Python Essentials – Final Project

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CSPP86

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Notes

This documentation provides important notes for running the program. The project includes a Python script (**main.py**) and an executable file (**main.exe**) for easy access.

Files Included:

main.py: The main Python script containing the source code for the program

main.exe: An executable file for running the program on Windows without needing a Python interpreter

requirements.txt: A file listing all the necessary Python packages required to run the program

To use the program without setting up a Python environment, double-click the main.exe file.

Running In PyChram:

Open the Project: Open the directory containing the program in PyCharm

Set Up the Virtual Environment: Install dependencies from requirements.txt as prompted

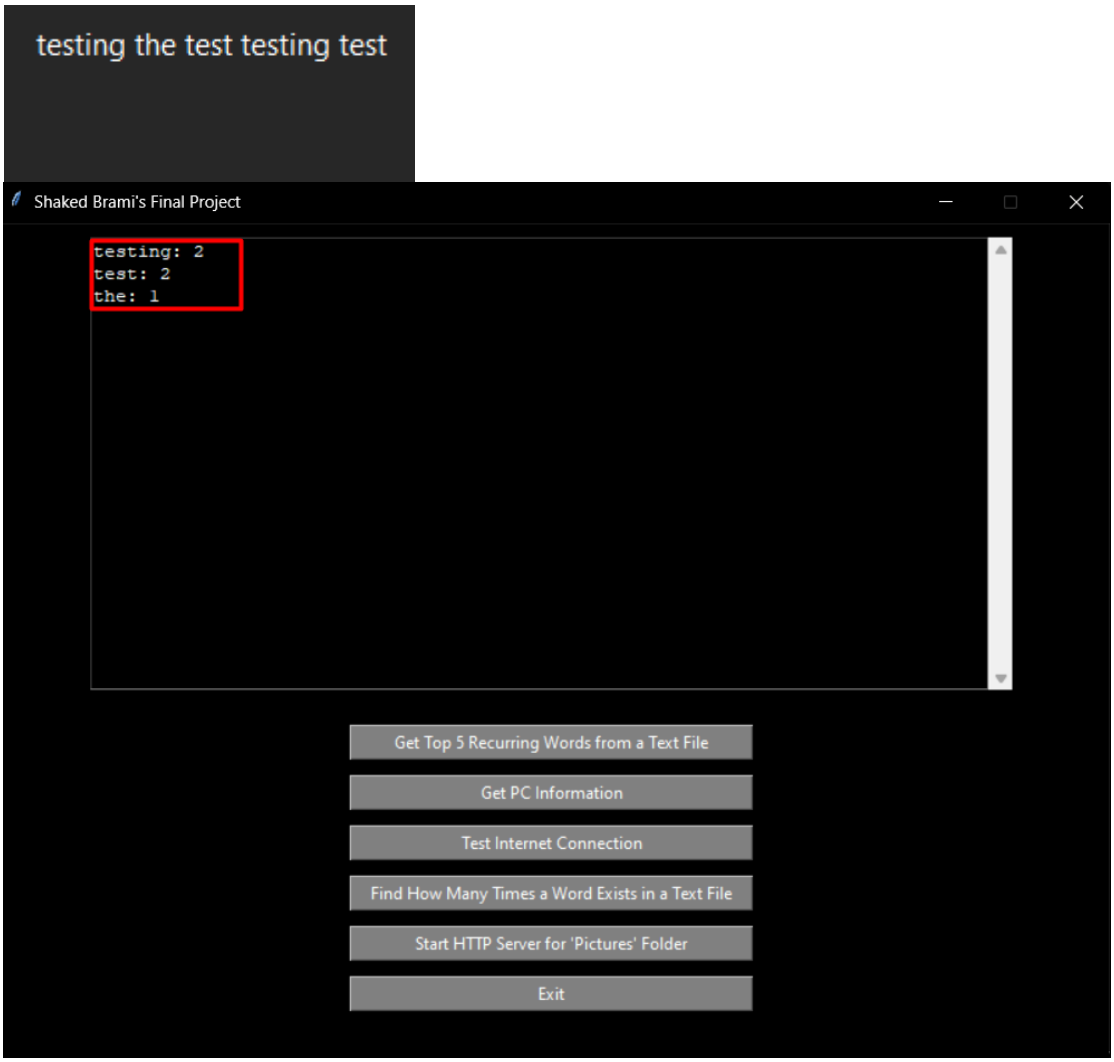
Run the Script: Locate and run main.py in PyCharm

