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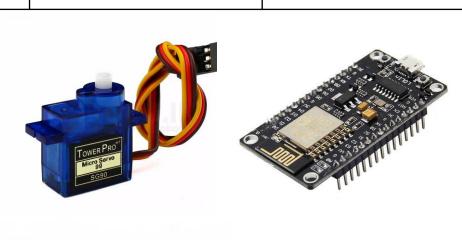Indonesia International Invention Expo

-INDONESIA-

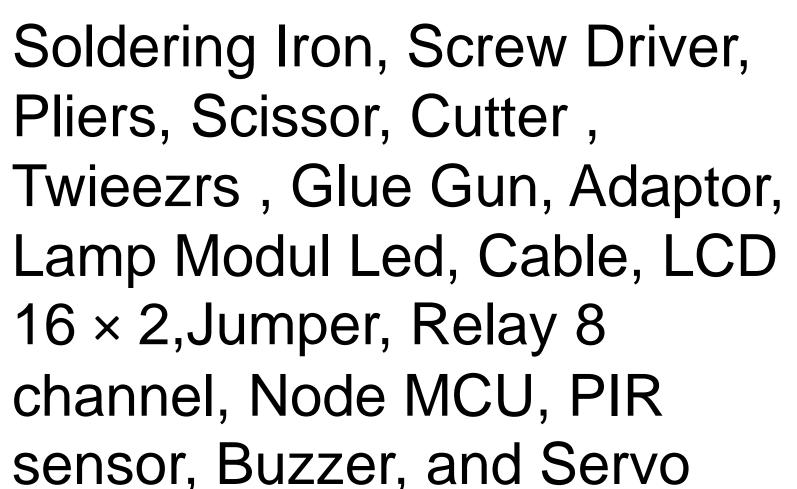# SHAMSU: Smart Heat and Motion Sensor for HomeUse

INTRODUCTION

The crime rate is increasing in several areas during the pandemic Covid-19. On the other hand, mobile internet users are growing rapidly. Based on those facts, the researchers think probably there must be a way in using mobile and user-friendly apps to detect and prevent criminal acts. SHAMSU (Smart Heat and Motion Sensor for Home Use) is an Arduino and Blynk-based device to improve home security systems by using the Internet of Things (IoT). The device can detect the temperature and movement of unwanted objects within certain distances. The infrared sensor will send data through the internet to turn on and drive the micro servo motor, buzzer, and LED automatically. As an easy-use tool, SHAMSU can operate and control from the mobile phone. Through several tests, the researchers have succeeded in proving that the device can be used for a home security system in the neighborhood.
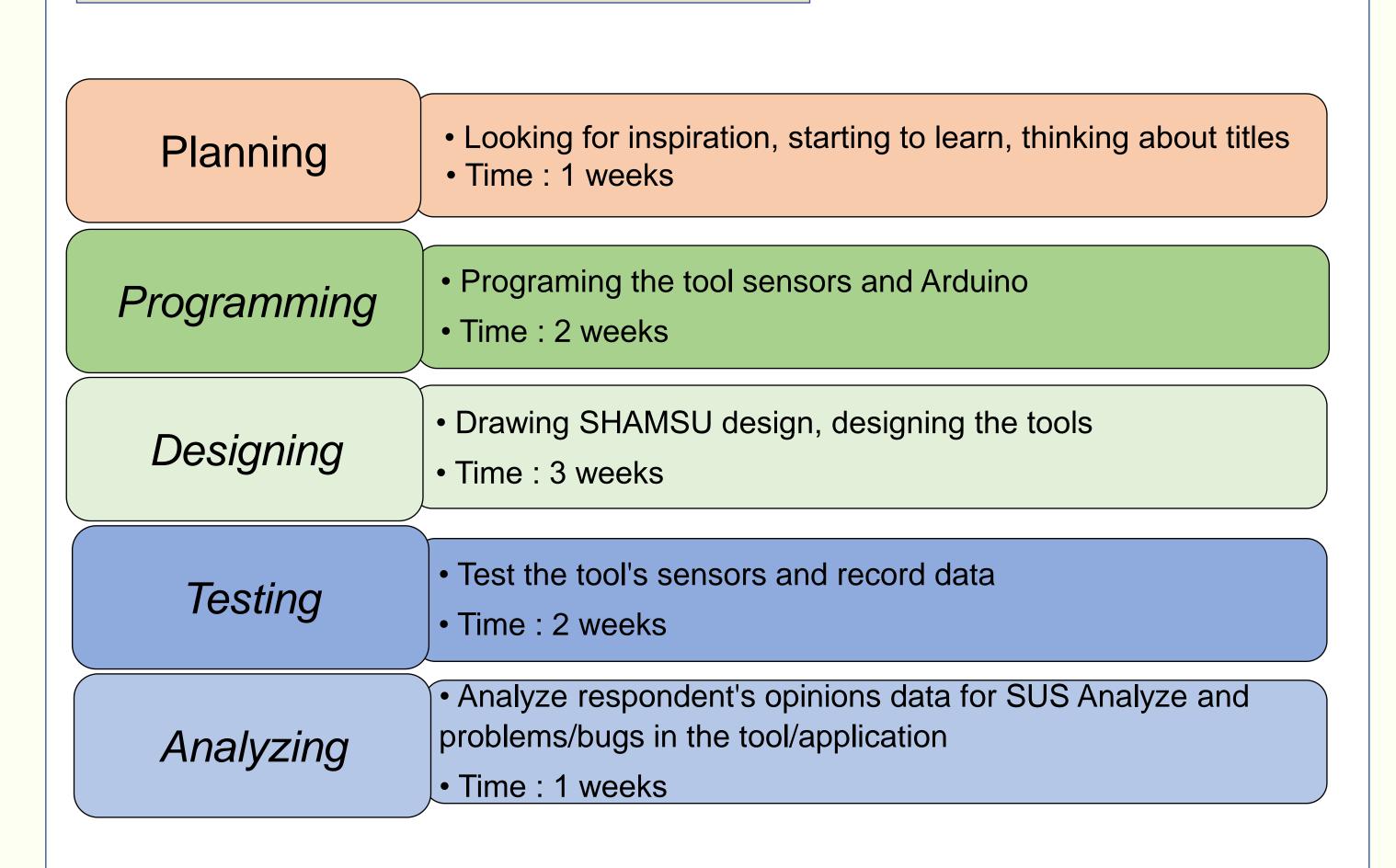
DATA AND DISCUSSION

