



**KG REDDY**  
College of Engineering  
& Technology

**Department of Electronics and Communication  
Engineering**

*Report of*

*Certification course on "IoT using Arduino"*

*From 4/09/2017 to 8/09/2017*

*Organized*

*in collaboration with IETE*

*by*

**Mr. Bavusaheb B Kunchanur**

Assistant Professor

Dept of ECE

KGR CET

**Mr. A Vijaya Bhasker Reddy**

Assistant Professor

Dept of ECE

KGR CET

**COORDINATOR**

**HOD**

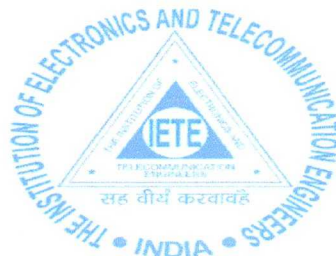
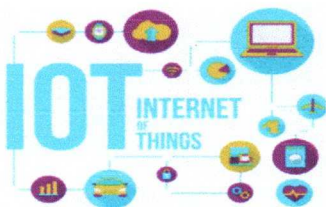
**HEAD**

DEPT. OF ELECTRONICS & COMMUNICATIONS ENGINEERING  
K.G. REDDY COLLEGE OF ENGINEERING & TECHNOLOGY  
CHILKUR (V), MOINABAD, R.R. DIST. 501 304.

**PRINCIPAL**

*Principal*

KG Reddy College of Engineering & Technology  
Chilkur (V) Moinabad (M),  
R. R. Dist



## Certification course and hands on session

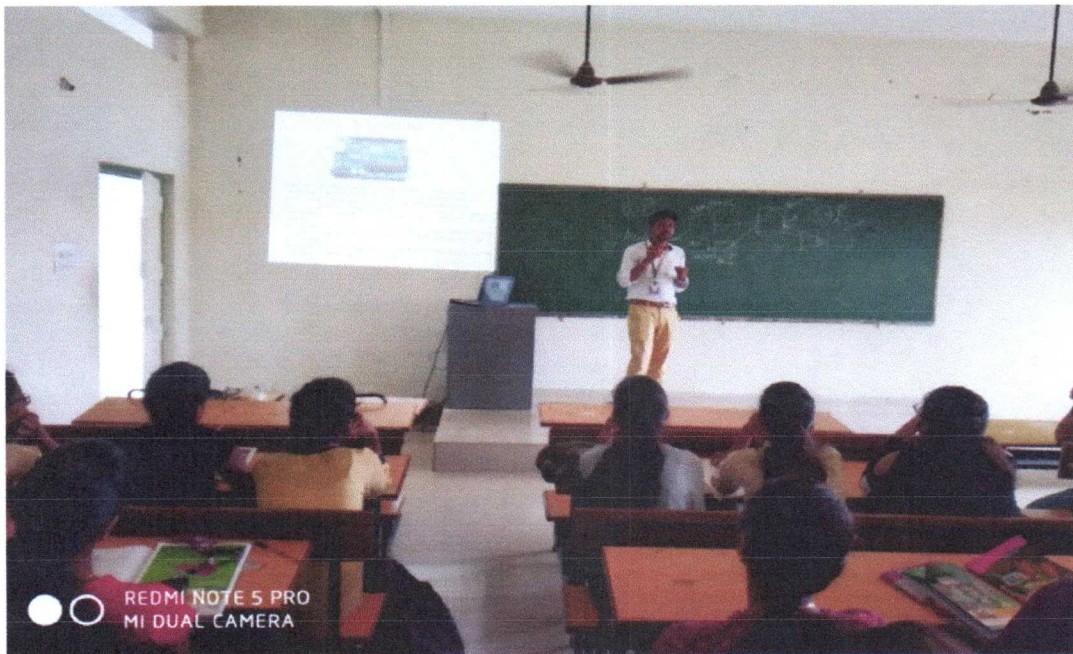
### “IoT using Arduino”

from 4<sup>th</sup> to 8<sup>th</sup> of September 2017

Electronics and Communication department of K G Reddy College of engineering and technology organized Certification course on "IoT using Arduino" in collaboration with IETE Hyderabad. Course was conducted by two experts **Mr. Bavusaheb B Kunchanur**, Assistant Professor at ECE Department KGR CET and **Mr. A.Vijaya Bhasker Reddy**, Assistant Professor at ECE Department KGR CET. Around 31 students from 3rd year ECE branch took part in this Course. Main focus of the Course was to do hands on practical with Arduino uno board and designing IoT applications using arduino/Node MCU. Arduino is an open source development board used by developers and hobbyist for creating projects and prototypes. Arduino has vast collection of supporting libraries developed by open source users across the world. Learning this platform might help students in rapid prototype development their project. Keeping these facts in mind content of Course was designed and delivered.

