Project Work Plan

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Main Tasks:

The main aim of this project is to develop a system which meets the specification provided by lecturer. This project mainly consists of three parts and they are:
1. Arduino Sensor Nodes : Collects the temperature and humidity of surrounding and sends the data to LEGO EV3

2. LEGO EV3 Robot : Acts as a smart truck which unloads the stuff in a place where temperature and humidity conditions are met. It should be able to avoid the obstacles and collision during it's movement.

3. Server : Communicates with robots to provide real time route information and acts as a rely between robot and remote control client. Basically, communication between sensor nodes, robot and server is through Bluetooth while the communication between server and remote control client is through TCP/IP.

Main tasks which has to be performed to complete the projects are as follows:

- Three components of the system has to be programmed individually and has to meet the specifications
- Arduino collects the sensor data and sends it to robot using Bluetooth
- After receiving the data from sensor nodes, robot has to unload stuffs in a place where certain conditions are met
- Robot has to avoid collisions and obstacles and has to send it's route information to the server
- Communication between robot and server is carried out using Bluetooth
- Server acts as a relay between robot and remote control client and forwards the route information provided by robot to client
- Communication between server and client is carried out using TCP/IP protocol

Tools:

Hardware Tools：
1. LEGO Mindstorm EV3
2. Arduino
3. Bluetooth module
4. Cables and connectors
5. Temperature and humidity sensor

Software Tools：
1. LEGO Mindstorm EV3 programming software

2. C/C++ language for Arduino.
3. C/C++ language for servers to control EV3.
4. Java for LEGO programming (LEJOS)

Schedule：

1. 3/9-3/15 Team build up and complete to splice the LEGO robot and be familiar to it.
2. 3/16-3/28 Each member gets familiar with the robot and the hardware devices, and conceive the final product.
3. 3/28-4/6 cooperate with the team member from other university, assign everyone's task and build subsystems.
4. 4/7-4/21 Achieve the connection between LEGO, servers and Arduino through Bluetooth and build the first prototype and test its functions.
5. 4/22- 5/10 improve the developed prototype and add more functions

Reference

1. Connect temperature sensor to LEGO http://blog.cmnxt.com/thread-55492-1-1.html
2. https://www.lego.com/en-us/mindstorms/about-ev3
3. https://www.lego.com/en-us/mindstorms/learn-to-program
4. http://www.lejos.org/
5. Bluetooth block http://microchip.eefocus.com/module/forum/forum.php?mod=viewthread&tid=744