KCES's College of Engineering and Management, Jalgaon
Activity Report

Name of The Activity : Online Workshop on Arduino esim.			
Category of activity		Co-curricular	
Date:	05/10/2020 to 09/10/2020	Participants profile:	BE Electrical Students
Name of Co-ordinator (S)	1. Mr.R.R.Waghulde 2. Mr.R.V.Patil		
Guest/ Experts (If any)	By Spoken Tutorial IIT Bombay		
Objective for conducting activity	➤ To know how to use arduino application. ➤ To get the information about different components used in arduino application. ➤ To get the knowledge about programming used in arduino application. ➤ To understand interfacing of arduino with AVR-GCC programming.		
Methodology	Through online video lectures		
Out Come	➤ Participants will able to get the knowledge about arduino application. ➤ Participants will Learn the basics of electronics, including reading schematics (electronics diagrams) ➤ Participants will Learn how to prototype circuits with a breadboard. ➤ Participants will Learn the Arduino programming language and IDE. ➤ Participants will learn Program with basic Arduino examples. ➤ Participants will learn Prototype circuits and connect them to the Arduino.		

Photos:

IQAC coordinator

Principal
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The Spoken Tutorial Project

- Self-explanatory: uses simple language
- Audio-video: uses multisensory approach
- Small duration: has better retention
- Learner-centered: learn at your own pace
- Learning by doing: learn and practise simultaneously
- Empowerment: learn a new **FLOSS** (**F**ree/**L**ibre and **O**pen **S**ource **S**oftware)

Target Audience

High school, College and Engineering students

Pre-requisites for Basic level tutorials:

- Basic knowledge of electronics
- Electronic components and connections
- Knowledge of C programming

Additional Pre-requisites for Intermediate level tutorial:

- Assembly language

Workshops

The Spoken Tutorial Project Team conducts workshops on Arduino and other FLOSS using spoken tutorials and gives certificates to those who pass an online test.
For more details, please visit
https://spoken-tutorial.org

Forum

We have developed a beginner friendly Forum to answer specific questions pertaining to any part of a particular tutorial.
For more details, please visit
https://forums.spoken-tutorial.org.

The Spoken Tutorial Project
is funded by the
National Mission on Education through
Information and Communication Technology,
Ministry of Human Resource Development,
Government of India.

Contact us

Email: contact@spoken-tutorial.org
Website: https://spoken-tutorial.org

Forum help available to all learners

Content available in 22 Indian languages

IIT Bombay

Spoken Tutorial

https://spoken-tutorial.org

Scan the QR code to
visit Spoken Tutorial website

ARDUINO

What is Arduino?

- Arduino is an open-source electronics platform used for building electronics projects.
- Arduino consists of both a physical programmable circuit board or microcontroller and a software IDE (Integrated Development Environment) that runs on the computer.
- It is used to write and upload computer code to the physical board.
- It is intended for making interactive projects.
- Download Arduino IDE from www.arduino.cc

Features of Arduino IDE

- Works on Linux, Windows and Mac operating systems
- Has many in-built functions that make programming simple and easy
- Easy to write code and upload it to the physical board
- Arduino IDE can be used with any Arduino board
- Can be easily adapted for IoT applications
- Arduino can be turned into IoT product by adding ESP8266 wifi module

Benefits of using Arduino Kit

- Arduino boards are less expensive compared to other microcontrollers platform.
- The Arduino programming environment is easy-to-use for beginners.
- For advanced users, the language can be expanded through C++ libraries and AVR-GCC programming language can be added to Arduino programs.
- The modules are published under a Creative Commons license, so circuit designers can make their own version of the module.

duino platform was designed for hobbyists, students and professionals to create IoT applications that play in the human interface world using sensors, motors, etc.