#### DAY-1:

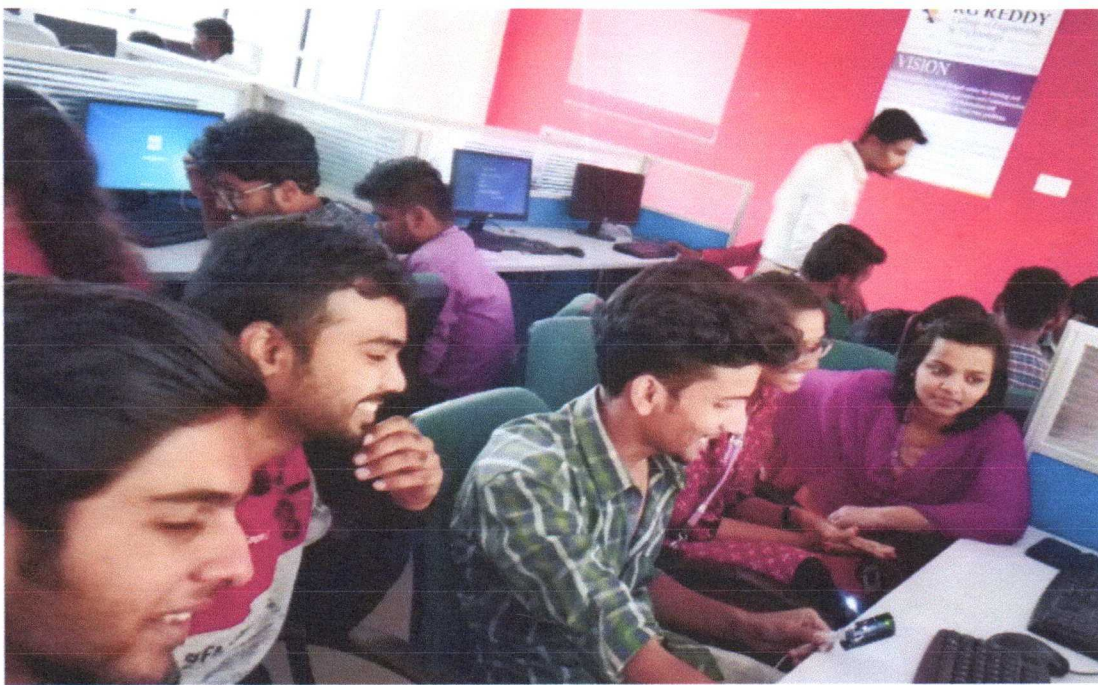
In the first session students got familiar with various development boards of Arduino and learnt the development environment for Arduino IDE. Working with Arduino I/O pin was interesting and students run small practical like blinking LED, interfacing Pushbutton switch.



