

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** (Free/Libre and Open Source Software)

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

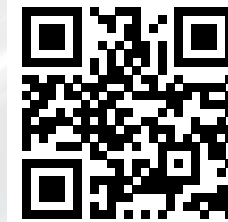
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Spoken Tutorial

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Scan the QR code to visit Spoken Tutorial website



National Mission on Education through Information and Communication Technology (NMEICT)

www.sakshat.ac.in

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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.

- Arduino 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.)