SMART HOME MANAGEMENT

Hardware and Sensors :

- ➔ Arduino UNO board for processing information
- ➔ **HC-SR04** SONAR ultrasonic sensor for measuring distance
- ➔ **DTH11** or **DTH12** sensor for measuring temperature and humidity
- ➔ RF module to transmit data between a node to node
- ➔ A voltage source, Push-button, Resistors, RGB LED

Problem Module:

- ➔ interfacing between microcontroller and pc(values and information transmission)
  - ◆ pc to microcontroller communication
  - ◆ microcontroller to pc communication
- ➔ interfacing between microcontroller and sensors(data transmission)
  - ◆ Arduino board receives information from sensors connected through digital pin
- ➔ interfacing between microcontroller and hardware
  - ◆ 3 push button will be connected to node 2
  - ◆ 1 RGB LED will be connected with node 3
  - ◆ An RF module (1 transmitter and 3 receivers) will be implemented.
    - RF module transmitter will be connected with node_2.
    - 1 additional Arduino board will be connected by an RF module(3 RX receivers) and 3 virtual terminals to show information received from RF module.

Step 1: Ultrasonic sensor and DTH sensor will be connected through digital pins with the master node(node_1) and it will take information from them. DTH11 or DTH12 sensor will measure humidity and temperature. Ultrasonic will calculate the distance of a target object from node_1. Information collected from the temperature sensor will be sent towards node_2 and ultrasonic sensor data will be sent towards node_3.

Step 2: an RGB LED is connected with the node_3. Depending on the information received (target object distance) from node 1, LED will dynamically change its color from blue to red or red to blue.

Step 3: Here 3 push buttons and RF module(1 Transmitter) will be connected to node_2 through digital pins.

Step 4: an additional Arduino with RF module (3 RX receiver) and 3 virtual terminal will be connected. These terminals will display the information collected from node_2 when any of the 3 buttons are pressed. RF Transmitter (TX) will transmit a signal to RF receiver (RX) which is connected with an additional Arduino board.