Introduction to Arduino, sensors and actuators



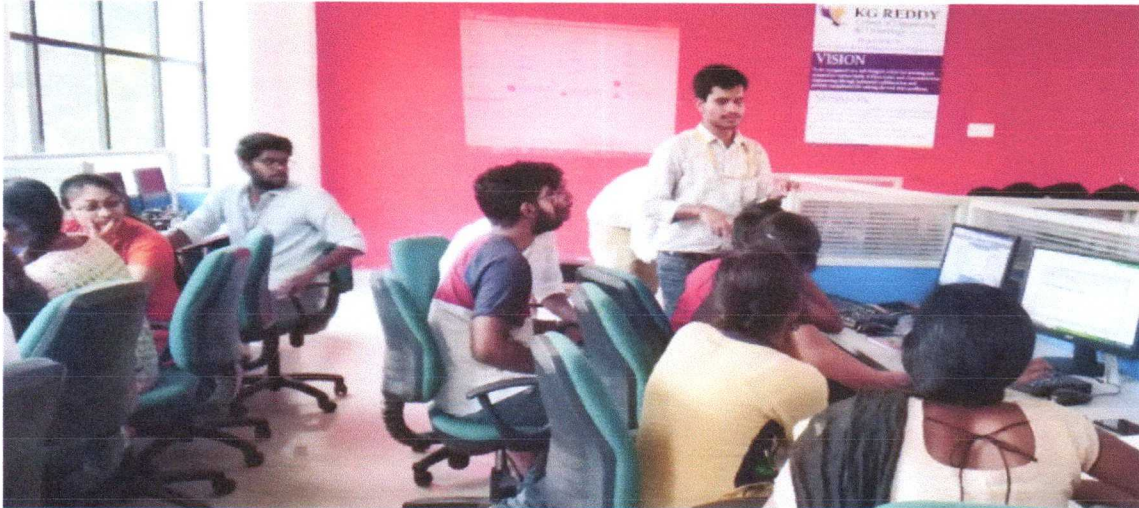
Installation of Arduino IDE



Blinking LED with delay of 1 sec

## DAY-2

On 5<sup>th</sup> the working of different sensors was covered and practical implementation for sensor interface was performed. In the second session after lunch Infrared LED based human entry door counter was implemented. Students learnt to interface ultrasonic, Smoke, Temperature sensors and displayed various data on serial monitor



