Implementation Of Smart Locker Notification Sending Using Telegram At The Directorate Of Innovation And Business Incubators.

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A B S T R A C T

The Directorate of Innovation and Business Incubator (DIIB) has built an Innovation locker for student assignments at Bina Darma University Palembang. What was developed by the innovator center, when the lecturer is unable to attend, students can collect their assignments in the lockers and can also make it easier for lecturers to collect them into one student assignment place. Notifications are messages displayed by your Android app to Provide reminders, communications from others, or other timely information from the app. User can tap notification to open your app or perform action directly from notification, Smart locker system prefers software over hardware. While hardware plays a big role, smart locker technology is incomplete without data and insights about usage and security. Our smart locker service is the best choice for workers who need to provide staff with a safe place to store personal items, need to reduce device loss, and want to take advantage of click-and-collect. All of this is backed up with real-time analysis and reports so you can make informed decisions.

Keyword: Telegram, Internet of Things, Smart Locker.

INTRODUCTION

The Directorate of Innovation and Business Incubators (DIIB) has built an Innovation locker as a place to collect student assignments at Bina Darma University, Palembang. Developed by the innovator center, when the lecturer is unable to attend, students can collect them in a locker and it can also make it easier for lecturers to gather together as one place for student assignments. This locker can also be called a smart locker because it uses automatic technology with a microcontroller. The condition of the Smart Locker does not yet have a monitoring or monitoring system [1].

Therefore, researchers will plan a solution to be able to monitor the Smart Locker, where later this monitoring aims to provide information to lecturers about Smart Locker activities. Researchers will use an Android-based smartphone to receive notifications from Smart Locker in realteam. And later researchers will also use a microcontroller technology system that can monitor Smart Lockers, which function to observe or monitor lockers that are being used[2]. By combining the two types of systems, the implementation of smart locker notifications on Telegram was created [3].

The aim of this research is to apply Internet of Things (iot) technology to Smart lockers. Where later the user will create a telegram Bot on the cellphone owner's Telegram, later the user will get a notification from the telegram Bot that the smart locker is there to put in items or also to collect assignments for the lecturer. Where later, when the lecturer's smart locker is full, the monitoring system and notification system will send a photo which will be sent to the lecturer's Telegram Bot [4]. Application if the student wants to put things in their smart locker. When the smart locker is full, there will be a monitoring system that will report that the locker is full and will later send a notification to the lecturer's Telegram Bot [5].

METHOD

This research design uses action research methods (action research). According to [6]. The research method applied aims to increase effectiveness, efficiency and quality of work products. Action research is used as a means to test, develop, discover, and create new actions that can be applied in work contexts.

In the action research method, research describes, interprets and explains a condition at the same time as intervening with the aim of improvement or participation. The action research method consists of several stages which can be seen from the picture below.
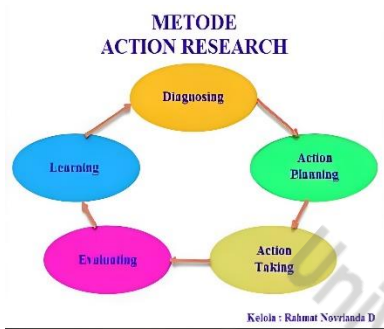

Figure 1. Research Method

RESULTS AND DISCUSSION

Researchers started making plans to find out notifications to Telegram and carried out tests so that the results of sending notifications to Telegram could be known. The results of the implementation of sending smart locker notifications to Telegram will be that when the student opens the smart locker door there will be a notification to Telegram in the form of the student's identity and when the student has submitted an assignment and later the assignment is full or the items in the smart locker are full there will be a notification from the Smart Locker to The lecturer's telegram bot says the locker is full.

Tables

Testing of Student Identity Notifications and Full Smart Locker Notifications obtained very satisfactory results for researchers.

