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Android Remote Control System using wireless connection

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Abstract. Remote door lock control using an android based Arduino. where homeowners can lock and unlock by controlling the door lock via a cellphone that is often carried everywhere. So it is hoped that a remote door locking system can be via a smartphone (smartphone) to assist in locking without having to go to the door. In addition to that, the software created is expected to make it easier for homeowners to lock the door without having to go to the door by controlling the door lock using a cellphone to make it easier to open and lock the doors. The method used is the method of data collection and system development methods. The method of data collection is the method of observation and literature study. While the system development method used is the waterfall method. Application control door locks remotely using Arduino based on android were modeled using UML diagrams (Unified Modeling Language). The conclusion of the application made can be used to lock and unlock the door of the house using a cellphone. The creation of an Android-based home door lock application can make it easier for homeowners to open the lock and homeowners are not afraid to lose their house keys. It is expected that the addition of features in the door lock control applications remotely using Arduino based on android not only controls the door lock.

1. Introduction

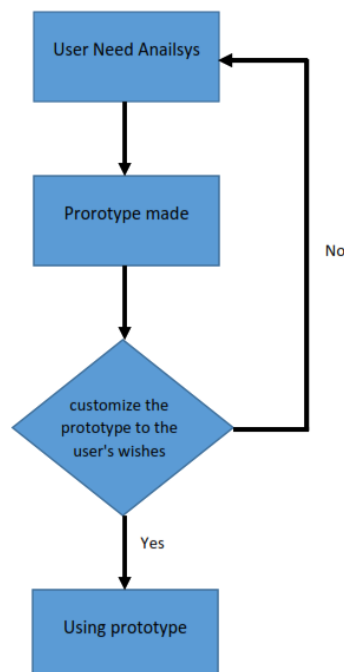
Applications are now popular software, applications also include user interfaces that take advantage of the unique interaction mechanisms provided by mobile platforms to be able to access various sites [1], such as text classification [1]. In the implementation of the system, the button is used as manual control for the process of opening and locking the Smart Door Lock. When the button is pressed, the Smart Door Lock system will do checking the last state then the system will change the state that was originally open to be locked or vice versa [2]. Development using App Inventor 2 will make it easy to access learning because this application is android in nature [3]. The development of the existing smart door lock system is still vulnerable. Human error is still common. For example, humans are still vulnerable to the neglect factor. They forgot to lock the door coupled with the many human activities, so the control system that has been developed is still not effective. Not yet automatic, the process opens and closes the door [4]. Android Based Smart door lock system is designed to address the issue of unauthorized access, breaches, and intrusions. Banks, corporate offices, financial organizations, jewelry stores, and government organizations are some of the common targets where unauthorized access, breaches, and intrusions occur [5-8]. Technological developments that have increasingly sophisticated door security systems must keep up with the times. The room door security system, which is currently still using conventional methods, is considered unsafe at this time, even though there are already CCTV cameras in use [6]. Mobile devices require a password to upgrade system security. The hardware on the door uses a microcontroller to control the linear actuator



which acts as a locking mechanism. Bluetooth protocol is selected as a communication method because it is already integrated into many Android devices and secured via the protocol itself [7].

2. Methodology

Prototyping is a system development technique that uses prototyping to develop the system so that the owner or user of the system has a picture of the system development to be done, this technique is often used when the system user does not understand the system to be developed so he has an idea of the system to be developed, with a floating prototype can create a prototype first before developing the actual system [7]. An evolutionary prototype is a prototype that is continuously developed so that the prototype fulfills the functions and procedures required by the system [8].



can be shown below the stages in the evolutionary prototype:

- a) analyze user needs: the developer and the user or system owner have a discussion where the user or system owner explains to the developer the system requirements they want.
- b) Create Prototype: the developer makes a prototype of the system that has been described by the user or system owner.
- c) customize the prototype to the user's wishes: the developer asks the user or the owner of the system about the prototype that has been made, whether or not it is in accordance with the system's needs.
- d) Using Prototype: the system starts to be used with a prototype that has been made

Figure 1. Evolutionary prototype stage

In using this method, the system will continue to be developed so that it becomes more complex so that the work will never finish, but the door lock system will continue to develop and develop according to market needs.

