Содержание

Введение и постановка задачи

Создание генератора турнирной сетки.

Техническое задание

Данная программа предназначена для графического отображения турнирной сетки соревнований, использующих олимпийскую систему (Single Elimination) проведения. Присутствует ограничение по количеству команд(4, 8, 16, 32). Ограничение связано с тем, что большое количество команд может не поместиться на экране монитора.

Сначала в консоль вводится количество команд, затем названия команд через пробел.

Приложение работает в интерактивном режиме. Изначально команды отображаются в первом этапе. Для того чтобы подтвердить победу над противником (продвинуть в следующий этап) требуется выбрать команду — победителя.

В программе не предусмотрено сохранение.

Описание выполненного проекта

Данная программы выводит туринрную сетку по вводимым данным (количество команд и названия команд)

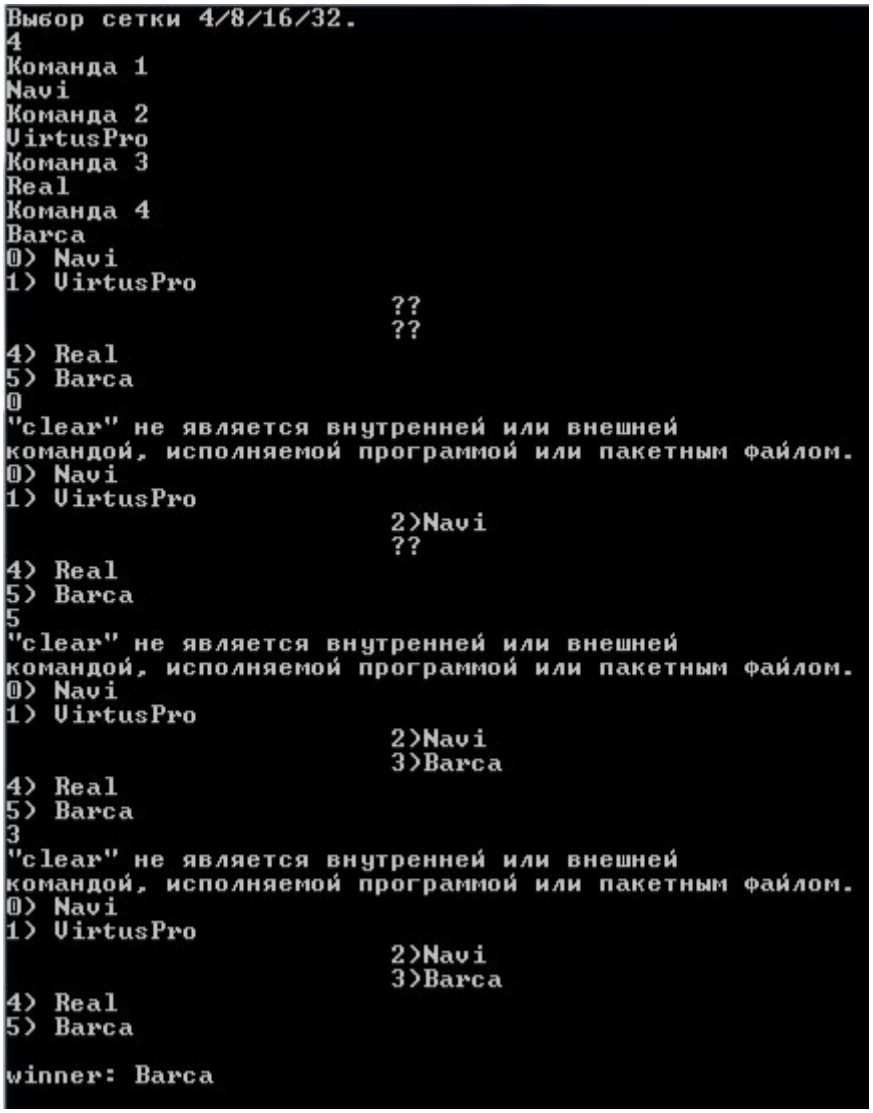

Рисунок 1: Пример работы программы

Приложение. Текст программы

```
// file func.h

const short int ttl = 10;
const char windowname[] = "Tournament grid generator";

typedef char text[ttl+1];

text buffer[32];

int grid4(int, text[]);
int grid8(int, text[]);
int grid16(int, text[]);
int grid32(int, text[]);
// file main.cpp


#include <iostream>
#include <cstdlib>
#include <cstring>
#include "func.h"

using namespace std;

int main()
{
setlocale(LC_ALL, "Russian");
srand(time(0));
char inputtn[100];
int numbert = 32;
string check;
cout<<"Введите количество команд равное 4/8/16/32."<<endl;
cin>>numbert;
while(numbert!=4 && numbert!=8 && numbert!=16 && numbert!=32)
{
numbert = 0;
cout<<"Код ошибки: 1. Количество команд должно быть равно 4/8/16/32."<<endl;
cin>>numbert;
}
for(int i=0; i<numbert; i++)
{
cout<<"Введите названия команды "<<i+1<<" на английском языке:"<<endl;
cin>>inputtn;
while(strlen(inputtn)>ttl)
{
strcpy(inputtn,"");
```

```
cout<<inputtn<<endl;
cout<<"Код ошибки: 2. Количество символов в названии команды не должно превышать "<<ttl<<"."<<endl;
cin>>inputtn;
}
strcpy(buffer[i], inputtn);
}
switch(numbert)
{
case 4:
{
grid4(numbert, buffer);
break;
}
case 8:
{
grid8(numbert, buffer);
break;
}
case 16:
{
grid16(numbert, buffer);
break;
}
case 32:
{
grid32(numbert, buffer);
break;
}
}
return 0;
}
```

