Final Project suggestions

Project1:

he purpose of this project is to design and implement a Wireless Sensor Network. You can have as many motes as you want. As a suggestion you can have one mote functioned as the coordinator, two as Routers and one as End Device as shown in below

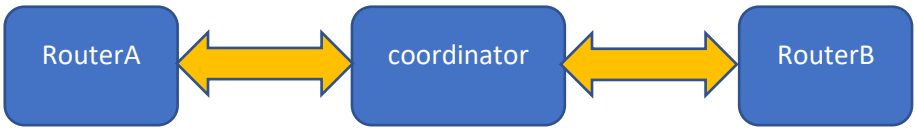

Fig1. The Wireless network

The coordinator consisted of one Arduino Uno, one XBee module (a radio module Zigbee), two TMP36 temperature sensors and three push button switches which are used to send debug data from the coordinator to the other XBee motes as shown below

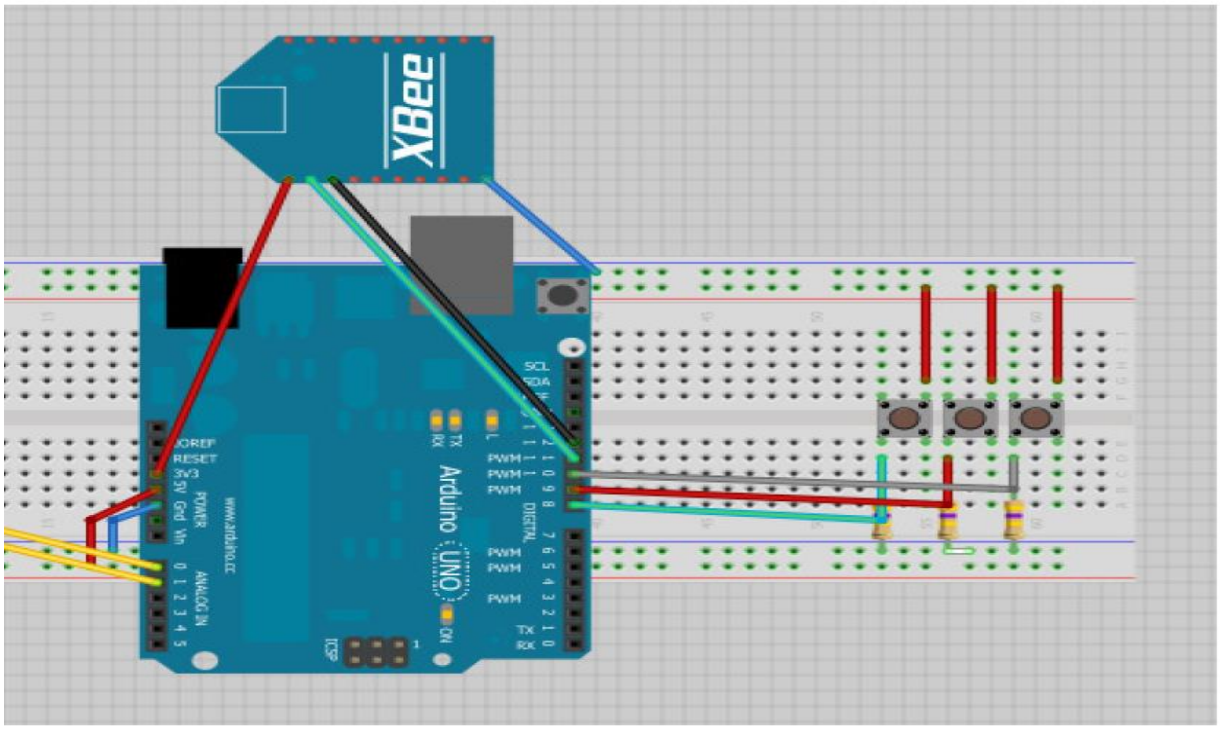

Fig. 2 The coordinator[1]

The Arduino Uno is in charge of processing all of the data from the network. When the push buttons are pressed, one of the routers receives a packet from the coordinator which tells the XBee device in the router to assert one of the digital I/O pins. Connected to that pin is a LED (See Below). This helps to check if the network is configured properly and all of the motes can communicate with the coordinator.

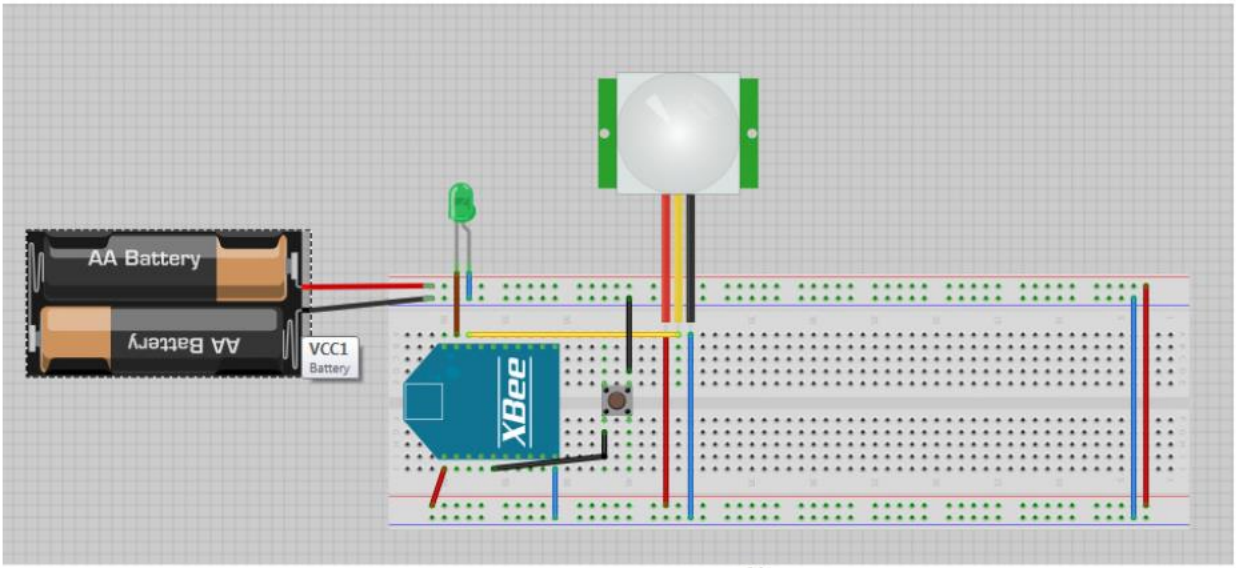

Fig3. The router

Inside the router side, here is also a status LED connected to the XBee. This LED is triggered by the Coordinator when a specific I/O packet is received from the Coordinator. This packet tells the device to turn on the LED that is connected to the Router. This allows the user to visually see when the network has been configured correctly with a simple push of a button

[1]Atkinson, Kimo, “Implementation of Wireless Sensor Networks”, EENG 4800, Utah Valley University, Final Report, April 2013.

Project2:

Get your hands on programming TI CC2650 sensor tag. It includes various sensors including accelerometer, gyroscope, Humidity, Magnetometer, Pressure, Temperature.

Project3:

Smartphone detection of human activity :

You can access the dataset from the link below:

30 volunteers performed 6 different activities: standing, sitting, lying, walking, going upstairs, going downstairs.

Try to come up with a model to classify these activities with as much accuracy as possible.

http://archive.ics.uci.edu/ml/datasets/Smartphone-Based+Recognition+of+Human+Activities+and+Postural+Transitions