IoT school bus: Children safety

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Abstract— With the rising statistics of traffic accidents and child abduction, there is a need for a robust system that enables constant tracking for millions of children on their way commuting from and to schools. With emerging of Internet of Things (IoT) technology, in addition to Radio Frequency Identification (RFID), developing such system becomes feasible. This system provides complete visibility children tracking. In this paper, we propose a complete low cost design and implementation of an IoT-based system that allows schools, parents and authority to track the movement of the children during their presence in the school bus, which guarantees comfort for parents and safety for children. The system is based on, a low cost Nano RFID reader and a GPRS module both interfaced with Arduino microcontroller. The Nano RFID reader is used as an interface for providing the reader with a mean to access the internet over 3G/4G network. We build Mysql database and deploy it on Heroku's cloud platform, which makes building applications and deploying them fast, secure, easy and scalable. We also develop a Java GUI; with secure login grant admin access, for a complete visibility and control over the system users on internet. The system is tested successfully on field using one of King Fahd University of Petroleum and Minerals (KFUPM) school buses.

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