Getting Top 5 Recurring Words from a Text File

The Function:

```
def top_5_words(file_name):
    try:
        with open(file_name, 'r') as file:  # Open the file in read mode
            text = file.read().lower()  # Read the file content and convert to lowercase
        words = re.findall( pattern: r'\b\w+\b', text)  # Find all words using regular expression
        word_counts = collections.Counter(words)  # Count the occurrences of each word
        top_5 = word_counts.most_common(5)  # Get the top 5 most common words
        text_area.delete( index1: "1.0", tk.END)  # Clear the text area
        for word, count in top_5:  # Iterate over the top 5 words and their counts
            text_area.insert(tk.END, chars: f"{word}: {count}\n")  # Insert each word and its count into the text area
    except FileNotFoundError:
        messagebox.showerror( title: "Error", message: f"File '{file_name}' not found. Please make sure the file exists and try again.")  # Show an error message if the file is not found
    except Exception as e:
        messagebox.showerror( title: "Error", message: f"An error occurred: {e}")  # Show an error message for any other exceptions
```

I will Use a test.txt File that will contain this:



Getting PC Information

The Function:

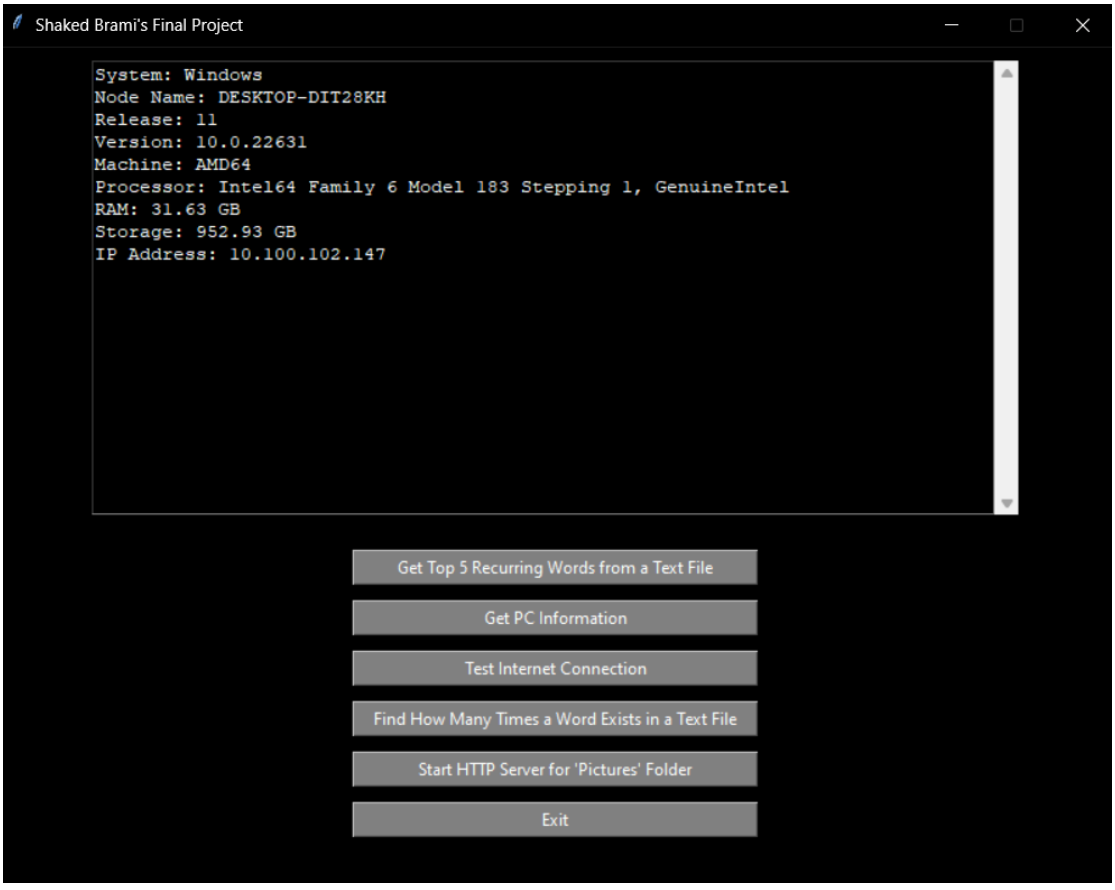
```python
def get_pc_info():
    try:
        text_area.delete( index1: "1.0", tk.END)  # Clear the text area
        text_area.insert(tk.END,  chars: f"System: {platform.system()}\n")  # Insert system information