3. Result and Discussion

From the observations, the researchers collected data about the security of the door lock. Where the researcher observes making a door lock application using a cellphone or mobile phone android based. While in the analysis stage, researchers analyze problems for making door lock applications android based to create an android-based house door lock application.

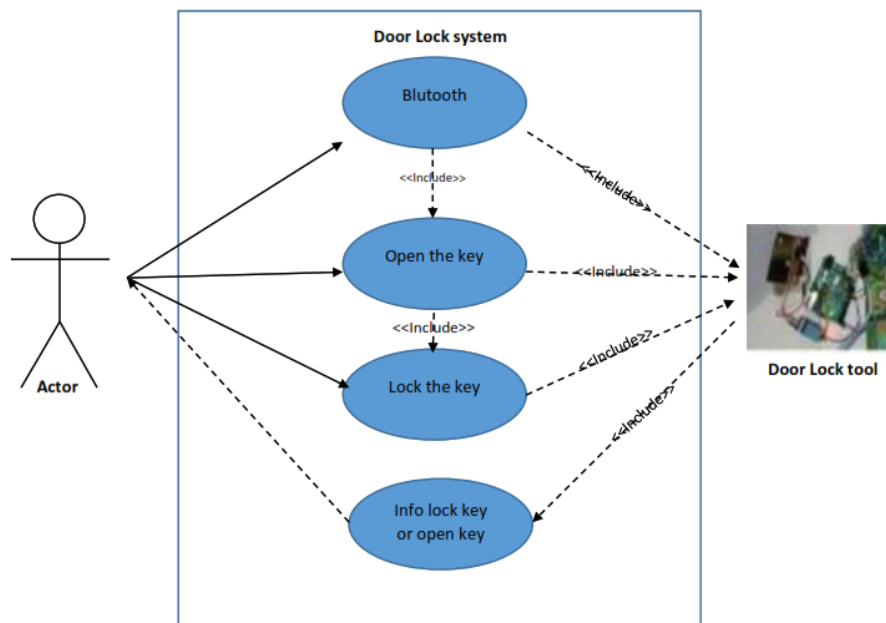


Figure 2. Use case diagram door lock system

From the picture above it can be explained how the actor must run Bluetooth first before being able to lock or open the door lock system, after the same response to the dining door lock tool will appear info or notification whether the lock is open or not.

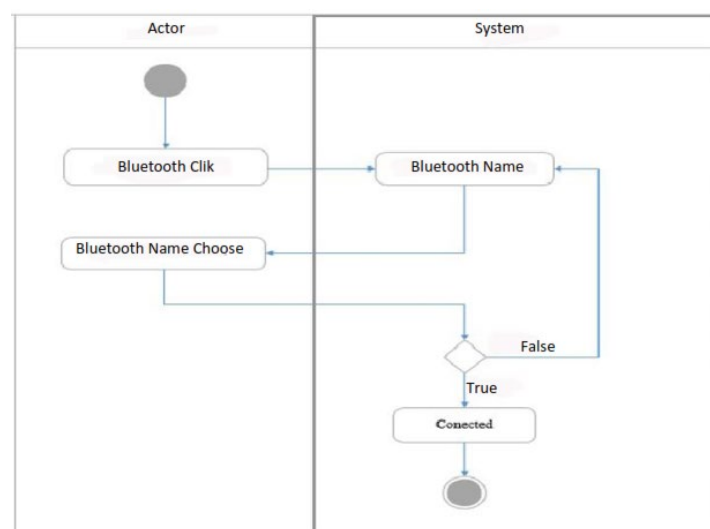


Figure 3. Bluetooth connection activity diagram

from the picture above it can be explained how the stages where the actor must first select Bluetooth then after the Bluetooth is selected according to the intended device it will open, but if the one in the booth is wrong then they have to re-choose the correct Bluetooth device

