Report On

Internet Speed Tracker

Submitted in partial fulfillment of the requirements of the Course project in Semester IV of Second Year Computer Engineering

By

Shashank Bhatt (Roll No. 02)

Faisal Qureshi (Roll No.12)

Vedant Patil (Roll No.11)

Supervisor

Ms. Sneha Mhatre

Vidyavardhini's College of Engineering & Technology

Department of Computer Engineering

(2023-24)

Vidyavardhini's College of Engineering & Technology

Department of Computer Engineering

CERTIFICATE

This is to certify that the project entitled “Internet Speed Tracker” is a bonafide work of "Shashank Bhatt (Roll No. 02), Faisal Qureshi (Roll No.12), Vedant Patil (Roll No.11)" submitted to the University of Mumbai in partial fulfillment of the requirement for the Course project in semester IV of Second Year Computer Engineering.

Ms. Sneha Mhatre
Mentor

Dr Megha Trivedi
Head of Department

Dr. H.V. Vankudre
Principal

ABSTRACT

This project introduces a Python-based Internet Speed Tracker designed to monitor and analyze internet speed metrics consistently. The tool aims to address the need for reliable internet speed data to evaluate internet service providers' performance and users in making informed decisions regarding their internet subscriptions. The Internet Speed Tracker utilizes popular libraries such as speedtest-cli to measure various aspects of internet speed, including download speed, upload speed, and ping. It features a user-friendly graphical interface developed with Tkinter, allowing users to initiate speed tests, view real-time results, and track historical data through simple visualizations. The application stores results in a local database, enabling long-term data analysis and trends monitoring. Preliminary testing has shown that the tracker accurately reflects internet speeds, and its deployment could significantly benefit users experiencing inconsistent internet service levels. This tool exemplifies how automated tracking and straightforward data presentation can empower consumers and foster greater transparency within the telecommunications industry.

CONTENTS:

MODULE DESCRIPTION AND FLOWCHART:

Speed Test Module:

- Description: Manages data storage, retrieval, and simple data analysis.
- Key Functions:
- measure_speed(): Connects to the nearest test server and measures download and upload speeds along with ping.
- save_results(): Saves the test results to the local database for historical tracking.

Database Module:

- Description: Manages data storage, retrieval, and simple data analysis.
- Key Functions:
- connect_database(): Establishes a connection with the local database.
- insert_data(speed_data): Inserts new speed test results into the database.
- fetch_data(): Retrieves historical speed test results for analysis.

User Interface (UI) Module :

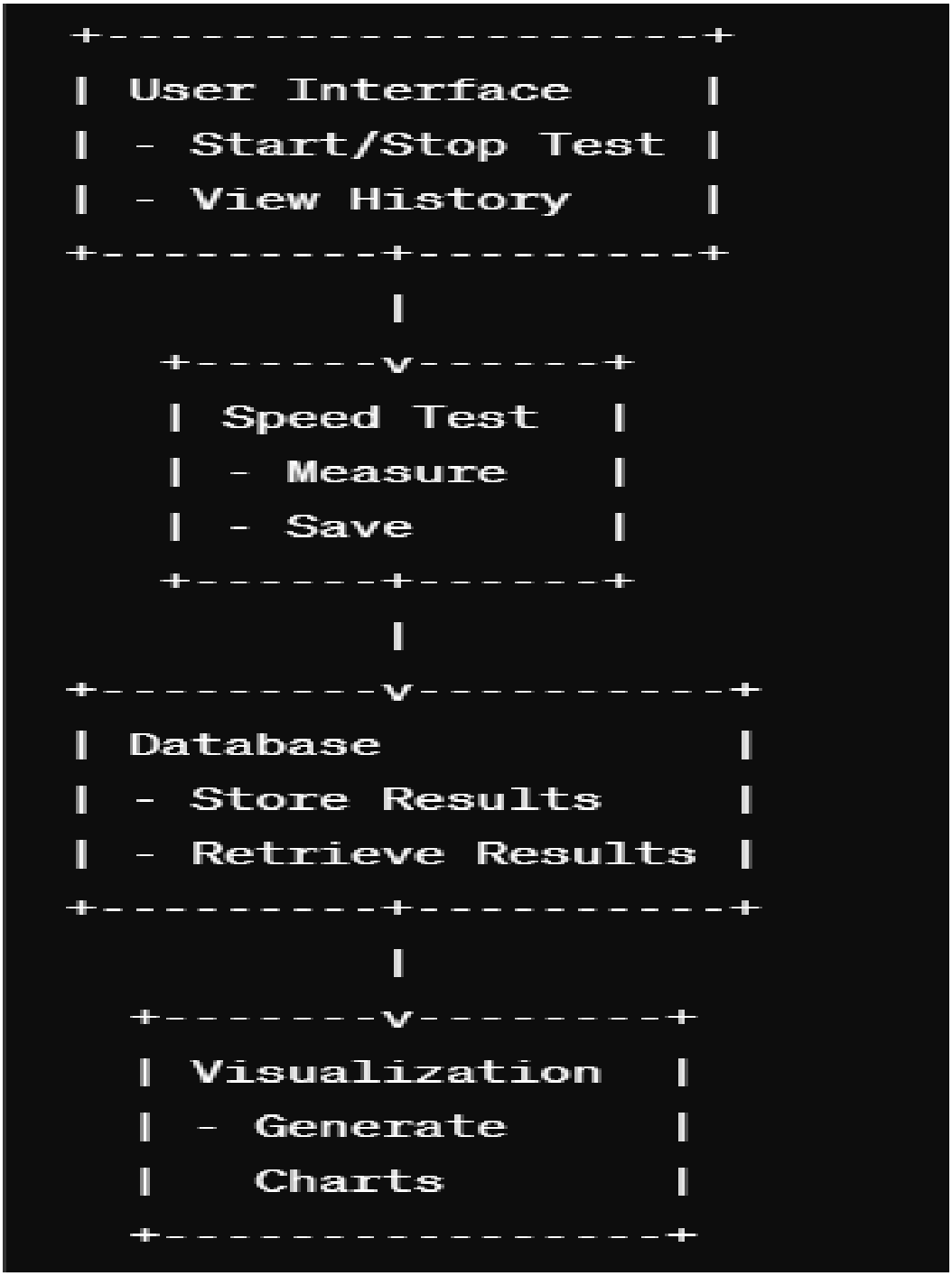
- Description: Provides a graphical interface for user interaction.
- Key Functions:
- display_main_window(): Shows the main dashboard of the application.
- start_test(): Button to initiate a new speed test.
- show_history(): Displays historical speed data in graphical formats.

