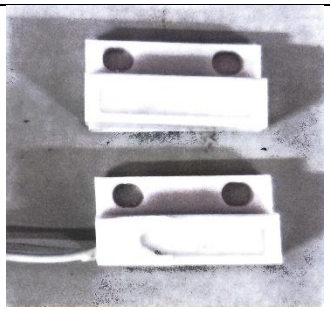
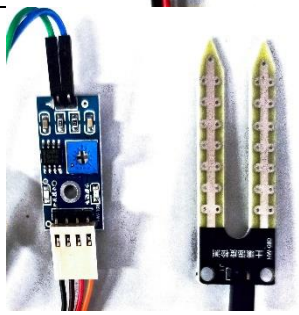
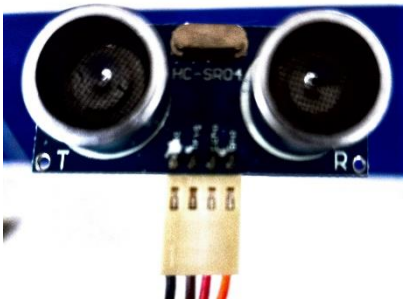
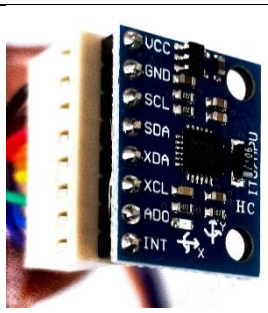
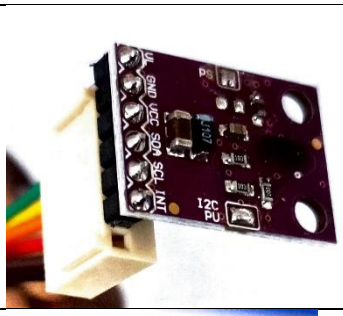
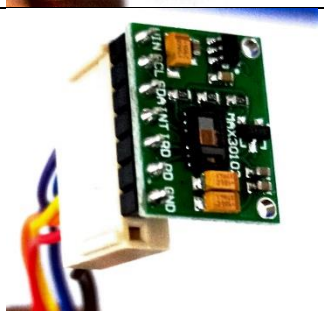
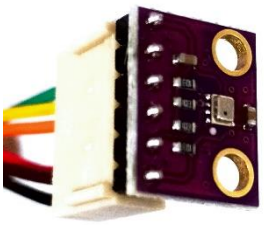
Mini Projects 2022

S.No	Project Title with AIM	Sensors Required	Sensor Image
1	**Home Security System with IoT interface** Detect presence of intruders and unauthorised opening of windows using PIR and magnetic switch sensors and alarm status update in Firebase and mobile app	**Magnetic switch** **PIR sensor**	
2	**Smart Garden with IoT interface** Detect level of soil moisture and switch on motor based on limit checking, transfer soil moisture data and motor status to Firebase and display in mobile app	**Soil Moisture sensor**	
3	**IR Remote based Control with IoT Interface** Local control of an appliance using IR remote as well as cloud based control using a mobile app	**IR Receiver** **IR Generic Remote**	
4	**IoT based Remote Range Meter** Detect range at which object ids present using Ultrasonic sensor HC0SR04 and transfer range data to Firebase and display in mobile app	**Ultrasonic sensor**	

5	**Fall Detection using IoT** Detect fall forward, backward, left or right using multi-axes accelerometer MPU6050 and transfer fall status to Firebase and display in mobile app	**MPU6050 Multi-axes accelerometer**	
6	**Gesture Recognition using IoT** Detect left,right, up and down gestures using APDS9960 sensor, transfer gesture to Firebase and display in mobile app	**APDS9960 Colr & Gesture sensor**	
7	**Heart Rate Monitoring using IoT** Detect heartbeat (beats per minute) using MAX30102 sensor, transfer heartbeat data to Firebase and display in mobile app	**MAX30102 Heartbeat & SPO2 monitor**	
8	**Wake Sound Detection and Alarm Notification** Record sound using a MEMS microphone, transform to frequency domain using FFT , detect presence of the specific frequency of a bell and transfer status to Firebase	**INMP441 MEMS mic**	
9	**IoT based Real Time Appliance Control** Based on start, stop timings set in mobile app and transferred to Firebase control an appliance using GISMO6	**Relay** **RTC using Internet**	**Onboard Relay**

10	**Environment Monitoring using IoT** Measure temperature, atmospheric pressure and altitude using BMP280 sensor, transfer data to Firebase and display values in mobile app	**Bosch's BMP280 Envirinment Moniro**