TITLE : Cloud based Temperature Monitoring Application.

PROBLEM STATEMENT:
Design and Implement cloud based temperature monitoring application using Arduino UNO, ESP8266 and suitable IoT Cloud Platform.

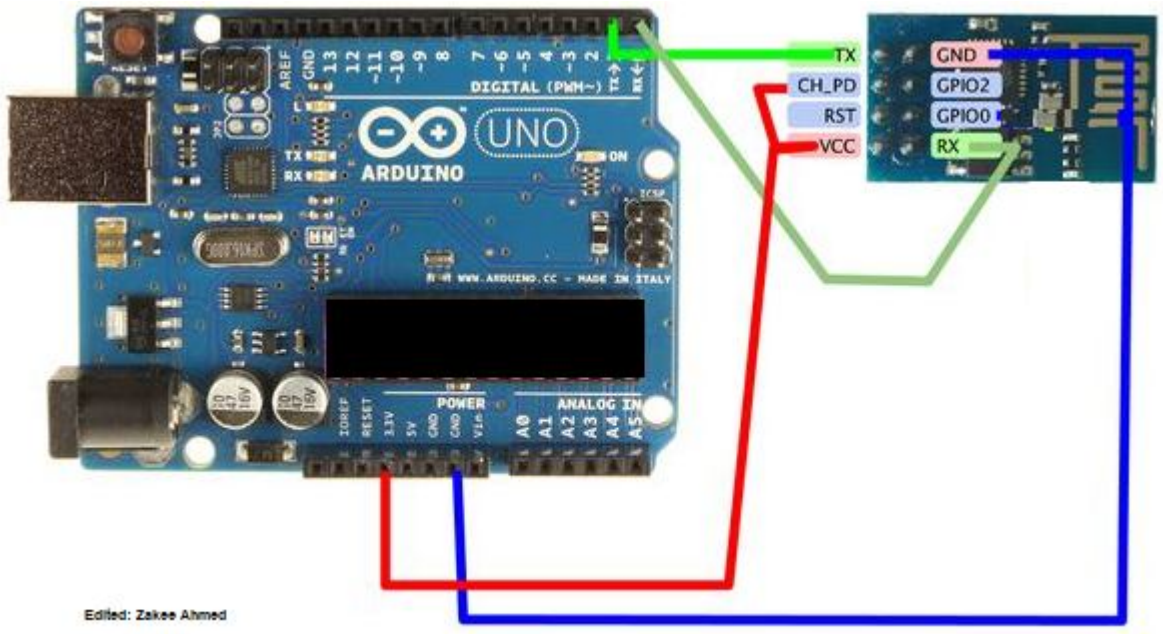
OBJECTIVE :
a. To understand the architecture of ESP8266 and its programming.
b. To understand the working of IoT cloud platform
c. To develop comprehensive approach towards building small low cost

IoT application.

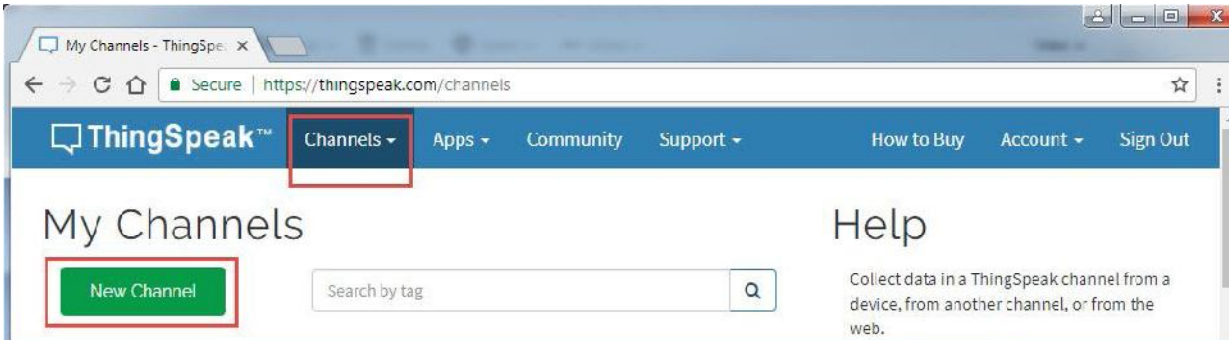
Tutorial For Arduino Uno and WiFi Module ESP 8266 Interfacing

