PRAYER TIME REMINDER AND MOBILE PHONE JAMMER FOR MOSQUE BASED ON RASPBERRY PI

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ABSTRACT

Prayer time reminder based on raspberry pi with LCD TV as a display that not only can be set according to location based on GPS coordinates, but also contain information in the form of picture, text, video, etc. This is much better than just simple words placed on dot matrix or running text as it is today. Display design can be fully customized as per needed, it can be accommodated because the system based on raspberry pi mini PC. The method used for this research is by conducting literature studies and field studies that are necessary for system design and manufacture. This system had several components involve include raspberry pi, signal jammer, air freshner, and LCD TV. This prayer time reminder display information of mosque name, address, clock, prayer schedule based on GPS coordinate, event photo, announcement, video, and running text as per installed program. This reminder also act as mobile phone signal jammer, so there is no interference based on mobile phone signal. Jammer activated when entered prayer time up to at least 30 minutes later. It function can also be added as air freshner which will spray as long as the jammer is activated at 10 minute intervals.

Keywords: Raspberry pi, Prayer Time, Reminder, Signal Jammer, LCD TV

1. INTRODUCTION

Fardlu prayer is a mandatory for every muslims. The five-time prayer schedule obtained from the Ministry of Religious Affairs or Religious Organizations are usually in paper or print out and posted on mosques or prayer rooms or included in calendars, often known as eternal prayer time. For all this time the Muslims know prayer time by listening adzan from the mosque since people are often doubted whether it is time for prayer or not, because the daily prayer schedule is regulary change overtime (Ferliyanda,2014). In addition to muadzin's adzan, it can also be heard from electronic device such as radio and television broadcasts as a prayer reminder but not all radio and television broadcast adzan for every prayer time (Henry, 2008).

Today, prayer time reminder which are often encounterd in mosque utilize the seven segments, dot matrix, and running text. It is very common practice used nowdays to display date, clock, and prayer time for that day. Another problem that exist is people uncomfortable while praying because of noisy and crowded atmosphere. One of the disrupting factor for prayer concentration sourced from mobile phones signal. People tend to forgot turn off their mobile phone when time for prayer is arrives (Lucky, 2015).

To solved those problem requires an integrated solution that included prayer time reminder and signal jammer such as this device. It based on raspberry pi with LCD TV as a display that not only can be set according to location based on GPS coordinates, but also contain information in the form of picture, text, video, etc. This is much better than just simple words placed on dot matrix or running text as it is today. Display design can be fully customized as per needed, for example reminder of adzan and iqomah in the form of sound or video or images. This device also act as mobile phone signal jammer, so there is no interference based on mobile phone signal. Jammer activated when entered prayer time until as long as it needed. It function can also be added as air freshner which will spray as long as the jammer is activated with few minute intervals. It can be accommodated because the system based on raspberry pi mini PC.

This device is expected to make prayer time better and comfortable than before, and still has room to grew more with the support of *raspberry pi* and LCD TV whose size can be changed as per request. This device is also expected to make people who will pray more comfortable because there is no interference from mobile phones that forgot to turned off and the mosque will always be fragrant during prayer time.

