



MANIPAL UNIVERSITY
JAIPUR



Team-2

CARBON EMISSION OPTIMIZATION MODE FOR LAPTOPS

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Problem Statement

Brainstorming and Planning Phase-



Understanding the problem and research-based investigation.



Identifying the Back-end and Front-end work components.



Workload division.

Shivam

TechStack



FRONT-END DEVELOPMENT:



Programming Languages: C#



Front-End Framework: .NET Framework



User Interface: WinForms



BACK-END DEVELOPMENT:



Programming Languages: C

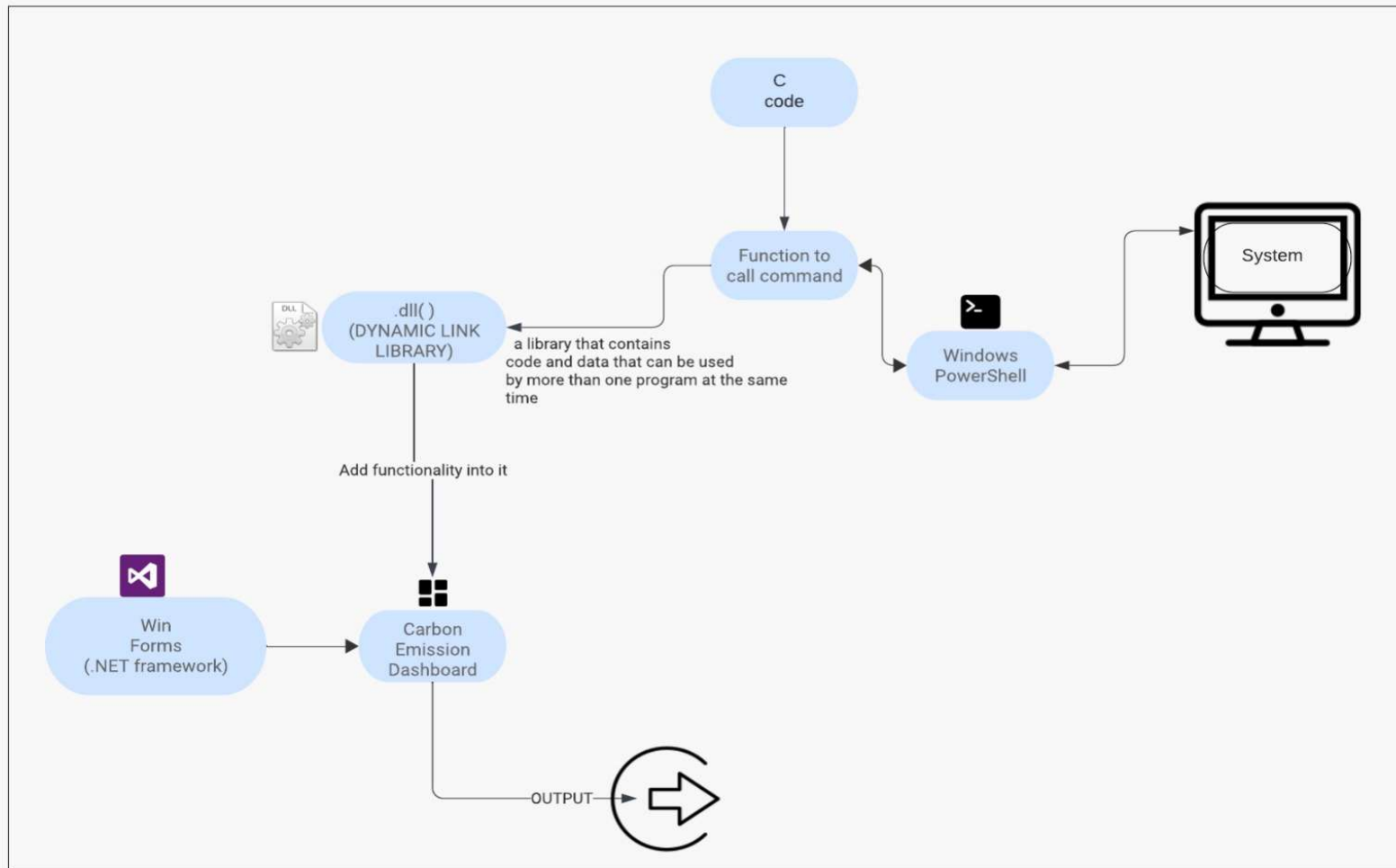


Data Extraction: From System via Windows PowerShell



Library: DLL(Dynamic Link Library)