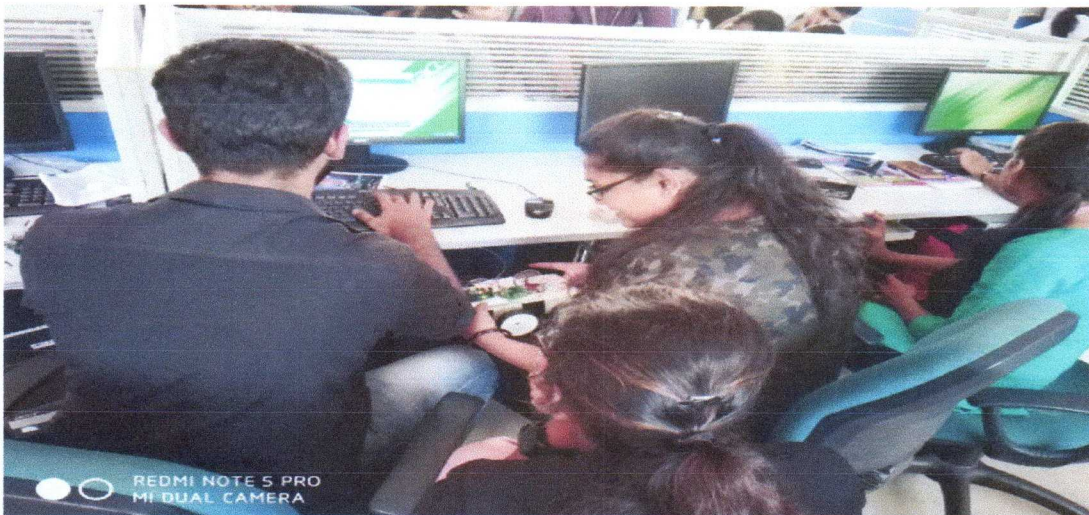
Explaining about sensors



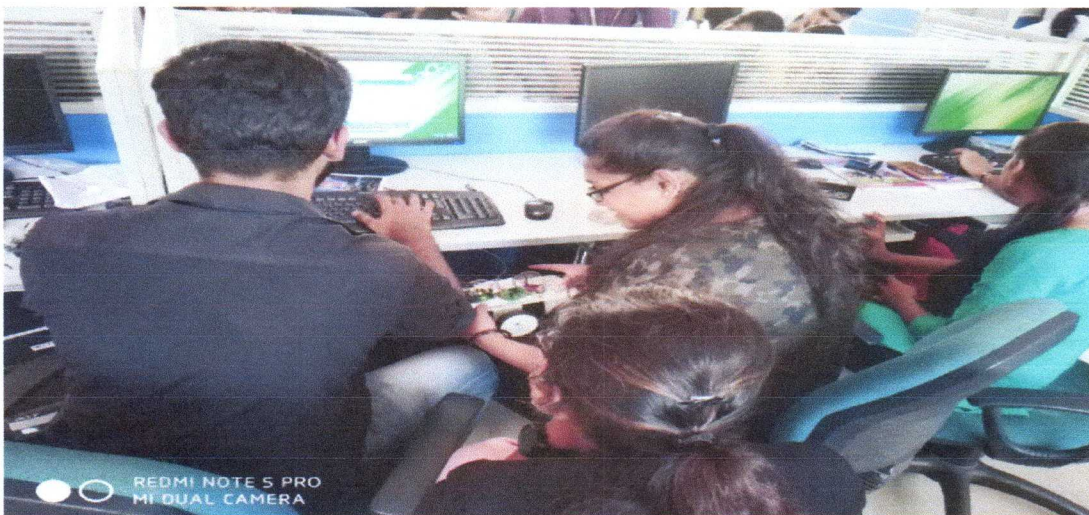
Programming sensors

### DAY- 3

On the 6<sup>th</sup> students learnt working with motors using LM293D and in this session students controlled rotation of DC motor based on the conditions. Students learned controlling DC motors using sensor values, they designed a robot and controlled directions of robot with ultrasonic sensor. Relay concept was demonstrated by experts and students learnt to control home appliances via Arduino. Students also learnt to work with infrared remote and emulated working of Projector IR remote. At the end of the day they designed simple 4 wheel robot with sensors.



Introduction to motor drivers and controlling the direction of motors with Arduino



Introduction to motor drivers and controlling the direction of motors with Arduino

## DAY- 4

On 7<sup>th</sup> students learned about Node MCU ESP8266 embedded wifi module with arduino. Adding NODE MCU sketches to arduino IDE and writing program on node MCU was also covered. In the afternoon session they have created an channel in ThingSpeak.com and they have controlled LED through thingSpeak channel. In the last session they have designed an IoT application where, they have interfaced relay and controlled home appliances through internet. So students learnt to implement advance practical of implementing IoT. Overall student learnt the basics of working with IoT using Arduino and gained basic knowledge of various Arduino development boards; Programming environment; onboard features of Arduino Uno: I/O, Analog, PWM, and IoT using Arduino. Feedback students was collected and it suggested that they welcomed this initiative and they are motivated to explore more dimension in this platform also they are willing to use this board in their projects in future.



Introduction to IoT and Controlling relay through internet

## DAY- 5

On 8<sup>th</sup> we have evaluated the learning of students. We have given the real time problem statement and asked the students to design their solution using IoT and Arduino. The students designed deferent solutions using IoT for home automation, industrial automation and agricultural automation.



Studnts solving realtime problems

In the second session, we have conducted a test to evaluate and certify the students

At 4:15pm Prof. M.N.Narsaiah, HOD,ECE, KGR CET issued the certificates. He concluded by addressing the students and explained the motive behind the Course. He suggested the students to do their mini, major projects on Arduino and IoT with the help of faculty members.



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Ref No: KGR CET/ECE/2017-18/

**CIRCULAR**

Date: 1/9/2017

All the students of III-B.Tech I semester ECE are here by instructed to enroll for the certification course on **“IoT using Arduino”**, which is going to conduct from 4/09/2017 to 8/09/2017. Interested students are instructed to meet Prof. Bavusaheb.B.k

  
**HOD**

**HEAD**  
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CHILKUR (V), MOJIBABAD, R.R. DIST.581 204.

  
**Principal**

**Principal**  
K.G. Reddy College of Engineering & Technolog.  
Chilkur (V) Mojababad (M).  
R. R. Dist





## **Syllabus for the certification course on “IoT using Arduino”**

Introduction to Internet of Things (IoT), Applications of IoT in various business sectors, IoT architecture & building blocks, How to build an IoT product,

Sensors & Interfacing, Software & Hardware platforms for IoT implementation, Introduction to Arduino Hardware & IDE.

Introduction to DHT11 Temperature and Humidity measurement, Introduction to Ultrasonic Sensor, Introduction to PIR Motion sensor,

Introduction to Actuators (DC Motor, Servo Motor and Relay), Introduction to Bluetooth Technology

Introduction to NodeMCU (ESP8266-12E), Introduction to NodeMCU firmware, NodeMCU as Server and Client, NodeMCU as an Access Point, Mobile Communication using Sim800 (GSM/GPRS Module), Introduction to various Notification Servers, Introduction to IOT Cloud Platforms and API,



Department of Electronics and Communication Engineering

Year/Sem: III. B.Tech - I Sem.

