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1   //Neha Alla
2   //Junior
3   //Contest3 veitch
4
5   def isEmpty(board):
6       empty = False
7       for row in board:
8           for val in row:
9                if val == '1':
10                  empty = True
11      return empty
12
13  def main(input):
14      inputsplit = list(input)
15      bin1 = bin(int(inputsplit[0], 16))[2:].zfill(4)
16      bin2 = bin(int(inputsplit[1], 16))[2:].zfill(4)
17      board = [list(bin1), list(bin2)]
18      alist = ["A", "A", "~A", "~A"]
19      blist = ["B", "~B"]
20      clist = ["~C", "C", "C", "~C"]
21      output = ''
22      while(isEmpty(board) == True):
23          if board[0][0] == '1' and board[0][1] == '1' and board[0][2] == '1' and
            board[0][3] == '1':
24              board[0][0] = 0
25              board[0][1] = 0
26              board[0][2] = 0
27              board[0][3] = 0
28              output += "B+"
29          elif board[1][0] == '1' and board[1][1] == '1' and board[1][2] == '1' and
            board[1][3] == '1':
30              board[1][0] = 0
31              board[1][1] = 0
32              board[1][2] = 0
33              board[1][3] = 0
34              output += "~B+"
35          elif board[0][0] == '1' and board[0][1] == '1' and board[1][0] == '1' and
            board[1][1] == '1':
36              board[0][0] = 0
37              board[1][1] = 0
38              board[1][0] = 0
39              board[0][1] = 0
40              output += "A+"
41          elif board[0][1] == '1' and board[0][2] == '1' and board[1][1] == '1' and
            board[1][2] == '1':
42              board[0][1] = 0
43              board[0][2] = 0
44              board[1][1] = 0
45              board[1][2] = 0
46              output += "C+"
47          elif board[0][2] == '1' and board[0][3] == '1' and board[1][2] == '1' and
            board[1][3] == '1':
48              board[0][2] = 0
49              board[1][2] = 0
50              board[0][3] = 0
51              board[1][3] = 0
52              output += "~A+"
53          elif board[0][0] == '1' and board[1][0] == '1' and board[0][3] == '1' and
            board[1][3] == '1':
54              board[0][0] = 0
55              board[1][0] = 0
56              board[0][3] = 0
57              board[1][3] = 0
58              output += "~C+"
59          else:
60              x = []
61              y = 0
62              found = False
63              for r in range (0, 2):
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                prev = False
                for c in range (0, 4):
                    if not found:
                        if board[r][c] == '1':
                            if prev == True:
                                x = [c - 1, c]
                                y = r
                                board[y][c - 1] = 0
                                board[y][c] = 0
                                found = True
                            else:
                                prev = True
                        else:
                            prev = False
            if found:
                out = blist[y]
                if x[0] == 0:
                    out = "A" + out
                elif x[0] == 2:
                    out = "~A" + out
                else:
                    out = out + "C"
                output += out + "+"
            if found == False:
                found = False
                x = 0
                for c in range(0, 4):
                    prev = False
                    for r in range(0, 2):
                        if not found:
                            if board[r][c] == '1':
                                if prev == True:
                                    x = c
                                    found = True
                                    board[0][c] = 0
                                    board[1][c] = 0
                                else:
                                    prev = True
                            else:
                                prev = False
                if found:
                    output += alist[x] + '' + clist[x] + "+"
            if found == False:
                if board[0][0] == '1' and board[0][3] == '1':
                    board[0][0] = 0
                    board[0][3] = 0
                    output += 'B~C+'
                elif board[1][0] == '1' and board[1][3] == '1':
                    board[1][0] = 0
                    board[1][3] = 0
                    output += '~B~C+'
            if found == False:
                for r in range (0, 2):
                    for c in range (0, 4):
                        if board[r][c] == '1':
                            output += alist[c] + blist[r] + clist[c] + "+";
                            board[r][c] = 0
    print(output[:-1])

with open('jr-test-input.txt') as fp:
    for i in range(0,5):
        Input = fp.readline()
        main(Input)
```