智慧型系統控制

趙春棠 老師

四技機電四甲

49422019

黃秉宏

- 井字遊戲並沒有什麼必勝的著法，但只要適當的回應，就可保持不敗。也

1	2	3
4	5	6
7	8	9

法則

- 手玩家的最佳著法其第一步最好下在四個角落(即 2、4、6、8 號位置)，因為後手玩家除了下在 中央的 5 號位置之外必敗。即使對手下了該位置，只要回以馬步佈局或對角佈局也還有一半的勝算。
- 先手玩家第一步的次佳選擇在 5 號位置 ，因為後手玩家除了下在四個角落外必敗， 即使對手下了該位置，只要再下在對手的另一個對角也還有三分之二的勝算。
- 後手玩家的第一步，如果 5 號位置是空的則選擇 5 號位置，否則選擇在四個角落。
- 只要掌握以上要領，再針對當時情況稍微思考一下，必可保持不敗。

固因此我就依此原理來寫此小程式
具有智慧的電腦對手
頂多與他平手不可能贏電腦

意外發現到的網址
http://www.casperwang.idv.tw/archives/story_2/000020.html#more

```cpp
#include "stdafx.h"
#include <stdlib.h>
#include <stdio.h>
#include <iostream>
using namespace std;
char XY[3][3] = {{'1', '2', '3'}, {'4', '5', '6'}, {'7', '8', '9'}};

void show()//顯示畫面
{
    int i, j;

    for (i = 0; i < 3; i++) {
        for (j = 0; j < 3; j++)
        cout << XY[i][j] << " ";

        cout << endl;
    }
}
void judge()//玩家的輸入位置判斷
{
    int position;
    cout << "換玩家輸入";
    cin >> position;

    if (position < 1 || position > 9)
        cout << "輸入錯誤" << endl;

    else {
        int x = (position-1)/3, y = (position-1)%3;
        if (XY[x][y] == 'o' || XY[x][y] == 'x'){
        cout << "選過了, 不要亂選!" << endl;
        judge();
        }
        else XY[x][y]='x';
    }
    show();
```

```cpp
        cout<<"換電腦輸入"<<endl;
}
void reset()
{
int i, j, ch = '1';
for (i = 0; i < 3; i++)
for (j = 0; j < 3; j++)
XY[i][j] = ch + i*3 + j;



}



int _tmain(int argc, _TCHAR* argv[])
{

                //int select;
                cout << "電腦優先按"<< endl;
                    //1, 玩家優先請按" << endl;
                //cout << "第位玩家是o, 第位玩家是x" << endl;
                show();
                //cout << "請問由誰先下:";
                //cin >> select;
                //if (select==1){
                    char Q;
                    Q='o';
                    cout << "由電腦先輸入: "<< endl;
                    XY[1][1]=Q;
                    show();
                    judge();
                    //狀態
                    if(XY[1][1]=='o'&& XY[0][1]=='x'){
                        XY[2][0]='o';
                        show();
                        judge();
                        if(XY[2][0]=='o' && XY[1][1]=='o' && XY[0][2]=='x'){
                            XY[0][0]='o';
                            show();
```

```cpp
            judge();
            if(XY[2][1]=='x' || XY[1][2]=='x'){
                    XY[2][2]='o';
                    show();
                    cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[0][0]=='o' && XY[1][1]=='o' && XY[2][2]=='x'){
                    XY[1][0]='o';
                    show();
                    cout<<"電腦獲勝!!"<<endl;
            }
            else {
                    XY[2][2]='o';
                    show();
                    cout<<"電腦獲勝!!"<<endl;
            }
        }
        else{
            XY[0][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        system("pause");
    }
    //狀態
    else if(XY[1][1]=='o'&& XY[1][2]=='x'){
        XY[2][0]='o';
        show();
        judge();
        if(XY[2][0]=='o' && XY[1][1]=='o' && XY[0][2]=='x'){
            XY[2][2]='o';
            show();
            judge();
            if(XY[1][0]=='x' || XY[0][1]=='x'){
                    XY[0][0]='o';
                    show();
                    cout<<"電腦獲勝!!"<<endl;
            }
```

```cpp
                    else if(XY[0][0]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
                        XY[2][1]='o';
                        show();
                        cout<<"電腦獲勝!!"<<endl;
                    }
                    else {
                        XY[0][0]='o';
                        show();
                        cout<<"電腦獲勝!!"<<endl;
                    }
                }
                else{
                    XY[0][2]='o';
                    show();
                    cout<<"電腦獲勝!!"<<endl;
                }
                system("pause");

}
//狀態
else if(XY[1][1]=='o'&& XY[2][1]=='x'){
    XY[2][0]='o';
    show();
    judge();
    if(XY[2][0]=='o' && XY[1][1]=='o' && XY[0][2]=='x'){
        XY[0][0]='o';
        show();
