

# Lab 3 Documentation

-Vinayak Rastogi (2016CS10345)

-Nikhil Kulkarni (2016CS10340)

The aim of the assignment was to simulate the game of othello on the “Embest Board Plugin” in the ARMSim# simulator, that simulates a particular ARM processor board.

Github Repository Containing the Project: <https://github.com/vinayak1998/OTHELLO>

Following are the virtual input and output devices provided:

1. One 8-segment display (output).
2. Two red LED lights (output).
3. Two black buttons (input).
4. Sixteen blue buttons arranged in a keyboard 4 x 4 grid (input).
5. One LCD display screen, which is a grid of 40 columns by 15 rows.

We first worked on the high level code written in C

(<https://github.com/vinayak1998/OTHELLO/blob/master/othello.c>).

Then simplified it so that it can be converted to ARM easily

(<https://github.com/vinayak1998/OTHELLO/blob/master/Othello.s>)

We have considered/assumed the following things :

- > Initially, a cross of 1s and 2s placed.
- > assuming an initial score1 and score 2 of 2
- > An exception “Invalid Input” is raised when :
  - (a) - Either a coordinate that is out of board, is input OR
  - (b) - A coordinate which does not have an adjacent coordinate filled, in any of the 8 directions
- > In the case where after inputting, No coordinate is flipped, no error is raised but the score isn't updated either
- > The Scores are updated after every step
- > Input is taken from the BlueBoard
- > Last Chance is also shown, for reference.
- > single digit score is represented as => “nz” where n is a number from 0-9

Following are the screenshots:

C program-

```
Initial -
score1=2
score2=2
1
2
3

score1=4
score2=1
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
0 0 0 1 0 0 0 0
0 0 0 1 1 0 0 0
0 0 0 1 2 0 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
```