        text_area.insert(tk.END,  chars: f"Node Name: {platform.node()}\n")  # Insert node name
        text_area.insert(tk.END,  chars: f"Release: {platform.release()}\n")  # Insert OS release
        text_area.insert(tk.END,  chars: f"Version: {platform.version()}\n")  # Insert OS version
        text_area.insert(tk.END,  chars: f"Machine: {platform.machine()}\n")  # Insert machine type
        text_area.insert(tk.END,  chars: f"Processor: {platform.processor()}\n")  # Insert processor information

        # Get RAM info
        ram = psutil.virtual_memory().total / (1024 ** 3)  # Get total RAM in GB
        text_area.insert(tk.END,  chars: f"RAM: {ram:.2f} GB\n")  # Insert RAM information

        # Get storage info
        disk = psutil.disk_usage('/')  # Get disk usage information
        total_storage = disk.total / (1024 ** 3)  # Convert total storage to GB
        text_area.insert(tk.END,  chars: f"Storage: {total_storage:.2f} GB\n")  # Insert storage information

        # Get IP address
        ip_address = socket.gethostbyname(socket.gethostname())  # Get the IP address of the host
        text_area.insert(tk.END,  chars: f"IP Address: {ip_address}\n")  # Insert IP address information
    except Exception as e:
        messagebox.showerror( title: "Error",  message: f"An error occurred: {e}")  # Show an error message for any exceptions
```

Results:



Testing Internet Connection

The Function:

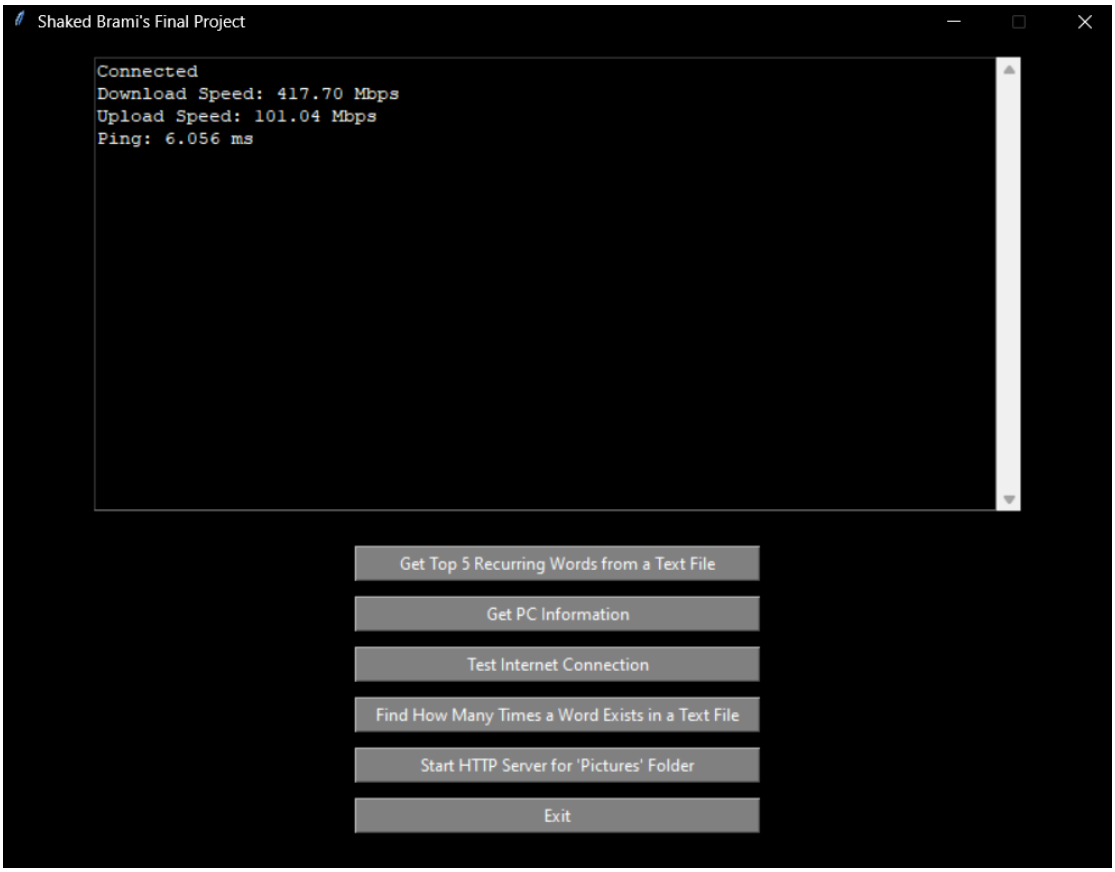
```python
def test_internet_connection():
    try:
        output = subprocess.check_output( args: ["ping", "-n", "1", "google.com"], shell=True, universal_newlines=True)  # Ping Google to check internet connectivity
        text_area.delete( index1: "1.0", tk.END)  # Clear the text area
        text_area.insert(tk.END,  chars: "Connected\n")  # Insert "Connected" if the ping is successful

        # Perform speed test
        st = speedtest.Speedtest()  # Create a Speedtest object
        st.download()  # Perform a download speed test
        st.upload()  # Perform an upload speed test
        results = st.results.dict()  # Get the results as a dictionary

        text_area.insert(tk.END,  chars: f"Download Speed: {results['download'] / 1_000_000:.2f} Mbps\n")  # Insert download speed
        text_area.insert(tk.END,  chars: f"Upload Speed: {results['upload'] / 1_000_000:.2f} Mbps\n")  # Insert upload speed
        text_area.insert(tk.END,  chars: f"Ping: {results['ping']} ms\n")  # Insert ping time

    except subprocess.CalledProcessError:
        text_area.delete( index1: "1.0", tk.END)  # Clear the text area
        text_area.insert(tk.END,  chars: "Not connected\n")  # Insert "Not connected" if the ping fails
```

We Will not only check the ping to google.com, we will also check the Downloading and Uploading speed, with the ping to the Speed Test server.

