//Source Code of Tic Tac Toe using Multiple Inheritance

```
#include <iostream>
#include <cstdlib>
#include<ctime>
#include<stdlib.h>
using namespace std;
class RPS {
 public:
   int choice2,ac;
   int scoreR1,scoreR2;
    RPS()
    {  scoreR1=scoreR2=0;
    }
   int AIinput1();
   void scoreR(int,int);
   void checkwin1(int,int);
};
class TTT {
 public:
   int a[10],choice2,scoreT1,scoreT2;
   TTT()
   {  scoreT1=scoreT2=0;
     for(int i=0;i<10;i++)
        a[i]=i;
   }
   int AIinput2();
   void scoreT();
   void checkwin2(int,int);
   void show();
};
class Game:public RPS,public TTT
{
 public:
   int choice1,uc;
   int userInput1();
   int userInput2();
};

int main() {
  srand(time(0));
  Game g;
  cout<<"Roll No. 161210040\n";
  int choice;
  cout<<"Which game do you want to play?";
  cout<<"\n1. Rock Paper Scissor      2.Tic Tac Toe\n";
  cin>>choice;
  switch(choice) {
     case 1: int a,b,i,n;
        cout<<"How many games you want to play? ";
           cin>>n;
      cout<<"\n1.ROCK      2.PAPER      3.SCISSOR\n";
           for(i=0;i<n;i++)
           {  cout<<"Game "<<i+1<<"\n";
             a=g.userInput1();
             b=g.AIinput1();
             g.scoreR(a,b);
           }
           g.checkwin1(g.scoreR1,g.scoreR2);
           break;
```

```
    case 2:  int ch,m,j,k;
             ch=5;
             m=1;
             while(ch!=1 && m<=5)
             {   if(m==5)
                   ch=1;
                j=g.userInput2();
                m++;
                k=g.AIinput2();
                g.show();
                g.scoreT();
                if(g.scoreT1>g.scoreT2)
                  ch=g.scoreT1;
                else if(g.scoreT1<g.scoreT2)
                      ch=g.scoreT2;
             }
             g.checkwin2(g.scoreT1,g.scoreT2);
             break;
    default: cout<<"\nWrong Choice";
             break;
  }
  return 0;
}
void RPS::scoreR(int uc,int ac) {
   if(uc==ac)
     cout<<"";
   else if(uc==1)
   {   if(ac==2)
         scoreR2++;
       else
         scoreR1++;
   }
   else if(uc==2)
   {   if(ac==1)
         scoreR1++;
       else
         scoreR2++;
   }
   else
   {   if(ac==1)
         scoreR2++;
       else
         scoreR1++;
   }
   cout<<"\nYour Score: "<<scoreR1;
   cout<<"\tCPU Score: "<<scoreR2<<endl;
}
void RPS::checkwin1(int user,int AI)
{   if(user==AI)
      cout<<"\nGAME DRAWS!\n";
   else if(user<AI)
      cout<<"\nCPU WINS!\n";
   else
      cout<<"\nYOU WIN!\n";
}
int RPS::AIinput1()
{
   choice2=(rand()%3)+1;
   cout<<"CPU : "<<choice2;
   return choice2;
}
```

```
int Game::userInput1()
{   cout<<"You : ";
    cin>>choice1;
    return choice1;
}

int TTT::AIinput2()
{   int i;
    do
    {   choice2=(rand()%9)+1;
        i=choice2;
    }while((a[i]==20) || (a[i]==10));

    cout<<"CPU : "<<choice2<<endl;
    a[i]=20;
    return choice2;
}
void TTT::scoreT()
{
    if(a[1]==a[2] && a[2]==a[3])
    {  if(a[1]==10)
         scoreT1++;
       else
         scoreT2++;
    }
    else if(a[1]==a[4] && a[4]==a[7])
    {  if(a[1]==10)
         scoreT1++;
       else
         scoreT2++;
    }
else if(a[1]==a[5] && a[5]==a[9])
{  if(a[1]==10)
     scoreT1++;
   else
     scoreT2++;
}
else if(a[2]==a[8] && a[8]==a[5])
{  if(a[2]==10)
     scoreT1++;
   else
     scoreT2++;
}
else if(a[3]==a[6] && a[6]==a[9])
{  if(a[3]==10)
     scoreT1++;
   else
     scoreT2++;
}
else if(a[3]==a[5] && a[5]==a[7])
{  if(a[3]==10)
     scoreT1++;
   else
     scoreT2++;
}
 else if(a[4]==a[5] && a[5]==a[6])
{  if(a[4]==10)
     scoreT1++;
   else
     scoreT2++;
}
else if(a[7]==a[8] && a[8]==a[9])
```

```
   {
 if(a[7]==10)
       scoreT1++;
     else
       scoreT2++;
   }
}
void TTT::checkwin2(int user,int AI)
{   if(user==AI)
      cout<<"\nGAME DRAWS!\n";
   else if(user<AI)
      cout<<"\nCPU WINS!\n";
   else
      cout<<"\nYOU WIN!\n";
}
void TTT::show()
{   int i=1;
   while(i<=9) {
       if(a[i]==10)
         cout<<" o ";
       else if(a[i]==20)
         cout<<" x ";
       else
         cout<<" _ ";
        if(i%3==0)
         cout<<"\n";
       i++;
   }
   cout<<endl;
}
int Game::userInput2()
{
 cout<<"You : ";
   cin>>choice1;
   while((a[choice1]==10)||(a[choice1]==20))
   {
    cout<<"Already occupied!\n";
     cout<<"Enter Again : ";
     cin>>choice1;
   }
   a[choice1]=10;
   return choice1;
}
```

```
#include <iostream>
#include <cstdlib>
#include<ctime>
#include<stdlib.h>
using namespace std;
class RPS {
 public:
   int choice2,ac;
   int scoreR1,scoreR2;
    RPS()
    {  scoreR1=scoreR2=0;
    }
   int AIinput1();
   void scoreR(int,int);
   void checkwin1(int,int);
};
class TTT {
 public:
   int a[10],choice2,scoreT1,scoreT2;
   TTT()
   {  scoreT1=scoreT2=0;
     for(int i=0;i<10;i++)
        a[i]=i;
   }
   int AIinput2();
   void scoreT();
   void checkwin2(int,int);
   void show();
};
class Game:public RPS,public TTT
{
 public:
   int choice1,uc;
   int userInput1();
   int userInput2();
};

int main() {
  srand(time(0));
  Game g;
  cout<<"Roll No. 161210040\n";
  int choice;
  cout<<"Which game do you want to play?";
  cout<<"\n1. Rock Paper Scissor      2.Tic Tac
Toe\n";
  cin>>choice;
  switch(choice) {
     case 1: int a,b,i,n;
           cout<<"How many games you want to play?
