Battle Of Bots #2   LIVE

h

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Time left : 00 : 00 : 00

Dots and Boxes

Max. Marks: 100

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Dots and Boxes is a popular two-player board game. We will play Dots and Boxes on a 5x5 grid of boxes (6x6 grid of dots). The game starts with empty grid of dots (no lines and no filled boxes). The player who has its turn to play can add a single horizontal or vertical line between two unjoined adjacent dots. In this move, if the player completes the fourth side of a box then the player owns that box, earns one point and takes another turn. Otherwise, the alternate player takes next turn to play. When a box is owned by some player, it's filled with the corresponding player's color. The game ends when no more lines can be placed. The winner of the game is the player with the most points. Player 1 takes the first turn when the game starts.
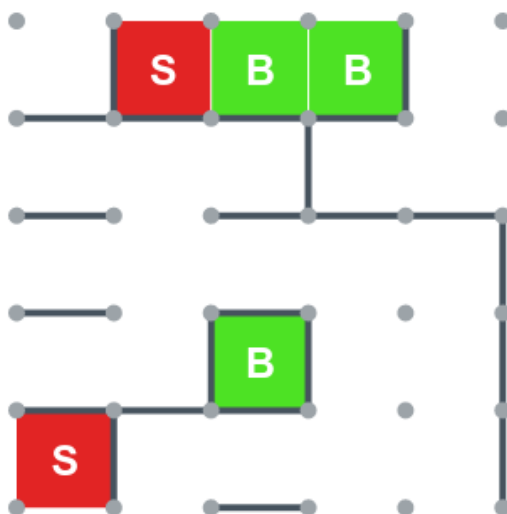

Your aim is to implement a bot which plays **Dots and Boxes** with other's or default bot. The program you submit will run for each move played by your player in the game.

Input

The input will be a 5x5 matrix consisting of positive integers. Each integer represents the state of a box in the grid. Then next line in the input contains your player id (1 or 2).

The coordinate of a box is represented by [row, column]. In the given matrix, coordinate of the top-left box is [0,0] and bottom-right is [4,4]. A row increases from top to bottom and column increases from left to right.

The state of a box(i.e which sides of that box are joined) is a positive integer which can be perceived as a sequence of bits in it's binary representation. The value tells following information about the box. For better clarity, refer to following image:
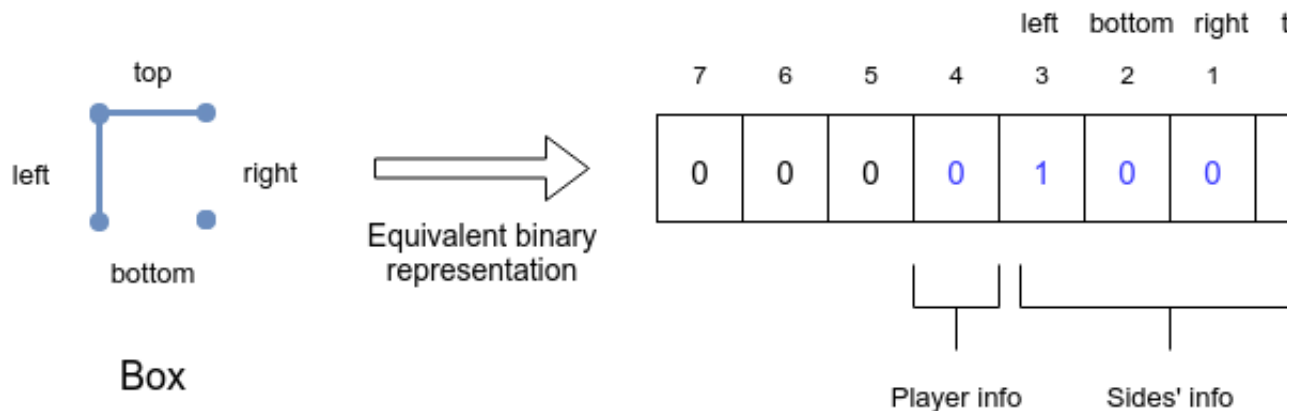
1) The 4 least significant bits of a box's value tells which of the 4 lines have been added around the box. The bit indexes 0 to 3 correspond to top, right, bottom and left side of a box respectively. A bit is 0 or 1; 1 if there is line on corresponding side, otherwise 0. (The index of the least significant/rightmost bit is 0 and it increases right to left.)

2) If all the 4 least significant bits are 1, then the box is owned by a player. The 5th least significant bit (bit index 4) tells whether it is owned by player 1 or 2. If the bit value is 0, the box is owned by Player 1 otherwise it's owned by Player 2.

Hence, the valid values for box representation is the set {0..15, 31}. The box owned by Player 1 has value 15 (00001111 in binary) and the box owned by Player 2 has value 31 (00011111 in binary).

