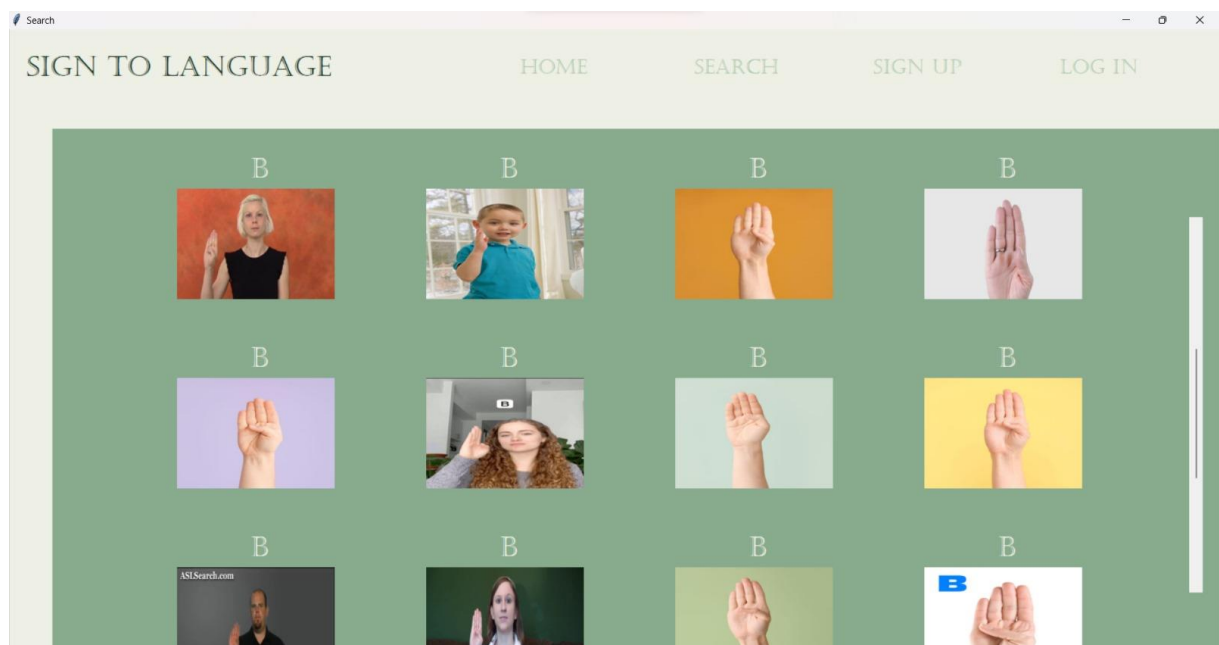
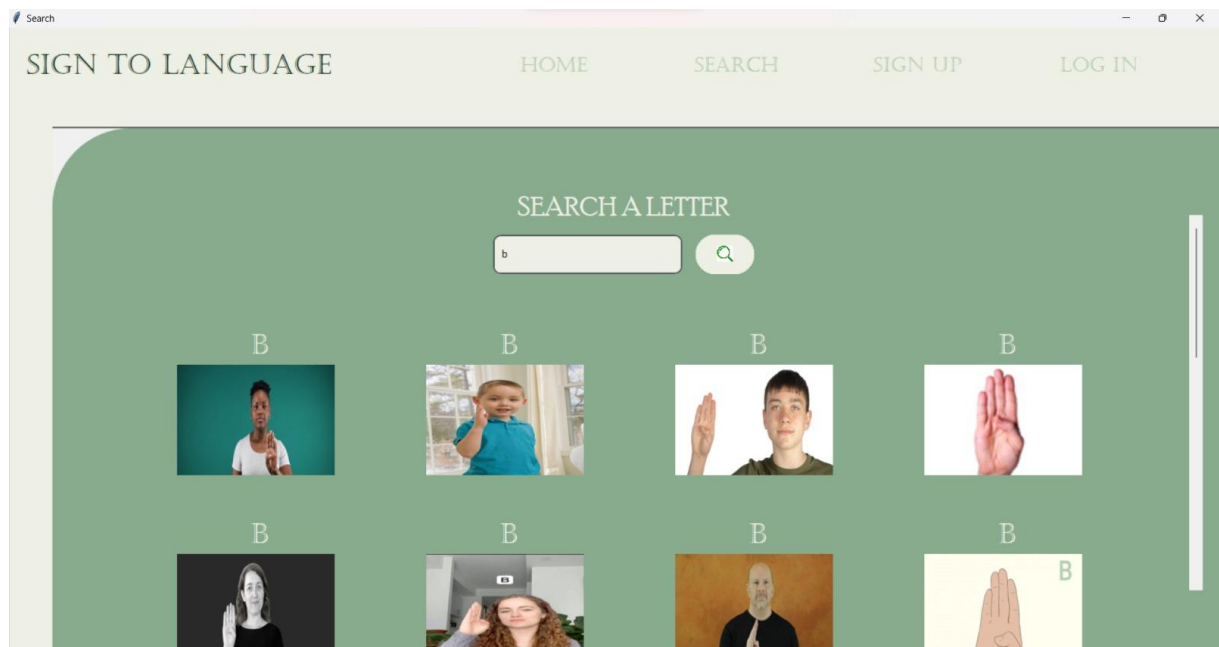