        judge();
        if(XY[0][1]=='x' || XY[1][2]=='x'){
            XY[2][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        else if(XY[0][0]=='o' && XY[1][1]=='o' && XY[2][2]=='x'){
            XY[1][0]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
```

```cpp
            else {
                XY[2][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
        }
        else{
            XY[0][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        system("pause");

    }
    //狀態
    else if(XY[1][1]=='o'&& XY[1][0]=='x'){
        XY[2][0]='o';
        show();
        judge();
        if(XY[2][0]=='o' && XY[1][1]=='o' && XY[0][2]=='x'){
            XY[2][2]='o';
            show();
            judge();
            if(XY[0][1]=='x' || XY[1][2]=='x'){
                XY[0][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[0][0]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
                XY[2][1]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else {
                XY[0][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
```

```cpp
        }
        else{
            XY[0][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        system("pause");
    }
    //狀態
    else if(XY[1][1]=='o'&& XY[0][2]=='x'){
        XY[2][0]='o';
        show();
        judge();
        //staic01
        if(XY[2][0]=='o' && XY[1][1]=='o' && XY[0][1]=='x'){
            XY[0][0]='o';
            show();
            judge();
            if(XY[2][1]=='x' || XY[1][2]=='x'){
                XY[2][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[0][0]=='o' && XY[1][1]=='o' && XY[2][2]=='x'){
                XY[1][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else {
                XY[2][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            system("pause");
        }
        //staic02
        else if(XY[2][0]=='o' && XY[1][1]=='o' && XY[0][0]=='x'){
            XY[0][1]='o';
```

```cpp
        show();
        judge();
        if(XY[0][1]=='o' && XY[1][1]=='o' && XY[2][1]=='x'){
            XY[1][2]='o';
            show();
            judge();
            if(XY[1][0]=='x' && XY[1][1]=='o' && XY[1][2]=='o'){
                XY[2][2]='o';
                show();
                cout<<"雙方平手!!"<<endl;
            }
            else{
                XY[1][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
        }
        else {
            XY[2][1]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        system("pause");
}
//staic03
else if(XY[2][0]=='o' && XY[1][1]=='o' && XY[1][0]=='x'){
    XY[2][2]='o';
    show();
    judge();
    if(XY[0][1]=='x' || XY[1][2]=='x'){
        XY[0][0]='o';
        show();
        cout<<"電腦獲勝!!"<<endl;
    }
    else if(XY[0][0]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
        XY[2][1]='o';
        show();
        cout<<"電腦獲勝!!"<<endl;
```

```cpp
        }
        else {
            XY[0][0]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        system("pause");
    }
//staic04
    else if(XY[2][0]=='o' && XY[1][1]=='o' && XY[2][1]=='x'){
        XY[0][0]='o';
        show();
        judge();
        if(XY[0][1]=='x' || XY[1][2]=='x'){
            XY[2][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        else if(XY[0][0]=='o' && XY[1][1]=='o' && XY[2][2]=='x'){
            XY[1][0]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        else {
            XY[2][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        system("pause");
    }
//staic05
    else if(XY[2][0]=='o' && XY[1][1]=='o' && XY[2][2]=='x'){
        XY[1][2]='o';
        show();
        judge();
        if(XY[1][0]=='x' && XY[1][1]=='o' && XY[1][2]=='o'){
            XY[0][1]='o';
            show();
```

```cpp
                judge();
                if(XY[0][1]=='o' && XY[1][1]=='o' && XY[2][1]=='x'){
                        XY[0][0]='o';
                        show();
                        cout<<"雙方平手!!"<<endl;
                }
                else{
