# BRAINWAVE

LED STRIKE

So you're the generic Indian Engineering student, who is terribly bored during lectures. You decide to do something about it, and build yourself an LED game to play with your friend. The game is a simple brick game of tanks. Your job is to make 1 console, with two controls one control for you and other for your friend, which enable you to play the game and while away lectures!

Task

As the Engineer, you are required to design and build the gaming system as per the following specifications –

1. There will be one hardware console containing two controller switches. On turning on,it will automatically initialize to 2 tanks made of LEDs, one for controller 1 and other for controller 2. The tanks will remain on the console throughout the game. LEDs of both the controller should be different.The switch controls should have three controls R(right), L(left) and S(shoot).

2. The structure of the tank should be as shown and it should move left and right only,the muzzle should be the shooting part in both the tanks.

MUZZLE
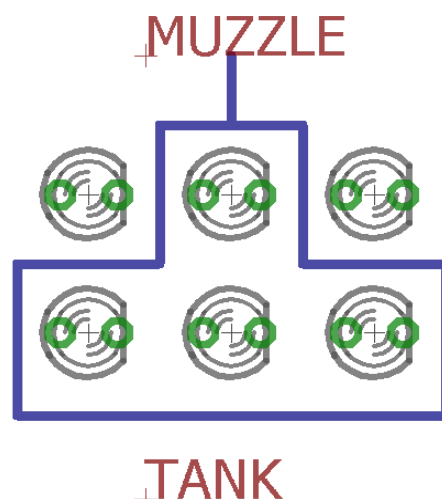
TANK

3. When an R is entered the tank should move right, left for an L and it should shoot for an S. This is how the tanks should move.

IEEE DTU
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Delhi Technological University
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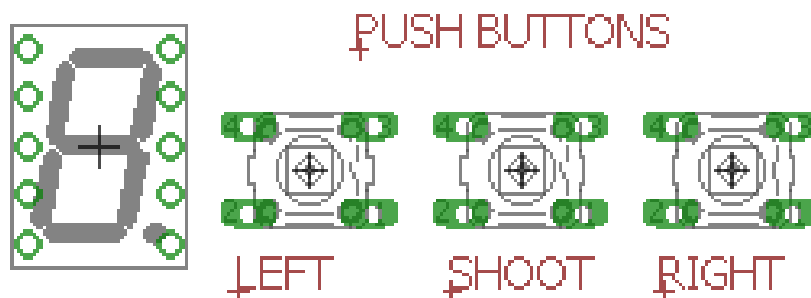Delhi - 110042, India
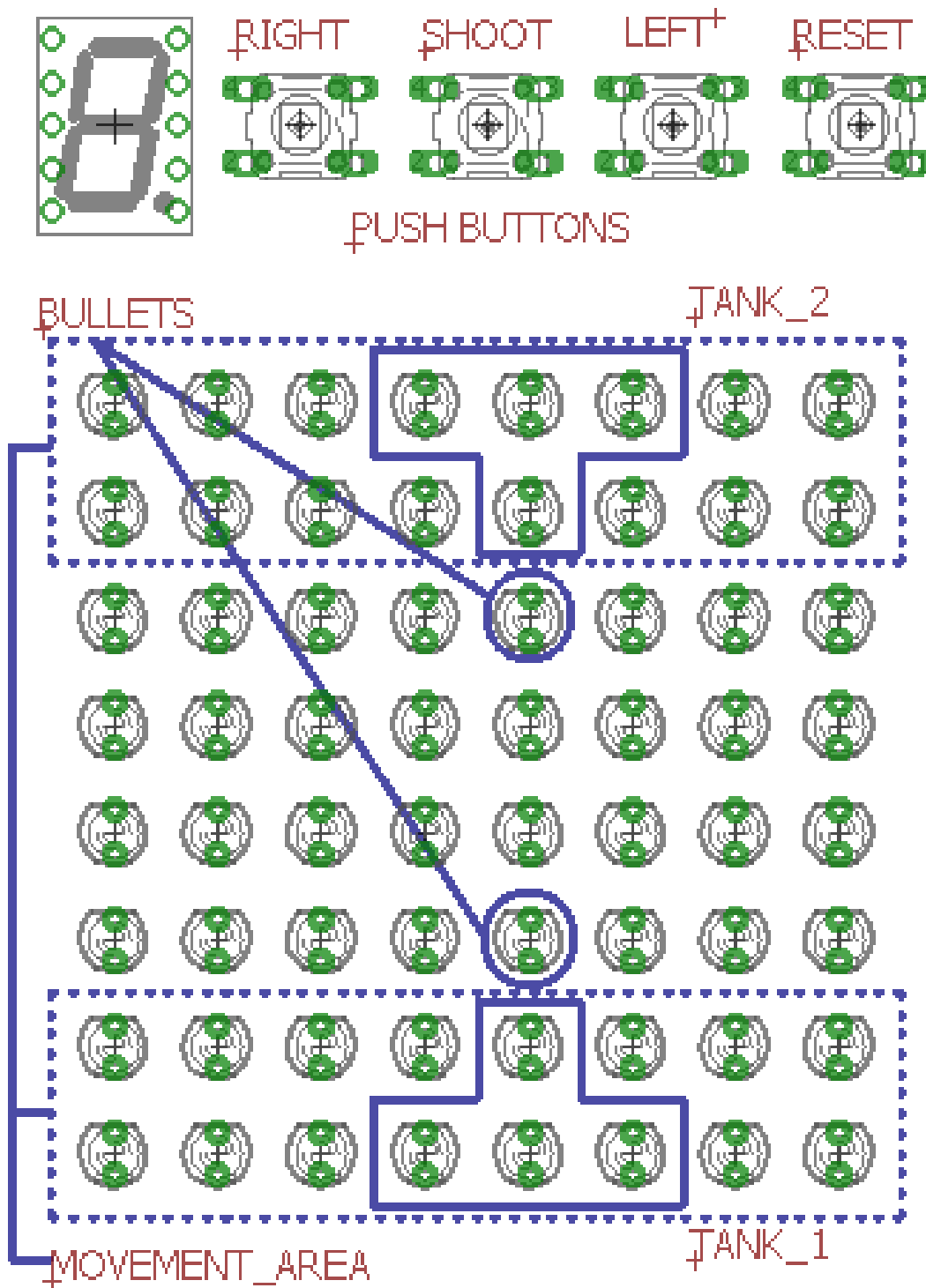
MOVEMENT (ONLY LEFT OR RIGHT)

