Project. Let’s Catch the Lion!

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Introduction

- **Dōbutsu shōgi** (Japanese: どうぶつしょうぎ "animal chess") is a small shogi variant for young children. It was invented by female professional shogi player Madoka Kitao, partially to attract girls to the game.

- There are some apps and flash games.
Rules

- **Turns**
  - Players take alternating turns.
  - On each turn the current player must either move a single piece or place a piece from their hand.

- **Moving**
  - Each piece can move one square in direction indicated by the dots on it.
Rules

**Promotion**
- The chick will promote into a powerful hen if it moves into the opponent’s end zone.
- A chick placed directly into the end zone from the hand will not promote.
- When captured, hens will revert back to chicks.
Rules

- **Capturing**
  - The players can capture their opponent’s pieces by moving their own pieces on top of them.
  - When a player captures a piece, it is placed into the player’s **hand**, from which it can be placed back on the empty square on subsequent turns.

- **No Suicide**
  - It is not allowed to move or leave the lion where the opponent can capture it on the next turn.
Rules

- Winning the Game
  - 1. (Checkmate & Stalemate) If your opponent is unable to do anything.
  - 2. Move your lion to the opponent’s end zone where the opponent is unable to catch your lion on the next turn.
The coordinates are indicated by the horizontal indicators (A, B, and C) and the vertical indicators (1, 2, 3, and 4).
Every pieces are represented by a single character. The opponent’s pieces are shown as lower case characters, while that of yours are upper case characters. Other empty places are shown as ‘o’.

<table>
<thead>
<tr>
<th>L</th>
<th>G</th>
<th>E</th>
<th>C</th>
<th>H</th>
</tr>
</thead>
</table>

```
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L</td>
<td>G</td>
</tr>
<tr>
<td>2</td>
<td>E</td>
<td>C</td>
</tr>
<tr>
<td>3</td>
<td>H</td>
<td>L</td>
</tr>
<tr>
<td>4</td>
<td>G</td>
<td>o</td>
</tr>
</tbody>
</table>
```
Input

- The first four lines of the input represent the board and the pieces on it. Your side is always bottom.
- The fifth line contains pieces on your hand. The pieces are represented as the upper case characters.
- The sixth line contains pieces on the opponent’s hand. The pieces are represented as the lower case characters.
待った！
（四国用可能）

[a]
ogl
ooo
oEL
ooo
EC
gc
Output

- Assuming that the turn is now yours, output the movement or placement of your piece following the rules.
- Movement
  - `<piece> <previous position> <next position>`
  - L C3 C4
- Placement
  - `<piece> P <position>`
  - C P A2
- Give up
  - `give_up`
待った！
（一匹使用可能）

あそびかた
対局開始

[output]
L C3 C4
<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
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<td>2</td>
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<td>3</td>
<td></td>
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<tr>
<td>4</td>
<td></td>
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</tr>
</tbody>
</table>

待った！（一匹使用可能）

あそびかた

対局開始

[output]
C P A2
Requirements

- The output must follow the rules.
- If there’s no available movements or placements, then output the `give_up`.
- Your program should win the randomly selecting program at least 7 times out of 10 games.
- The output must be given in one second from our practice server.
Evaluation

- Total 1000 points
- Stability (300)
  - Starting with 300 points, -30 points are given for each violation on the rules during the test.
- Readability (200)
  - Comments (50)
  - Indentations and Spacing (50)
  - Naming (50)
  - Clean Data and Code Structures (50)
- Modularity (200)
  - Starting with zero point, 10 points are given for each meaningful function.
- Intelligence (100)
  - Winning Rate (100)
- Completeness (150)
  - Functionality (100)
  - Efficiency (50)
- Report (50)
Report

Contents

- Explanations of some core data structures.
- Precise descriptions of your idea implemented in the program.
- Test methods used to verify the stability.
Create a directory named *project* in your home directory.

Put your source files and a *makefile* in it.

Send the report of any format to *hnkwak@bi.snu.ac.kr*.

Mail title: *prg_[student number]_project*
- *prg_2014-12345_project*

Due to: *6/17(Wed) 23:59 pm*
Reference

- **Flash game url**

- **Wiki**
  - [http://en.wikipedia.org/wiki/D%C5%8Dbutsu_sh%C5%8Dgi](http://en.wikipedia.org/wiki/D%C5%8Dbutsu_sh%C5%8Dgi)