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HEALTH MONITORING ATM

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***Abstract*— To monitor the patient details in periodic interval is an overhead in using existing technologies. To overcome this we have introduced Health monitoring ATM machine. Health monitoring ATM is the simplest way to get their own medical parameters. In general four different sensors are used to gather patient medical information. In existing system, it takes more time to measure and only prickable sensors are used. In which people afraid because of pain and also there is wastage of blood. In this proposed system, we introduced three important basic medical parameters like temperature, heart rate, weight and height (BMI), which are all unprickable sensors that is pain free devices and there is no wastage of blood.**

Keywords— Pulse rate measurement, BMI measurement, temperature measurement, coin acceptor technique, PIC16F887.

I. INTRODUCTION

Recent years have seen a rising interest in wearable sensors and today several devices are commercially available for personal health care, fitness, and activity awareness. Now-a-days technology field is mostly developed in medical fields. Many sensors have been discovered for patients so they can achieve painless measurement. In present non-invasive sensors are developed, so that there is no need for pricking the skin for blood. Medical parameters that measured should be accurate, and also now discovering sensors are also giving accurate results. In the healthcare industry, the dependence on medical technology cannot be overstated, and as a result of the development of these brilliant innovations, healthcare practitioners can continue to find ways to improve their practice – from better diagnosis, surgical procedures, and improved patient care. We can remotely and continuously monitor each heartbeat, moment-to-moment blood pressure readings. This digitalization in medical field helps the human in many ways.

II. SYSTEM DESCRIPTION

This proposed system makes awareness in medical field. Health monitoring ATM is a single integrated machine, where we can measure four important medical parameters like temperature, heart rate, weight and height (BMI). Where people can easily get their medical reports at any time with accurate results.Most of the peoples expecting this type of system. Also health ATM is consisting of non prickable sensor, where there is no need for pricking the skin for measuring the medical parameters. And also the non-invasive sensors are gives accurate results similar to normal sensors. Usually the general checkup takes more number of time and money, for this we introduced this type of system. In this system any people can easily take their reports with low cost and easy. This system mainly used in hospitals for their loaf, and it is also used in public areas where people can easily get their medical reports. These basic parameters are to be generally checked for elderly peoples.

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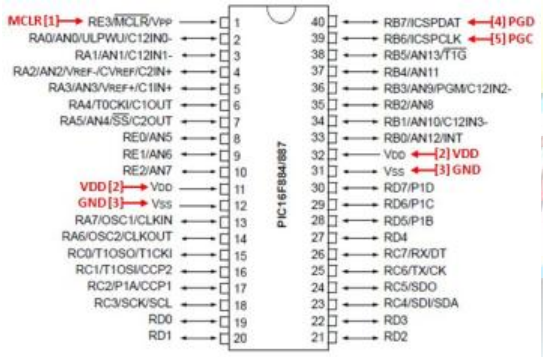
III. METHODOLOGY

The methodology in this project consists of hardware, software and the brief definition of the hardware components withsoftware devices:

MICROCONTROLLER:

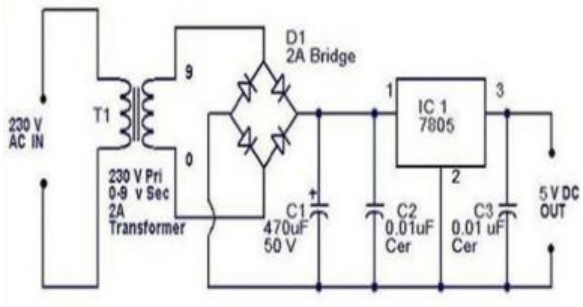
Microcontrollers are designed for embedded applications, in contrast to the microprocessors used in personal computers or the other general purpose applications consisting of various discrete chips. It is used in automatically controlled products and devices such as automobile engine control systems, implantable medical devices, remote controls, office machines, appliances, power tools and other embedded systems.

