Project Specification

Build Tic-Tac-Toe Game Board with Arduino Uno

Course	GP106: Computing
Batch	E/15
Project Mode	Group - 3/4 members (same as the lab groups)
Duration	4 weeks
Milestones	2 regular and 1 bonus
Marks	15% (regular milestone) + 5% (bonus milestone)
Resources	A complete development kit is given by the department, one per group.
Preamble	In brief, the project is to build a simple Tic-Tac-Toe game board (https://en.wikipedia.org/wiki/Tic-tac-toe) with Arduino Uno microcontroller board and appropriate interfacing hardware. The game board should support two players and have to be achieved with mono color nine LEDs. You may use appropriate input mechanisms to the board so that the players can make their placement on the board via the input mechanism. The project is expected to be completed by a group of students in two milestones and an optional bonus milestone. You **may** look at the following links (or any other material on the web) to get some idea for your input interface and the LED placement: • https://www.youtube.com/watch?v=sj6_i2tAnAQ, • https://www.youtube.com/watch?v=CMOEULL6WAc The first milestone of the project involves building a 3 x 3 mono coloured LED array on a breadboard and displaying any possible game state using the LEDs. That is, you should be able to input the game state from Matlab and display the same on the board. You should note that the game state has two players. In the second milestone, you need to develop the input mechanism for the game. The two players should be able to input their placements on the board using your input mechanism. Further, the board should be able to figure out when a player wins or when a game is drawn and indicate it using a buzzer (preferably with different tones) or any other suitable mechanism. The project also has a bonus milestone. Where, you can enhance the game board or the user experience to the next level. This milestone is for those who consider the first two milestones are not challenging enough and want to improve the user experience of the system. Use your own imagination and novel idea to improve the system, in any way possible.

Milestone #	Deliverables	Deadline	Marks
1	Working display of the game board (LEDs) with inputs given by a Matlab program for game states: 1a. The circuit diagram and the hardware 1b. The flowchart and the software	07-Sep-2017	6
2	The completed game board 2a. The circuit diagram and the hardware 2b. The flowchart and the software	21-Sep-2017	9
Bonus	An extra innovative feature Note that the bonus milestone will be marked, only if both the regular milestones are completed. For the bonus milestone, you will be evaluated according to your innovativeness, creativity and the technical difficulty of the feature.	21-Sep-2017	5

Please clarify any doubts from the project forum. Wish you happy making!