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A GSM, WSN and Implanted Web Server Engineering For Web Based Kitchen

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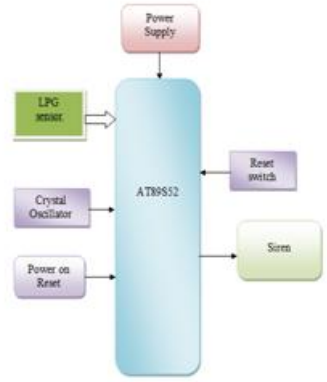
Abstract:
KITCHEN environment monitoring is one of the important measures to be closely monitored in real-time for safety, security and comfort of people. With the advancements in Internet technologies and Wireless Sensor Networks (WSN), a new trend in the era of ubiquity is being realized. Enormous increase in users of Internet and modifications on the internetworking technologies enable networking of everyday. The paper proposes a Raspberry pi based kitchen monitoring system. Raspberry Pi is used as an Embedded Web Server, User can control Set of devices from Phone/PC Web Browser. We have designed and implemented a compact wireless sensor network with internet capability. The system can monitor the status of kitchen and send an alert SMS via GSM network automatically to users. The system has the Raspberry pi and then the system responds to the corresponding instruction with high security.

Existing system:
We are using AT89S52 as our controller. Controller is the heart of the entire system and a LPG sensor is interfaced to the MCU. This is a simple-to-use liquefied petroleum gas (LPG) sensor, suitable for sensing LPG (composed of mostly propane and butane) concentrations in the air. The MQ-6 can detect gas concentrations anywhere from 200 to 10000ppm. A siren is also interfaced to the system to make alert when that is detected. So that when one listens the siren they can easily know about the leakage.



Drawback: No remote alert by SMS

Proposed system
Here the project also proposes the sensors interfacing with the controller and GSM modem too. If there is the Gas detection or raise in temperature the message will be sent through the GSM. In case of PIR and LDR sensor also SMS will be sent in case of person detection and day/night mode. A fire sensor is also included to detect the fire and send SMS using GSM modem. The system is modularly built, allowing different modules to be added. In addition, it is flexible to accommodate a wide range of measurement devices with appropriate interfaces. It has a variety of features such as energy efficient, intelligence, low cost, portability and high performance.

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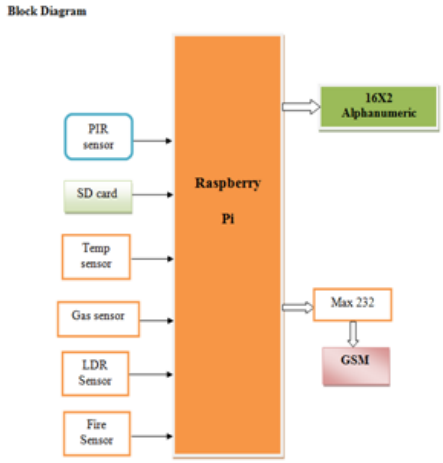


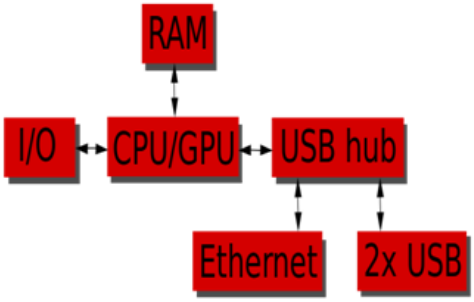
RASPBERRY-PI

The **Raspberry Pi** has a Broadcom system on a chip (SoC).

