

# 1. 21點撲克牌遊戲

- global variables
- function calls
- random number
- arrays

## 1.1 Project Description

- 未考慮5張牌未超過21點的情況

## 1.2 Source Code

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

int card[52], user[5], pc[5], cc=4;

void initialGame()
{
    int i,temp, p;
    srand(time(NULL));
    //洗牌
    for(i=0;i<52;i++)
    {
        card[i]=i;
    }
    for(i=0;i<52;i++)
    {
        p=rand()%52;
        temp=card[i];
        card[i]=card[p];
        card[p]=temp;
    }
    //各分兩張牌給user與pc
    user[0]=card[0];
    user[1]=card[1];
    user[2]=user[3]=user[4]=(-1);
    pc[0]=card[2];
```

```
pc[1]=card[3];
pc[2]=pc[3]=pc[4]=(-1);
cc=4;
}

void newline()
{
    printf("\n");
}

int getPoint(int c[])
{
    int i,p,sum=0, a=0;
    for(i=0;i<5;i++)
    {
        if(c[i]!=(-1))
        {
            p=c[i]%13+1;
            p= (p>10)? 10: p;
            if(p==1)
                a++;
            sum+=p;
        }
    }
    if(a&&((sum+10)<=21))
        sum+=10;
    return sum;
}

int pcPoint()
{
    return getPoint(pc);
}

int userPoint()
{
    return getPoint(user);
}

void showAcard(int ca)
{
    int p;
    char suit[4]={'s','h','d','c'};
    printf("%c",suit[ca/13]);
    p=ca%13;
    switch(p+1)
    {
        case 1:
            printf("A");
            break;
        case 2: case 3: case 4: case 5: case 6: case 7: case 8: case 9:
```

```
        printf("%ld", p+1);
        break;
    case 10:
        printf("T");
        break;
    case 11:
        printf("J");
        break;
    case 12:
        printf("Q");
        break;
    case 13:
        printf("K");
    }
}

void showCard( int c[])
{
    int i;
    for(i=0;i<5;i++)
    {
        if(c[i]!=(-1))
        {
            showAcard(c[i]);
            printf(" ");
        }
    }
    newline();
}

void showUserCard()
{
    printf("User: ");
    showCard(user);
}

void showPcCard(int i)
{
    printf(" PC : ");
    if(i!=1)
        showCard(pc);
    else
    {
        showAcard(pc[0]);
        newline();
    }
}

int user_turn()
```

```
{
    int ucc=2, quit=0;
    char c;

    showUserCard();
    showPcCard(1);
    while((ucc<5)&&(!quit))
    {
        printf("Add a card?(y/n)");
        scanf(" %c", &c);
        if(c=='y')
        {
            user[ucc++]=card[cc++];
            showUserCard();
            if(userPoint(>21)
            {
                showPcCard(5);
                printf("I Win!\n");
                return 0;
            }
        }
        else
            quit=1;
    }
    return 1;
}

void pc_turn()
{
    int pcc=2, quit=0;
    char c;
    showPcCard(5);
    while((pcc<=5)&&(pcPoint(<16))
    {
        printf("I want to add a card...\n");
        pc[pcc++]=card[cc++];
        showPcCard(5);
    }
    if(pcPoint(>21)
        printf("You Win!\n");
    else if(userPoint(>pcPoint())
    {
        printf("You Win!\n");
    }
    else if(userPoint()==pcPoint())
    {
        printf("Even!\n");
    }
    else
    {
        printf("I Win!\n");
    }
}
```

```
}  
}  
  
int isContinue()  
{  
    char c;  
    printf("Do you want to play again?(y/n)");  
    scanf(" %c", &c);  
    if(c=='y')  
        return 0; // 0 for continue  
    else  
        return 1; // 1 for exit  
}  
  
int main()  
{  
    int quit=0;  
    while(!quit)  
    {  
        initialGame();  
        if(user_turn()) // return 0 if user loss  
            pc_turn();  
        quit = isContinue();  
    }  
}
```

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Last update: **2019/07/02 15:01**

