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ENHANCING LOCKER SECURITY: A PIC16F877A MICROCONTROLLER-BASED AUTHENTICATION AND DETERRENT SYSTEM

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Abstract: In an era marked by escalating security concerns, safeguarding possessions has emerged as a paramount priority, necessitating continual technological innovation. However, as security technologies advance, so too do the strategies employed by perpetrators. In response to this evolving landscape, this paper presents a novel approach centered around the utilization of the PIC16F877A microcontroller to fortify locker security systems. The proposed system operates by juxtaposing an input passcode against a pre-stored reference within the microcontroller's memory. Upon successful authentication, the locker mechanism is disengaged, permitting access. Conversely, failed attempts trigger an LCD display prompt signaling a "RETRY" message. Subsequent erroneous entries activate an integrated electric shock mechanism coupled with an audible alarm, serving as a potent deterrent against unauthorized access. Despite the strides made in technological advancement, theft remains an enduring threat, particularly in the realm of locker security. To mitigate this risk, our system embodies a multifaceted security architecture, harnessing the computational capabilities of the PIC16F877A microcontroller to fortify locker enclosures. By embracing these innovative features, our solution endeavors to establish a formidable barrier against unauthorized entry, thereby enhancing the overall security landscape and safeguarding personal belongings with heightened efficacy and resilience.

Keywords: Memory; Locker; Security; Shock