**CHAPTER IV**

**RESULT AND DISCUSSION**

This chapter discusses about the system overview, technical description, structure organization, interpretation of the data gathered through construction and testing of the devices. And the materials, process in constructing the devices.

**System Overview**

The cardiovascular system include heart. Heart is the organ responsible for pumping blood through human body. Cardiovascular system failure can lead to death. Having a hard time monitoring blood pressure and pulse rate, especially those patient that require immediate treatment once abnormal signs occur like high blood, low blood and high measurement of heart rate.

The researcher provides a solution to the problem. The study entitled Automated Blood Pressure and Pulse Rate Monitoring Device with Printing Capability. A personal use monitoring device that will monitor blood pressure and pulse rate of the patient.

The component of the device is sensor, microprocessor, LCD display and printer. And a software application for the user profile. The software application designed for multiple user each user has their own profile for the betterment of keeping record without interfering the data of the other users.

The software application also has notification and alarm system features. Notification will be based on the user age. Because normal blood pressure varies depending on the age. The user also can print the result using a printer. Printing form will be consisting of user’s name, the date and time user conducted the reading the result of the reading. This is for the better keeping of records monitoring the blood pressure and heart rate.

Printer

Touch Screen

LCD

Pulse Rate

Sensor

Microprocessor

Blood Pressure

Sensor

Figure 4.1 **Block Diagram**

Figure 4.1 shows the interconnection of the main component in the device. The device works when the user attach the device on his/her arm. The sensor uses to detect the user blood pressure and pulse rate and the reading will be transmitted to the microprocessor.

Microprocessor serve as the brain of the system. The microprocessor receives the data from the sensor for it to process and store. And the other input is from the touch screen LCD monitor each user require to create an account before using the device to access and view the result

The printer is connected to the microcontroller so the user can print the result of the reading for betterment of keeping record and monitoring.

**Hardware Specification**

The material used in constructing the device was included on this chapter. Names of the material, specification, figure and data sheet are shown below

A. Major Component

**Raspberry Pi**

**MPX2050GP Pressure Sensor**

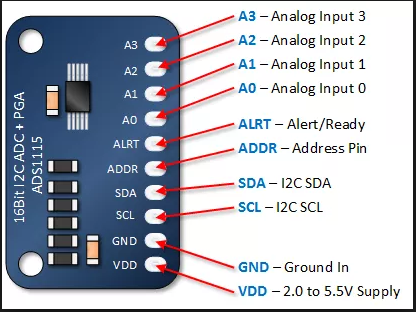
The MPX2050GP silicon piezoresistive pressure sensor providing a highly accurate and linear voltage output, directly proportional to the applied pressure. The sensor is a single, monolithic silicon diaphragm with the strain gauge and a thin-film resistor network integrated on-chip. The chip is laser trimmed for precise span and offset calibration and temperature compensation. And connected to port, which is an input to the on-chip 10-bit analog-to-digital(A/D) converter. The pressure sensor provides a signal output to the microprocessor of approximately 0.2 Vdc at 0 mm Hg to 4.7 Vdc at 375 mm Hg of applied pressure.

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**Figure 5. MPX2050GP pressure sensor**

**Specifications:**

**ADC ADS1115**

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