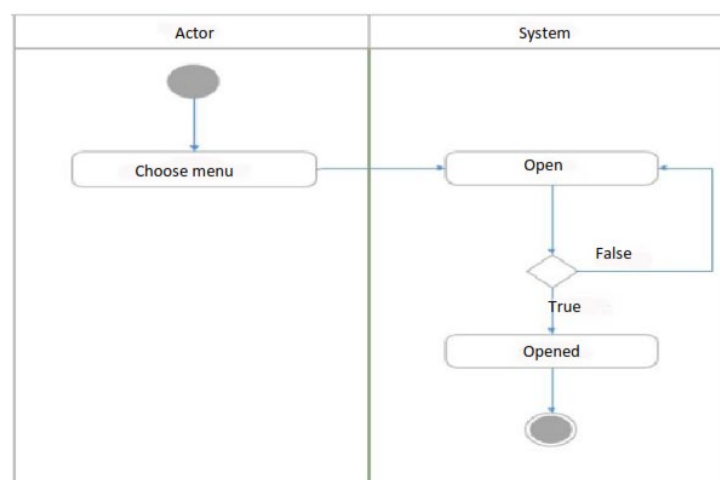


Figure 4. Open Key Activity Diagram

From the picture above you can see how the actor chooses the lock menu to open, if it is not open then the menu options will continue to appear until the lock is open, indeed sometimes the lock will not open due to an unreachable Bluetooth connection.

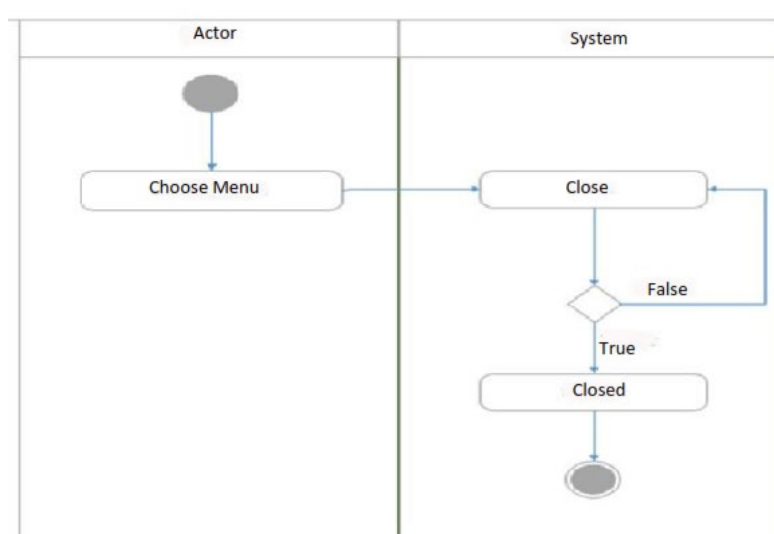


Figure 5. Lock Key Activity Diagram

As well as the unlock system the steps are the same as opening and if the key is not locked when the unlock menu is selected then it is caused by the Bluetooth distance that is not reached by the door lock system tool

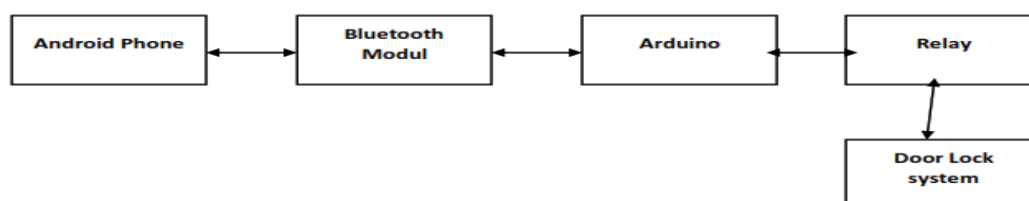


Figure 6. Modeling Door Lock System

The flow of the system modeling is broad as follows:

Following. In the first step, the user must connect the Bluetooth on the cellphone with the Bluetooth module. When connected, the user can use the display from the door lock application to control the door lock. The data sent from Bluetooth on the cellphone will be received by the Bluetooth module and will later be processed on the Arduino. Processing on the Arduino will later be to control the tools that are ordered from the cellphone. The tool that is controlled is the door lock of the house.

4. Conclusion

The system that is built produces a system using Bluetooth as a tool for sending and receiving data that is used to control the door lock, the system is successful and can be used to lock and unlock the door of the house using a mobile phone. also will no longer be afraid to lose the key to the door of the house but make sure a Bluetooth connection is always within reach.

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