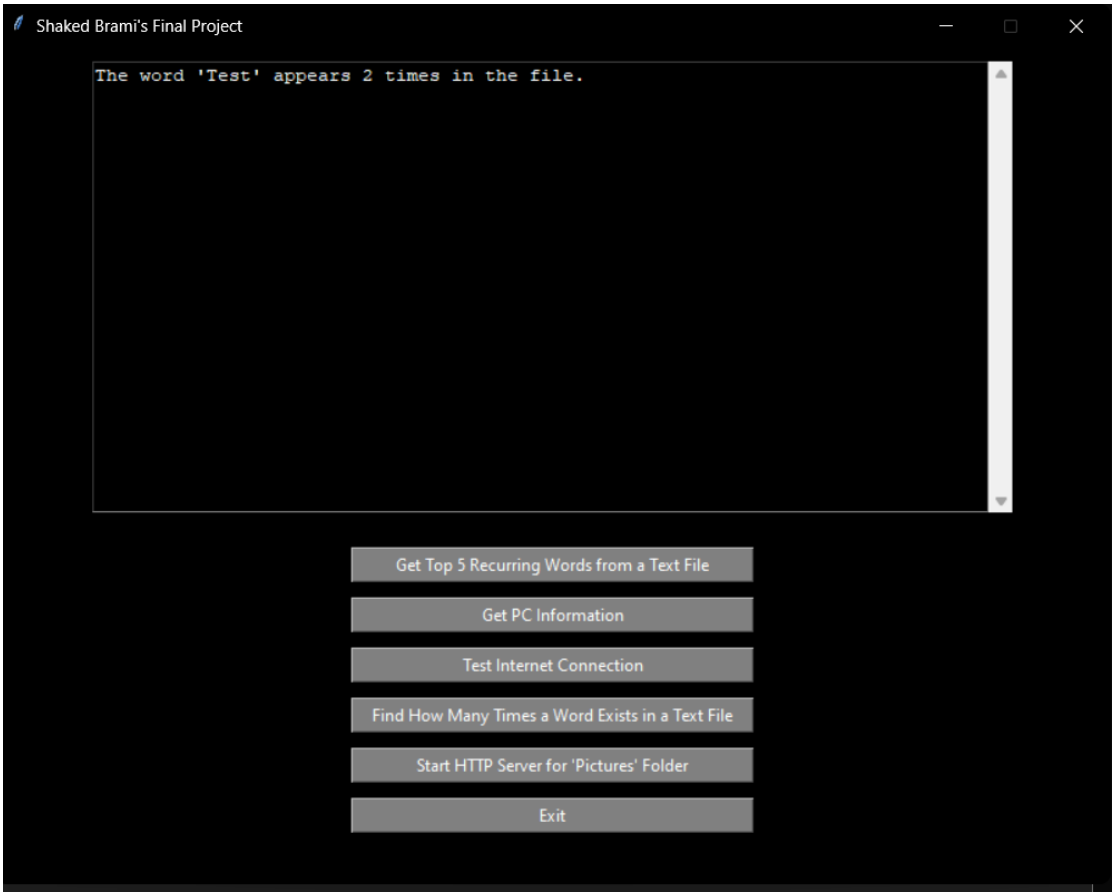


Find How Many Times a Word Exists in a Text File

The Function:

```python
def word_count_in_file(file_name, word):
    try:
        with open(file_name, 'r') as file:  # Open the file in read mode
            text = file.read().lower()  # Read the file content and convert to lowercase
        count = text.split().count(word.lower())  # Count the occurrences of the word
        text_area.delete( index1: "1.0", tk.END)  # Clear the text area
        text_area.insert(tk.END,  chars: f"The word '{word}' appears {count} times in the file.\n")  # Insert the count of the word
    except FileNotFoundError:
        messagebox.showerror( title: "Error",  message: f"File '{file_name}' not found. Please make sure the file exists and try again.")  # Show an error message if the file is not found
    except Exception as e:
        messagebox.showerror( title: "Error",  message: f"An error occurred: {e}")  # Show an error message for any other exceptions
```

We will use the Test File once again, and we will Search for the word "Test"