Proposed Architectural Diagram



Priyansh

Approaches employed

- Power Consumption:
 - CPU Usage
 - Power Meter/Watt Meter
 - Discharge Rate
- UI Integration: First React then ---> C#

Karan

Prototype
+
Demonstration

Layout

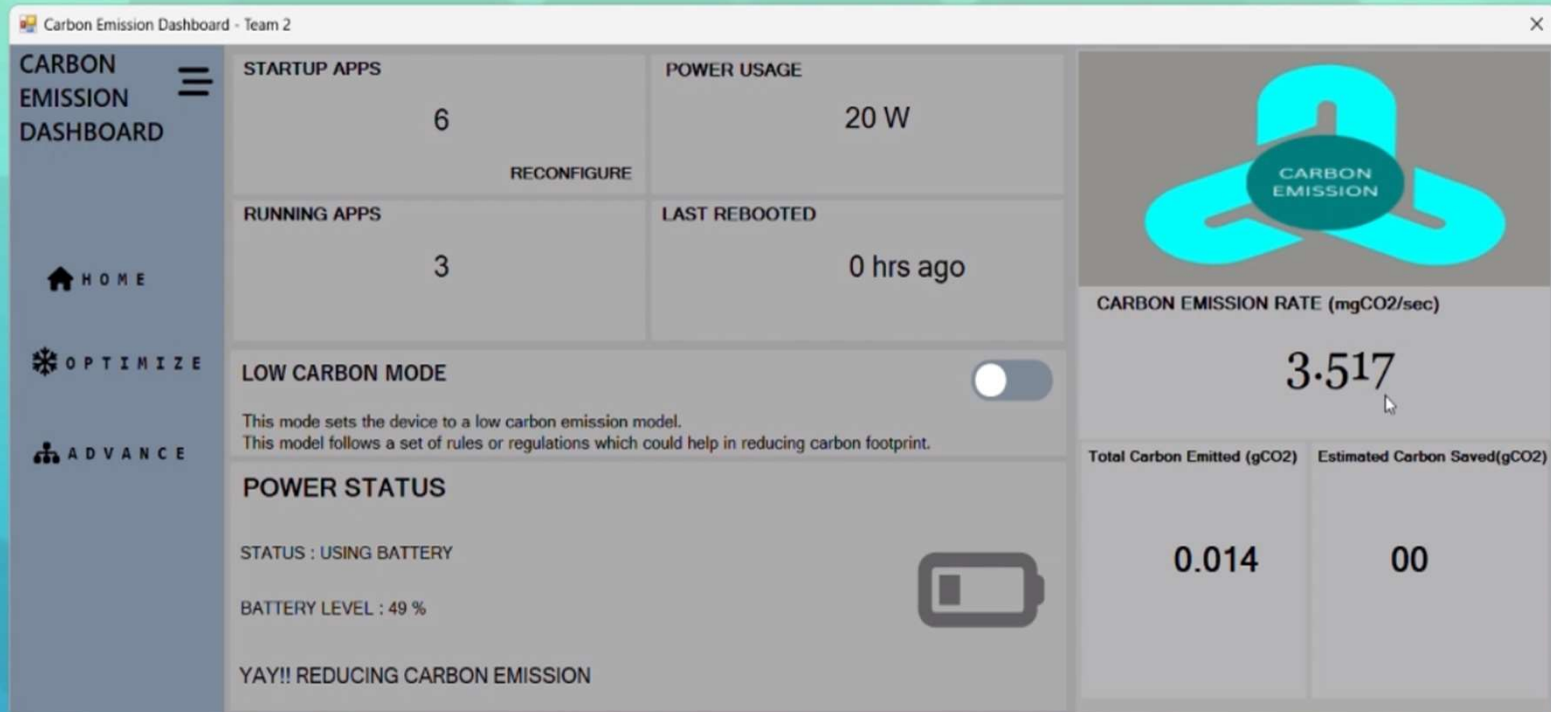
Features

Carbon Corner

Optimization

Dashboard:

Karan



DEMONSTRATION[Video]:



Carbon Intensity and Emission Formula-

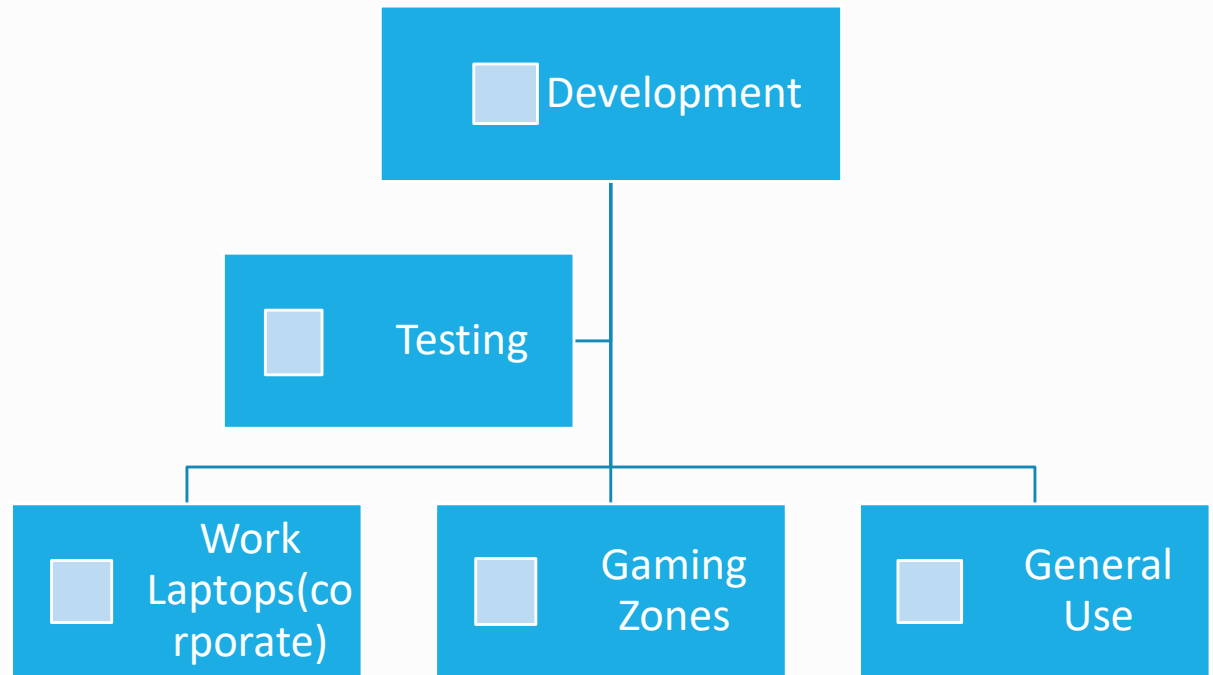
$$\text{CO}_2 \text{ Emission(g CO}_2\text{)} = \text{Power utilized} \times \text{Carbon Intensity}$$

Power Utilized in milliwatts

Carbon Intensity(for India)=633gCO₂-kWh

Bhavya

Deployment



✓ Integration with Dell Power Manager

Future Expansion-



**Location Feature to
make it global**



**Implement on
desktops**



**A mini/portable
version for
smartphones**



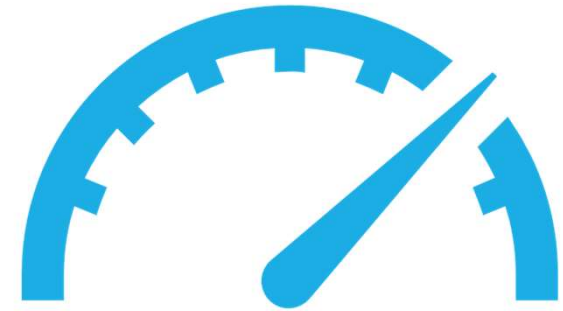
**Dedicated Server to
collect data for
survey purposes**

What Makes It Stand Apart!