Table 1. Notification Testing

NO	Testing	Succeed	Not successful
1.	Notification of Student Identity (Name and ID)	√	
2.	Full Smart Locker Notification	√	

As for this test, there are still shortcomings when the Smart Locker is not connected to electricity, it will not function and when the Smart Locker is connected to electricity, the Smart Locker will turn on, the delay is when the signal we use WiFi from our Smartphone will have speed problems and requires a long delay of around 2 minute .

Figures

RFID is the abbreviation of Radio Frequency Identification. RFID is a technology used to identify and retrieve data using barcodes or magnetic cards. RFID is formed by the main

components, namely the tag (transponder), reader and antenna. In passive tags, the signal is sent by the reader via electromagnetic waves, then the tag will respond and send the data/information [7]. Contained in it. Readers also have the ability to make data changes to tags in addition to reading and retrieving information data stored in tags. Meanwhile, the antenna in the RFID system influences the distance and range of reading or identifying objects [8].

Figure 2. RFID

Esp 8266 Nodemcu

NodeMCU ESP8266 is a microcontroller module designed with ESP8266 inside. The ESP8266 functions for Wi-Fi network connectivity between the microcontroller itself and the Wi-Fi network (Dasmen & Prayitno, 2023). Later the ESP8266 will send a notification to the lecturer's telegram [9].
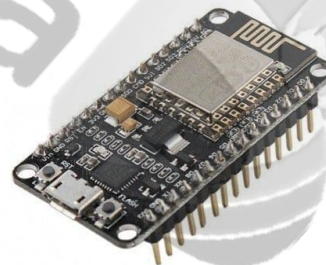

Figure 3. Esp 8266 Nodemcu

Ultrasonic HC-SR04 is a sensor module that can measure distances ranging from 2cm to 450 cm, where the accuracy is 3mm. In this module there are transmitter, receiver and control circuit sections, with higher time accuracy [10]{Bibliography} Later, this sensor will detect an object when it approaches. The sensor will send data to esp8266 [11].
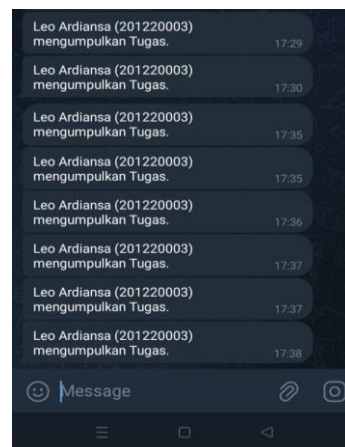
Figure 4. Ultrasonic HC-SR04

Figure 5. RFID test results to Telegram

CONCLUSIONS

Notification technology systems are all forms of activity carried out using access media. With this notification system, Smart Locker becomes easier and more efficient. After implementing the smart locker notification to Telegram [12]. utilizing WiFi technology, it can work well, as well as the display information process which will send notifications to the Lecturer's Telegram. Research that has been carried out and is in accordance with the problems formulated as well as analyzing the results of the tests that have been carried out [13].

At this testing stage the researcher uses an ultrasonic sensor to find out what items are in the smart locker and when the items have piled up there will be a notification message in the form of a short message to the lecturer's Telegram Bot. Later the sensor will detect items at least 4 cm from the sensor, and the delay is around 15 seconds. The hc-sr04 ultrasonic sensor will be placed on top of the Smart Locker and this ultrasonic sensor functions to detect an object when the object approaches [15]. The sensor will send a notification to the telegram that the locker is full.

Figure 6. Ultrasonic test results to telegram

Test Results Notification of personal identity to TelegraWhen a student wants to put their things [14]. in or collect their assignments into the Lecturer's Smart Locker, a notification will appear on Telegram containing the student's name and ID. The delay will be around 15 seconds, and when the student enters their assignments, the student will attach the ID card to the RFID. The RFID Smart Locker functions to identify and retrieve data using a barcode or magnetic card.

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