

Smart Medicine Using IoT

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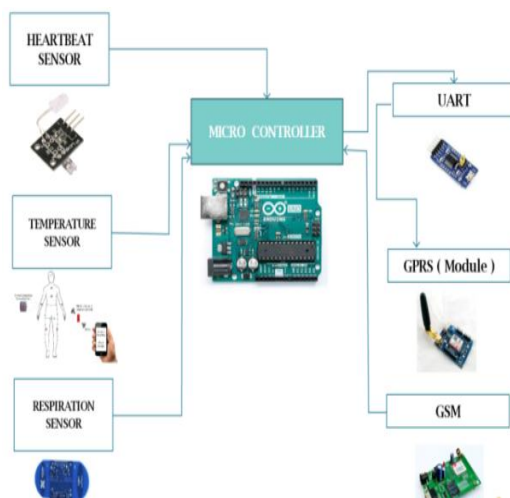
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Abstract- The recent advancements in technology and the availability of the Internet make it possible to connect various devices that can communicate with each other and share data. The Internet of Things (IoT) is a new concept that allows users to connect various sensors and smart devices to collect real-time data from the environment. Using GPRS module patient heartbeat, temperature and respiration values with name as well as age of the patient is sent to server. The server sends patient's data to the client server. Using GPS module the location of the patient is predicted and medicine is delivered to corresponding patient address.

I. INTRODUCTION

The embedded systems industry was born with the invention of microcontrollers and since then it has evolved into various forms, from primarily being designed for machine control applications to various other new verticals with the convergence of communications. With the tremendous growth in medical technology, there is cure for many dreadful diseases through the intake of several new medicines. The number of medicines to be taken by each person has increased. It has become hard for us to reach the hospital or medical ourselves for take the medicines at particular time. This Smart Medicine helps us by embedded and IoT connected with medical that we should take at that particular time.

II. BLOCK DIAGRAM



III. REQUIRED COMPONENTS

Hardware Components

PIC MICROCONTROLLER

- 8bit microcontroller
- Pin count-40
- 33 I/O pins
- RAM-368bytes
- ROM-8K
- Data EEPROM256bytes
- Timer-2 x 8-bit, 1 x 16-bit
- ADC 8 channel, 10-bitComparators-2
- Temperature Range (C) -40 to 125
- Operating Voltage Range (V) 2 to 5.5

HEARTBEAT SENSOR

- The sensor itself consist of an emitter and detector mounted side by side pressed closely against the skin
- When the heart bumps blood pressure rises sharply and so does the amount of infrared light from the emitter that gets reflected back to the detector.

TEMPERATURE SENSOR

- A temperature sensor measures the hotness or coolness of an object.
- The sensor's working base is the voltage that's read across the diode.
- The temperature rises whenever the voltage increases.
- The sensor records any voltage drop between the transistor base and emitter.

RESPIRATION SENSOR

- The Respiration Sensor is used to monitor abdominal or thoracic breathing, in biofeedback applications such as stress management and relaxation training.

- Besides measuring breathing frequency, this sensor also gives you an indication of the relative depth of breathing.

GPS MODULE

The Global Positioning System (GPS) is a global navigation satellite system that provides location and time information in all weather conditions. GPS satellites transmit signal information to earth. This signal information is received by the GPS antenna in order to measure the user’s correct position.

FEATURES:

- Supply voltage: 9v to 12v DC
- Interface: UART RS232
- Optional TTL / UART also available
- GPS antenna frequency: 1575.42MHz

GPRS MODULE

Internet of Things (IoT) is an environment in which objects, animals or people are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. IoT board featured with SIM900 GPRS modem to activate internet connection also equipped with a controller to process all input UART data to GPRS based online data. Data may be updated to a specific site or a social network by which the user can able to access the data.

FEATURES:

- Power Supply: DC +12v 1Amp
- Auto data updating: 30sec
- Digital Output port Pins: +5V DC

Software Components

EMBEDDED C

Microprocessor based systems; programs were developed using assemblers and fused into the EPROMs. LEDs, switches, etc. were used to check for correct execution of the program. But they were too costly and were not quite reliable as well. As time progressed, use of microprocessor specific assembly-only as the programming language reduced and embedded systems moved onto C as the embedded programming language of choice. C is the most widely used programming language for embedded processors/controllers. Embedded C uses most of the syntax and semantics of

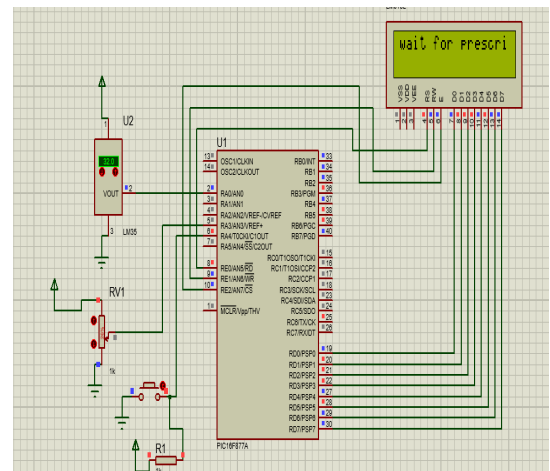
standard C, e.g., main () function, variable definition, data type declaration, conditional statements (if, switch, case), loops (while, for), functions, arrays and strings, structures and union, bit operations, macros, etc.

MPLAB

MPLAB Integrated Development Environment (IDE) is a free, integrated toolset for the development of EMBEDDED applications employing Microchip’s PIC and DSPIC microcontrollers. MPLAB IDE runs as a 32-bit application on MS Window, is easy to use and includes a host of free software components for fast applications developments and super-charged debugging. MPLAB IDE also serves as a single, unified graphical user interface for additional Microchip and third party software and hardware development tools. Moving between tools is a snap, and upgrading from the free software simulator to hardware debug and programming tools is done in a flash because MPLAB IDE has the same user interface for all tools.

Output

The output is achieved through the Proteus stimulation tool.



IV. CONCLUSION

IoT is universal occurrence of things and objects that are intersected and are capable to work together with each other to extent a common goal. Smart medicine using IoT places the base for disease diagnosis and resource distribution. This system must be both effective and efficient for the information sharing. The restoration system and the easy allotment of domain knowledge, which should make the system as distinctive and perform admirable, as Iot and smart medicine have played important role in the method.

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