                        XY[2][1]='o';
                        show();
                        cout<<"電腦獲勝!!"<<endl;
                }
        }
        else {
                XY[1][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;


        }
        system("pause");
}
//staic06
else if(XY[2][0]=='o' && XY[1][1]=='o' && XY[1][2]=='x'){
        XY[2][2]='o';
        show();
        judge();
        if(XY[0][1]=='x' || XY[1][0]=='x'){
                XY[0][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
        }
        else if(XY[0][0]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
                XY[2][1]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
        }
        else {
                XY[0][0]='o';
                show();
```

```cpp
                    cout<<"電腦獲勝!!"<<endl;
                }
            }
            system("pause");
    }
    //狀態
    else if(XY[1][1]=='o'&& XY[2][2]=='x'){
        XY[0][0]='o';
        show();
        judge();
        //staic01
        if(XY[0][0]=='o' && XY[1][1]=='o' && XY[1][2]=='x'){
            XY[0][2]='o';
            show();
            judge();
            if(XY[1][0]=='x' || XY[2][1]=='x'){
                XY[2][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[0][0]=='o' && XY[0][1]=='x' && XY[0][2]=='o'){
                XY[2][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else {
                XY[0][1]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            system("pause");
        }
        //staic02
        else if(XY[0][0]=='o' && XY[1][1]=='o' && XY[0][2]=='x'){
            XY[1][2]='o';
            show();
            judge();
            if(XY[1][0]=='x' && XY[1][1]=='o' && XY[1][2]=='o'){
```

```cpp
                XY[0][1]='o';
                show();
                judge();
                if(XY[0][1]=='o' && XY[1][1]=='o' && XY[2][1]=='x'){
                    XY[2][0]='o';
                    show();
                    cout<<"雙方平手!!"<<endl;
                }
                else{
                    XY[2][1]='o';
                    show();
                    cout<<"電腦獲勝!!"<<endl;
                }
            }
            else {
                XY[1][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            system("pause");
        }
        //staic03
        else if(XY[0][0]=='o' && XY[1][1]=='o' && XY[0][1]=='x'){
            XY[2][0]='o';
            show();
            judge();
            if(XY[1][2]=='x' || XY[2][1]=='x'){
                XY[1][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[0][0]=='o' && XY[1][0]=='x' && XY[2][0]=='o'){
                XY[0][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else {
                XY[1][0]='o';
```

```cpp
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            system("pause");
        }
        //staic04
        else if(XY[0][0]=='o' && XY[1][1]=='o' && XY[1][0]=='x'){
            XY[0][2]='o';
            show();
            judge();
            if(XY[2][1]=='x' || XY[1][2]=='x'){
                XY[2][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[0][0]=='o' && XY[0][1]=='x' && XY[0][2]=='o'){
                XY[2][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else {
                XY[0][1]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            system("pause");
        }
        //staic05
        else if(XY[0][0]=='o' && XY[1][1]=='o' && XY[2][0]=='x'){
            XY[2][1]='o';
            show();
            judge();
            if(XY[0][1]=='x' && XY[1][1]=='o' && XY[2][1]=='o'){
                XY[1][0]='o';
                show();
                judge();
                if(XY[1][0]=='o' && XY[1][1]=='o' && XY[1][2]=='x'){
                    XY[0][2]='o';
```

```cpp
                show();
                cout<<"雙方平手!!"<<endl;
            }
            else{
                XY[1][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
        }
        else {
            XY[0][1]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;


        }
        system("pause");
    }
    //staic06
    else if(XY[0][0]=='o' && XY[1][1]=='o' && XY[2][1]=='x'){
        XY[2][0]='o';
        show();
        judge();
        if(XY[0][1]=='x' || XY[1][2]=='x'){
            XY[0][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        else if(XY[0][0]=='o' && XY[1][0]=='x' && XY[2][0]=='o'){
            XY[0][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        else {
            XY[1][0]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
    }
```

```cpp
        system("pause");
    }
    //狀態
    else if(XY[1][1]=='o'&& XY[2][0]=='x'){
        XY[0][2]='o';
        show();
        judge();
        //staic01
        if(XY[2][1]=='x' && XY[1][1]=='o' && XY[0][2]=='o'){
            XY[2][2]='o';
            show();
            judge();
            if(XY[0][1]=='x' || XY[1][0]=='x'){
                XY[1][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[0][2]=='o' && XY[1][2]=='x' && XY[2][2]=='o'){
                XY[0][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else {
                XY[1][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            system("pause");
        }
        //staic02
        else if(XY[2][2]=='x' && XY[1][1]=='o' && XY[0][2]=='o'){
            XY[2][1]='o';
            show();
            judge();
            if(XY[0][1]=='x' && XY[1][1]=='o' && XY[2][1]=='o'){
                XY[1][2]='o';
                show();
                judge();
```

```cpp
            if(XY[1][0]=='x' && XY[1][1]=='o' && XY[1][2]=='o'){
                XY[0][0]='o';
                show();
                cout<<"雙方平手!!"<<endl;
            }
            else{
                XY[1][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
        }
        else {
            XY[0][1]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        system("pause");
    }
    //staic03
    else if(XY[1][2]=='x' && XY[1][1]=='o' && XY[0][2]=='o'){
        XY[0][0]='o';
        show();
        judge();
        if(XY[2][1]=='x' || XY[1][0]=='x'){
            XY[0][1]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        else if(XY[0][0]=='o' && XY[0][1]=='x' && XY[0][2]=='o'){
            XY[2][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        else {
            XY[0][1]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
```

```cpp
        system("pause");
}
//staic04
else if(XY[0][1]=='x' && XY[1][1]=='o' && XY[0][2]=='o'){
    XY[2][2]='o';
    show();
    judge();
    if(XY[2][1]=='x' || XY[1][0]=='x'){
        XY[1][2]='o';
        show();
        cout<<"電腦獲勝!!"<<endl;
    }
    else if(XY[0][2]=='o' && XY[1][2]=='x' && XY[2][2]=='o'){
        XY[0][0]='o';
        show();
        cout<<"電腦獲勝!!"<<endl;
    }
    else {
        XY[1][2]='o';
        show();
        cout<<"電腦獲勝!!"<<endl;
    }
    system("pause");
}
//staic05
else if(XY[0][0]=='x' && XY[1][1]=='o' && XY[0][2]=='o'){
    XY[1][0]='o';
    show();
    judge();
    if(XY[1][0]=='o' && XY[1][1]=='o' && XY[1][2]=='x'){
        XY[0][1]='o';
        show();
        judge();
        if(XY[0][1]=='o' && XY[1][1]=='o' && XY[2][1]=='x'){
            XY[2][2]='o';
            show();
            cout<<"雙方平手!!"<<endl;
        }
```

```cpp
            //狀態
                            else{
                                XY[2][1]='o';
                                show();
                                cout<<"電腦獲勝!!"<<endl;
                            }
                    }
                    else {
                        XY[1][2]='o';
                        show();
                        cout<<"電腦獲勝!!"<<endl;


                    }
                    system("pause");
            }
        //staic06
        else if(XY[1][0]=='x' && XY[1][1]=='o' && XY[0][2]=='o'){
            XY[0][0]='o';
            show();
            judge();
            if(XY[2][1]=='x' || XY[1][2]=='x'){
                XY[0][1]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[0][0]=='o' && XY[0][1]=='x' && XY[0][2]=='o'){
                XY[2][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else {
                XY[0][1]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
        }
        system("pause");
    }
//狀態
```

```cpp
else if(XY[1][1]=='o'&& XY[0][0]=='x'){
    XY[2][2]='o';
    show();
    judge();
    //staic01
    if(XY[1][0]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
        XY[2][0]='o';
        show();
        judge();
        if(XY[0][1]=='x' || XY[1][2]=='x'){
            XY[0][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        else if(XY[2][0]=='o' && XY[1][1]=='o' && XY[0][2]=='x'){
            XY[2][1]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        else {
            XY[0][2]='o';
            show();
            cout<<"電腦獲勝!!"<<endl;
        }
        system("pause");
    }
    //staic02
    else if(XY[2][0]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
        XY[1][0]='o';
        show();
        judge();
        if(XY[1][0]=='o' && XY[1][1]=='o' && XY[1][2]=='x'){
            XY[2][1]='o';
            show();
            judge();
            if(XY[0][1]=='x' && XY[1][1]=='o' && XY[2][1]=='o'){
                XY[0][2]='o';
                show();
```

```cpp
                    cout<<"雙方平手!!"<<endl;
                }
                else{
                    XY[0][1]='o';
                    show();
                    cout<<"電腦獲勝!!"<<endl;
                }
            }
            else {
                XY[1][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            system("pause");
        }
        //staic03
        else if(XY[2][1]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
            XY[0][2]='o';
            show();
            judge();
            if(XY[0][1]=='x' || XY[1][0]=='x'){
                XY[2][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[0][2]=='o' && XY[1][1]=='o' && XY[2][0]=='x'){
                XY[1][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else {
                XY[2][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            system("pause");
        }
        //staic04
```

```cpp
else if(XY[1][2]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
    XY[2][0]='o';
    show();
    judge();
    if(XY[0][1]=='x' || XY[1][0]=='x'){
        XY[0][2]='o';
        show();
        cout<<"電腦獲勝!!"<<endl;
    }
    else if(XY[0][2]=='x' && XY[1][1]=='o' && XY[2][0]=='o'){
        XY[2][1]='o';
        show();
        cout<<"電腦獲勝!!"<<endl;
    }
    else {
        XY[0][2]='o';
        show();
        cout<<"電腦獲勝!!"<<endl;
    }
    system("pause");
}
//staic05
else if(XY[0][2]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
    XY[0][1]='o';
    show();
    judge();
    if(XY[0][1]=='o' && XY[1][1]=='o' && XY[2][1]=='x'){
        XY[1][2]='o';
        show();
        judge();
        if(XY[1][0]=='x' && XY[1][1]=='o' && XY[1][2]=='o'){
            XY[2][0]='o';
            show();
            cout<<"雙方平手!!"<<endl;
            system("pause");
        }
        else{
            XY[1][0]='o';
```

```cpp
                    show();
                    cout<<"電腦獲勝!!"<<endl;
                }
            }
            else {
                XY[2][1]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;


            }
            system("pause");
        }
        //staic06
        else if(XY[0][1]=='x' && XY[1][1]=='o' && XY[2][2]=='o'){
            XY[0][2]='o';
            show();
            judge();
            if(XY[2][1]=='x' || XY[1][0]=='x'){
                XY[2][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else if(XY[2][0]=='x' && XY[1][1]=='o' && XY[0][2]=='o'){
                XY[1][2]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
            else {
                XY[2][0]='o';
                show();
                cout<<"電腦獲勝!!"<<endl;
            }
        }
        system("pause");
    }

//}
```

```cpp
		/*	else{
				cout << "由玩家先輸入: "<< endl;
				cout<<"未完成設計，敬請期待"<<endl;
				system("pause");
				return 0;
		}*/
}
```