8085 based Smart Mirror

Manoj sahu 93EC15
Udit kumar agarwal 188EC15

Feb 2, 2018

Synopsis

Our smart mirror wont just say youre the prettiest of them all. It will also tell you the time, daily tasks(to-do list), weather outside, upcoming calendar appointments, and more. Encapsulated within a wooden frame, it will consist of a two-way mirror with an electronic display and wifi module behind the mirror. In form of widgets, it deploys various multi-colour leds accompanied with stencils to form an iconic indicator for various weather conditions, pollution level etc. Along with it, there will be a 4 digit SSD which can be used to display time as well as temperature(in both centigrade and Fahrenheit format), in close proximity of user.

Keywords: 8085, Microprocessor, Assembly language, Two way mirror, esp8266

Category: Application based project

1. Motivation

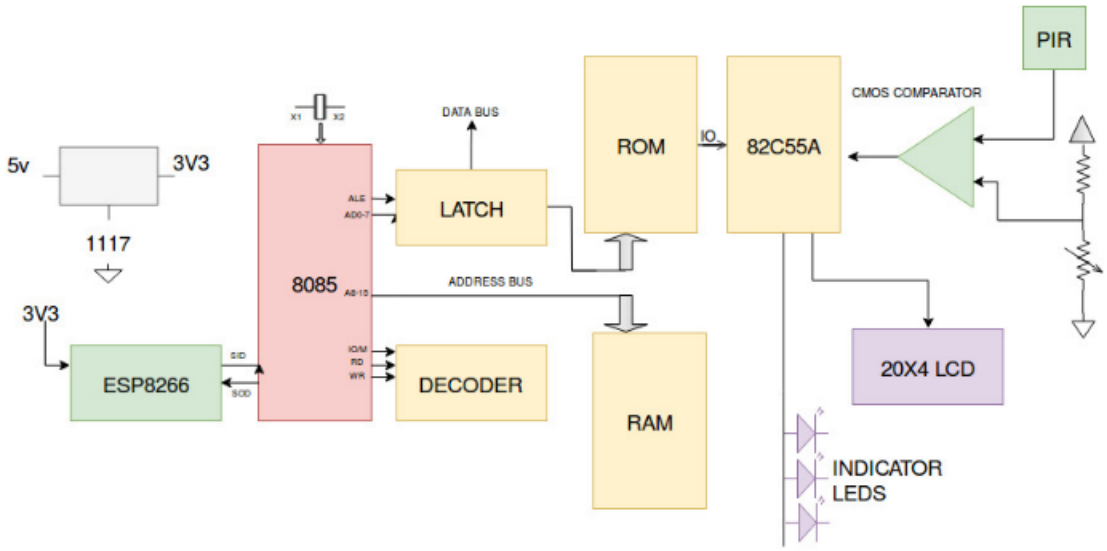
Designing a micro processor [1] based system does involves thorough knowledge of primitive yet pedagogically important computer architectures. Designing a complete embedded hardware project right from scratch imparts basic knowledge of advanced digital blocks used today in various micro controllers. Our project Smart mirror, presents an enthralling blend of science fiction with reality.

2. Justification

Nowadays, implementation of smart mirrors includes using high end processors like in raspberry pi and other single board computers. Using a cheap microprocessor like 8085 for recreating smart mirror, justifies it's processing power. Moreover, Mirrors are an essential parts of every room, using it to display important information along with To-Do list sounds to be an interesting and a useful idea.