In the "Search" page, if a user searches for a word or letter multiple times, they will encounter different image combinations based on various datasets. This dynamic behavior ensures that the user experiences diverse visual content each time they perform the same search, adding variety and engagement to their interactions with the application.

Various datasets of words:



Various datasets of letters:



For newcomers to the application, the "Sign Up" page is available, prompting users to provide essential details such as their name, surname, email, and password. This step facilitates a straightforward registration process, enabling users to unlock additional features and personalized content.

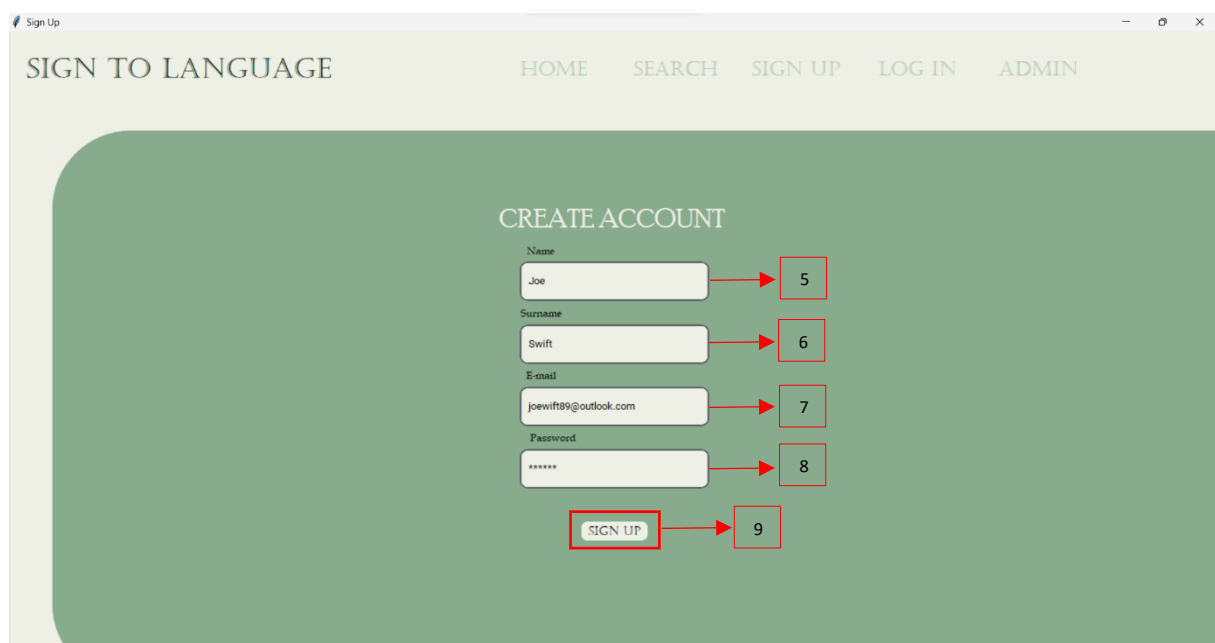
5- Enter your name as you would like it to appear.