Features

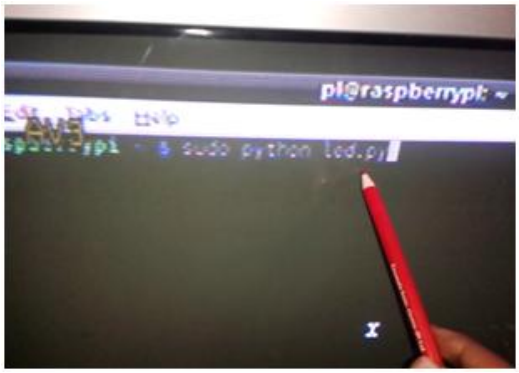
- System Memory – 1GB LPDDR2
- Storage – micro SD card slot (push release type)
- Video & Audio Output – HDMI and AV via 3.5mm jack.
- Connectivity – 10/100M Ethernet
- USB – 4x USB 2.0 ports, 1x micro USB for power
- Expansion
  2×20 pin header for GPIOs
  Camera header
  Display header
- Power – 5V via micro USB port.
- Dimensions – 85 x 56 mm

Basic Hardware of Raspberry-PI



OS used in Raspberry pi is Linux

Coding will be done in python/C language



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Global System for Mobile Communication

Definition:

GSM, which stands for Global System for Mobile communications, reigns (important) as the world's most widely used cell phone technology. Cell phones use a cell phone service carrier's GSM network by searching for cell phone towers in the nearby area. Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication.

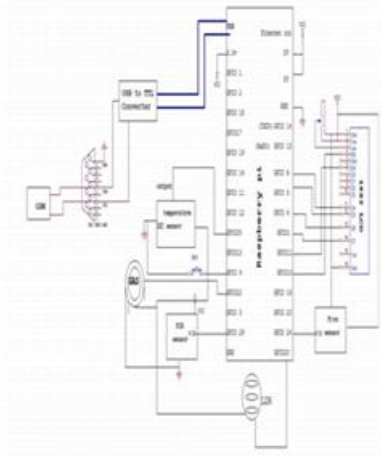
LCD

LCD stands for Liquid Crystal Display. LCD is finding wide spread use replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the following reasons:

Command	RS	RW	D7	D6	D5	D4	D3	D2	D1	D0	Execution Time
Clear display	0	0	0	0	0	0	0	0	0	1	1.64mS
Cursor home	0	0	0	0	0	0	0	0	1	x	1.64mS
Entry mode set	0	0	0	0	0	0	0	1	ID	S	40uS
Display on/off control	0	0	0	0	0	0	1	D	U	B	40uS
Cursor/Display Shift	0	0	0	0	0	1	D/C	R/L	x	x	40uS
Function set	0	0	0	0	1	DL	N	F	x	x	40uS
Set CGRAM address	0	0	0	1	CGRAM address						40uS
Set DDRAM address	0	0	1	DDRAM address							40uS
Read "BUSY" flag (BF)	0	1	BF	DDRAM address							-
Write to CGRAM or DDRAM	1	0	D7	D6	D5	D4	D3	D2	D1	D0	40uS
Read from CGRAM or DDRAM	1	1	D7	D6	D5	D4	D3	D2	D1	D0	40uS

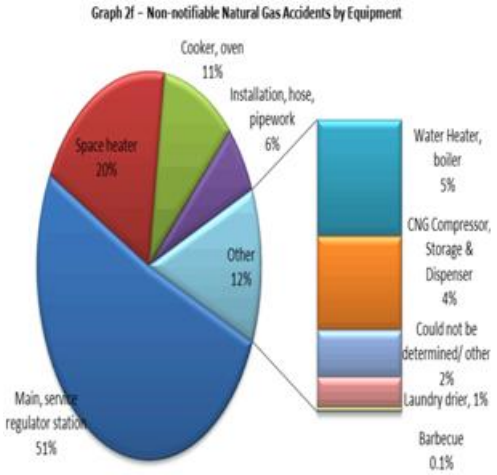
These components are "specialized" for being used with the microcontrollers, which means that they cannot be activated by standard IC circuits. They are used for writing different messages on a miniature LCD.

Interfacing diagram



Advantages:

- Reliability
- Ease of Operation
- Useful to detect harmful gases



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Results

Conclusion

In this project work, we have studied and implemented a complete working model using a Microcontroller. The programming and interfacing of microcontroller has been mastered during the implementation. This work includes the study of **GSM modem using sensors.**

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