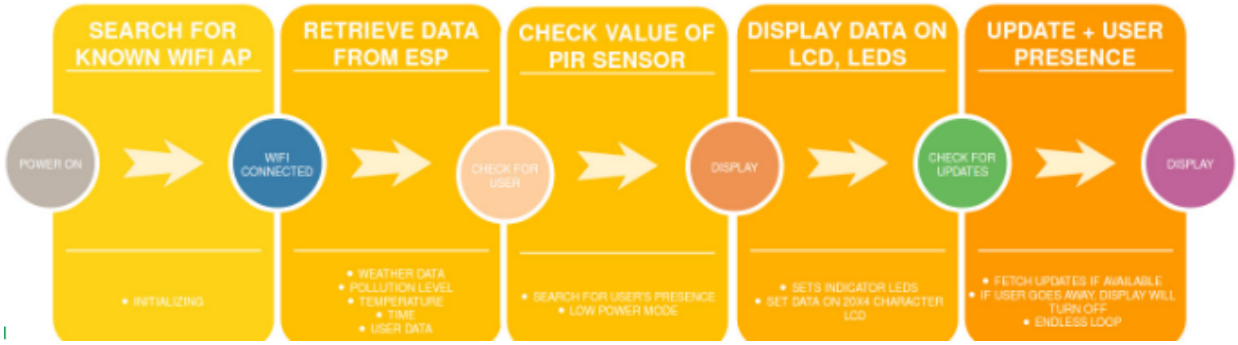
3. Brief description

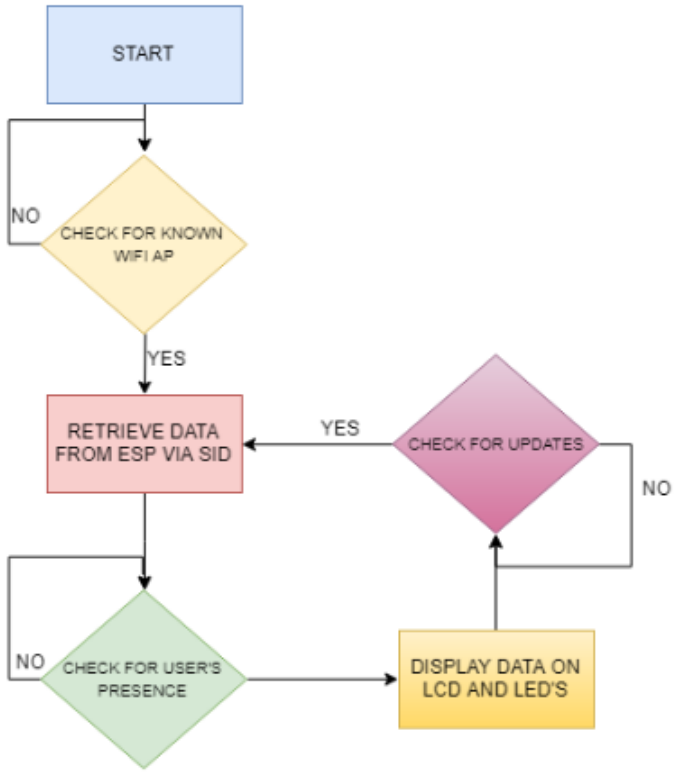
It deploys a two way mirror to display multitude of necessary information in close proximity of user. Information to be displayed can be manipulated via an android application using wifi interface.