1. Connections
    a. Vcc and CH_PD (ENable) to 3.3V on Arduino
    b. GND to Ground
    c. Tx to Tx of Arduino
    d. Rx to Rx of Arduino
    e. RST , GPIO0, GPIO2 are floating (Neither High nor Low- No Connection)

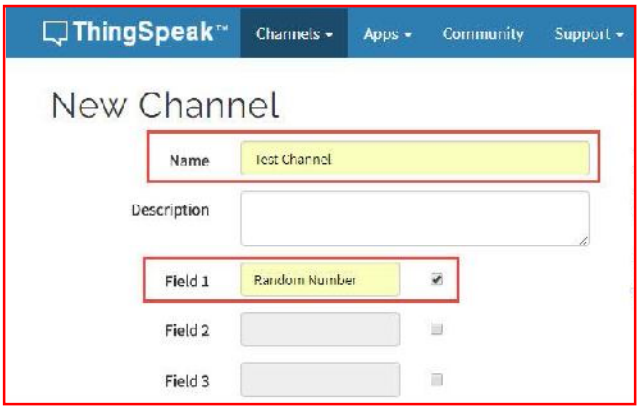
2. Interfacing diagram

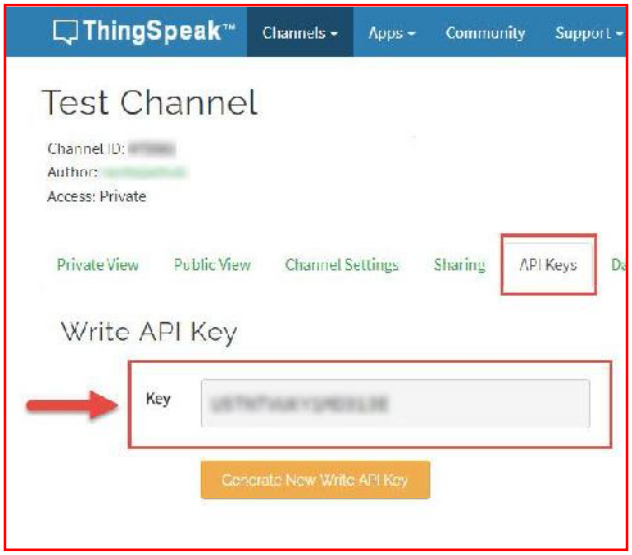


3. Steps
    a. Create thingspeak account



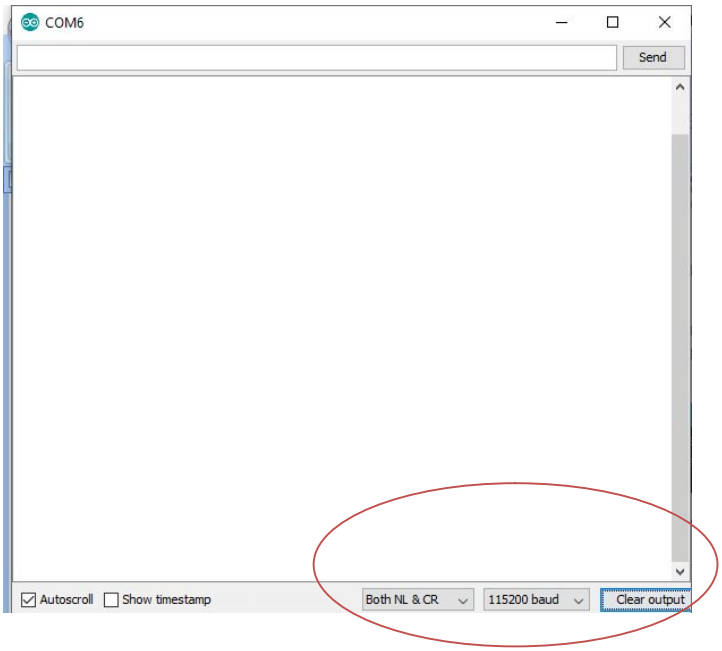
    b. Create new channel in thingspeak and get write API