2. RESEARCH METHODOLOGY
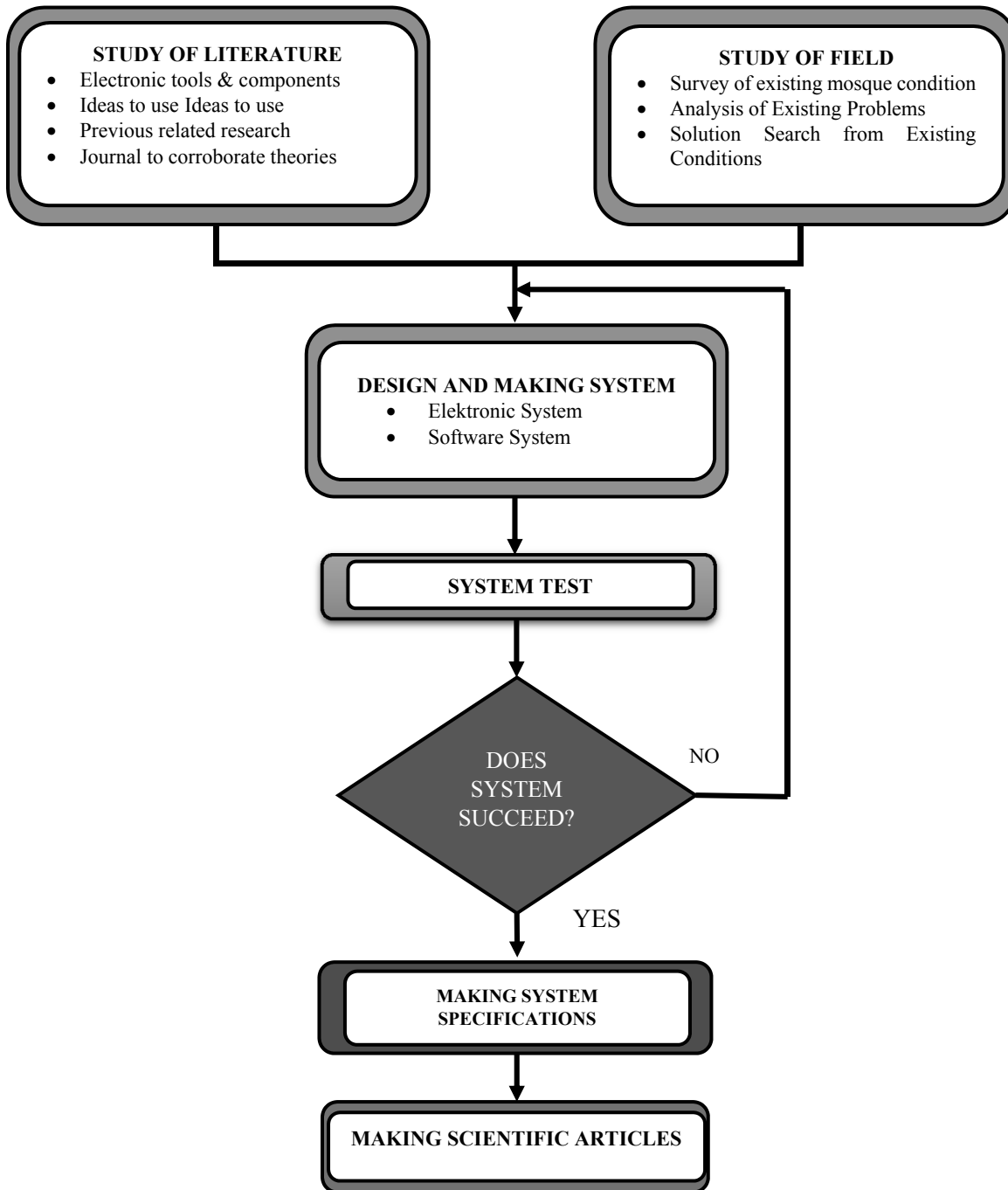
The steps taken for this research are as follows:

Figure 1. Block Diagram of Implementation Method

3. RESULTS AND ANALYSIS

Device making process for prayer time reminder and mobile phone signal jammer is divided into several main subject : Electronic Design, Logic Design, and Test Tools.