Output

Print the coordinates of the box [row, column] and the side of that box where you want to draw a line connecting the dots. The side can have a value from 0 to 3 (which designates top, right, bottom, left respectively).

Starting state

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

Scoring

The scores are calculated by running a tournament of all submissions. The tournament has started. Your latest submission will be taken into tournament at fixed intervals. Scores are assigned according to the Glicko-2 rating system.

Sample Input

```
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
```

Sample Output

```
2 3 1
```

Explanation

This is player 1's turn, and the player draws the line on right side (which is 1) of box [2, 3]. Since this line is adjacent to box [2, 4] too and it's on left of it, the value of this box changes too.

Box [2, 3]'s value = 2 (which is "00000010" in binary representation)
Box [2, 4]'s value = 8 (which is "00001000" in binary representation)

After the player's move the state of game becomes:

```
0 0 0 0 0
0 0 0 0 0
0 0 0 2 8
0 0 0 0 0
0 0 0 0 0
```

This state matrix will be supplied as input to next player.

Time Limit: 1 sec(s) for each input file.

Memory Limit: 256 MB

Source Limit: 1024 KB

Marking Scheme: Marks are awarded if any testcase passes.

Allowed languages: C, CPP, CLOJURE, CSHARP, GO, HASKELL, JAVA, JAVASCRIPT, JAVASCRIPT_NODE, LISP, OBJECTIVEC, PASCAL, PERL, PHP, PYTHON, RUBY, R, RUST, SCALA

Load Code Editor   You can submit code after loading editor.

Your Rating: ★★★★★

COMMENTS (62)

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Catalin Stefan Tiseanu 4 days ago at 10:27PM

If the tournament of bots will start on Monday, does it mean we have until then for our final submission ? (i.e not like 6 days like it says) - for example what if I do an improvement on Tuesday and resubmit ?

Reply ● Message ● Permalink

Praveen Kumar ⚡ Admin   4 days ago at 11:29PM

Unlike the last challenge when we ran the tournament at the end of 6 days, we will have the tournament running during the contest period this time. So, users will get the option of submitting their bot to tournament as well as normal 1-1 challenge. The rating will be calculated solely on the basis of tournament performance. So, yes, you have 6 days to improve your bot and submit to tournament.

Reply ● Permalink

Mamta 4 days ago at 11:31PM

so can we change our programs after checking the performance of our bot in the tournament??? or will the first submission to tournament be counted as final submission???

Reply ● Message ● Permalink

Catalin Stefan Tiseanu 4 days ago at 11:35PM

My question was exactly the same as Mamta's. If I submit a bot on Monday, and the on Tuesday I want to submit another amazing version, what will happen with the ELO rating ? My bot will have played some games already on Monday and would already have an ELO rating. If it did poorly on Monday, does the amazing version still have a shot at winning the tournament (assuming it could win the tournament if submitted at the last possible minute).

Reply ● Message ● Permalink

Praveen Kumar ⚡ Admin   4 days ago at 11:57PM

There will be restriction on the number of submissions that you can do to the tournament per day. For calculating the rating, the leaderboard will be regenerated by taking into account the results of the latest submission of all the users for every tournament submission. So, only your latest submission to tournament will affect your position in the leaderboard.

Reply ● Permalink

Mateusz Radecki 4 days ago at 01:57AM

Why is it impossible to play with our own program? :C

Reply ● Message ● Permalink

Shubham Jain ⚡ Admin 4 days ago at 05:58PM

Hi Mateusz, We have added this feature. Now you can play with your own bot. Have fun!

Reply ● Permalink

Daniel Mu 4 days ago at 07:55AM

If we use Java can we use the Scanner class for input? Or do we have to use BufferedReader?

Reply ● Message ● Permalink

Sreeram ⚡ Admin 4 days ago at 04:19PM

You can use both. prefer buffered reader

Reply ● Permalink

Daniel Mu 3 days ago at 12:56AM

Is there a specific reason why buffered reader is preferred?

Reply ● Message ● Permalink

Aalhad Kulkarni 2 days ago at 10:06PM

BufferedReader is faster than Scanner.
http://stackoverflow.com/questions/11966746/which-to-choose-buffered-reader-or-scanner-from-performance-point-of-view

Reply ● Message ● Permalink

Rajiv Nagarmath 4 days ago at 07:30PM

What is the significance of Player Id? Does the presence of player Id say that Input is provided for both player states?
If input is provided for both player states how to know which player Id will my bot have?

Reply ● Message ● Permalink

Eduard Besjentsev 4 days ago at 07:35PM

The tournament will most likely be played so you will play each player twice. This is fair as both parties will be able to start first against each other. The player id field will allows you to see how many blocks each player already has in a given state. Depending on your algorithm, it may cut down the complexity a lot.

Reply ● Message ● Permalink

Rajiv Nagarmath 4 days ago at 07:52PM

Eduard, thanks for replying.
I understand the requirement of player Id in the state matrix. But what is the requirement of player Id(single integer,1 or 2) that is provided after the state matrix?

Reply ● Message ● Permalink

Eduard Besjentsev 4 days ago at 08:10PM

It just tells you whether you started the game first or second. You're not required to use it nor do you need it to have a reasonably good bot. But it certainly can play a big role in your evaluation functions.

Reply ● Message ● Permalink

Rajiv Nagarmath 4 days ago at 08:25PM

From this explaination,my understanding is that I get the input(state matrix and Player Id) only for my bot's turn and I can process this input every time I get it - am I right? My initial understanding was that I get input for both players turn and I can neglect the input which has opponent's player Id. I may be sounding naive because of my inexperience in online bot programming.

Reply ● Message ● Permalink

Eduard Besjentsev 4 days ago at 08:31PM

Yes, you're correct, you will only get either the initial state if you're first to move or the state after your opponent has moved. So the player id will always be the same within one game.

Reply ● Message ● Permalink

Rajiv Nagarmath 3 days ago at 09:26PM

Thank you Eduard. Appreciate your replies.

Reply ● Message ● Permalink

Prakash Gourav 3 days ago at 01:16AM

I don't think that's correct. You can't deduce who started the game from the player id. We can only use player id to know how many boxed we have won so far.

Reply ● Message ● Permalink

Eduard Besjentsev 3 days ago at 01:36AM

The description states: "Player 1 takes the first turn when the game starts."

Reply ● Message ● Permalink

Prakash Gourav 3 days ago at 07:13PM

Thanks, you are correct!

Reply ● Message ● Permalink

Ankur Srivastava 4 days ago at 07:34PM

So is the 5th bit applicable only when the previous 4 bits are 1 ?

Reply ● Message ● Permalink

Eduard Besjentsev 4 days ago at 08:11PM

That's correct Ankur.

Reply ● Message ● Permalink

Alisha Mahapatra 3 days ago at 10:13PM

so the updates made in the matrix will only be according to the first 4 bits right?

Reply ● Message ● Permalink

Aashik Ahmed M 3 days ago at 12:35AM

So my bot runs only when my code compiles?

Reply ● Message ● Permalink

Shubham Jain ⚡Admin 2 days ago at 01:51AM

Yes.

Reply ● Permalink

Shubham Jain ⚡Admin 2 days ago at 01:55AM

The player's move will have effect on updated matrix state. You can refer to sample input/output.

Reply ● Permalink

Mateusz Radecki 3 days ago at 10:52PM

How do cerr wok here? Can we see what out program write on cerr during game?

Reply ● Message ● Permalink

Praveen Kumar ⚡Admin 3 days ago at 11:43PM

Unfortunately no. It is not possible to see cerr logs at this point of time but we have planned to support it in future.

Reply ● Permalink

Nikhilesh Kumar Gautam 3 days ago at 02:44AM

Do I have to update the state matrix myself after playing a move , or I will get an updated state matrix every time?

Reply ● Message ● Permalink

Shubham Jain ⚡Admin 3 days ago at 04:21AM

You will get updated state matrix every time.

Reply ● Permalink

Nikhilesh Kumar Gautam 2 days ago at 02:01AM

I am not getting updated matrix , my program is making a move for state matrix given in test case above for each move , second time it is showing invalid move , however it is running fine in local compiler !

Reply ● Message ● Permalink

Nikhilesh Kumar Gautam 2 days ago at 02:30AM

I am taking input like this
for(i=0;i<5;i++)
for(j=0;j<5;j++)
cin>>state_matrix[i][j];

Reply ● Message ● Permalink

Shubham Jain ⚡Admin 2 days ago at 02:35AM

Your second move is invalid because you are making line where it exists already.

Reply ● Permalink

Nikhilesh Kumar Gautam 2 days ago at 02:49AM

it is making a line where it already exists because the matrix i am getting is not updated . I think , because on my local compiler it is making an right move

Reply ● Message ● Permalink

Shubham Jain ⚡Admin 2 days ago at 02:53AM

Are you feeding the right input (the last state matrix of game

before your bot's move) to your program while running it in your local compiler?

Reply ● Permalink

Nikhilesh Kumar Gautam 2 days ago at 03:19AM

yes i am updating the state matrix in my local compiler and it is showing right results

Reply ● Message ● Permalink

Shubham Jain ⚡ Admin 2 days ago at 12:26PM

I checked your submission and it's making invalid move on updated state.

Reply ● Permalink

Aashik Ahmed M 3 days ago at 10:09AM

Is it possible to test my bot as second player against other bots?

Reply ● Message ● Permalink

Praveen Kumar ⚡ Admin 3 days ago at 11:19AM

No, but in the tournament, your bot is played against both as a first player and second player.

Reply ● Permalink

Yasharyan Gaikwad 3 days ago at 12:16PM

Ping someone and ask them to test their bot against yours. Your bot will play as second player in that case.

Reply ● Message ● Permalink

HARI RAM 3 days ago at 08:50PM

So, the description states that the tournament starts tomorrow (Nov 16). At what time?

Reply ● Message ● Permalink

Mateusz Radecki 2 days ago at 05:08PM

When will tournament finish?

Reply ● Message ● Permalink

Mateusz Radecki 2 days ago at 05:22PM

Is it possible to watch our tournament games live? I mean how our program is playing.

Reply ● Message ● Permalink

Shubham Jain ⚡ Admin 2 days ago at 06:41PM

We'll publish this feature soon.

Reply ● Permalink

HARI RAM 1 day ago at 09:31PM

Is the tournament started? Or will it start on the last day of competition (Friday)?

Reply ● Message ● Permalink

Shubham Jain ⚡ Admin 1 day ago at 10:08PM

The tournament has started. You can see the leaderboard.

Reply ● Permalink

Shubham Jain ⚡ Admin 21 hours ago

Hi Mateusz, Pleased to tell you that now you can watch your and others' games in tournament.

Reply ● Permalink

NAITIK MALAVIYA 22 hours ago

I've submitted my code yesterday.But,still my score is zero.Can anyone answer it,why??

Reply ● Message ● Permalink

Shubham Jain ⚡ Admin 21 hours ago

Your submission has been taken by tournament. It will get ranked soon.

Reply ● Permalink

Shubham Jain ⚡ Admin 21 hours ago

We have just published a feature to watch any game being played in tournament. The datetime at end of a game row in "Games" and "Tournament" tabs is linked to corresponding game page.

Reply ● Permalink

HARI RAM 8 hours ago

Awesome! So every player plays exactly two times against each? Or will they play until Friday in a fashion that they play nx2 matches against all other players (considering n as a whole number)?

Reply ● Message ● Permalink

Shubham Jain ⚡ Admin 4 hours ago

Whenever someone updates his/her submission then games will be played again with everyone else. Currently the value of `n` as you mentioned is 1 only.

Reply ● Permalink

HARI RAM 8 hours ago

Because Its no use to update the code now if we will play exactly two matches against all, as we have almost completed all the matches now and only left to play with one or two new submissions.

Reply ● Message ● Permalink

Shubham Jain ⚡ Admin 4 hours ago

I think, the above comment answers this too. As only games having at least one new submission of same player, will be played.

Reply ● Permalink

Nash Bean 13 hours ago

Created a temporary chat room for Dots and Boxes for the next few days. Check it out here: https://ibeansoftware.hipchat.com/chat/room/2175280

Reply ● Message ● Permalink

Konstantin Sidorov 4 hours ago

My submission outputs some gibberish on the first move and loses on server games (spending 0.1s), but works just fine on my local computer (spending 0.9s and outputting '0 0 0'). Fix the issue, please.

Reply ● Message ● Permalink

Shubham Jain ⚡ Admin 4 hours ago

I checked your latest submission on my local machine and it's giving gibberish output on first move. My local machine is Ubuntu 14.04. So can you check again?

Reply ● Permalink

Konstantin Sidorov 3 hours ago

Mac OS X Lion, output '0 0 0'.
Screenshot: http://i66.tinypic.com/25z4dx0.jpg

Reply ● Message ● Permalink

Shubham Jain ⚡ Admin 3 hours ago

Earlier I was compiling with g++-4.8, seeing the image sent by you, I compiled with g++-5 and the program gave correct output as you said. But we support g++4.8 only (You can see the judge environment). So you will have to change your program according to judge environment. We can do nothing in this matter, currently.

Reply ● Permalink

shashi kumar 1 hour ago

I did the coding but i Lost the game

Reply ● Message ● Permalink

Mårten Wiman 0 seconds ago

Occasionally, my bot gets time limit exceeded, even though it should return long before the 1 second has passed. Of course, there might be an infinite loop, or some other bug in my bot, but when I run the same input locally there doesn't seem to be a problem. I'm wondering if anyone else has experienced similar problems, and if this might be a problem with the judge?

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User	Result	Time	Lang
midhun r...		0.0	C
Mårten W...		0.0	C++
Mårten W...		0.0	C++
Ritesh T...		0.0	Python
Manolo G...		0.0	C
Paras Na...		0.0	Ruby
Konstant...		0.0	C++
Mohan Ni...		0.0	C++

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