



## Embedded Design Challenge

*Team Event, Open-To-All*

*Points: 35*

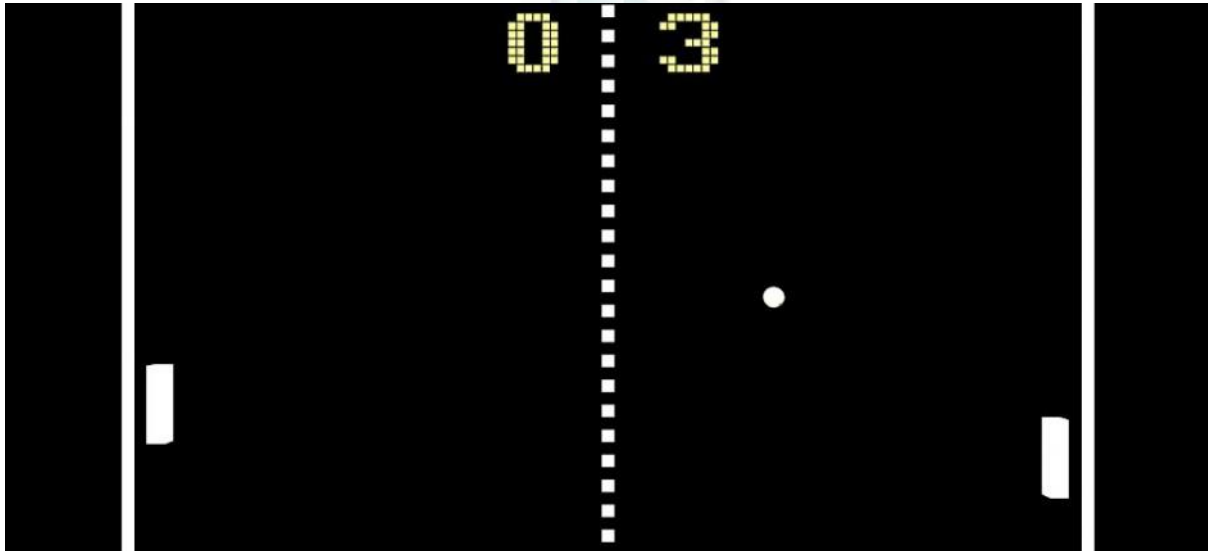
### INTRODUCTION:

We all love to play multiplayer games. Embedded Design challenge here gives you an opportunity to develop your own hardware and software that allows you to play a two-player game, with one player on the PC, and one player on an Arduino/ATmega based hardware that will be built by you.

### PROBLEM STATEMENT:

To design and build a two-player game, with one player playing on an Arduino with a potentiometer and an 8x8 LED matrix as input and output devices respectively. This Arduino will be connected to a PC via Bluetooth/USB, which will run a version of the same game, and will host the second player.

The Game: The game that everyone needs to implement is the classic 'Pong', which also happened to be the world's first video game. You can implement more multiplayer games for bonus points.



### COMPULSORY FEATURES:

Game running on Arduino, game running on PC, with communication being established via Bluetooth or USB. Extra points for Bluetooth. The PC version is recommended to be built on 'Processing', for ease of programming.



### ADDITIONAL FEATURES:

Bluetooth communication instead of USB. Use of mux/demux for reducing the number of pins used by microcontroller. You can add extra features to the game, such as high score, an AI mode etc. Can implement more games apart from the compulsory 'Pong'.

### JUDGING CRITERIA

Judging shall be done on basis of:

- User friendliness of the gadget.
- Robustness and innovation in design of the gadget. (logic used and its implementation)
- Layout on PCB/GPB and Soldering
- Extra features implemented.
- Power point Presentation

Judges would be faculty of Department of Electrical Engineering, IIT Kanpur and/or senior members of the Electronics Club.

### RULES AND REGULATIONS:

#### Eligibility & Team structure

- Students belonging to any batch or program are eligible.
- Team strength should not exceed 4.
- All the members of a single team should belong to the same pool.
- Maximum 2 teams are allowed per pool.

#### General Rules

- Use of pre-built modules is strictly prohibited. All the modules should be self-made. You can however use Arduino boards.
- Only basic ICs (4xxx and 7xxx) and 8-bit microcontrollers are allowed. Use of any other IC should be intimated to us.
- The final circuit must be soldered on a General Purpose Board or on a PCB. Circuits on breadboard will automatically lead to disqualification.
- The software written should be original and not copied from any other source. You can however use libraries.
- Judges' decision shall be final and binding on all.
- Judging shall be subjective.
- All of the above rules may be subject to change as they deem fit. Change in rules, if any, will be highlighted on the following links:
- Electronics Club Website: <http://students.iitk.ac.in/eclub/>
- Takneek Website: <http://students.iitk.ac.in/takneek/2013/>



## POINTS DISTRIBUTION

Parameter	Weightage (%)
Compulsory Tasks Achieved	20 (5+5+10)
Logic used and software implementation	20
User Friendliness of the device	15
Additional Features Implemented	25
PCB/GPB layout and soldering	10
Presentation	10

## Contacts



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