**Project Report**

**Laptop Battery Status Monitor**

**– Under Guidance of Prof. G. Thakur**

**Presented By: -**

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**Created & Presented: Python GUI Based & Designed with Adobe Photoshop**

**1. Project Overview:**

**1.1 Project Name:**

**Battery Status Monitor**

**1.2 Objective:**

**Develop a user-friendly application for monitoring and visualizing the battery status of a laptop.**

**Utilize the psutil library for real-time access to battery information.**

**Provide users with insights into charging status, remaining charge percentage, and estimated time for charging or discharging.**

**1.3 Rationale:**

**Modern laptop users often face challenges in monitoring their battery health effectively.**

**The project addresses the need for a user-friendly tool that provides accurate and comprehensible battery status information.**

**2. Implementation:**

**2.1 Libraries Used:**

**Tkinter:**

**Used for creating a graphical user interface, allowing users to interact with the application seamlessly.**

**psutil:**

**Employs the sensors\_battery() function to access real-time battery information, including charge percentage, power status, and estimated time.**

**PIL (Python Imaging Library):**

**Used for handling and resizing the banner image, enhancing the visual appeal of the application.**

**2.2 Functionality:**

**update\_battery\_info() Function:**

**Retrieves battery information and updates the GUI with the current charging state, charge percentage, and estimated time.**

**Utilizes label widgets for textual information and a canvas widget for a visual representation of the battery charge.**

**refresh\_battery\_info() Function:**

**Allows users to manually trigger the update of battery information, providing flexibility for immediate refresh.**

**2.3 Automatic Updates:**

**The application automatically updates battery information every 15 seconds, ensuring real-time monitoring without user intervention. Or else refresh button is added to the GUI.**

**3. References:**

**3.1 Tkinter Documentation:**

**Official documentation for Tkinter, the standard GUI toolkit for Python.**

[**https://docs.python.org/3/library/tkinter.html**](https://docs.python.org/3/library/tkinter.html)

**3.2 psutil Documentation:**

**Documentation for the psutil library, used for accessing system and process-related information.**

[**https://psutil.readthedocs.io/en/latest/**](https://psutil.readthedocs.io/en/latest/)

**3.3 PIL Documentation:**

**Documentation for the Python Imaging Library (PIL), used for image processing.**

[**https://pillow.readthedocs.io/en/stable/**](https://pillow.readthedocs.io/en/stable/)

**4. Conclusion:**

**4.1 Achievements:**

**The project successfully addresses the need for a user-friendly battery status monitoring tool.**

**Real-time information and visualizations enhance the user experience, providing valuable insights into battery health.**

**4.2 Functionality and Flexibility:**

**The application incorporates both manual and automatic update features, ensuring flexibility and real-time monitoring.**

**User-friendly features such as the manual refresh button contribute to an intuitive and efficient user interface.**

**4.3 Future Scope:**

**The project serves as a foundation for potential expansions, including notifications for critical battery levels or the incorporation of historical battery performance logs.**

**4.4 Overall Impact:**

**The Battery Status Monitor project delivers a practical solution for users seeking efficient and accessible tools for monitoring laptop battery health.**

**The project's simplicity, functionality, and potential for expansion make it a valuable addition to battery monitoring applications.**

**In summary, the Battery Status Monitor project stands as a user-friendly and effective solution for monitoring laptop battery health. The integration of real-time information, visualizations, and user-friendly features establishes the project as a valuable tool for modern laptop users.**