Name of the Event: Certification course on IoT using Arduino

Sl.No	Roll No.	Sign				
		4/9/17	5/9/17	6/9/17	7/9/17	8/9/17
1	15QMI A0423	Chh	Chh	Chh	Chh	Chh
2	15QMI A0438	K. Seenu	K. Chis	K. Seenu	K. Seenu	K. Seenu
3	15QMI A0442	Sreeja	Sreeja	Sreeja	Sreeja	Sreeja
4	15QMI A0432	Karthik	Karthik	Karthik	Karthik	Karthik
5	15QMI A0443	Navej	Navej	Navej	Navej	Navej
6	15QMI A0436	Rajs	Rajs	Rajs	Rajs	Rajs
7	15QMI A0410	Rhavan	Rhavan	Rhavan	Rhavan	Rhavan
8	15QMI A0418	Sushmi	Sushmi	Sushmi	Sushmi	Sushmi
9	15QMI A0445	Sai	Sai	Sai	Sai	Sai
10	15QMI A0430	Shree	Shree	Shree	Shree	Shree
11	15QMI A0441	Naveen	Naveen	Naveen	Naveen	Naveen
12	15QMI A0406	Divy	Divy	Divy	Divy	Divy
13	15QMI A0440	Harish	Harish	Harish	Harish	Harish
14	15QMI A0451	Suvarn	Suvarn	Suvarn	Suvarn	Suvarn
15	15QMI A0439	Navya	Navya	Navya	Navya	Navya
16	15QMI A0450	Nithish	Nithish	Nithish	Nithish	Nithish
17	15QMI A0428	Nandu	Nandu	Nandu	Nandu	Nandu
18	15QMI A0429	Vinay	Vinay	Vinay	Vinay	Vinay
19	15QMI A0437	Jyothi	Jyothi	Jyothi	Jyothi	Jyothi
20	15QMI A0449	Satish	Satish	Satish	Satish	Satish
21	15QMI A0407	Baba	Baba	Baba	Baba	Baba
22	15QMI A0459	Veda	Veda	Veda	Veda	Veda
23	15QMI A0412	Sud	Sud	Sud	Sud	Sud
24	15QMI A0426	Pooja	Pooja	Pooja	Pooja	Pooja
25	15QMI A0434	Ush	Ush	Ush	Ush	Ush
26	15QMI A0425	Charl	Charl	Charl	Charl	Charl
27	15QMI A0413	Prath	Prath	Prath	Prath	Prath
28	15QMI A0422	Geetha	Geetha	Geetha	Geetha	Geetha
29	15QMI A0435	K. Ansh	K. Ansh	K. Ansh	K. Ansh	K. Ansh
30	15QMI A0405	Maitra	Maitra	Maitra	Maitra	Maitra
31	15-408	Pr	Pr	Pr	Pr	Pr
32	15-451	Sud	Sud	Sud	Sud	Sud
33	15-409	R	R	R	R	R
34	15-423	Pr	Pr	Pr	Pr	Pr
35	15-401	Diksh	Diksh	Diksh	Diksh	Diksh
36	15-414	Ahu	Ahu	Ahu	Ahu	Ahu
37	15-415	Deepa	Deepa	Deepa	Deepa	Deepa
38	15-416	Prath	Prath	Prath	Prath	Prath
39	15-417	Naveen	Naveen	Naveen	Naveen	Naveen





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**Department of Electronics and Communication Engineering**

**Examination for the certification course on "IoT using Arduino"**

Date: 8/9/2017

Roll No: 18RM1A0419

Name: G. Venkatesh

1. What does GPIO stand for?

- |                                    |                               |                                          |                                     |
|------------------------------------|-------------------------------|------------------------------------------|-------------------------------------|
| A. General Purpose Outer Propeller | B. General Purpose Input Pins | C. General Purpose Interested Old People | D. General Purpose Output Processor |
|------------------------------------|-------------------------------|------------------------------------------|-------------------------------------|

[A] ✓

2. \_\_\_\_\_ are pre built circuit boards that fit on top of Android

- |           |               |               |            |
|-----------|---------------|---------------|------------|
| A. Sensor | B. Data types | C. Breadboard | D. Shields |
|-----------|---------------|---------------|------------|

[B] ✓

3. What license is Arduino distributed under?

- |                                                    |                |              |                        |
|----------------------------------------------------|----------------|--------------|------------------------|
| A. Proprietary with GNU GPL Ambient user interface | B. Proprietary | C. Shareware | D. LGPL or GPL license |
|----------------------------------------------------|----------------|--------------|------------------------|