- Arduino can interact with buttons, LEDs, LCDs, motors, speakers, cameras, TV and smartphones, etc.
- Arduino can be connected to one or more sensors to capture the data.
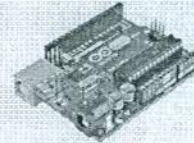
Spoken Tutorials in Arduino series
Basic Level

- Overview of Arduino
- Electronic components and connections
- Introduction to Arduino
- Arduino components and IDE
- First Arduino Program
- Arduino with Tricolor LED and Push button
- Arduino with LCD
- Display counter using Arduino
- Seven segment display
- Pulse Width Modulation
- Analog to Digital Conversion
- Wireless Connectivity to Arduino

Intermediate Level

- Assembly programming through Arduino
- Digital logic design with Arduino
- AVR-GCC programming through Arduino
- Interfacing LCD through AVR-GCC programming
- Mixing Assembly and C programming

Popular uses of Arduino

- Home automation (controlling lights, fans and other appliances) via Android smartphone
- Traffic light control
- PC controlled robotic arm
- Temperature controller
- Anti-theft camera system
- Automated irrigation system
- Feeder for Aquarium
- Garage parking
- Line follower robot

Components required to practise
Arduino Spoken Tutorials

1. Arduino UNO or Compatible Board (1 no.)
2. USB Power Cable (1 no.)
3. Resistor 220 ohms (6 nos.)
4. Resistor 10K Ohms (2 nos.)
5. Resistor 1K Ohms (4 nos.)
6. Breadboard (1 no.)
7. Tricolor LED Common Cathode (1 no.)
8. Red LED Common Cathode (1 no.)
9. Seven segment display - Common cathode (1 no.)
10. Seven segment display - Common anode (1 no.)
11. Decoder – IC 7447 (1 no.)
12. LCD 16 X 2 soldered with pin header (1 no.)
13. Jumper wires Male to Male (20 nos.)
14. Jumper wires Male to Female (8 nos.)
15. Potentiometer 10K Ohms (1 no.)
16. ESP8266 es01 WiFi Black color Module (1 no.)
17. DHT11 Temp_Humidity Sensor Module (1 no.)
18. L293D H-Bridge Motor driver IC (1 no.)
19. Toy Motor (1 no.)
20. Buzzer (1 no.)
21. Push Button Switch (2 nos.)

DATE: 01/10/2020

Schedule for Arduino Workshop

Sr.no.	Date	Topic
1	05/10/2020	Overview of Arduino
2	05/10/2020	Electronic components and connections
3	05/10/2020	Introduction to Arduino
4	05/10/2020	Arduino components and IDE
5	06/10/2020	First Arduino Program
6	06/10/2020	Arduino with tricolor LED and push button
7	06/10/2020	Arduino with LCD
8	06/10/2020	Display counter using Arduino
9	07/10/2020	Seven segment display
10	07/10/2020	Pulse width modulation
11	07/10/2020	Analog to digital conversion
12	07/10/2020	Wireless connectivity to arduino
13	08/10/2020	Assembly of Robot
14	08/10/2020	Robot control using bluetooth
15	08/10/2020	Assembly programming through arduino
16	08/10/2020	Digital logic design with arduino
17	09/10/2020	AVR-GCC programming through arduino
18	09/10/2020	Interfacing with AVR-GCC programming
19	09/10/2020	Mixing assembly and C programming

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HOD
Mr. Kalpesh M. Mahajan

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KCES's COLLEGE OF ENGINEERING AND MANAGEMENT JALGAON

A.Y 2020-21

Spoken tutorial IIT Bombay

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Class: B.Tech (Electrical Engg.)

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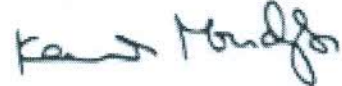|			
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Certificate of Participation

This is to certify that **POORVA BARHATE** participated in the **Arduino** training organized at **KHANDESH COLLEGE EDUCATION SOCIETY'S COLLEGE OF ENGINEERING AND MANAGEMENT, JALGAON** in **July 2020** semester, with course material provided by the Spoken Tutorial Project, IIT Bombay.

A comprehensive set of topics pertaining to **Arduino** were covered in the training.

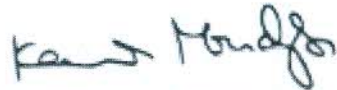August 30th 2020

Prof. Kannan M Moudgalya
IIT Bombay
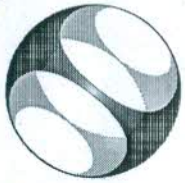
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Project at
IIT Bombay

Certificate of Participation

This is to certify that **MAYURI DALAL** participated in the **Arduino** training organized at

KHANDESH COLLEGE EDUCATION SOCIETY'S COLLEGE OF ENGINEERING AND MANAGEMENT, JALGAON in **July 2020** semester, with course material provided by the Spoken Tutorial Project, IIT Bombay.

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August 30th 2020

Prof. Kannan M Moudgalya
IIT Bombay