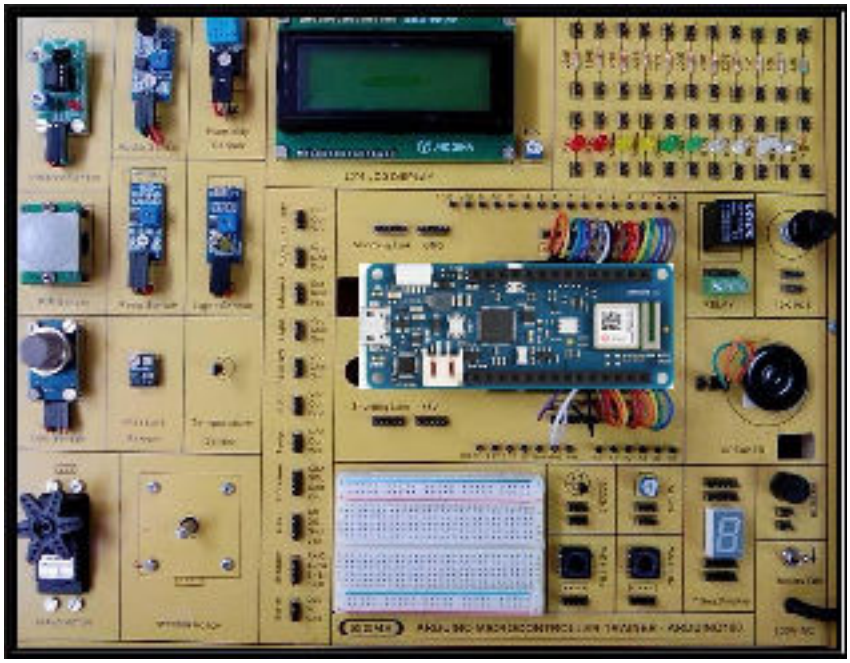
ARDUINO MKR1010 WIFI

MICROCONTROLLER TRAINER

MODEL-ARDUINO-MKR1010



This trainer has been designed with a view to provide practical and experimental knowledge of Internet of Things (IOT) with Sensors programing with Arduino MKR1010 Wifi IOT Board.

SPECIFICATIONS

A. Main Specs

1. Following Parts and Modules are assembled on Single PCB of size - 18 Inch x 15 Inch.
2. The complete circuit diagram is screen printed on component side of the PCB with circuit and Parts at the same place.
3. The PCB with components on front side is fitted in elegant wooden box having lock and key arrangement.
4. Modules and Parts should be removable without desodlering for easy repair / replacement
5. The acrylic cover is fitted on PCB to safeguard main parts.

B. Arduino MKR1010 Wifi Microcontroller Board

1. MCU : SAMD21G18A
2. Processor : Arm® Cortex®-M0+ at up to 48 MHz
3. 256 KB Flash
4. 32 KB SRAM
5. 12 Channel DMA
6. 5x 16 bit Timer/Counter
7. 3x 24 bit timer/counter with extended functions
8. 32 bit RTC
9. Watchdog Timer
10. CRC-32 generator
11. Full speed Host/Device USB with 8 end points
12. Two channel I2S
13. 12 bit 350ksps ADC (up to 16 bit with oversampling)
14. 10 bit 350ksps DAC
15. ATECC508 Crypto Chip
16. Nina W102 Module : Dual Core Tensilica LX6 CPU at up to 240MHz
17. Wi-Fi® : IEEE 802.11b up to 11Mbit, IEEE 802.11g up to 54Mbit, IEEE 802.11n up to 72MBit 2.4 GHz, 13 channels
18. Bluetooth® BR/EDR

    Max 7 Clients, 2.4 GHz, 79 channels, Up to 3 Mbit/s

C. Sensors:

1. Air Humidity and Temperature DHT11
2. Air Quality - MQ135
3. Soil / Water Temperature Sensor - DS18B20
4. Leaf Wetness Sensor - Rain Detector Sensor
5. Soil Moisture Sensor
6. Ambient Light Sensor - LDR Light Sensor

D. Modules and Hardware:

1. 20 X 4 - LCD Display
2. 1 Channel Relay board
3. DC Motor with Motor Driver board
4. Stepper Motor with Motor Driver board
5. 7 Segment Display
6. Different Resistors
7. Red, Green, Yellow LED
8. 10K Pot
9. Push Switch – 2 Nos
10. Audio Buzzer Board
11. Breadboard - 400 Points
12. 2 mm interconnection Sockets

E. Accessories

1. USB to Square USB Cable : 1 No
2. 2 mm Banana Jack Jumper – Connectors : 30 Nos
3. 9V, 1A Power Adaptor – Barrel 2.1mm : 1 No
4. Pen Drive - 16 GB with All Codes : 1 No
5. Printed Manual : 1 No.
6. Softcopy of Manual – On Pen Drive : 1 No
7. E-Books for IOT Subject – On Pen Drive : 10 Nos. in PDF Format
8. Mp4 Video for IOT Subject – On Pen Drive : 40 Nos

EXPERIMENTS

1. To understand theory and working of Arduino MKR1010 Wifi Board
2. To understand Operating System for Arduino MKR1010 Wifi Board
3. To understand Communication Protocols
4. To understand USB Interface for Arduino MKR1010 Wifi Board
5. To understand that how to connect 20 x 4 LCD Display to Arduino MKR1010 Wifi Board

6. To understand theory of Air Humidity and Temperature DHT11
7. To understand theory of Air Quality - MQ135
8. To understand theory of Soil / Water Temperature Sensor
9. To understand theory of Leaf Wetness Sensor - Rain Detector Sensor
10. To understand theory of Soil Moisture Sensor
11. To understand theory of Air Ambient Light Sensor - LDR

12. To understand Active Audio Buzzer
13. To understand 1 Channel Relay Board
14. To understand fundamental of DC motor and its driver
15. To understand fundamental of Stepper Motor and its driver

16. To make LED blink
17. To connect LCD Display
18. To measure Humidity using Humidity - DHT11 Sensor
19. To measure Air Humidity and Temperature using DHT11 Sensor
20. To measure Air Quality using Air Quality Sensor
21. To measure Temperature of Soil using Soil Temperature Sensor - DS18B20
22. To measure wetness of Leaf using Leaf Wetness Sensor - Rain Detector Sensor
23. To measure Moisture of soil using Soil Moisture Sensor
24. To measure Ambient Light using LDR Light Sensor

25. To use Audio buzzer for Output signal Alarm
26. To control 1 Channel Relay
27. To operate DC Motor control
28. To operate Stepper Motor

29. To send Sensors data to Website Cloud page using Wifi and Internet
30. To send Sensors data to MySQL Cloud Server and store them
31. To send Sensors data to Local Host Server and Store them on website html page
32. To send Sensors data to Mobile using GSM Gateway by SMS
33. To send Sensors data to Mobile using Android Mobile App
34. To send and display Sensors Data on website Smart Dashboard on a server

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