

G H Patel College of Engineering & Technology (A Constituent College of CVM University)



Department of Electronics & Communication Engineering

In Association with

Spoken Tutorial IIT Bombay

Organizes Six Days Remote Skill Development Programme on

ARDUINO

8TH - 13TH JUNE, 2020

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ABOUT CVMU

One of the oldest and most influential education trusts of Central Gujarat – the Charutar Vidya Mandal has got approval from Gujarat government for establishing a self-financed state private university called Charutar Vidya Mandal University (CVMU). Owing to the unique teaching approach adopted by the highly qualified faculties at CVMU, along with providing students with a conducive environment that promotes qualitative education, CVMU has accreditations from prestigious organizations.

ABOUT THE INSTITUTE & DEPARTMENT

G H Patel College of Engineering & Technology (GCET) is one of the premier SFI located at V. V. Nagar established in 1996 and managed by Charutar Vidya Mandal. Currently the institute is running with eight disciplines at graduate level and nine at post graduate level.

Department of Electronics & Communication started in 1997. Also, Post Graduate courses were started in Communication Engineering and Embedded Systems in 2007 and 2013 respectively. The Department has been accredited by NBA for 6 years since 2015.

ABOUT ARDUINO

Arduino is an open-source electronics platform based on easy-to-use hardware and software and used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE that runs on your computer, used to write and upload computer code to the physical board.

SALIENT FEATURES

- Inexpensive
- Cross-platform
- Simple, clear programming environment
- Open source and extensible software
- Open source and extensible hardware

OUTCOME OF FDP

- Installation of Arduino IDE on Ubuntu Linux OS
- Features of Arduino, Components of Arduino board
- What projects can be accomplished using an Arduino
- What is on the typical Arduino board and why
- The different varieties of Arduino boards
- Some useful widgets to use with your Arduino

IMPORTANT NOTES

- Limited seats, Registration will on first come first serve basis.
- Register yourself with new email id which must not be associated with any of the other courses of spoken tutorials before.
- Confirmation of Registration is subject to verification done by Spoken Tutorials.

Last Date of Registration: 5th June, 2020, 11:00 AM



All Engineering
branch students
can attend.

LIMITED
SEATS
ENROLL
NOW

<https://bit.ly/36P6KJ3>



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ONE WEEK SKILL DEVELOPMENT PROGRAM ON ARDUNIO
(8TH JUNE 2020 – 13TH JUNE 2020)

SCHEDULE

S.No.	Date	Topic
1	08/06/2020	a) Overview of Arduino b) Electronic Components & Connections c) Introduction to Arduino,
2	09/06/2020	d) First Arduino Program e) Arduino with Tricolor LED & Push button f) Arduino with LCD
3	10/06/2020	g) Display Counter using Arduino h) Seven Segment Display i) Pulse Width Modulation j) Analog to Digital Conversion
4	11/06/2020	k) Wireless connectivity to Arduino l) Assembly programming through Arduino m) Digital Logic Design with Arduino
5	12/06/2020	n) AVR-GCC Programming through Arduino o) Interfacing LCD through AVR-GCC Programming p) Mixing Assembly and C programming
6	13/06/2020	QUIZ

ORGANISING COMMITTEE

CVMU_GCET_EC_FDP

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**ONE WEEK SKILL DEVELOPMENT PROGRAM ON ARDUINO
(8TH JUNE 2020 - 13TH JUNE 2020)**

Installation Sheet for Arduino IDE

1 The procedure to install Arduino IDE on Ubuntu Linux 16.04

1.1 The procedure to install Arduino IDE 1.6.9 (recommended)

1. To follow the installation procedure, you need to be connected to the internet.
2. Locate the tutorial Introduction to Arduino.
3. This tutorial explains how to install Arduino IDE on Ubuntu Linux 16.04 OS.
4. At the time of creating this series, the latest version was Arduino IDE 1.6.9
5. To install the same version, follow the steps as given below.
6. Go to the website: www.arduino.cc
7. Under SOFTWARE menu, click on DOWNLOADS.
8. Scroll down and locate the Previous Releases. Click on the previous version of the current release link.
9. Scroll down and go to 1.6.9 version.
10. Click on Linux 32 Bit or 64 Bit link on the right panel based on your system architecture.
11. Click on JUST DOWNLOAD at the bottom of the window.
12. At 3:43 the tutorial shows how to save the zip file.
13. Follow the steps as shown on the tutorial to install Arduino IDE.
14. At 5:06 the tutorial demonstrates how to open Arduino IDE. If you could see the same on your machine, it indicates that Arduino IDE is successfully installed.

1.2 To install Arduino IDE latest version

1. Go to the website: www.arduino.cc
2. Under SOFTWARE menu, click on DOWNLOADS.
3. You will see the latest version.
4. Click on Linux 32 Bit or 64 Bit link on the right panel based on your system architecture..
5. Click on JUST DOWNLOAD at the bottom of the window.
6. At 3:43 the tutorial shows how to save the zip file.
7. Follow the steps as shown in the tutorial to install Arduino IDE.
8. At 5:06 the tutorial demonstrates how to open Arduino IDE. If you could see the same on your machine, it indicates that Arduino IDE is successfully installed.