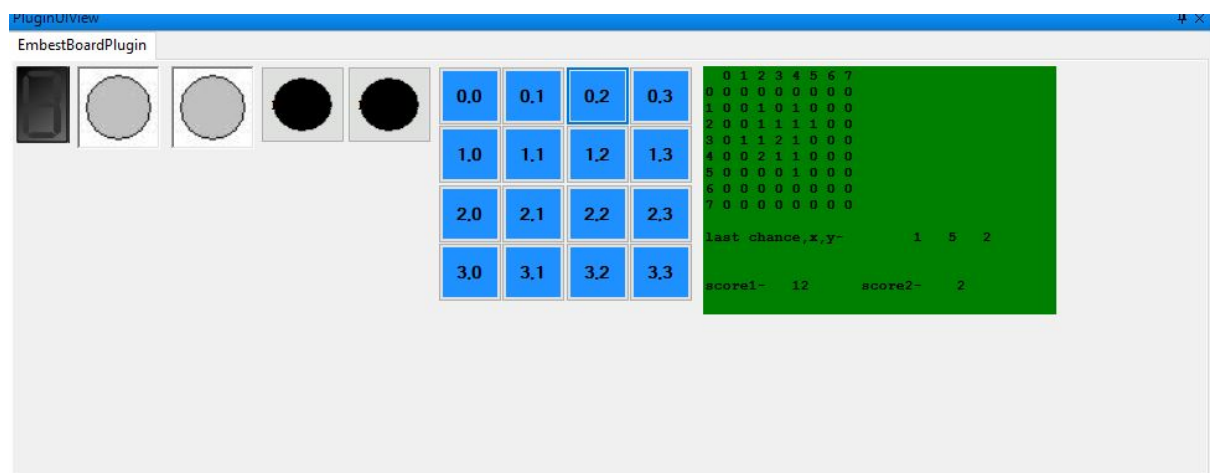
```
2
2
4

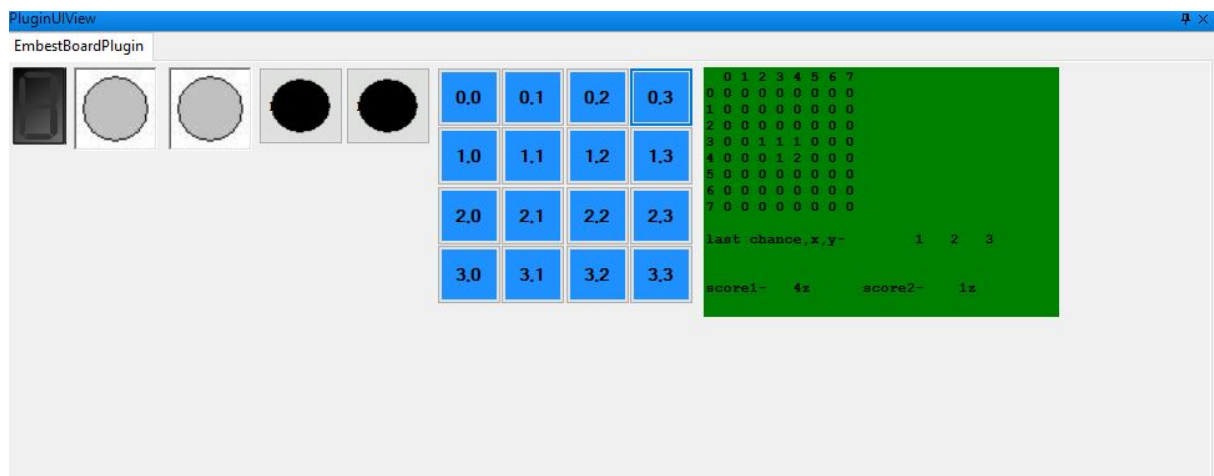
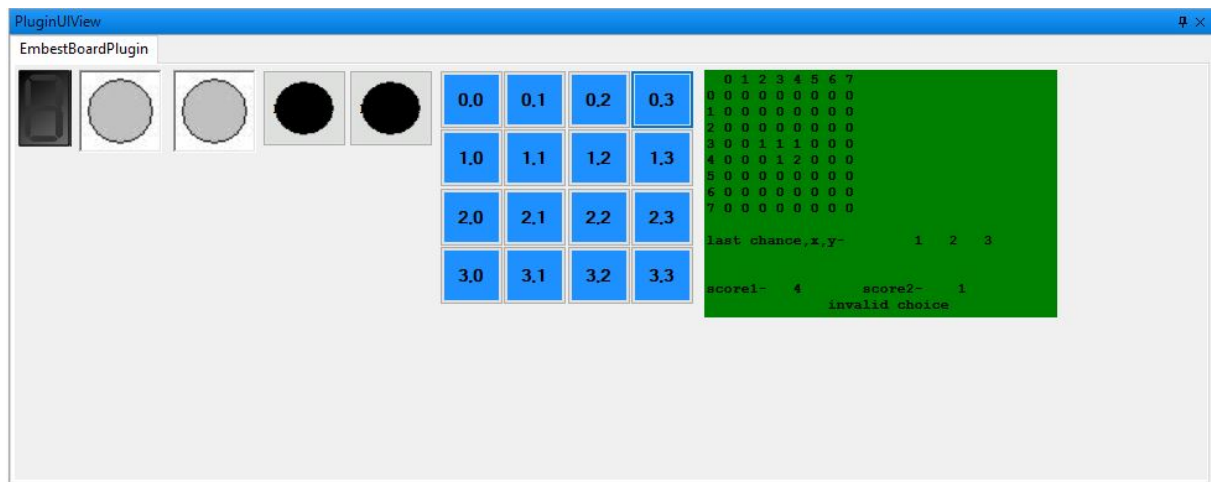
score1=3
score2=3
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
0 0 0 1 2 0 0 0
0 0 0 1 2 0 0 0
0 0 0 1 2 0 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
```

```
1
1
5

score1=5
score2=2
0 0 0 0 0 0 0 0
0 0 0 0 0 1 0 0
0 0 0 1 1 0 0 0
0 0 0 1 2 0 0 0
0 0 0 1 2 0 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0
```

ARMSim#-





The project was a rich learning experience. Thank you.

-----X-----X-----X-----X-----X-----X-----X-----X-----X-----X-----