3.1 Electronic Design

Electronic design includes *raspberry pi 3b* design with LCD TV. Electronic design scheme in Figure 2 below:
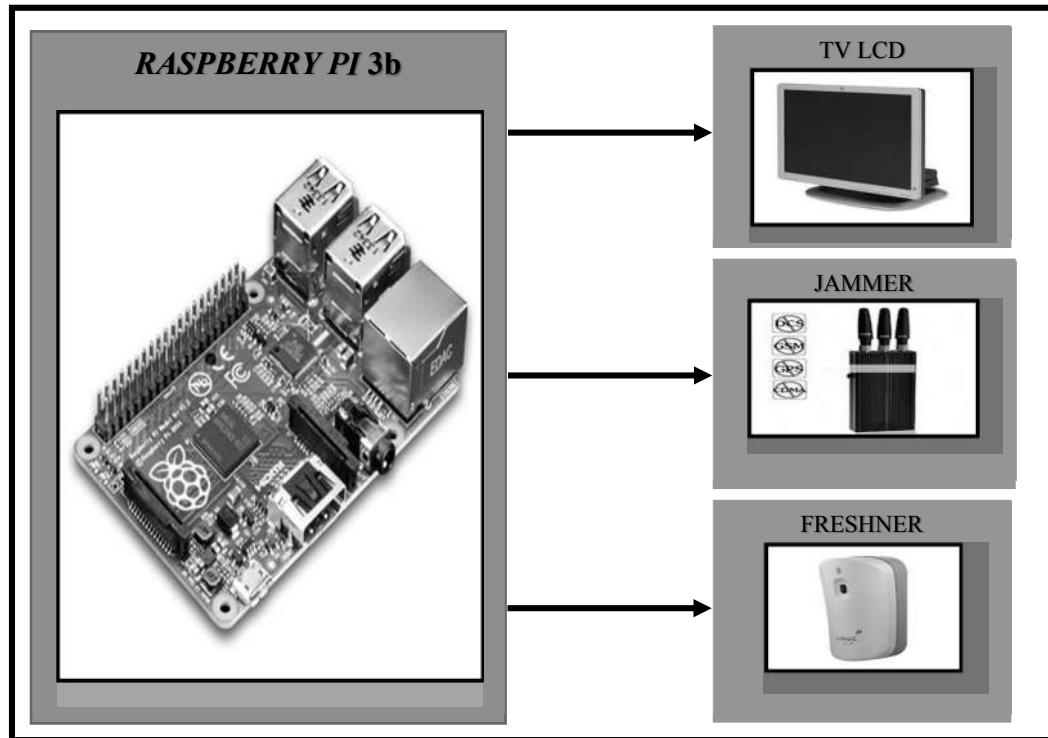

Figure 2. Electronic Design

There are several tools that are needed include raspberry pi 3b, LCD TV, jammer, and air freshener with the following individual detail specifications as follows :

a. *Raspberry pi 3b*
   - *Processor* 1.2GHz 64-bit ARMv8 *quad-core* CPU, 1GB of RAM
   - 802.11n *Wireless* LAN, Bluetooth 4.1
   - 4 USB *ports,* one HDMI *port,* one *Ethernet port,* card slot *micro* SD, 40 GPIO pins
   - 3.5mm *audio* jack and *Videos*
   - *Camera Serial Interface* (CSI), *Display Serial Interface* (DSI)
   - *Power Supply* 5V 3A
   - Operating system support - Linux and Unix or Windows 10 IOT

b. LCD TV
   - Size (L x W x H cm): 53.5 x 10 x 42.5eso
   - Resolution 1280x1024 (17 inch)
   - *Ratio of* 5: 4
   - LED *widescreen*
   - USB *ports,* HDMI, AV, antenna, *Audio* IN/OUT, VGA analog and digital *tunner Auto rolution*

c. Signal Removal (Jammer)
   - CDMA, GSM, DCS, 3G, 4G, wifi
   - Effective isolating / shielding diameter: +/- 40m
   - Power input AC110V-240V, 50 / 60Hz, 1.0A
   - Product size: 25.5cm x 11cm x 3.2cm