[1] here, Intel 8085

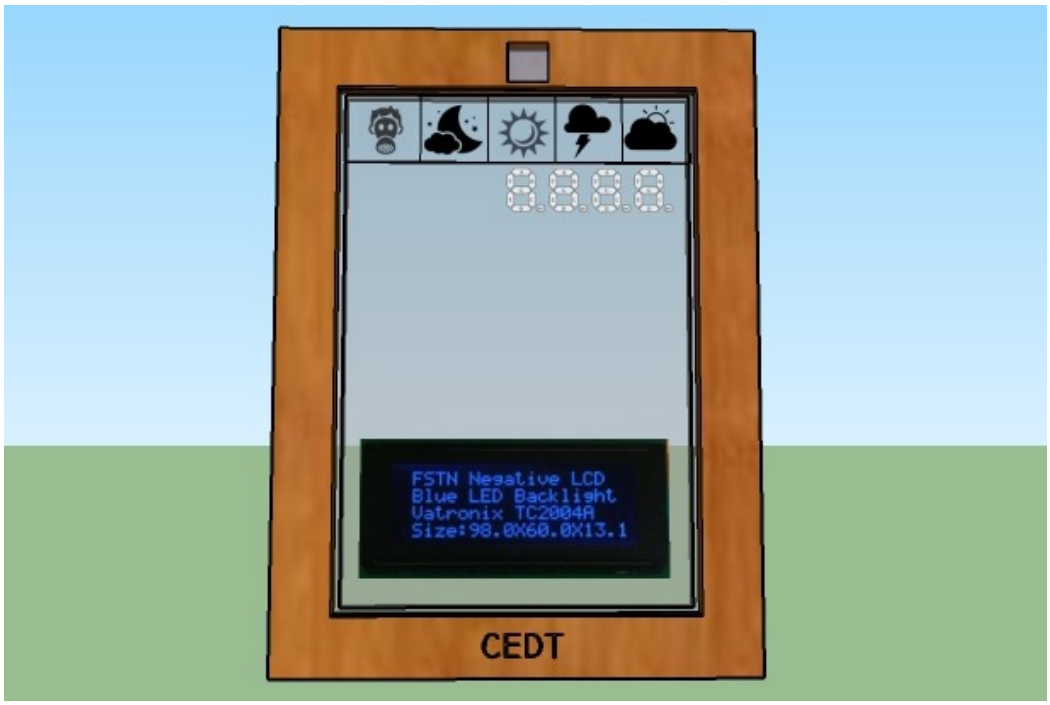
3.1. Code Flow



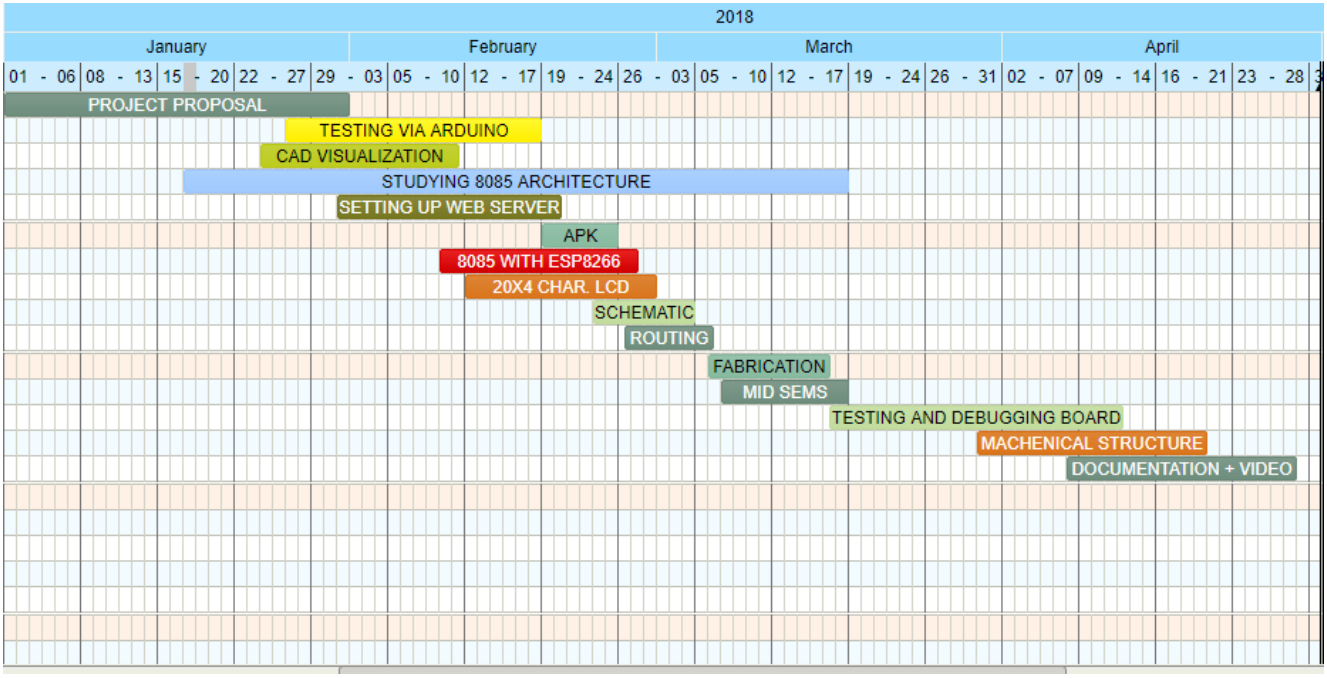


On power on, ESP will scan through all known wifi networks and will connect to the known access point. Upon connection to the main server, all the information is transferred to ESP via secured gateways. Information will then be displayed on LCD/SSD/LED'S appropriately depending on the value of IR sensor.

3.2. CAD visualization



3.3. Gantt chart



4. Bill of Materials

Following are the expected materials required for the project:

S.No	Item	Quantity	Description
1	8085A	1	Microprocessor
2	EEPROM	1	32Kb ROM
3	RAM	1	32Kb RAM
4	ESP8266	1	Wifi module
5	LM1117	1	3V3 regulator for ESP
6	74HC138	1	3X8 DECODER
7	74HCT04	1	6 not gate IC
8	74HCT573	1	* bit D latch
9	82C55A	1	CMOS PPI
10	20X4 Character LCD	1	LCD
11	Two way mirror	1	-
12	PIR sensor	1	HCSR501
13	4 DIGIT SSD	1	Common cathode

5. References

- Microprocessor programming ,architecture and application with 8085 by Ramesh Goankar
- https://www.makeuseof.com/tag/6-best-raspberry-pi-smart-mirror-projects-weve-seen-far/
- https://hackaday.com/2016/04/27/smart-mirror-reflects-hacker/
- https://hackaday.com/2016/02/28/79-smart-mirror-uses-raspberry-pi/