6- Enter your surname as you would like it to appear.

7- Provide a valid email address.

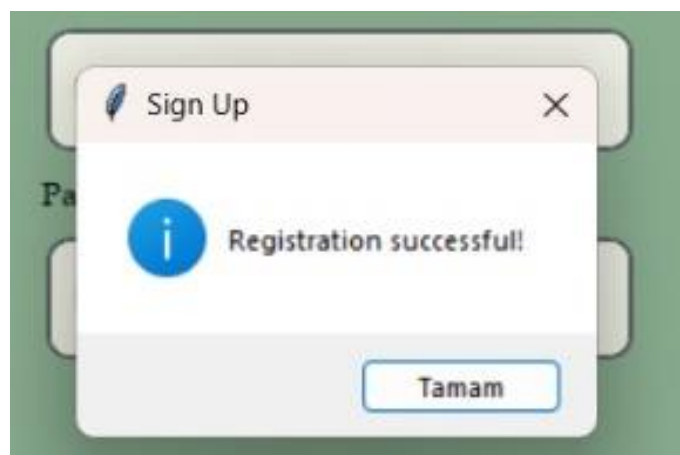
8- Create a secure password.

9- Click the "Sign Up" button.



The screenshot shows a web browser window titled "Sign Up". The page has a navigation bar with links: "SIGN TO LANGUAGE", "HOME", "SEARCH", "SIGN UP", "LOG IN", and "ADMIN". The main content area is titled "CREATE ACCOUNT" and contains a registration form. The form fields are labeled "Name", "Surname", "E-mail", and "Password". The "Name" field contains "Joe", "Surname" contains "Swift", "E-mail" contains "joewift89@outlook.com", and "Password" contains "\*\*\*\*\*". Below the form is a "SIGN UP" button. Red arrows point from numbered boxes (5, 6, 7, 8, 9) to the respective form fields and the button.

This message box should appear after user registers:

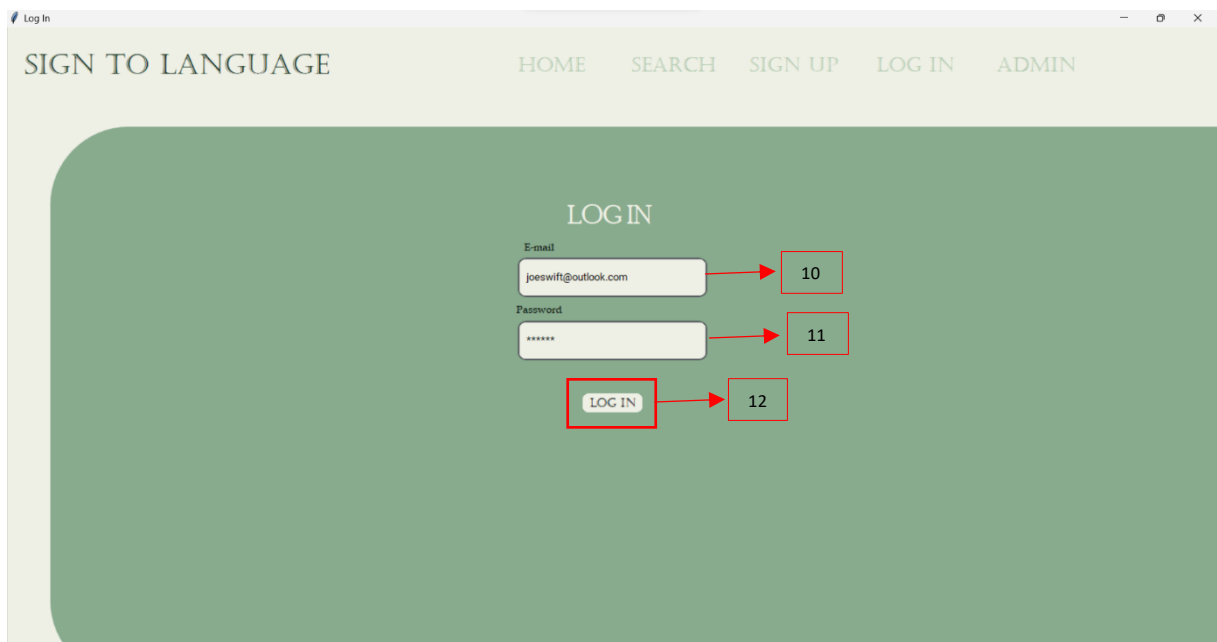


Registered users can utilize the "Log In" page, where entering the correct email and password grants access to their accounts. This secure login mechanism ensures that users can seamlessly retrieve their personalized data and continue their learning journey.