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2 The procedure to install Arduino IDE on Windows

2.1 The procedure to install Arduino IDE 1.6.9 on Windows 10

1. To follow the installation procedure, you need to be connected to the internet.
2. At the time of creating this series, the latest version was Arduino1.6.9
3. To install the same version, follow the steps as given below
4. Go to the webiste: www.arduino.cc
5. Under SOFTWARE menu, click on DOWNLOADS.
6. Scroll down and locate the Previous Releases. Click on the previous version of the current release link.
7. Scroll down and go to 1.6.9 version
8. Click on Windows installer link.
9. Click on JUST DOWNLOAD at the bottom of the window.
10. The .exe file will get downloaded. Then click on the arduino-1.6.9-windows.exe file.
11. Arduino Setup window will appear. Click on the check box I agree for license.
12. In the Arduino Setup : Installation Options, select all the check boxes and click on Next button.
13. Click on Install button.
14. A dialogue box may appear to install the device software.
15. Click on Install button to install the device software when prompted.
16. Wait until the installation is completed.
17. Arduino IDE shortcut will be launched on the desktop.
18. This indicates that Arduino IDE is successfully installed.

2.2 To install Arduino IDE latest version

1. Go to the webiste: www.arduino.cc
2. Under SOFTWARE menu, click on DOWNLOADS.
3. You will see the latest version.
4. Click on Windows ZIP file for non admin install link on the right panel.
5. Click on JUST DOWNLOAD at the bottom of the window.
6. A zip file will be downloaded in the Downloads folder. Extract the zip file.
7. Double click on the Arduino application file to open the Arduino IDE.
8. If you could see the Arduino IDE, it indicates that Arduino IDE is successfully installed.



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Instruction Sheet for Arduino

1 Online / Offline content

1. The online content of Spoken Tutorials can be accessed from :
<https://spoken-tutorial.org/tutorial-search/>
2. You can also download the Spoken Tutorials for offline learning from :
<https://spoken-tutorial.org/cdcontent/>
3. From this link download the FOSS categories in the language you wish to learn.
4. The Spoken Tutorial content will be downloaded as a zip file on your machine.
5. Extract the contents of the zip file & access them.

2 The procedure to practise

1. You have been given a set of spoken tutorials and files.
2. You will typically do one tutorial at a time.
3. You may listen to a spoken tutorial and practise by reproducing all the steps shown in the video side-by-side.
4. If you find it difficult to do the above, you may consider listening to the whole tutorial once and then practise during the second hearing.

**3 Side-by-side learning video
(Only for offline content)**

1. Go to the folder name spoken on your machine.

2. Locate index.html file.

3. Open this file with either Firefox or Chrome web browser.
4. The Side-by-Side learning video will appear. This video will explain how to learn from the spoken tutorials.
5. Click on the Play button to play the video.
6. Note all the steps explained therein.

4 Arduino

1. Click on "Select FOSS" or "All FOSS Categories" drop-down and choose "Arduino".
2. Click on "Select Language" or "All Languages" drop-down and choose the language (English, Hindi, Marathi ...) in which you wish to learn.
3. Click on "Submit" button.
4. You will see a list of tutorials based on your selection.
5. Start with the first tutorial in the displayed list.

5 First tutorial: Overview of Arduino

1. Locate the topic "Overview of Arduino" and click on it.

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2. To view the tutorial, click on the Play icon which is located in the player.

6 Second tutorial: Electronic components and connections

1. Locate the topic "Electronic components and connections" and click on it.
2. To view the tutorial, click on the Play icon which is located in the player.
3. General introduction to electronic components and how to do the basic connections are covered in this tutorial.

7 Third tutorial: Introduction to Arduino

1. Locate the topic "Introduction to Arduino" and click on it.
2. To view the tutorial, click on the Play icon which is located in the player.
3. How to install Arduino IDE is covered in this tutorial.

8 Fourth tutorial: Arduino Components and IDE

1. Locate the topic "Arduino Components and IDE" and click on it.

2. To view the tutorial, click on the Play icon which is located in the player.

3. Basic components of Arduino and Arduino IDE are covered in this tutorial.

9 Fifth tutorial: First Arduino Program

1. Locate the topic "First Arduino Program" and click on it.
2. To view the tutorial, click on the Play icon which is located in the player.
3. While uploading the program for the first time, you may get error as Permission denied or Can't open device "/dev/ttyACMO" .
4. Refer to the Additional reading material link of this tutorial for solution.
5. Important Note : To execute the sudo commands in the terminal, you need to be given super user permission by your system administrator.

9.1 Instructions to practise

1. Create a folder on the "Desktop" with your "Name-RollNo-Component". (Eg. "vin-04-arduino").
2. Give a unique name to the files you save, so as to recognize it next time. (Eg. "Arduino-1-vin").
3. Remember to save all your work in your folder.
4. This will ensure that your files don't get overwritten by someone else.

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5. Save your work from time to time, instead of saving it at the end of the task.

9.2 Common instructions for Assignments

1. Attempt the Assignments as instructed in the tutorial.
2. Save your work in your folder.

9.3 Common instructions to use Code files

1. Click on the link "Code files" located below the player and save it in your folder.
2. Extract the downloaded zip file.
3. You will see all the code/source files used in the particular tutorial.
4. Use these files as per the instructions given in the particular tutorial.
5. Play-pause-practise the whole tutorial.
6. Once the tutorial is complete, choose the next tutorial from the playlist which is located on the right side or below the player.
7. Follow all the above instructions, till you complete all the tutorials in the series.

10 Eleventh tutorial: Analog to Digital Conversion

1. This tutorial requires internet connection as we need to install DHT11 library.

11 Twelfth tutorial: Wireless Connectivity to Arduino

1. This tutorial requires internet connection as we need to install ESP8266 WiFi module.
2. At 5:07, the tutorial shows to copy a json URL to Additional Board Managers.
3. Follow each and every step as specified in the tutorial.

12 Thirteenth tutorial: Assembly programming through Arduino

1. This tutorial requires internet connection as we need to install avra and avrdude

13 General instructions for Windows users

1. To install Arduino IDE in Windows, follow the steps given in the installation sheet.
2. Intermediate level tutorial requires installation of avra and avrdude.
3. Refer to the Additional reading material link of Assembly programming through Arduino tutorial to do the avrdude installation.

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