By reducing the size and cost compared to a design that uses a separate microprocessor, memory, and input/output devices, microcontrollers make it economical to digitally control even more devices and processes. Mixed signal microcontrollers are common, integrating analog components needed to control non-digital electronic systems.



POWER SUPPLY:

A power supply unit (PSU) converts main AC to low voltage regulated DC power for the internal components of a computer. Modern personal computers universally use switched-mode power supplies. Some power supplies have a manual switch for selecting input voltage, while others automatically adapt to the mains voltage.



BODY MASS INDEX:

Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. A high BMI can be an indicator of high body fatness. BMI can be used to screen for weight categories that may lead to health problems but it is not diagnostic of the body fatness or health of an individual.

Hence BMI of the reputed person is calculated using height and weight. Using the both scale the BMI is measured using the formula:

BMI = (Weight in kg)/(Height in metres)^2

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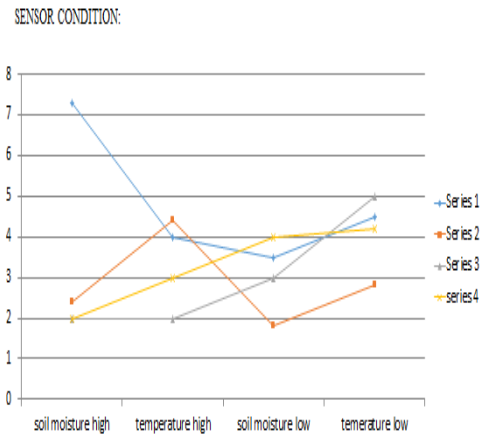
TEMPERATURE SENSOR:

Temperature Sensors measure the amount of heat energy or even coldness that is generated by an object or system, allowing us to "sense" or detect any physical change to that temperature producing either an analogue or digital output. he LM35 series are precision integrated-circuit temperature devices with an output

voltage linearly-proportional to the Centigrade temperature

The LM35 device has an advantage over linear temperature sensors calibrated in Kelvin, as the user is not required to subtract a large constant voltage from the output to obtain convenient Centigrade scaling. The LM35 device does not require any external calibration or trimming to provide typical.



HEART RATE SENSOR:

Heart rate monitors provide immediate feedback on how hard you are working out so that you can make adjustments to get the greatest benefit from your exercise regimen. The goal is to exercise within your target heart rate zone for maximum impacts. According to the Centers for Disease Control and Prevention, for moderate-intensity physical activity a person's target heart rate should be 50 percent to 70 percent of his or her maximum heart rate. For example, using the results calculated above for a 50-year-old person, 50 percent and 70 percent levels would be:

- 50 percent level: 170 x 0.50 = 85 beats per minute (bpm)
- 70 percent level: 170 x 0.70 = 119 bpm

For intense exercise, a 50-year-old person's target heart rate should be 70 percent to 85 percent of his or her maximum heart rate.

LIQUID CRYSTAL DISPLAY (LCD):

LCDs allow displays to be much thinner than cathode ray tube (CRT) technology. LCDs consume much less power than LED and gas-display displays because they work on the principle of blocking light rather than emitting it.

An LCD is made with either a passive matrix or an active matrix display grid. The active matrix LCD is also known as a thin film transistor (TFT) display. The

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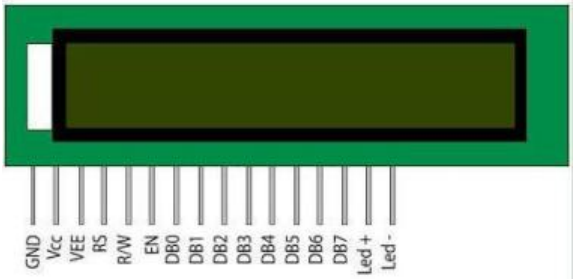
passive matrix LCD has a grid of conductors with pixels located at each intersection in the grid. [11] discussed about an eye blinking sensor. Nowadays heart attack patients are increasing day by day."Though it is tough to save the heart attack patients, we can increase the statistics of saving the life of patients & the life of others whom they are responsible for.