10- Enter the email address associated with your account.

11- Input your secure password.

12- Click the "Log In" button.



This message box should appear after user log in:



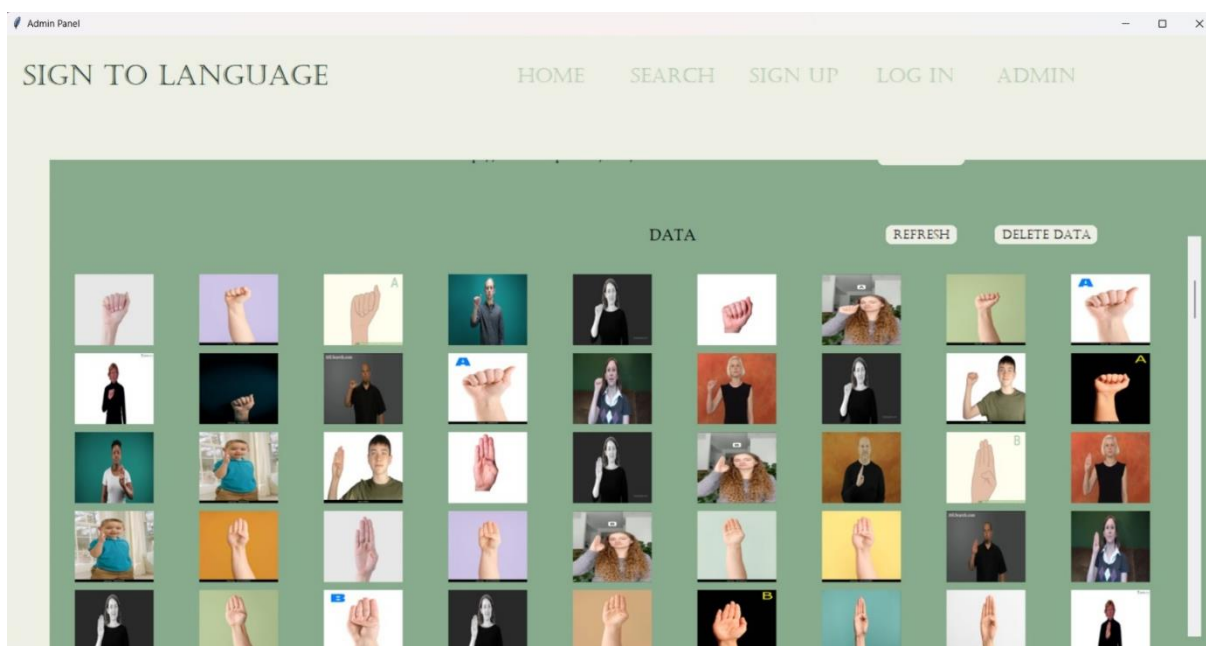
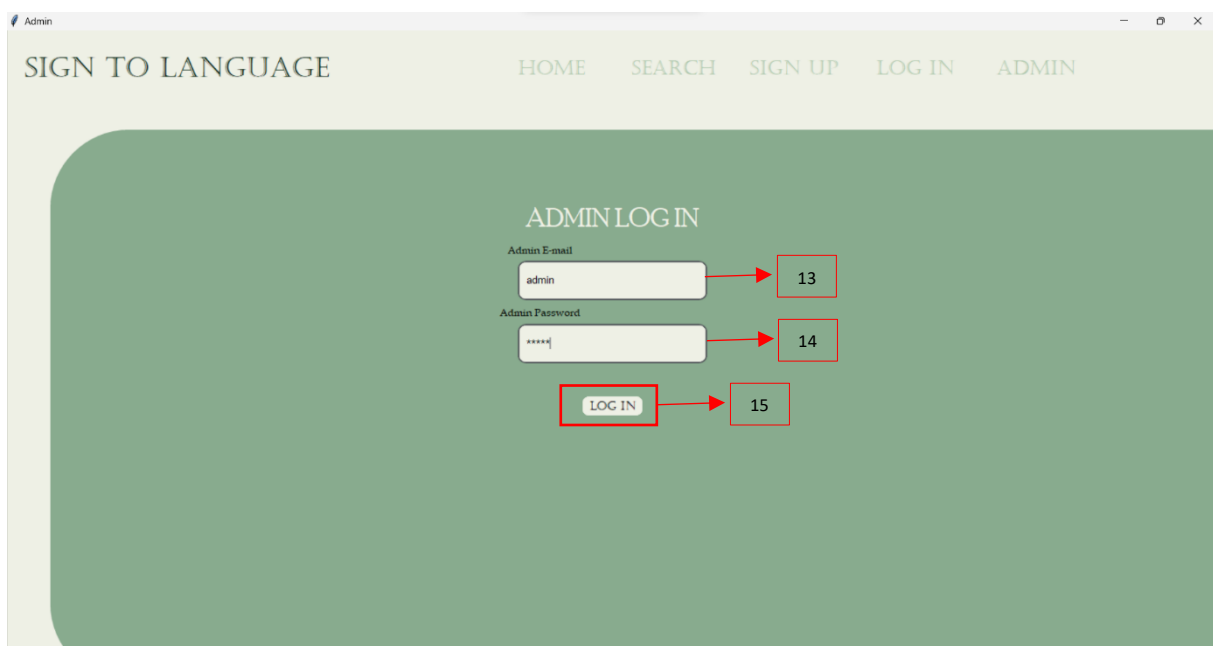


In the "Sign To Language" project, the admin panel is dedicated to the task of searching for data. Administrators utilize this specialized interface to perform searches and retrieve relevant information from the system. The admin panel's search functionality serves as a powerful tool for administrators to gather the necessary information efficiently, contributing to informed decision-making and ensuring the effective management of the application.

13- Enter the email address “admin”

14- Input the secure password “admin”

15- Click the “Log In” button.

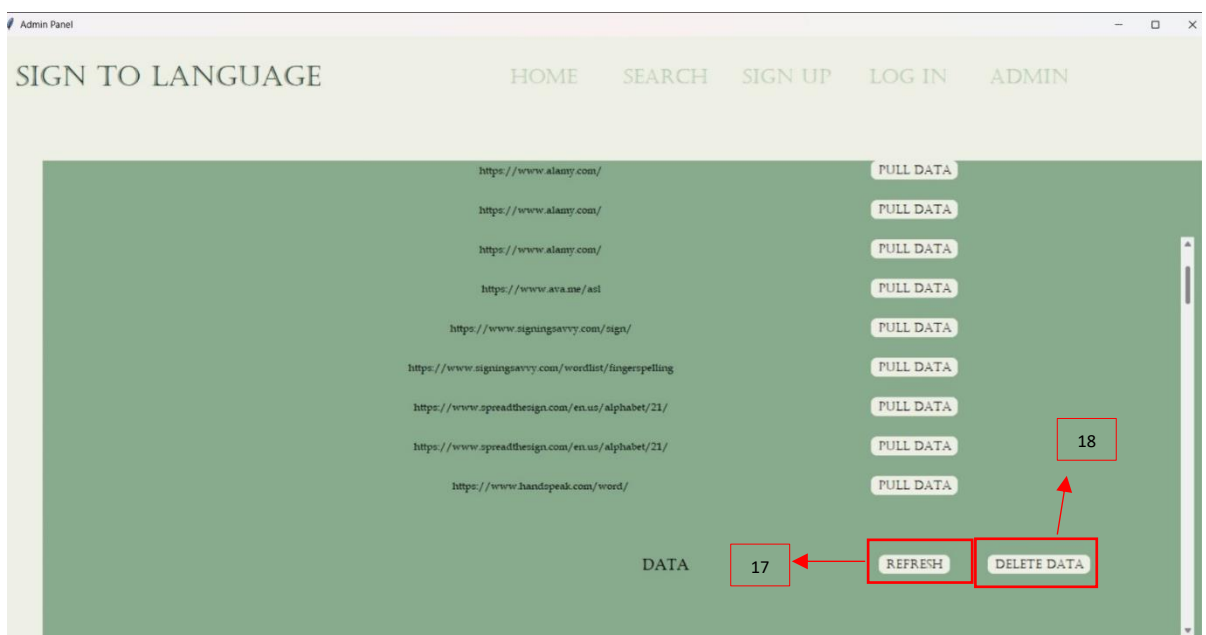
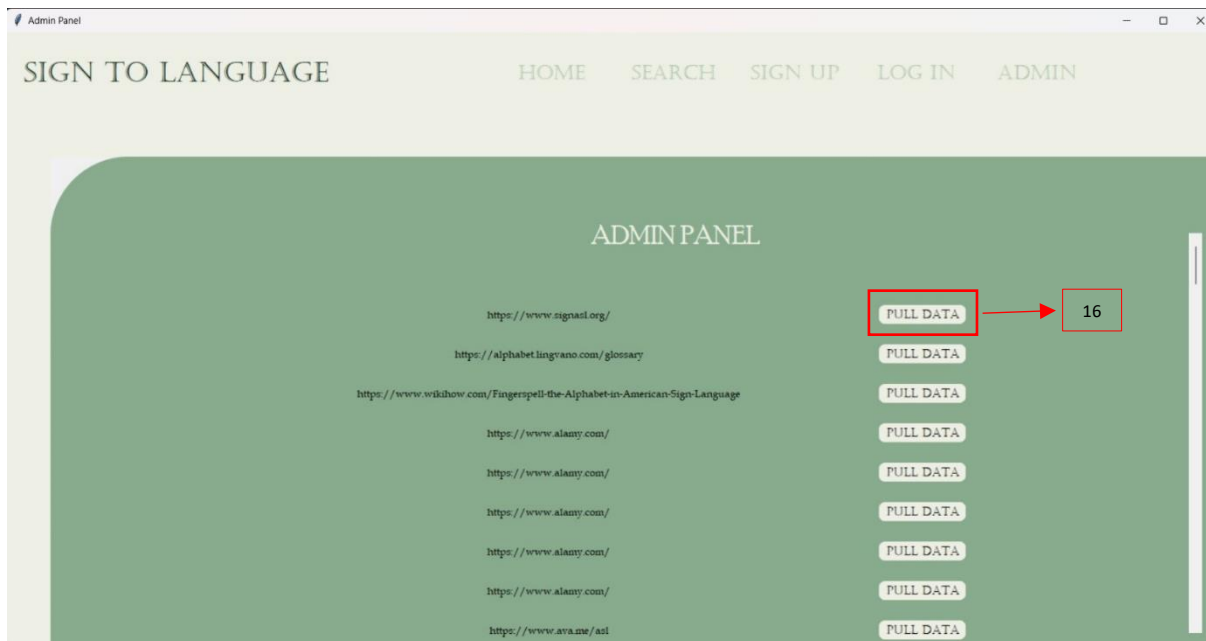


Once logged in, admin has a control over data collections:

16- Click the “Pull Data” button to fetch data from the specified site.

17- Click the “Refresh” button to update and display the saved data.

18- Click the “Delete” button to delete all the data.



In the "Sign To Language" project, the previously learned page is dedicated to users to have an option to save what they have learned, allowing them to review the content as needed.

19- Click the “Refresh” button to display the searched letters saved up to this point.

