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Switching On/Off Air Conditioner and Fan Alternately based on IoT Motion Detection and Room Temperature

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Abstract
The Internet of Things (IoT) connects electrical appliances that enable data transfer for communication without human intervention. IoT has evolved, and its implementation has been extended to residential areas. It can be said that all residents use fans as cooling appliances. In Malaysia, having a fan is not sufficient due to its hot temperature throughout the year. Therefore, most of the residents use air conditioners as an additional cooling appliance. Using air conditioners regularly could contribute to high energy consumption. Furthermore, excessive energy consumption occurs when an occupant of a residential building forgets to switch off electrical appliances such as fans and air conditioners. In addition, leaving electrical appliances turning on when nobody is at home just wastes energy. This work aims to develop an IoT-based smart home controlling system for minimizing energy consumption. This system enables automatic control that depends on room temperature and motion detection. Various types of sensors, such as temperature sensor, humidity sensor, and motion sensor, are used to switch on/off the air conditioner and fan. The air conditioner and fan will be alternately switched on and off depending on the ideal room temperature. The testing results show a significant reduction in energy consumption and a promising decrease in the electricity bill. Future works should be focusing on determining the over limit energy consumption. On top of that, this research would be best to try on simulation to get better results. © 2024, Politeknik Negeri Padang. All rights reserved.

Author Keywords
alternately control; energy consumption; ideal temperature; Internet of Things

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