Visualization Module :

- Description: Creates graphs and charts to display speed test results.
- Key Functions:
- generate_time_series_chart(): Generates time-series charts of speed tests over time.
- generate_summary_statistics(): Displays statistical summaries of the speed data.

Configuration Module :

- Description: Manages configuration settings such as server preferences, testing intervals, and notifications.
- Key Functions:
- load_config(): Loads the user-defined settings from a configuration file.
- save_config(settings): Saves updates to the configuration settings.


User Interface
- Start/Stop Test
- View History
Speed Test
- Measure
- Save
Database
- Store Results
- Retrieve Results
Visualization
- Generate
Charts

SOFTWARE REQUIRED:

Development Environment:

1. Python: The core language used for the project. Ensure you have the latest Python version installed, or at least a version that supports all the libraries you plan to use.
2. Integrated Development Environment (IDE):
    - PyCharm: Highly recommended for Python projects due to its robust features, including code completion, project management, and debugging tools.
    - Visual Studio Code: A lightweight, versatile editor with strong Python support via extensions.

Libraries Module:

1. speedtest-cli:
    - Purpose: This library is essential for measuring Internet connection speed. It interfaces with Speedtest.net servers.
    - Installation: Install via pip with the command pip install speedtest-cli.

2. Tkinter:
    - Purpose: Tkinter will serve as the GUI toolkit for creating the user interface.
    - Installation: Tkinter usually comes pre-installed with Python, but it can be installed separately if not included.

PROGRAM:

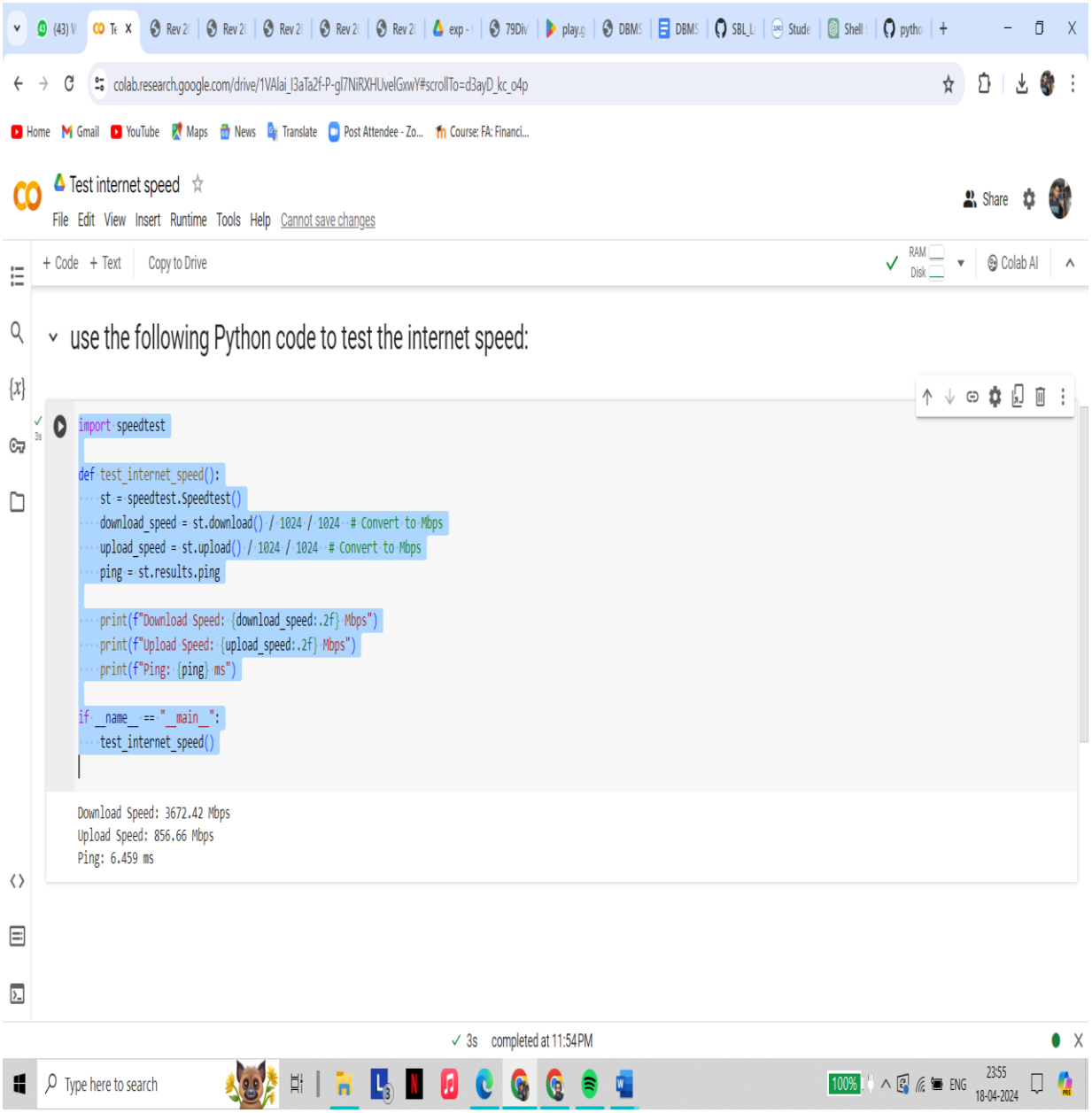
```
import speedtest

def test_internet_speed():
    st = speedtest.Speedtest()
    download_speed = st.download() / 1024 / 1024  # Convert to Mbps
    upload_speed = st.upload() / 1024 / 1024  # Convert to Mbps
    ping = st.results.ping

    print(f"Download Speed: {download_speed:.2f} Mbps")
    print(f"Upload Speed: {upload_speed:.2f} Mbps")
    print(f"Ping: {ping} ms")

if __name__ == "__main__":
    test_internet_speed()
```

RESULTS:


colab.research.google.com/drive/1VAlai_l3aTa2f-P-gl7NiRXHUvelGxwY#scrollTo=d3ayD_kc_o4p
Test internet speed
File Edit View Insert Runtime Tools Help Cannot save changes
Share
+ Code + Text Copy to Drive
Colab AI
use the following Python code to test the internet speed:
import speedtest
def test_internet_speed():
st = speedtest.Speedtest()
download_speed = st.download() / 1024 / 1024 # Convert to Mbps
upload_speed = st.upload() / 1024 / 1024 # Convert to Mbps
ping = st.results.ping
print(f"Download Speed: {download_speed:.2f} Mbps")
print(f"Upload Speed: {upload_speed:.2f} Mbps")
print(f"Ping: {ping} ms")
if __name__ == "__main__":
test_internet_speed()
Download Speed: 3672.42 Mbps
Upload Speed: 856.66 Mbps
Ping: 6.459 ms
✓ 3s completed at 11:54PM
Type here to search
100%
ENG
23:55
18-04-2024

CONCLUSION:

The Internet Speed Tracker developed in Python has proven to be an effective tool for monitoring and analyzing internet connection speeds. Utilizing the speedtest-cli library, the application reliably measures download speed, upload speed, and ping, offering users real-time insights into their internet service quality