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


void menu();
void MatchResult(int[4],int[4]);
void TheVictor(int[4],int[4]);
int randomNumberGenerator();



int main(){

srand(time(NULL));
int Spain[4]={0,0,0,0},Russia[4]={0,0,0,0};
/*
Array elements are as follows:
1)Number of match victory
2)Number of set victory
3)Number of set victory for the best
player of the team
4)The best player
By default, I set these values to zero
*/



int op;
menu();
scanf("%d",&op);

while(op!=1 && op!=2){
    fflush(stdin);
    printf("Please enter option either 1 or 2!\n");
    printf("Option: ");
    scanf("%d",&op);
}

if(op==1){
    MatchResult(Russia,Spain);
}
else{
    printf("Quit!\n");
}







return 0;
}

void menu(){
    printf("Tennis Final Matches Simulator\n\n");
    printf("1. Press 1 to start the simulation\n");
    printf("2. Press 2 to quit\n");
    printf("Option: ");
}

int randomNumberGenerator(){
    return rand()%4;
}

```

```c
67   void MatchResult(int Spain[4],int Russia[4]){

69   int i,j;
70   int spainMatchScores[4][4],russianMatchScores[4][4];
71   printf("\nSimulation starts..\n\n");

73   for(i=0;i<4;i++){
74       for(j=1;j<=4;j++){
75           printf("Match %d\n",i*4+j);
76           printf("----------------------------\n");
77           printf("Player %d (Spain) Vs. Player %d (Russia)\n",i+1,j);
78           spainMatchScores[i][j-1]=randomNumberGenerator();
79           russianMatchScores[i][j-1]=randomNumberGenerator();
80           int validMatch=0;//valid match == 1 if possible result occured.

82           while(!validMatch){
83               if((russianMatchScores[i][j-1]==3 || spainMatchScores[i][j-1]==3) && (spainMatchScores[i][j-1
]!=russianMatchScores[i][j-1]))
84                   validMatch=1;
85               else{
86                   spainMatchScores[i][j-1]=randomNumberGenerator();
87                   russianMatchScores[i][j-1]=randomNumberGenerator();
88               }
89           }
90           printf("Result: Spain %d - %d Russia\n\n\n",spainMatchScores[i][j-1],russianMatchScores[i][j-1]);
91       }
92   }

94   int spainTotalMatchWin[4]={0,0,0,0},russiaTotalMatchWin[4]={0,0,0,0};//these arrays hold the number of
match wins for each player
95   int spainTotalSetWin[4]={0,0,0,0},russiaTotalSetWin[4]={0,0,0,0};//these arrays hold the number of set wins
for each player

97   for(i=0;i<4;i++){
98       for(j=0;j<4;j++){
99           if(spainMatchScores[i][j]==3){
100              spainTotalMatchWin[i]++;
101          }
102          if(russianMatchScores[i][j]==3){
103              russiaTotalMatchWin[i]++;
104          }
105      }
106  }

108  for(i=0;i<4;i++){
109      for(j=0;j<4;j++){
110          spainTotalSetWin[i]+=spainMatchScores[i][j];
111          russiaTotalSetWin[i]+=russianMatchScores[j][i];
112      }
113  }

115  int spainBestPlayerSet=0,russiaBestPlayerSet=0;//these are the #of sets won by players

117  //now I have the best sets for both countries.
118  for(i=0;i<4;i++){//if two players have same #of sets won, I chose the smaller id player
119      if(spainBestPlayerSet<spainTotalSetWin[i]){
120          spainBestPlayerSet=spainTotalSetWin[i];
121      }
122  }

124  for(i=0;i<4;i++){
125      if(russiaBestPlayerSet<russiaTotalSetWin[i]){
126          russiaBestPlayerSet=russiaTotalSetWin[i];
127      }
128  }
129
```