Starting an HTTP server for the Pictures folder

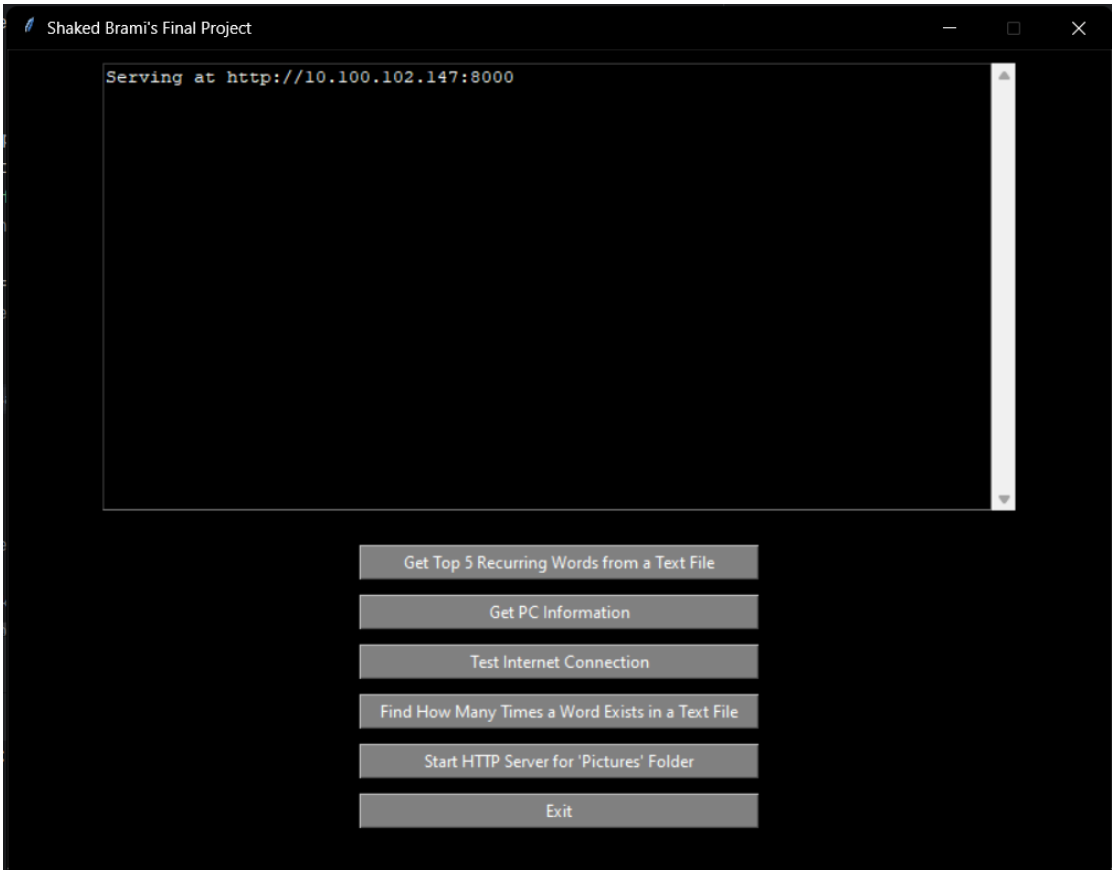
The Function:

```
def start_http_server():
    try:
        os.chdir(os.path.expanduser("~/Pictures"))  # Change the working directory to the 'Pictures' folder
        handler = SimpleHTTPRequestHandler  # Create a request handler
        host_ip = socket.gethostbyname(socket.gethostname())  # Get the IP address of the host
        port = 8000  # Define the port number

        def run_server():
            with TCPServer( server_address: (host_ip, port), handler) as httpd:  # Create and start the HTTP server
                text_area.delete( index1: "1.0", tk.END)  # Clear the text area
                text_area.insert(tk.END,  chars: f"Serving at http://{host_ip}:{port}\n")  # Insert the server URL
                httpd.serve_forever()  # Keep the server running

        server_thread = threading.Thread(target=run_server, daemon=True)  # Create a thread to run the server
        server_thread.start()  # Start the server thread

    except Exception as e:
        messagebox.showerror( title: "Error",  message: f"An error occurred: {e}")  # Show an error message for any exceptions
```



Directory listing for /

- Camera Roll/
- desktop.ini
- Saved Pictures/
- Screenshots/
- UbisoftConnect/

Exporting to Exe File

We will install pyinstaller

Then, we will insert this commend:

```
(.venv) PS C:\Users\Shaked\PycharmProjects\PythonProjectSee> pyinstaller --onefile main.py
```

We got the file: