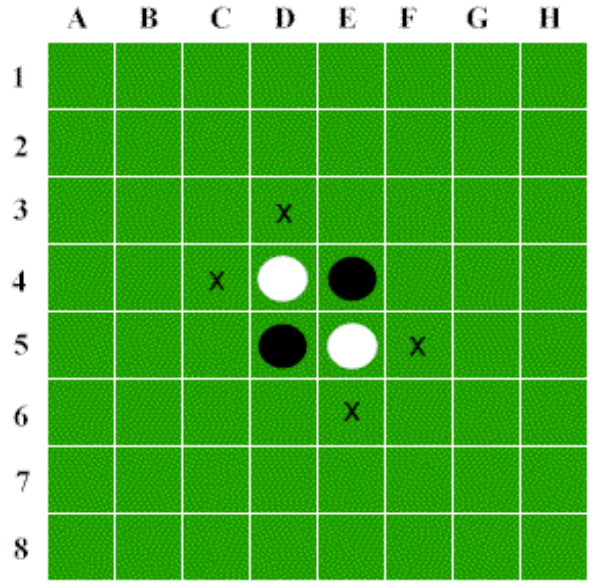
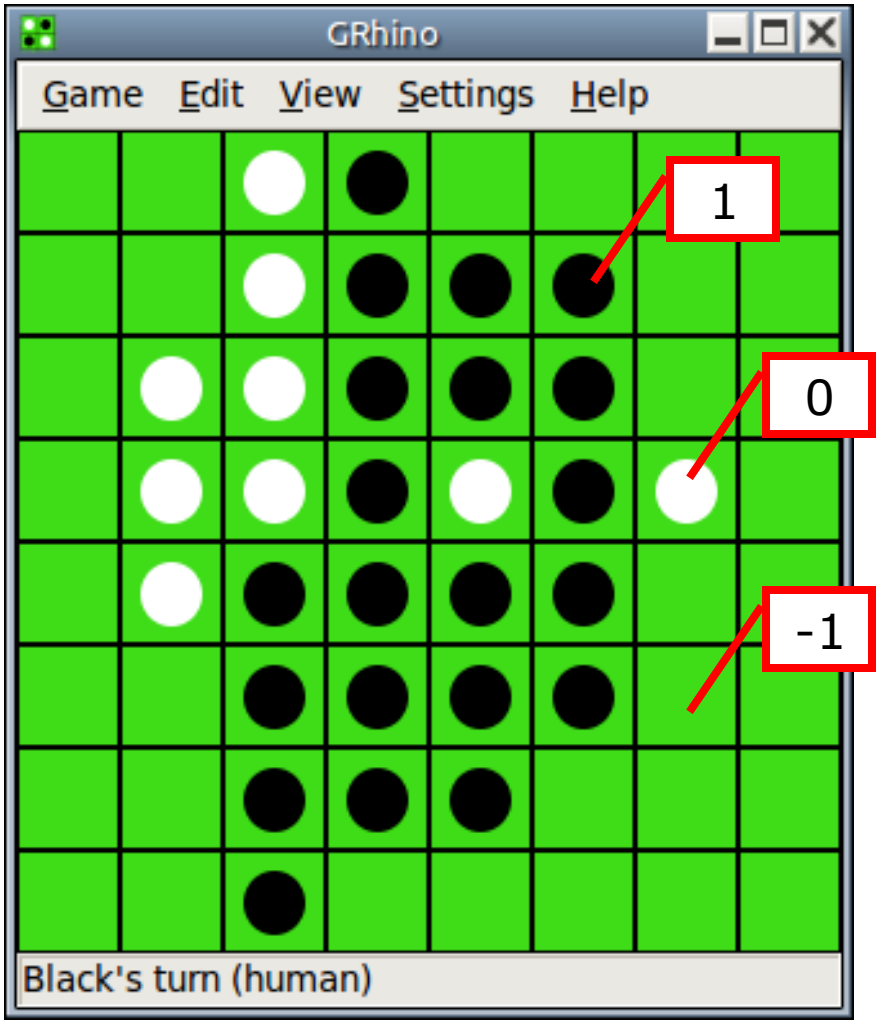
# Othello 黑白棋

```
int cells[8][8];
```

0白○
1黑✖



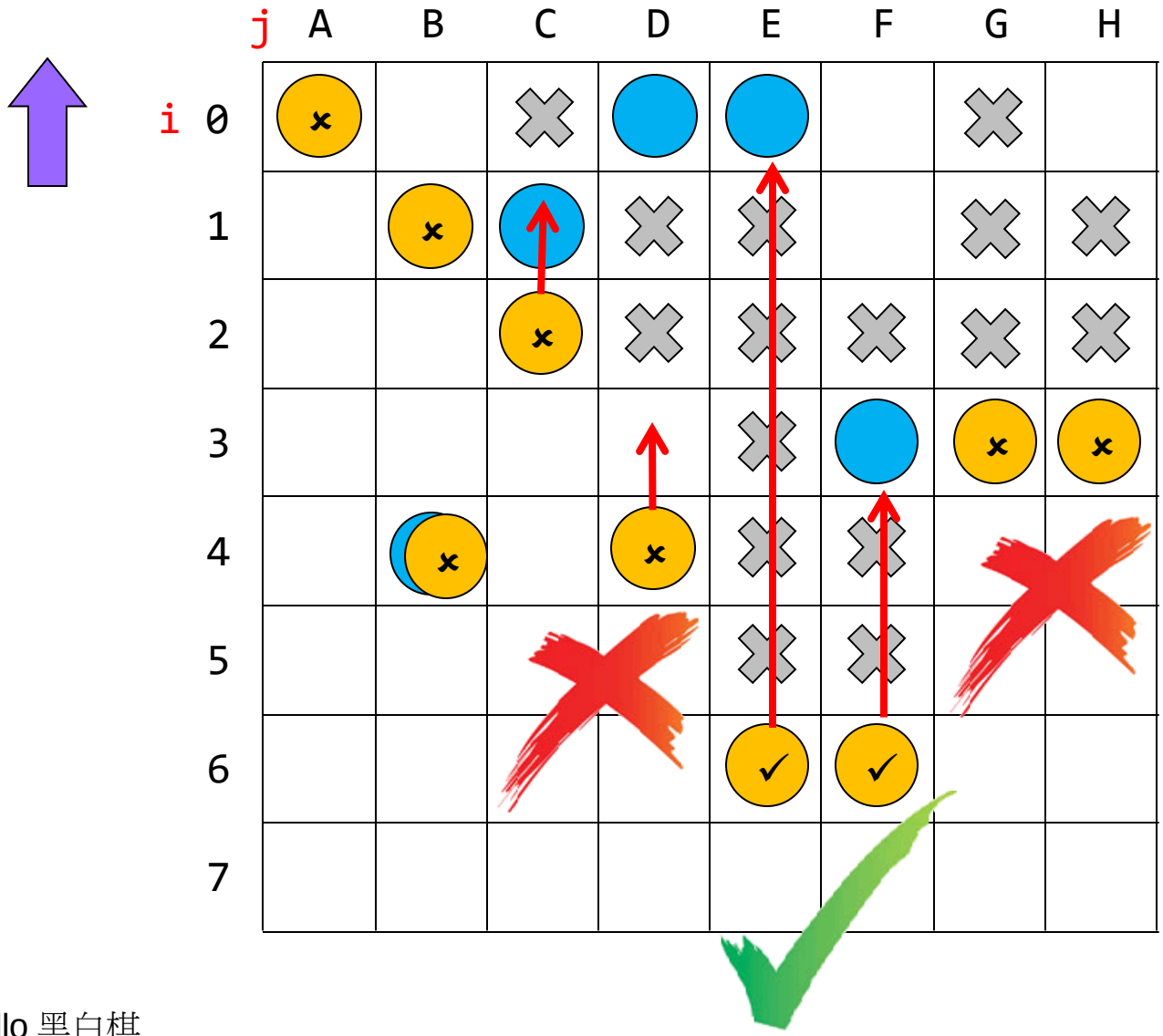

```
color_display(i,j);
```

# Valid move?

turn=0

```
int CheckN (int i, int j, int ox)
```

0白○
1黑✖

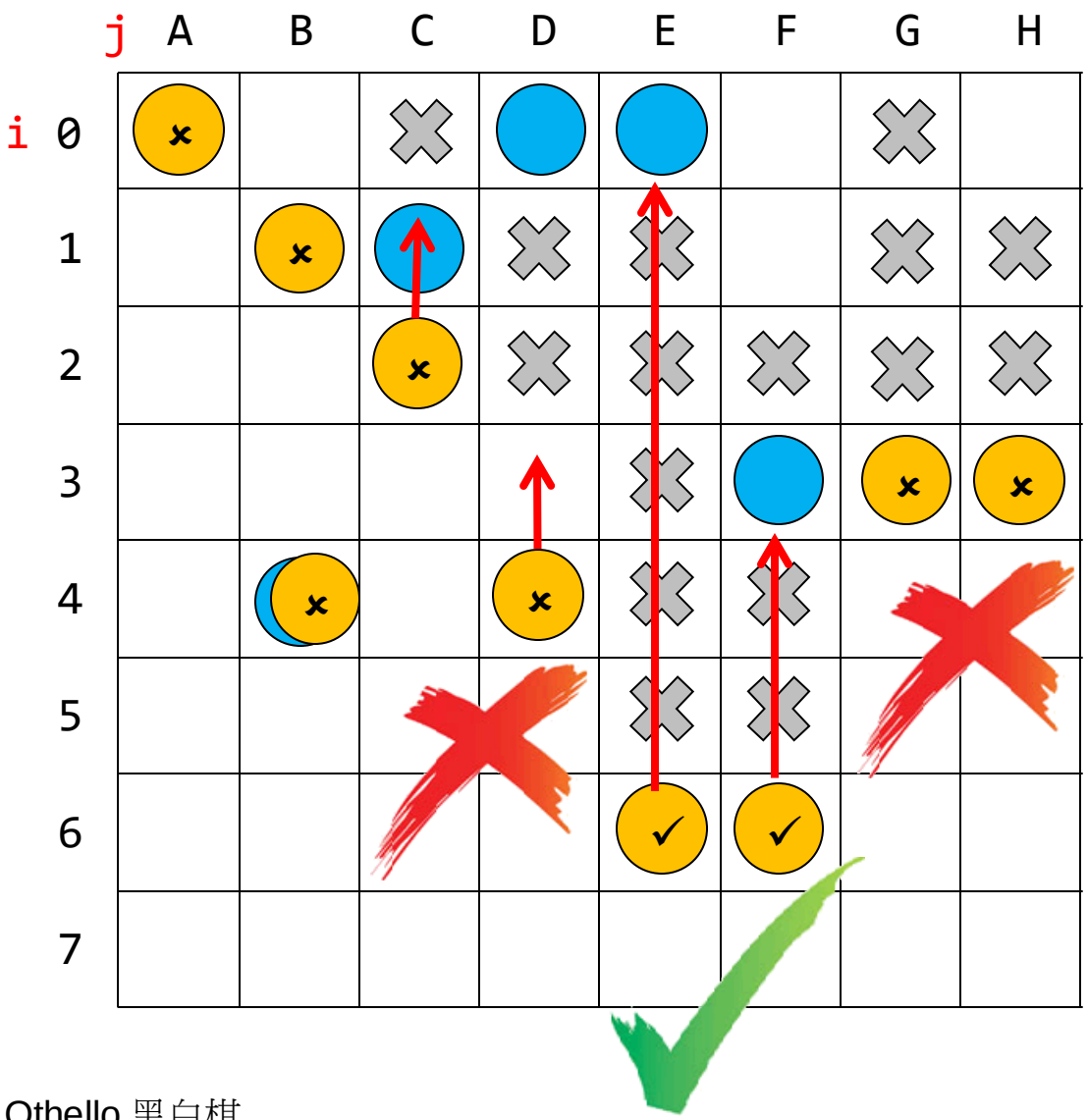



```
void chgN(int i, int j, int ox)
```

turn=0

```
int CheckN (int i, int j, int ox)
```

0白○
1黑✖




! EMPTY

```
if(i<__ || cells[i][j]!=____)
    return 0;
```

```
if(cells[i-1][j]!=(_______))
    return 0;
```
(對方)

---

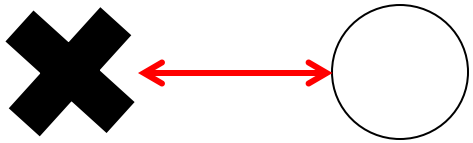
```
while(i>0 &&
    cells[__][__]==(____)) i--;
```
(對方)

(出界)

```
if(i<=0) return 0;
```

```
return (cells[_][_]==_____);
```
(本方)

# 改變change

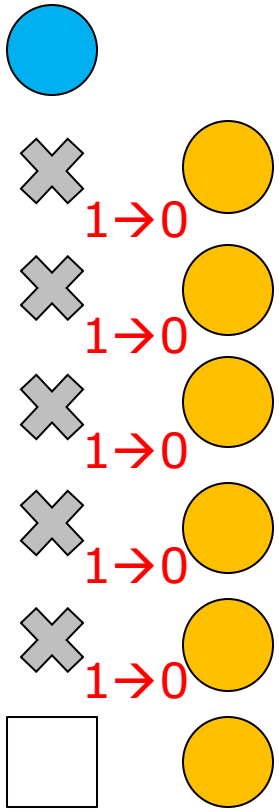


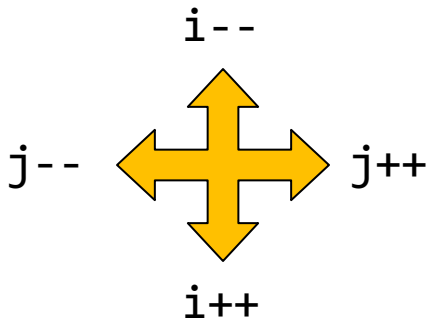
0白○
1黑✖

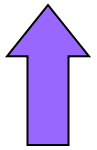
0

```
void chgN(int i, int j, int ox){          // ox=[0|1]
        cells[i][j]= ____;→0
        i--;
        while(i>=0 && cells[i][j]==____){
                cells[i][j]= ____;
                i--;                      →0
        }
}
```

1



```
   j   A   B   C   D   E   F   G   H
i
0  void game(){
          int i,j,ox=0,ok;
          char col='A',row='0';
1         color_display(-1,-1);
          do{
2                 gotoxy(0,MAX+2);
                  printf("User %c (e.g. A0): ", (ox==1)?'x':'o');
3                 fflush(stdin); col=toupper(getche());   'D'
                  fflush(stdin); row=toupper(getche());   '4'
4                 if
                  if  ____________________________________________
5     'D' → 3       i =
      '4' → 4       j =  ____________________________________________
6
                  ok = 0;
7                 if(cells[i][j]==______)
                          ok = check_and_change_cells(i,j,ox);
                  if(ok>0) ox = _____;   // 0→1(白轉黑),1→0(黑轉白)
                  else printf("\a");
          }while(1);
  }
```

```
#define MAX 10
int cells[MAX][MAX]={0};     // 0(o),1(x)
```

0白○
1黑✖

若超出範圍，則重新輸入。

轉為數字 (0-9)

**0/1**

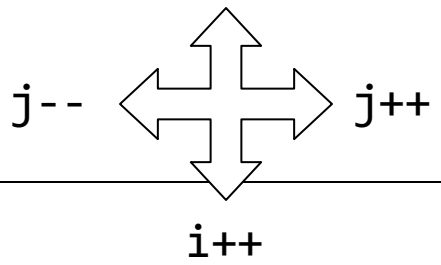
```
                    0    1    2    3    4    5    6    7
                //   N,   E,   S,   W,   NE,  SE,  SW,  NW
int dirn[8][2]= {-1,0, 0,1, 1,0, 0,-1, -1,1, 1,1, 1,-1, -1,-1};
                (i+_,j+_)
```

0,1

```
int check_and_change_cells(int i, int j, int ox){
        int d=0,ok=0;
//      for(d=0; d<8; d++)
//
        if(check(i,j,ox,0)){ change(i,j,ox,0);   ok++;}
        if(check(i,j,ox,1)){ change(i,j,ox,1);   ok++;}
        if(check(i,j,ox,2)){ change(i,j,ox,2);   ok++;}
        if(check(i,j,ox,3)){ change(i,j,ox,3);   ok++;}
        if(check(i,j,ox,4)){ change(i,j,ox,4);   ok++;}
        if(check(i,j,ox,5)){ change(i,j,ox,5);   ok++;}
        if(check(i,j,ox,6)){ change(i,j,ox,6);   ok++;}
        if(check(i,j,ox,7)){ change(i,j,ox,7);   ok++;}

        if(ok>0) cells[i][j]=    ;     // 0白,1黑
        color_display(i,j);
        return ok;
}
```

0白○
1黑✖



```
                    0     1     2     3     4     5     6     7
                //   N,    E,    S,    W,    NE,   SE,   SW,   NW
int dirn[8][2]= {-1,0, 0,1, 1,0, 0,-1, -1,1, 1,1, 1,-1, -1,-1};
                (i+_,j+_)
```

0,1　　0-7 (direction)

```
int check(int i, int j, int ox, int d){
        if(cells[i][j]_________) return 0;
(下一步) i += dirn[  ][0];      // ↑ ↓
        j += dirn[  ][1];       // ← →
        if(cells[i][j]_________________) return 0;
```

(非空格)

(旁邊非對方棋子)　(尚未出界)

```
        while(i>=0 && j>=0 && i<MAX && j<MAX
                                && cells[i][j]==_____){
              i += dirn[  ][0];
              j += dirn[  ][1];
        }
        if(i<0 || j<0 || i>=MAX || j>=MAX) return 0;
        return (cells[i][j]___);
}
```

(對方棋子)

(本方棋子)

0白○
1黑✖

```
                          0     1     2     3     4     5     6     7
                //    N,    E,    S,    W,    NE,   SE,   SW,   NW
int dirn[8][2]= {-1,0, 0,1, 1,0, 0,-1, -1,1, 1,1, 1,-1, -1,-1};
                (i+_,j+_)
```

0白○
1黑✖

0,1　　0-7 (direction)

```
void change(int i, int j, int ox, int d){
        do{
                i += dirn[  ][0];   (下一步)
                j += dirn[  ][1];
                if(i___|| j___|| i>=MAX || j>=MAX   (已出界)
                          || cells[i][j]_____) break;
                cells[i][j]=_____;   (本方棋子)
        }while(1);
}
```

完