Faculty of Engineering & Technology

Department of Computer Science and Engineering

(Artificial Intelligence & Machine Learning)

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A report on

Assignment Work

"File Sharing Application with Python GUI"

Submitted in fulfilment for the project work

Bachelor of Technology

COMPUTER SCIENCE AND ENGINEERING

(Artificial Intelligence and Machine Learning)

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Introduction

The File Transfer System is a desktop-based application developed using Python's Tkinter library for the graphical user interface and the socket library for network communication. This project enables seamless file sharing between a sender and a receiver over a local network.

Objectives

- To create a simple and user-friendly file transfer system.
- To implement client-server communication using sockets.
- To provide a graphical interface for file selection and transfer.
- To ensure a smooth user experience with features like reset and error handling.

Technologies Used

- Programming Language: Python
- GUI Library: Tkinter
- Networking Library: Socket
- Multithreading: Used to handle multiple client connections efficiently.

System Architecture

- The system consists of two main components:
- Sender Application: Selects and sends files.
- Receiver Application: Receives and saves files.
- Both applications communicate over a TCP/IP socket connection.

Appendix

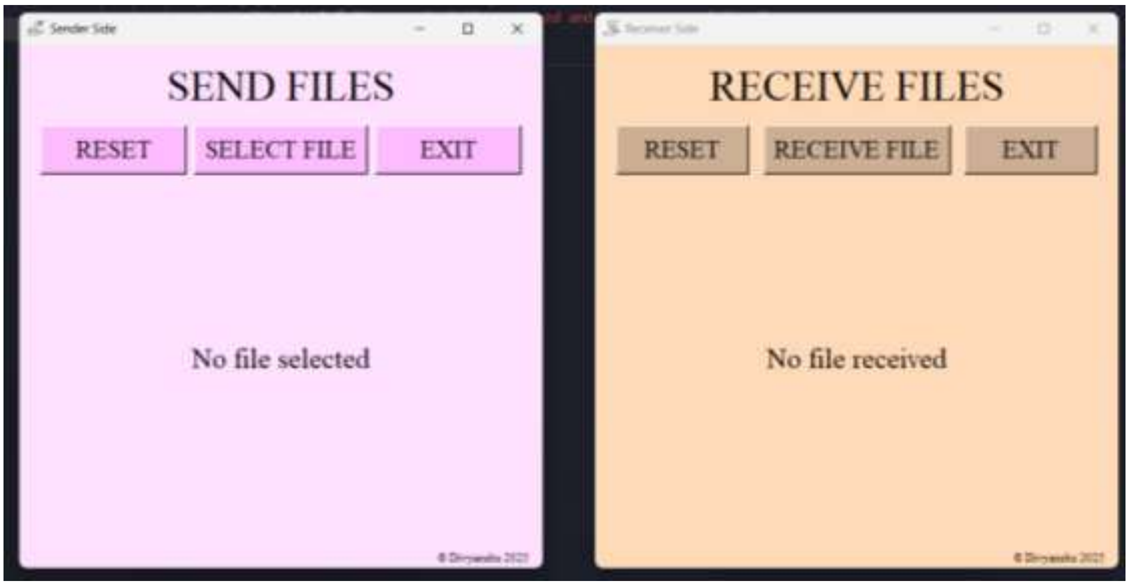
Sender.py:

```
def start_server(file_path):

    global server_socket

    if server_socket is None:

        server_socket = socket.socket(socket.AF_INET, socket.SOCK_STREAM)

        server_socket.bind((SERVER_HOST, SERVER_PORT))

        server_socket.listen(1)
        print(f"[*] Server listening on {SERVER_HOST}:{SERVER_PORT}")
    while True:
        try:
            if server_socket.fileno() == -1:
                print("[!] Server socket is closed. Re-initializing...")
                server_socket = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
                server_socket.bind((SERVER_HOST, SERVER_PORT))
                server_socket.listen(1)
            client_socket, client_address = server_socket.accept()
            print(f"[*] Accepted connection from {client_address[0]}:{client_address[1]}")
            threading.Thread(target=handle_client, args=(client_socket, file_path)).start()
        except OSError as e:
            print(f"[!] Socket error: {e}")
            messagebox.showerror("Socket Error", f"An error occurred with the socket: {e}")
def handle_client(client_socket, file_path):
    try:
        with open(file_path, 'rb') as file:
            file_data = file.read()
            client_socket.sendall(file_data)
            print("[*] File sent successfully.")
            messagebox.showinfo("Success", "File sent successfully.")
    except FileNotFoundError:
        print("[!] File not found.")
        client_socket.sendall(b'File not found')
    finally:
        client_socket.close()
```

Receiver.py:

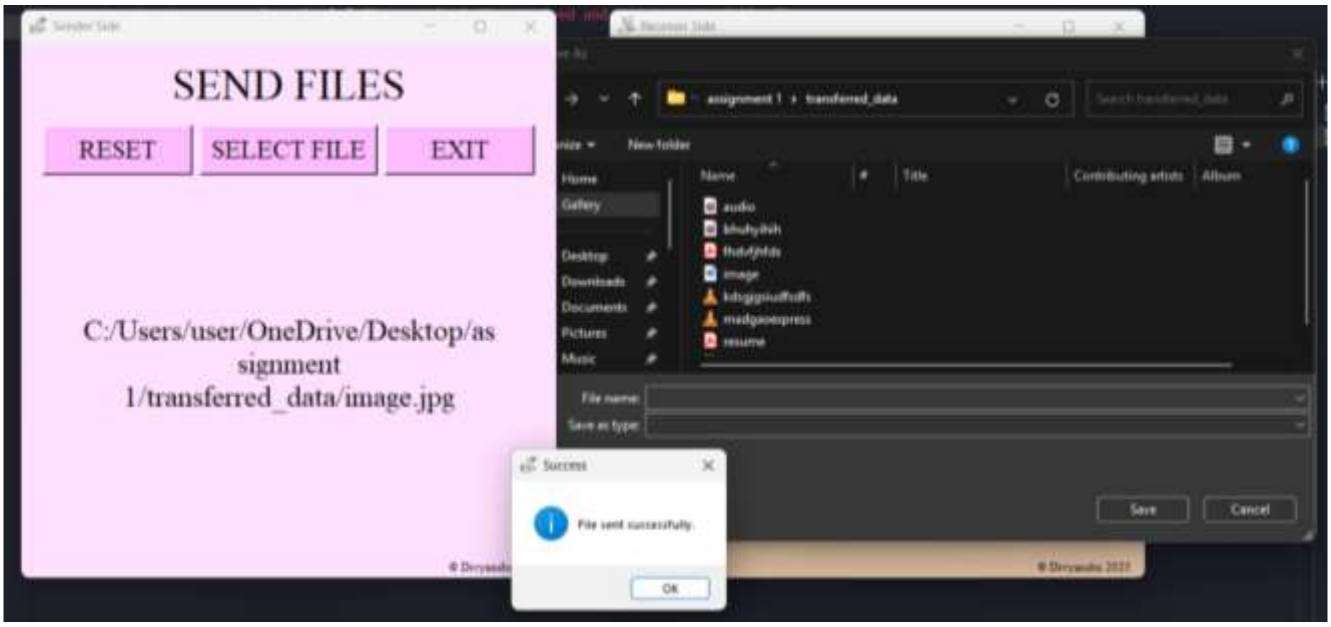
```
def receive_file():
    global client_socket
    client_socket = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    try:
        client_socket.connect((SERVER_HOST, SERVER_PORT))
        file_name = filedialog.asksaveasfilename(defaultextension=".*")
        if file_name:
            with open(file_name, 'wb') as file:
                while True:
                    file_data = client_socket.recv(BUFFER_SIZE)
                    if not file_data:
                        break
                    file.write(file_data)
            file_label.config(text=f"File saved as: {file_name}")
            print("[*] File received and saved.")
            messagebox.showinfo("Success", "File received and saved successfully.")
        else:
            print("[!] No file name provided.")
    except Exception as e:
        print(f"[!] Error: {e}")
        messagebox.showerror("Error", f"An error occurred: {e}")
    finally:
        client_socket.close()
        client_socket = None
```

Screenshots



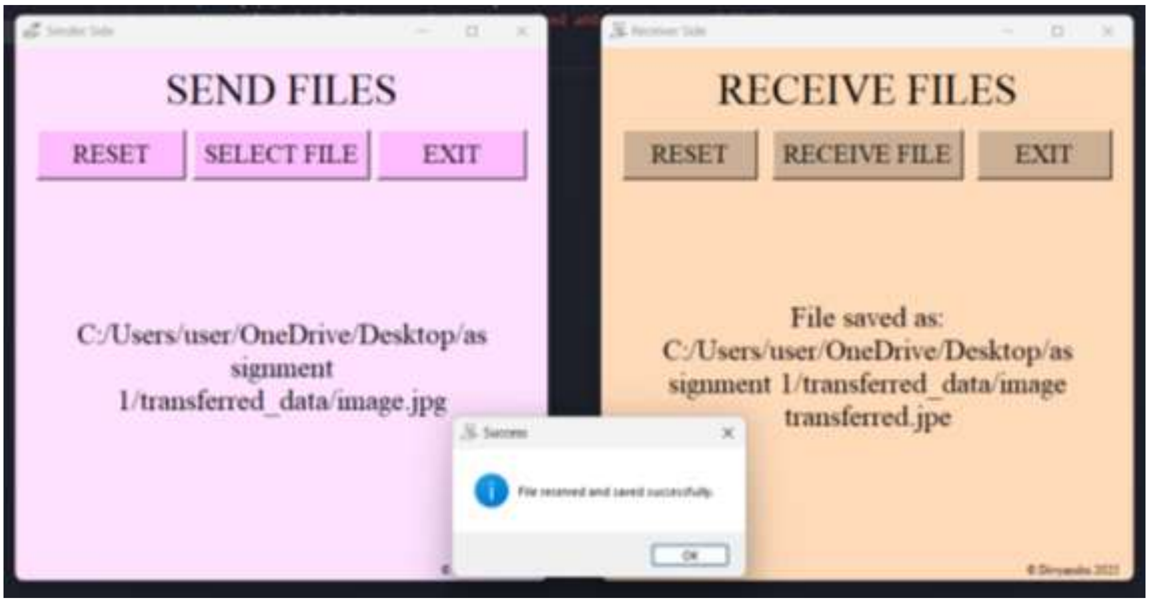
No file selected

No file received



C:/Users/user/OneDrive/Desktop/as
signment
1/transferred_data/image.jpg

File sent successfully.



C:/Users/user/OneDrive/Desktop/as
signment
1/transferred_data/image.jpg

File saved as:
C:/Users/user/OneDrive/Desktop/as
signment 1/transferred_data/image
transferred.jpe

File received and saved successfully.

Conclusion

This project successfully demonstrates a basic yet effective file transfer system using Python, Tkinter, and sockets. The application provides a user-friendly interface for selecting, sending, and receiving files over a local network. With its robust error handling and simple implementation, this system serves as a fundamental model for more advanced file-sharing applications.