No	Testing	Test case	Expected Results	Result
1.	PIR Sensor	Can PIR detect presence of living things?	PIR can detect Human present	Valid
2.	Servo	Can Servo move as desired?	Servo can serve to push or rotate objects with high-precision control in terms of angular position	Valid
3.	Buzzer	Can Buzzer sound following PIR sensor?	Buzzer will sound automatically when PIR succeed in detecting something	Valid
4.	LED	Can the light on following PIR sensor?	LED will light on automatically when PIR succeed in detecting something	Valid
5.	Blynk App	Can Blynk show the sensor value in the app?	Blynk can show the sensor value dan set the tool from the app	Valid

Tools And Materials:
Soldering Iron, Screw Driver, Pliers, Scissor, Cutter , Twieezrs , Glue Gun, Adaptor, Lamp Modul Led, Cable, LCD 16 × 2,Jumper, Relay 8 channel, Node MCU, PIR sensor, Buzzer, and Servo

METHOD

Planning	• Looking for inspiration, starting to learn, thinking about titles • Time : 1 weeks
Programming	• Programing the tool sensors and Arduino • Time : 2 weeks
Designing	• Drawing SHAMSU design, designing the tools • Time : 3 weeks
Testing	• Test the tool's sensors and record data • Time : 2 weeks
Analyzing	• Analyze respondent's opinions data for SUS Analyze and problems/bugs in the tool/application • Time : 1 weeks

SHAMSU has been developed for around 3 months through several processes from planning to analyzing. The device has been tested by a Black Box method to examine the functionality and usability of the system.

CONCLUSION

The researcher has succeeded in proving that the device made in this project can detect temperature and movement of living things through internet and mobile phone applications. Arduino and Blynk are very smart programs or applications that can be used to operate detectors such as PIR Sensor with support from several devices such as Buzzer, LCD, and Servo Motor which functioned as warning and preventing systems. The device has proven to be very effective in increasing home security.

RECOMMENDATION

The researchers are very aware that the performance of this device can still be improved by adding several functions, such as:
- adding a video camera to get the visual figure and real-life situation.
- changing the electricity power supply from the AC power to the DC battery so that the device can be stored and used anywhere.

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