    c. Launch Arduino IDE and Upload Code following code in Arduino

d. Configure Serial Monitor with baudrate 115200 baud and “Both NL and CR” Option



e. Prepare a Notepad file with following code

AT

AT+RST

AT+CWMODE=3

AT+CWLAP

AT+CWJAP="wifiNAME","wifiPASSWORD" ***//ADD HOTSPOT CREDENTIALS***

AT+CIFSR

AT+CIPMUX=0

AT+CIPSTART="TCP","api.thingspeak.com",80

AT+CIPSEND=51

GET /update?api_key=XXXXXXXXXXXXXXXX&field1=255 ***//ADD Write API and Value without adding any space***

AT+CIPCLOSE

f. Copy paste each line one by one
g. DONE!!

AT Commands for reference

Commands	Description	Type	Set/Execute	Inquiry	test	Parameters	Examples
AT+RST	restart the module	basic	-	-	-	-	
AT+CWMODE	wifi mode	wifi	AT+CWMODE=<mode>	AT+CWMODE?	AT+CWMODE=?	1= Sta, 2= AP, 3=both	
AT+CWJAP	join the AP	wifi	AT+ CWJAP =<ssid>,<pwd >	AT+ CWJAP?	-	ssid = ssid, pwd = wifi password	
AT+CWLAP	list the AP	wifi	AT+CWLAP				
AT+CWQAP	quit the AP	wifi	AT+CWQAP	-	AT+CWQAP=?		
AT+ CWSAP	set the parameters of AP	wifi	AT+ CWSAP= <ssid>,<pwd>,<chl>, <ecn>	AT+ CWSAP?		ssid, pwd, chl = channel, ecn = encryption	Connect to your router: : AT+CWJAP="YOURSSID","helloworld"; and check if connected: AT+CWJAP?
AT+ CIPSTATUS	get the connection status	TCP/IP	AT+ CIPSTATUS				
AT+CIPSTART	set up TCP or UDP connection	TCP/IP	1)single connection (+CIPMUX=0) AT+CIPSTART= <type>,<addr>,<port>; 2) multiple connection (+CIPMUX=1) AT+CIPSTART= <id><type>,<addr>, <port>	-	AT+CIPSTART=?	id = 0-4, type = TCP/UDP, addr = IP address, port= port	Connect to another TCP server, set multiple connection first: AT+CIPMUX=1; connect: AT+CIPSTART=4,"TCP","X1.X2.X3.X4",9999
AT+CIPSEND	send data	TCP/IP	1)single connection(+CIPMUX=0) AT+CIPSEND= <length>; 2) multiple connection (+CIPMUX=1) AT+CIPSEND= <id>,<length>		AT+CIPSEND=?		send data: AT+CIPSEND=4,15 and then enter the data
AT+CIPCLOSE	close TCP or UDP connection	TCP/IP	AT+CIPCLOSE=<id> or AT+CIPCLOSE		AT+CIPCLOSE=?		
AT+CIFSR	Get IP address	TCP/IP	AT+CIFSR		AT+ CIFSR=?		
AT+ CIPMUX	set mutiple connection	TCP/IP	AT+ CIPMUX=<mode>	AT+ CIPMUX?		0 for single connection 1 for mutiple connection	
AT+ CIPSERVER	set as server	TCP/IP	AT+ CIPSERVER= <mode>[,<port>]			mode 0 to close server mode, mode 1 to open; port = port	turn on as a TCP server: AT+CIPSERVER=1,8888, check the self server IP address: AT+CIFSR=?

Thanks and Regards

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