d. Air freshner
   - 225mL
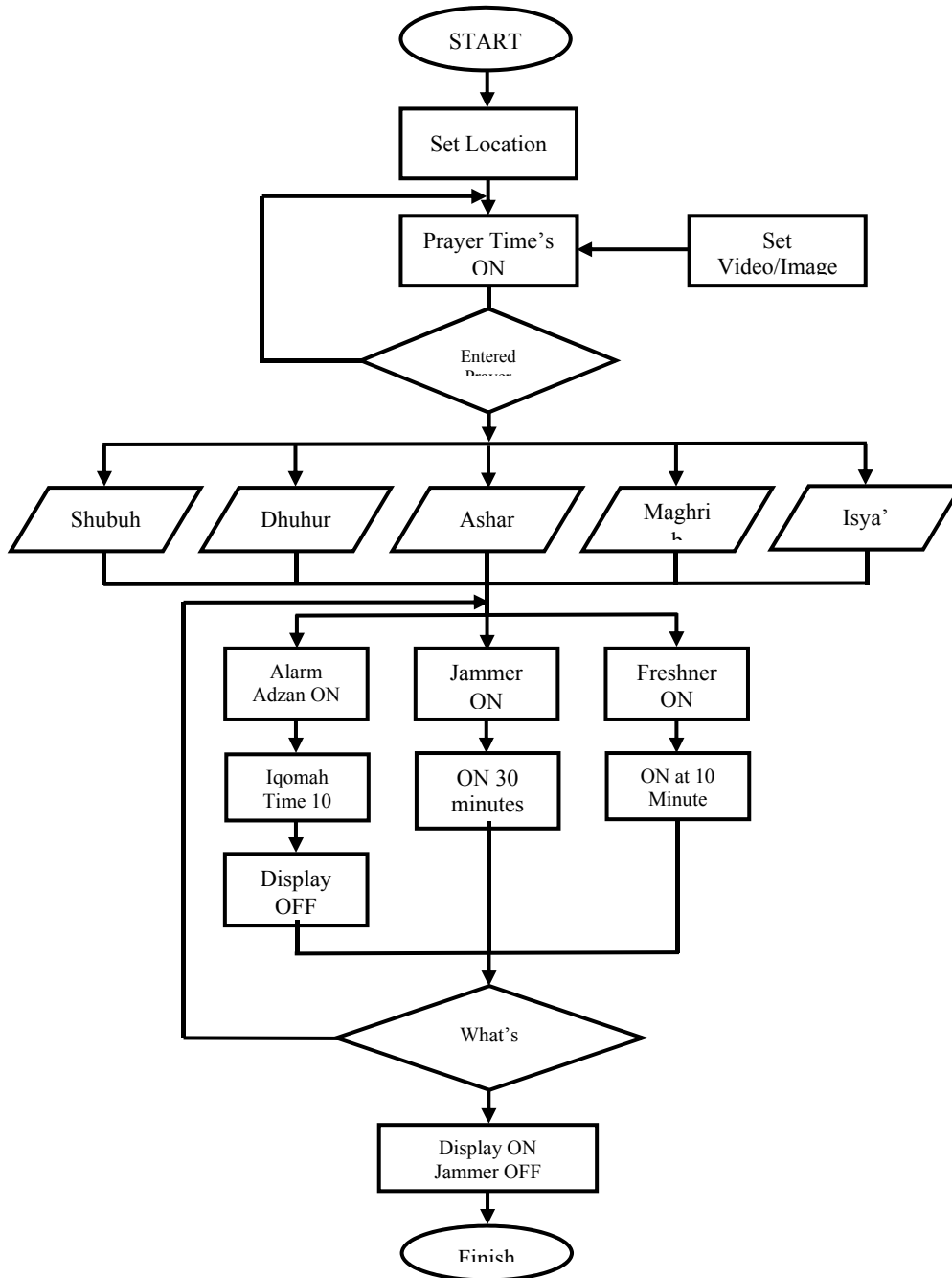   - Timer 10, 20, 40 minutes

3.2 Logic Design

Figure 3. System Flowchart

3.3 Test Tools

3.3.1 *Raspberry Pi* Test

 Raspberry pi serves as data and information processor, to determine whether the system can work properly or not, then testing of the processor is required. . The processor activation is tested by insert *sd* memory *card* in the slot provided in the *raspberry pi* that contain installed operating system (OS). Then

by connected to a 5V 3A power supply, Raspberry pi activation is indicated by blinking indicator light on the raspberry pi board as shown in Fig. 4.

Figure 4. Indicator Light on Board Raspberry Pi

Raspberry Pi connection to LCD TV tested by using VGA / HDMI cables. *Raspberry pi* that has been activated connected to LCD TV, then start booting symbol will emerge as shown in Figure 5 when *raspbeery pi* booting. After *boot* process finished, LCD TV will display *dekstop* of *raspberry pi* OS that was installed on *sd memory card* as shown in Figure 6.

