Antivirus System using Raspberry Pi Pico W For Windows

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Abstract: *In today's rapidly evolving digital environment, the proliferation of cyber threats necessitates the development of robust, efficient, and lightweight antivirus solutions, particularly for edge computing devices. This paper introduces a compact and cost-effective antivirus scanning system built on the Raspberry Pi Pico W platform, specifically engineered to detect and neutralize threats originating from USB storage devices and network-connected peripherals. Leveraging the capabilities of MicroPython for ease of development and Wi-Fi connectivity for remote access and updates, the proposed system integrates a signature-based malware detection mechanism to provide real-time scanning and threat identification. The lightweight nature of the Raspberry Pi Pico W ensures low power consumption and portability, making it ideal for deployment in educational environments, small-scale industrial setups, and edge networks. Furthermore, the system is designed with dynamic updating functionality, enabling automatic retrieval and integration of the latest malware signature databases via Wi-Fi, thereby enhancing its adaptability and resilience against emerging threats. Through practical testing and implementation, the prototype demonstrates an effective balance between performance, resource efficiency, and affordability, positioning it as a viable cybersecurity tool for constrained environments where traditional antivirus solutions may be impractical*

Keywords: Raspberry Pi Pico W, Antivirus, IoT Security, USB Scanning, Embedded Systems, Micro Python, Lightweight Detection, Threat Signature, Real-time Monitoring

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