

## ABSTRACT

The laboratory is one of the supporting facilities for student lectures at the Faculty of Applied Sciences, Telkom University. The system of borrowing laboratory space still uses a simple method, by filling out the logbook, taking the room key in the admin room and returning it back after borrowing. These things often encounter obstacles, such as the keys that are not returned to the admin, borrowers who often do not fill out laboratory loan books and so on.

From those problems, this final project will be made a tool to make it easier and more practical in conducting loans. The key to the laboratory room will be integrated with the Near Field Communication or NFC system which will immediately open the door of the room. The tool that will be made is also equipped with a DHT11 sensor to monitor the temperature in the laboratory room. Whereas for monitoring and viewing the empty laboratory space schedules can be done with applications on Android devices.

Based on the results of testing that has been done, all systems both microcontrollers and Android applications are running well. The room door can open according to the NFC ID in Firebase and monitor the temperature with a DHT11 sensor that has a tolerance of 2-5%. All functions in the Android application can work 100% well.

**Keywords:** monitoring, DHT11, NFC, android