A current is sent across two conductors on the grid to control the light for any pixel. An active matrix has a transistor located at each pixel intersection, requiring less current to control the luminance of a pixel. For this reason, the current in an active matrix display can be switched on and off more frequently, improving the screen refresh time (your mouse will appear to move more smoothly across the screen, for example).



COIN ACCEPTOR:

The sensors in this coin acceptor use the thickness, diameter and fall time of the coins to identify them and it's fully programmable so you're not limited to any particular type of currency, which is shown in fig 4.12. After you've programmed the coin profiles, the coin acceptor will recognize them and report when each type is inserted, rejecting other coins.

STEPPER MOTOR:

Bipolar motors have a single winding per phase. The current in a winding needs to be reversed in order to reverse a magnetic pole, so the driving circuit must be more complicated, typically with an H-bridge arrangement (however there are several off-the-shelf driver chips available to make this a simple affair). There are two leads per phase , none are common.

Static friction effects using an H-bridge have been observed with certain drive technologies.

Dithering the stepper signal at a higher frequency than the motor can respond to will reduce this “static friction” effect. Though a bipolar stepper motor is more complicated to drive, the abundance of driver chips means this is much less difficult to achieve.

IV.BLOCK DIAGRAM

Our block diagram represents the flow process of our proposed system. Whenever the coin is inserted, the coin acceptor sends the pulse signal to the micro controller on further the arm gets open with the help of stepper motor, where the person was supposed to place their arm. After the arm gets placed, the microcontroller gives the signals to the sensors and measures various parameters like temperature, heart rate, height and weight (BMI). The medical parameters are isolated, filtered, amplified and passed to the microcontroller. Hence all the medical parameters are displayed using Liquid Crystal Display (LCD) and printed by printer using RS232 to USB serial communication.

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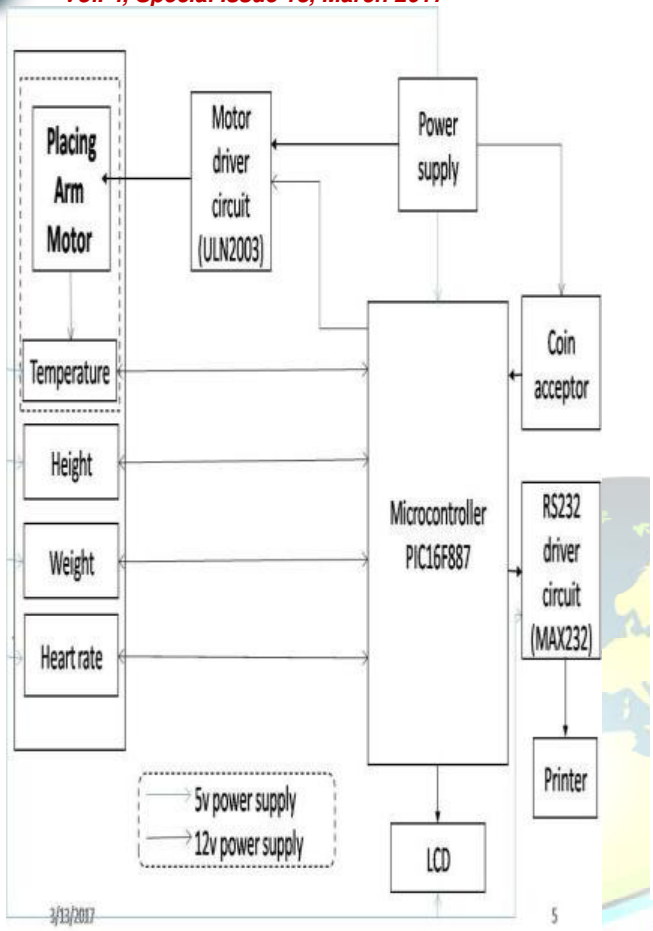
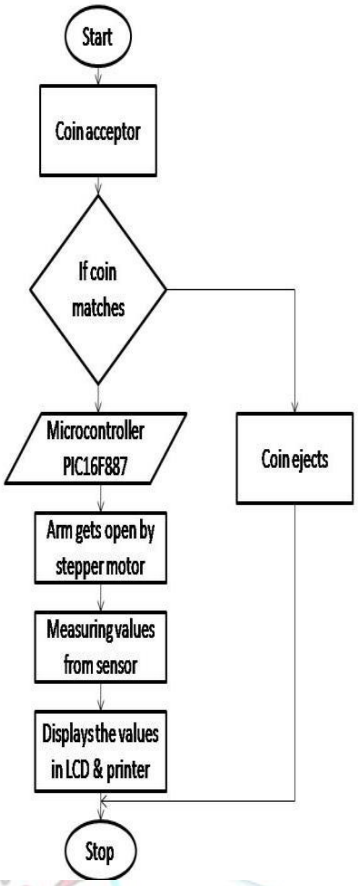