";
           cin>>n;
           cout<<"\n1.ROCK     2.PAPER
3.SCISSOR\n";
           for(i=0;i<n;i++)
           {  cout<<"Game "<<i+1<<"\n";
             a=g.userInput1();
             b=g.AIinput1();
             g.scoreR(a,b);
           }
           g.checkwin1(g.scoreR1,g.scoreR2);
```

```
            break;
      case 2:  int ch,m,j,k;
            ch=5;
            m=1;
            while(ch!=1 && m<=5)
            {   if(m==5)
                  ch=1;
               j=g.userInput2();
               m++;
               k=g.AIinput2();
               g.show();
               g.scoreT();
               if(g.scoreT1>g.scoreT2)
                  ch=g.scoreT1;
               else if(g.scoreT1<g.scoreT2)
                     ch=g.scoreT2;
            }
            g.checkwin2(g.scoreT1,g.scoreT2);
            break;
      default: cout<<"\nWrong Choice";
            break;
   }
   return 0;
}
void RPS::scoreR(int uc,int ac) {
    if(uc==ac)
      cout<<"";
    else if(uc==1)
    {   if(ac==2)
         scoreR2++;
        else
            scoreR1++;
    }
    else if(uc==2)
    {   if(ac==1)
          scoreR1++;
        else
          scoreR2++;
    }
    else
    {   if(ac==1)
          scoreR2++;
        else
          scoreR1++;
    }
    cout<<"\nYour Score: "<<scoreR1;
    cout<<"\tCPU Score: "<<scoreR2<<endl;
}
void RPS::checkwin1(int user,int AI)
{   if(user==AI)
      cout<<"\nGAME DRAWS!\n";
    else if(user<AI)
      cout<<"\nCPU WINS!\n";
    else
      cout<<"\nYOU WIN!\n";
}
int RPS::AIinput1()
{
    choice2=(rand()%3)+1;
    cout<<"CPU : "<<choice2;
    return choice2;
}
```

```
int Game::userInput1()
{   cout<<"You : ";
    cin>>choice1;
    return choice1;
}

int TTT::AIinput2()
{   int i;
    do
    {   choice2=(rand()%9)+1;
        i=choice2;
    }while((a[i]==20) || (a[i]==10));

    cout<<"CPU : "<<choice2<<endl;
    a[i]=20;
    return choice2;
}
void TTT::scoreT()
{
    if(a[1]==a[2] && a[2]==a[3])
    {  if(a[1]==10)
         scoreT1++;
       else
         scoreT2++;
    }
    else if(a[1]==a[4] && a[4]==a[7])
    {  if(a[1]==10)
         scoreT1++;
       else
         scoreT2++;
    }
else if(a[1]==a[5] && a[5]==a[9])
{  if(a[1]==10)
     scoreT1++;
   else
     scoreT2++;
}
else if(a[2]==a[8] && a[8]==a[5])
{  if(a[2]==10)
     scoreT1++;
   else
     scoreT2++;
}
else if(a[3]==a[6] && a[6]==a[9])
{  if(a[3]==10)
     scoreT1++;
   else
     scoreT2++;
}
else if(a[3]==a[5] && a[5]==a[7])
{  if(a[3]==10)
     scoreT1++;
   else
     scoreT2++;
}
 else if(a[4]==a[5] && a[5]==a[6])
{  if(a[4]==10)
     scoreT1++;
   else
     scoreT2++;
}
```

```
    else if(a[7]==a[8] && a[8]==a[9])
    {  if(a[7]==10)
         scoreT1++;
       else
         scoreT2++;
    }
}
void TTT::checkwin2(int user,int AI)
{   if(user==AI)
      cout<<"\nGAME DRAWS!\n";
    else if(user<AI)
      cout<<"\nCPU WINS!\n";
    else
      cout<<"\nYOU WIN!\n";
}
void TTT::show()
{   int i=1;
    while(i<=9) {
        if(a[i]==10)
          cout<<" o ";
        else if(a[i]==20)
          cout<<" x ";
        else
          cout<<" _ ";

         if(i%3==0)
          cout<<"\n";
          i++;
    }
    cout<<endl;
}
int Game::userInput2()
{   cout<<"You : ";
    cin>>choice1;
    while((a[choice1]==10)||(a[choice1]==20))
    { cout<<"Already occupied!\n";
      cout<<"Enter Again : ";
      cin>>choice1;
    }
    a[choice1]=10;
    return choice1;
}
```