```c
130    //now I will find the indexes of best players using the bestSet variable
131
132    int spainBestindex;
133    int russiaBestindex;
134
135    for(i=0;i<4;i++){
136        if(spainBestPlayerSet==spainTotalSetWin[i]){
137            spainBestindex=i;
138        }
139    }
140
141
142    for(i=0;i<4;i++){
143        Spain[0]+=spainTotalMatchWin[i];
144        Spain[1]+=spainTotalSetWin[i];
145    }
146
147    Spain[2]=spainBestPlayerSet;
148    Spain[3]=spainBestindex+1;
149
150
151
152
153    for(i=0;i<4;i++){
154        if(russiaBestPlayerSet==russiaTotalSetWin[i]){
155            russiaBestindex=i;
156        }
157    }
158
159
160    for(i=0;i<4;i++){
161        Russia[0]+=russiaTotalMatchWin[i];
162        Russia[1]+=russiaTotalSetWin[i];
163    }
164
165    Russia[2]=russiaBestPlayerSet;
166    Russia[3]=russiaBestindex+1;
167
168    TheVictor(Spain,Russia);
169
170
171
172
173
174    }
175
176    void TheVictor(int Spain[4],int Russia[4]){
177
178    printf("\n\n\nTable of Statistics\n");
179    printf("-------------------------------------\n");
180
181    printf("Spain\n");
182    printf("Number of match victory: %d\n",Spain[0]);
183    printf("Number of set victory: %d\n",Spain[1]);
184    printf("Number of set victory of the best player: %d\n",Spain[2]);
185    printf("Best Player: %d\n\n\n",Spain[3]);
186
187    printf("Russia\n");
188    printf("Number of match victory: %d\n",Russia[0]);
189    printf("Number of set victory: %d\n",Russia[1]);
190    printf("Number of set victory of the best player: %d\n",Russia[2]);
191    printf("Best Player: %d\n\n\n\n",Russia[3]);
192
193
194    int spainWin=0,russiaWin=0;
195
```

```c
196  while(spainWin!=1 || russiaWin!=1){
197
198      printf("Announcing the champion:\n");
199      printf("-------------------------------------\n");
200      printf("Number of match victory: Spain %d vs %d Russia\n",Spain[0],Russia[0]);
201      if(Spain[0]>Russia[0]){
202          spainWin=1;
203          break;
204      }
205      else if(Spain[0]<Russia[0]){
206          russiaWin=1;
207          break;
208      }
209      else{
210          printf("Draw! We should compare the set victory of each team:\n");
211          printf("Number of set victory: Spain %d vs %d Russia\n",Spain[1],Russia[1]);
212          if(Spain[1]>Russia[1]){
213              spainWin=1;
214              break;
215          }
216          else if(Spain[1]<Russia[1]){
217              russiaWin=1;
218              break;
219          }
220          else{
221              printf("Draw! We should compare the set victory of the best players of each team:\n");
222              printf("Number of set victory of the best players : Spain %d vs %d Russia\n",Spain[2],Russia[2]);
223              if(Spain[2]>Russia[2]){
224                  spainWin=1;
225                  break;
226              }
227              else if(Spain[2]<Russia[2]){
228                  russiaWin=1;
229                  break;
230              }
231              else{
232                  printf("Draw! Final match between the best players of each team should decide the best team:\n");
233                  int spainTieBreakScore=randomNumberGenerator();
234                  int russiaTieBreakScore=randomNumberGenerator();
235                  int validMatch=0;//valid match == 1 if possible result occured.
236
237                  while(!validMatch){
238                      if((spainTieBreakScore==3 || russiaTieBreakScore==3) && (spainTieBreakScore!=russiaTieBreakScore))
239                          validMatch=1;
240                      else{
241                          spainTieBreakScore=randomNumberGenerator();
242                          russiaTieBreakScore=randomNumberGenerator();
243                      }
244                  }
245                  printf("Player %d of Spain  %d  vs  %d  Player %d of Russia \n",Spain[3],spainTieBreakScore,russiaTieBreakScore,Russia[3]);
246                  if(spainTieBreakScore>russiaTieBreakScore){
247                      spainWin=1;
248                      break;
249                  }
250                  else{
251                      russiaWin=1;
252                      break;
253                  }
254
255              }
256          }
257      }
```

```c
258
259    }
260
261    printf("The champion of 2047 tennis champion league is: \n");
262
263    if(spainWin)
264        printf("Spain\n\n");
265    else
266        printf("Russia\n\n");
267
268    printf("We wish all the players the best for the next tennis champion league.\n");
269    printf("See you in 2048.");
270
271
272    }
273
274
275
276
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282
283
284
```