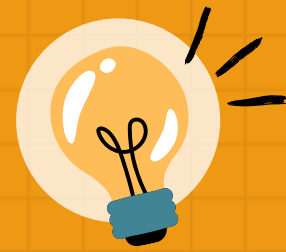


ROBOTICS WITH ARDUINO



CONNECT, CODE, INNOVATE



UNDERSTANDING ELECTRICITY

- What is electricity?
- Introduction to voltage, current, and resistance with simple analogies.

1

EXPLORING CIRCUITS

- What is a circuit? Understanding open and closed circuits.
- Setting up a basic circuit.
- Simulation using Tinkercad.

2

HANDS-ON ELECTRONICS

- Introduction to basic electronic components: LEDs, resistors, buttons, buzzers, breadboards, and wires.
- Learn to use a breadboard for building circuits.

3

SIMPLE CIRCUITS

- Build a circuit to light up an LED using a resistor and power source.
- Check how changing the resistor value affects the brightness of the LED.
- Use a push-button switch to toggle the LED on and off.

4

INTRODUCTION TO ARDUINO

- Exploring the Arduino Uno board
- Understanding digital pins, power pins, and the reset button.
- Getting started with Arduino Programming using PictoBlox.

5

LED BLINK AND PWM

- Program the LED to blink
- Pulse Width Modulation
- Changing the brightness of LED
- Fading in and fading out

6

INFRA-RED SENSOR

Learn about the IR sensor and integrate it into the circuit to make the LED glow when an object is detected at a distance/ near.

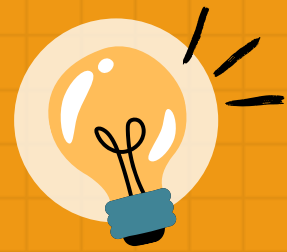
7

ACTIVITIES

- Sequence to blink multiple LEDs
- Design a traffic light simulation
- Home security alarm system

8

CONNECT, CODE, INNOVATE



LIGHT-DEPENDENT RESISTOR

- What is an LDR?
- Understanding how it senses light intensity
- Analog vs. digital signals

9

10

SERIAL MONITOR

- Reading light intensity using Analog Read.
- Displaying light values in Serial Monitor
- Automated Street Light System

OTHER SENSORS

- Learning to use Flame Sensor, Sound Sensor, Ultrasonic Sensor, Touch Sensor, Temperature Sensor and Soil Moisture Sensor

11

12

MOVING WITH MOTORS

- Exploring DC Motors and Servo Motors
- Connect a Motor to Arduino using a Motor Driver
- Make a Servo Motor move to specific angles.

REAL-TIME PROJECTS

- Fire Alarm System
- Clap-Activated Light
- Voice-Controlled Lights
- Smart Doorbell

13

14

REAL-TIME PROJECTS

- Room Temperature Monitor
- Temperature-controlled Fan
- Automatic Plant Watering System

BUILDING ROBOTS

- Explanation of chassis components - frame, wheels, motors.
- Assemble a basic robot chassis using the provided kit

15

16

BUILDING ROBOTS

- Obstacle Avoidance Robot
- Line-following Robot
- Build a Creative Robot