4. The bullets should move straight in one direction. Whenever bullet of any team hits opposition's tank, the team will get 1 point and if the bullet hits the muzzle there will be an increment of 2 points in that team. The LEDs should be so that whenever bullets go the colour of that line should be respective to the team firing bullets.As shown below the LED of red colour is hitting the blue team and it is heading straight.

5. There should be a seven segment display on both the sides of the console which will count the points and it should start from 0 and count all the way to 9. As soon as any team scores 9 points, that team will be regarded as the winner and all LEDs corresponding to that team should glow for 3 seconds.
6. .For starting new game there should be a reset button too on the board.

Finally the console will look like as shown below.

RIGHT   SHOOT   LEFT⁺   RESET

PUSH BUTTONS

BULLETS   TANK_2

MOVEMENT_AREA   TANK_1

PUSH BUTTONS

LEFT   SHOOT   RIGHT

Judgement Criteria

1. The extent to which all the specifications of the entire console have been implemented.
2. Innovation will be highly appreciated.
3. Neatness and Compactness in the Hardware fabrication, and the Cost.
4. Finesse in coding and optimization, design of Display and Console, Ergonomics.

General Rules

1. Each team can have a maximum of four participants.
2. Teams may have members from different colleges and years as well.
3. Judges' decision will be final and binding.
4. Participation is open for all undergraduate and postgraduate students.
5. If any other material is required, the participants may ask for the same through e-mail or phone at least 10 days prior to the competition.

Competition Structure

Stage 1-

Each Team has to mail a soft copy of the synopsis by 20th January, 2017 to troika.brainwave@gmail.com. The synopsis must contain the list of components used, circuit diagram and the algorithm applied.

Stage 2-

Teams registered in the first stage will appear on the competition day with their fully working model for the final showdown. Team with highest marks and best performance will be selected as per marking criteria and judge's discretion. Please regularly check the website for further updates on the competition and the change in rules and regulations, if any. For any queries, mail to us at troika.brainwave@gmail.com