Arduino Projects

Techfest is the annual science and technology festival of IIT Bombay. Following is the basic outline of the **in-person** workshop that will be happening at **Techfest, IIT Bombay**.

OVERVIEW:

Arduino is an open-source 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. Arduino can interact with buttons, LEDs, motors, sensors, cameras, smartphones, etc. It can used for almost any electronics project.

This is a Complete Arduino Course which will guide you from a very basic to an advanced level. Students generally lack in applying programming knowledge to embedded systems. Therefore, this course is so designed, in turn, to help in applying programming concepts step by step in practical scenarios.

The duration of this workshop will be 2 days; it consists, 4 sessions each 3

hours; properly divided into theory and practical.

Along the course, a duration of **10+ project** will be made under instructors' guidance.

Eventually, students will be able to **do 100+ projects.**

Sensors:

• Students will learn about various types of sensors, like MQ3 (alcohol

sensor), MQ2 (flammable gas sensor), Water sensor, LDR, etc.

• Architecture of sensors

• Internal circuits and its working principle

• Interfacing with the Arduino board

Processing unit:

• Arduino board and its future scope

• Pin diagram and architecture of Arduino UNO

• Arduino IDE and Arduino programing language

• ADC of Arduino and its application

• PWM and its application

• Programming of real-life projects

Actuators:

• Learn various types of actuators such as electrical motor, relay module,

servo motor etc.

• Working of actuators

• Its internal circuitry

• Interfacing with Arduino and sensors

• Its usage in real life projects

Projects developed during the course:

• SONAR

• Rain detector alarm

• Fire detector and alarm

• Automatic street light

• Automatic hand sanitizer

• Automatic Water pump

• Light intensity meter

• Gas leakage detector

• Alcohol detector

• Automatic dustbin