[C] ✓

4. What does IDE stand for?

- |                        |                                       |                         |        |
|------------------------|---------------------------------------|-------------------------|--------|
| A. In Deep Environment | B. Integrated Development Environment | C. Internal Deep Escape | D. IDE |
|------------------------|---------------------------------------|-------------------------|--------|

[D] ✓

5. Which board is first to use microcontroller with in build USB?

- |            |        |             |             |
|------------|--------|-------------|-------------|
| A. LilyPad | B. UNO | C. RedBoard | D. Leonardo |
|------------|--------|-------------|-------------|

[D] ✓

6. A program written with the IDE for Arduino is called \_\_\_\_\_

- |               |           |                 |                |
|---------------|-----------|-----------------|----------------|
| A. IDE source | B. Sketch | C. Cryptography | D. Source code |
|---------------|-----------|-----------------|----------------|

[A] ✓

7. \_\_\_\_\_ board allows sewn into clothing.

- |        |             |            |         |
|--------|-------------|------------|---------|
| A. UNO | B. RedBoard | C. LilyPad | D. Mega |
|--------|-------------|------------|---------|

[B] ✓

8. A function is a series of programming statements that can be called by name. Which command is called once when the program starts:

- |           |            |             |            |
|-----------|------------|-------------|------------|
| A. loop() | B. setup() | C. (output) | D. (input) |
|-----------|------------|-------------|------------|

[C] ✓

9. It starts with a /\* and continues until a \*/ What does this do?

- |                   |                   |                     |                       |
|-------------------|-------------------|---------------------|-----------------------|
| A. Loads a sketch | B. Makes comments | C. Compiles quicker | D. Makes stars appear |
|-------------------|-------------------|---------------------|-----------------------|

[D] ✓

10. What does GPIO stand for?

- |                                    |                                    |                                    |                                    |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| A. General Purpose Outer Propeller | A. General Purpose Inner Propeller | A. General Purpose Outer Propeller | A. General Purpose Inner Propeller |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|

11. What license is Arduino distributed under?

[C] ✓



# KG REDDY

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- A. Proprietary with GNU GPL  
Ambient user interface
- B. Proprietary
- C. Shareware
- D. LGPL or GPL license
12. What does GPIO stand for?
- A. General Purpose Outer  
B. General Purpose Input Output Pins  
C. General Purpose Interested Old People  
D. General Purpose Input Output Processor
13. What does IDE stand for?
- A. In Deep Environment  
B. Integrated Development Environment  
C. Internal Deep Escape  
D. IDE
14. How many types of arduinos do we have?
- A. 5  
B. 6  
C. 8  
D. 6
15. .... are pre built circuit boards that fit on top of Android.
- A. Sensor  
B. Data types  
C. Breadboard  
D. Shields
16. A function is a series of programming statements that can be called by name. Which command is called once when the program starts:
- A. loop()  
B. setup()  
C. (output)  
D. (input)
17. A program written with the IDE for Arduino is called
- A. IDE source  
B. Sketch  
C. Cryptography  
D. Source code
18. Arduino IDE consists of 2 functions. What are they?
- A. Build() and loop()  
B. Setup() and build()  
C. Setup() and loop()  
D. Loop() and build() and setup()
19. Arduino shields are also called as
- A. Extra peripherals  
B. Add on modules  
C. Connectivity modules  
D. Another Arduinos
20. How many analog pins are used in Arduino Mega board?
- A. 16  
B. 14  
C. 12  
D. 8

[C]

[B]

[B]

[C]

[D]

[B]

[C]

[B]

[D]



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## **CERTIFICATE**

**Name: GADE MARY SUSHMA**

**Registration No: 15QM1A0418**

has successfully completed the prescribed requirements for the award of Certification course on "IOT USING ARDUINO" conducted by department of Electronics and Communication Engineering held in month of September from 04/09/2017 to 08/09/2017 in the academic year 2017-2018.

Date: 08/09/2017

**Course Coordinator**



**Principal**



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## **CERTIFICATE**

**Name: GAVARA NAGA LAKSHMI PRIYANKA**

**Registration No: 15QM1A0420**

has successfully completed the prescribed requirements for the award of Certification course on "IOT USING ARDUINO" conducted by department of Electronics and Communication Engineering held in month of September from 04/09/2017 to 08/09/2017 in the academic year 2017-2018.

Date: 08/09/2017

*Arjun*

**Course Coordinator**



*[Signature]*

**Principal**