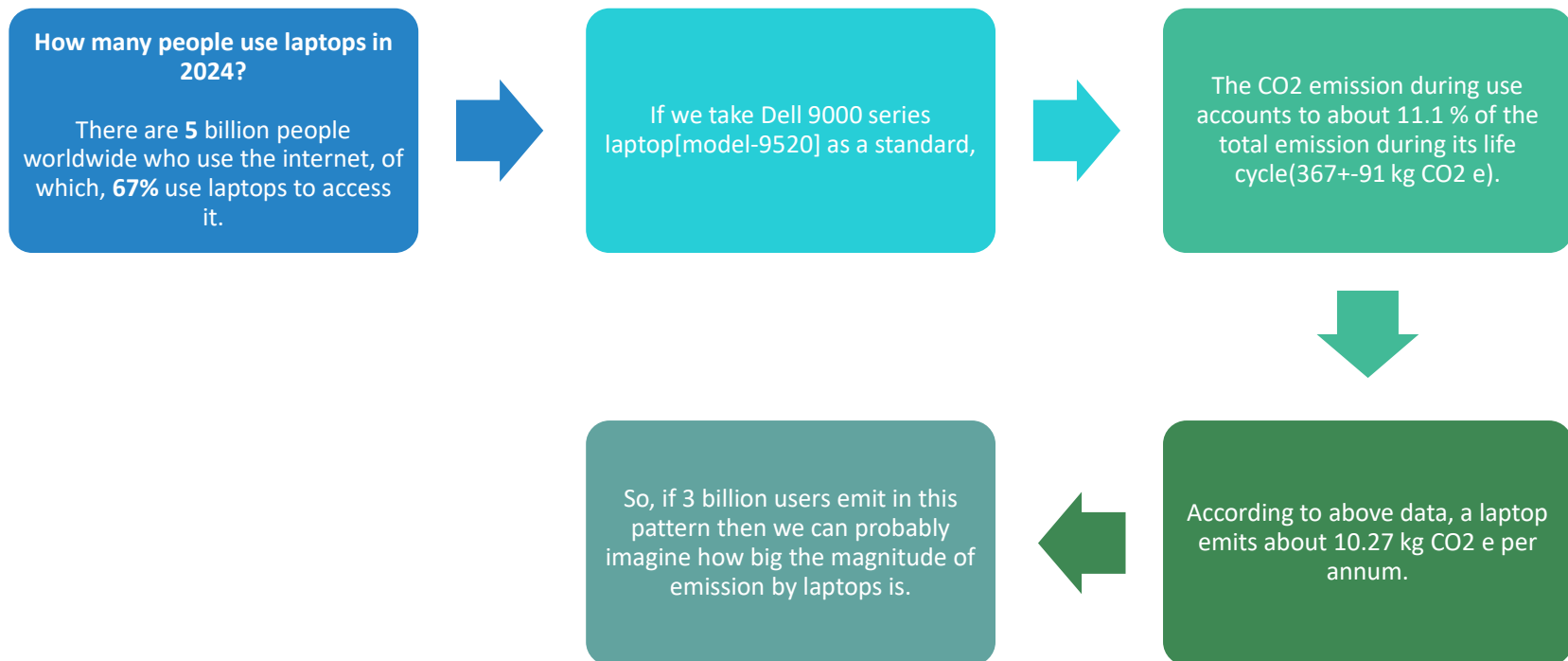
- Application does not ask for any personal user data.
- Memory Requirement: Very less compared to other applications.
- Plenty scope for further development: Innovation with climate change as concern is a prevalent field to invest in.


Possible Points of Improvement

- FASTER REFRESH RATE
- BETTER OPTIMIZATION
- REAL TIME NOTIFICATIONS FROM APPLICATION
- REGULARLY UPDATE CARBON INTENSITY



Significance in real world-



- 
- A solid blue horizontal bar spanning the width of the slide, positioned at the top.
- With our application we can help in reducing these numbers, considerably enough to see an effective change.

Works cited-

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Thank You
