

## 23. numAB2: 1A2B猜數字遊戲之二 (換電腦來猜)

### 23.1 Project Description

- 設計一個由電腦來猜數字的1A2B猜數字遊戲

### 23.2 Source Code

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

#define numlong 4
#define maxAnswers 10000

int guess[numlong];
int answer[numlong];

int possibleAnswers[maxAnswers][numlong];

int pivot= (maxAnswers-1);

int QWQ=1;
int A, B;
int checkA, checkB;
int cur=0;

void initial();

void getUserGuess();
int checkAGuess();
void showAnAnswer(int);
int checkDup(int);
void swap2PossibleAnswers(int, int);
void moveAPossibleAnswer(int, int);
void makeAGuess();
void updatePossibleAnswers();

int main()
{
```

```
int quit =0;
int qq=0;
int count = 0;

initial();

while(!quit)
{

    cur = makeAGuess();

    printf("A=?");
    scanf("%d", &A);

    printf("B=?");
    scanf("%d", &B);

    if(A==numlong)
    {
        printf("....^_^. ....\n");
        quit=1;
    }

    updatePossibleAnswers();

}

printf("GoodBye\n!");
}

void updatePossibleAnswers()
{
    i=0;
    while(i < pivot)
    {
        if(i!=cur)
        {
            checkAB(cur,i);
            if ((A != checkA )||(B != checkB))
            {
                moveAPossibleAnswer(pivot, i);
                pivot--;
            }
            else
            {
                i++;
            }
        }
    }
}
```

```
    }  
}  
  
void makeAGuess()  
{  
    int r;  
    srand(time(NULL));  
    r = rand() % pivot;  
    printf("pivot=%d rand=%d\n", pivot,r);  
    printf("I guess the answer is ");  
    showAnAnswer(r);  
}  
  
void showAnAnswer(int x)  
{  
    int i=0;  
    for(i=0; i< numlong; i++)  
    {  
        printf("%d", possibleAnswers[x][i]);  
    }  
    printf("\n");  
}  
  
void initial()  
{  
  
    int i;  
  
    for(i=0;i<maxAnswers;i++)  
    {  
        possibleAnswers[i][3] = ((int)(i / 1)) % 10;  
        possibleAnswers[i][2] = ((int)(i / 10)) % 10;  
        possibleAnswers[i][1] = ((int)(i / 100)) % 10;  
        possibleAnswers[i][0] = ((int)(i / 1000)) % 10;  
    }  
  
    i=0;  
    while( i < pivot)  
    {  
  
        if( checkDup(i) )  
        {  
            moveAPossibleAnswer(pivot, i);  
            pivot--;  
        }  
    }  
}
```

```
    else
    {
        i++;
    }

}

}

void moveAPossibleAnswer(int f, int t)
{
    int i;
    for(i=0;i<numlong;i++)
    {
        possibleAnswers[t][i]=possibleAnswers[f][i];
    }
}

int checkDup(int x)
{
    int i,j=0;

    for(i = 0;i< numlong-1;i++)
    {
        for(j = i+1;j<numlong;j++)
        {
            if (possibleAnswers[x][i] == possibleAnswers[x][j])
            {
                return 1;
            }
        }
    }
    return 0;
}

void getUserGuess()

{
    int i,q,w;
    int ck=0;
    while(!ck)
    {
        printf("input number:");
        for(i=0;i<numlong;i++)
        {
            scanf(" %c", &guess[i] );
        }

        for(i=0;i<numlong;i++)
        {
```

```
    guess[i]-=48;
}
    if((guess[0]==guess[1])||(guess[0]==guess[2])||(guess[0]==guess[3])
    {
    printf("retry!!\n");
    QWQ=0;

    }
else
    {
    QWQ=1;
    ck=1;
    }
}
}

int checkAGuess()

{
    int a=0,b=0,i,j;

    for(i=0;i<numlong;i++)
    {

        for(j=0;j<numlong;j++)

            {
                if((guess[i]==answer[j])&&(i==j))
                {
                    a++;
                    break;
                }
                else if(guess[i]==answer[j])
                {
                    b++;
                    break;
                }
            }

    }

    printf("....%dA %dB\n",a,b);

    if(a==4)
        return 1;
    else
        return 0;
}
```

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