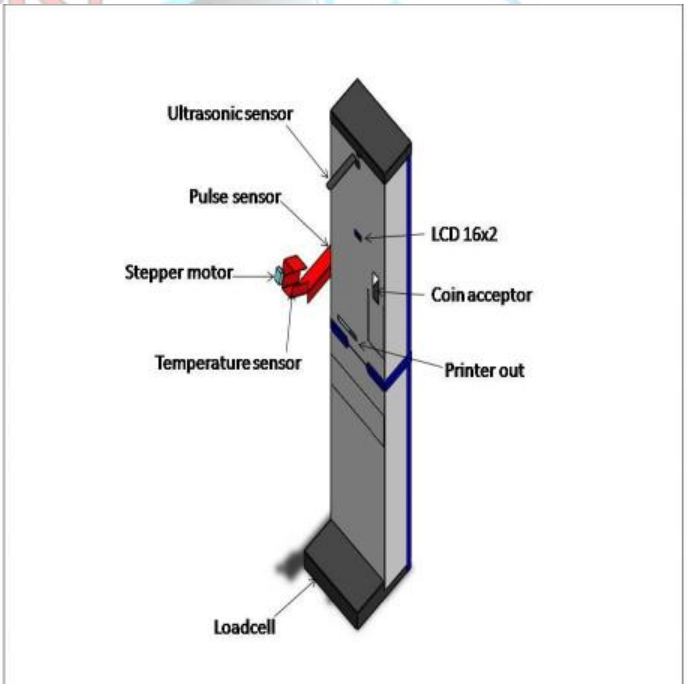


V . FLOW CHART

A flowchart is a formalized graphic representation of a logic sequence, work or manufacturing process, organization chart, or similar formalized structure. Flowcharts use simple geometric symbols and arrows to define relationships. In programming, for instance, the beginning or end of a program is represented by an oval. A process is represented by a rectangle, a decision is represented by a diamond and an I/O process is represented by a parallelogram. The Internet is represented by a cloud.

Flow chart explains the step by step process to the whole system. This system shows that the process and the ending process with the various starting data's. If it acts like the condition with the loop formation with if and else condition to satisfies the analog form to the digital form at various data's.

VIII . SYSTEM OVERVIEW



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VII . CONCLUSION

Thus we have aimed a solution for the welfare of the people or patients with user friendly at low cost device. In this system, people can insert the required currency note to the machine to know the levels of blood pressure, temperature, heart rate, BMI and glucose. Without pricking the skin we can measure those medical parameters and by using printer we will able to see the levels of these parameters.

Hence this system is an easy way to measure basic medical parameters with low cost and with minimum time consumption. Every action is based on the sensors to sense the parameters. In future this existing system also becomes popular on measuring various parameters.

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