Figure 5. Raspberry Pi Logo Display during Boot Process

Figure 6. Display of OS Desktop from Raspberry Pi

3.3.2 LCD TV Test

17-inch LCD TV with a resolution of 1280x1024 as display shown in Figure 7. Data from *raspberry* pi displayed on the LCD TV using HDMI *port* as shown in Figure 8.

Figure 7. LCD TV

Figure 8. Input Port LCD TV

Test input for LCD TV to accommodate input from antenna, HDMI, VGA and other ports as shown in Figure 9, in this case HDMI port is selected to access raspberry pi OS.
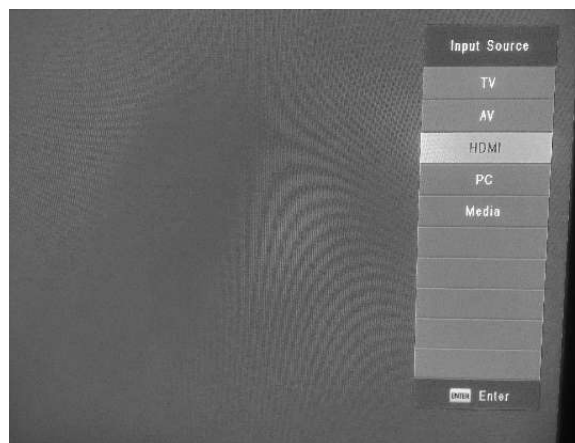

Figure 9. LCD TV input selector

3.3.3 Signal Jammer Test

Signal jammer test is performed by installing all the antennas used as an amplifier for the signal jammer as shown in Figure 10. Then given 220 VAC input voltage, set time for signal jammer activation is 1 minute.

After that all mobile phone signal should be lost from GSM, CDMA, 3G, 4G, and WIFI. This signal jammer range as far as 40 m^2 radius.

Figure 10. Signal Jammer

3.3.4 Air Freshner Test
Performance test by install fragrances and voltage source / batteries, after that the timer is set as needed.

Figure 11. Air Freshner

3.3.5 System Test
As per design, prayer time reminder test to display information such as mosques name, address, date, clock, prayer schedule based on GPS coordinate, event & mosque photo slide show, announcement, motivation, islamic lecture video, and running text as shown in Figure 12 and Figure 13.

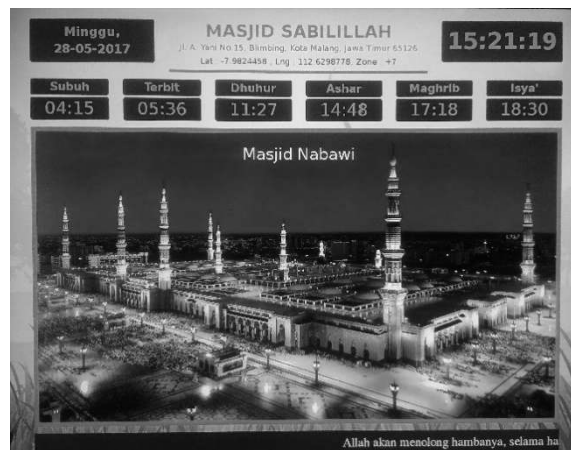*Figure 12. Display Prayer Time Reminder*

Figure 13. Display Prayer Time Reminder

The display design can also be changed as per needed. Display can be more appealing and had more functions as it is still on memory capacity of raspberry pi. Setting also quite easy and only need internet connection in the initial setting only.

4. CONCLUSION

After doing the design and testing it can be concluded as follows:

- Prayer time reminder can be made more interesting by utilize raspberry p, display design can be changed as per needed, display information such as mosques name, address, date, clock, prayer schedule based on GPS coordinate, event & mosque photo slide show, announcement, motivation, islamic lecture video, and running text and can accommodate more as long as memory capacity can handle.
- Prayer time reminder can be designed using raspberry pi with raspbian operating system and LCD TV as monitor or display.
- Prayer time reference determined based on mosque GPS coordinate which will be in pairs of eternal prayer schedule for every city or district, by entering data latitude and longitude.
- This signal jammer range as far as 40 m^2 radius, and air freshner which will spray as long as the jammer is activated at 10 minute intervals.

5. REFERENCES

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