//file grid4.cpp

```
#include <iostream>
#include <cstdlib>
#include <cstring>

typedef char text[11];

using namespace std;

int grid4(int numt, text buffer[])
{
```

```
int teamsN[6] = {0,1,-1,-1,2,3}, winner = -1;
int key;
for(int i =0; i<6; i++)
{
if(teamsN[i]!=-1) cout<<i<<") "<<buffer[teamsN[i]]<<endl;
else cout<<" \t\t\t??"<<endl;
}
while(winner==-1)
{
cin>>key;
system("clear");
if((key==2 || key==3) && teamsN[2]!=-1 && teamsN[3]!=-1) winner = teamsN[key];
if((key==0 || key==1) && teamsN[2] == -1) teamsN[2] = teamsN[key];
if((key==4 || key==5) && teamsN[3] == -1) teamsN[3] = teamsN[key];
for(int i =0; i<6; i++)
{
if(teamsN[i]!=-1)
if(i == 2 || i == 3) cout<<" \t\t\t"<<i<<")"<<buffer[teamsN[i]]<<endl;
else cout<<i<<") "<<buffer[teamsN[i]]<<endl;
else cout<<" \t\t\t??"<<endl;
}
}
cout<<endl<<"winner: "<<buffer[winner]<<endl;
return 0;
}
```

//file grid8.cpp

```
#include <iostream>
#include <cstdlib>
#include <cstring>

typedef char text[11];

using namespace std;

int grid8(int numt, text buffer[])
{
int teamsN[14] = {0,1,-1,-1,2,3,-1,-1,4,5,-1,-1,6,7}, winner = -1;
int key;
for(int i =0; i<14; i++)
{
if(teamsN[i]!=-1) cout<<i<<") "<<buffer[teamsN[i]]<<endl;
else
```

```
{
if(i == 2 || i == 3 || i == 10 || i == 11) cout<<" \t\t\t??"<<endl;
if(i == 6 || i == 7) cout<<" \t\t\t \t\t\t??"<<endl;
if(i != 2 && i != 3 && i != 10 && i != 11 && i != 6 && i != 7) cout<<i<<")
"<<buffer[teamsN[i]]<<endl;
}
}
while(winner==-1)
{
cin>>key;
system("clear");
if((key==2 || key==3) && teamsN[2]!=-1 && teamsN[3]!=-1 && teamsN[6] == -1) teamsN[6] =
teamsN[key];
if((key==10 || key==11) && teamsN[10]!=-1 && teamsN[11]!=-1 && teamsN[7] == -1)
teamsN[7] = teamsN[key];
if((key==6 || key==7) && teamsN[6]!=-1 && teamsN[7]!=-1) winner = teamsN[key];
if((key==0 || key==1) && teamsN[2] == -1) teamsN[2] = teamsN[key];
if((key==4 || key==5) && teamsN[3] == -1) teamsN[3] = teamsN[key];
if((key==8 || key==9) && teamsN[10] == -1) teamsN[10] = teamsN[key];
if((key==12 || key==13) && teamsN[11] == -1) teamsN[11] = teamsN[key];
for(int i =0; i<14; i++)
{
if(teamsN[i]!=-1)
{
if(i == 2 || i == 3 || i == 10 || i == 11) cout<<" \t\t\
t"<<i<<")"<<buffer[teamsN[i]]<<endl;
if(i == 6 || i == 7) cout<<" \t\t\t \t\t\t"<<i<<")"<<buffer[teamsN[i]]<<endl;
if(i != 2 && i != 3 && i != 10 && i != 11 && i != 6 && i != 7) cout<<i<<")
"<<buffer[teamsN[i]]<<endl;
}
else
{
if(i == 2 || i == 3 || i == 10 || i == 11) cout<<" \t\t\t??"<<endl;
if(i == 6 || i == 7) cout<<" \t\t\t \t\t\t??"<<endl;
if(i != 2 && i != 3 && i != 10 && i != 11 && i != 6 && i != 7) cout<<i<<")
"<<buffer[teamsN[i]]<<endl;
}
}
}
cout<<endl<<"Winner: "<<buffer[winner]<<endl;
return 0;
}
```

//file grid16.cpp

```
#include <iostream>
#include <cstdlib>
#include <cstring>

typedef char text[11];

using namespace std;

int grid16(int numt, text buffer[])
{
int teamsN[30] = {0,1,-1,-1,2,3,-1,-1,4,5,-1,-1,6,7,-1,-1,8,9,-1,-1,10,11,-1,-1,12,13,-1,-1,14,15},
winner = -1;
int key;
for(int i =0; i<30; i++)
{
if(teamsN[i]!=-1) cout<<i<<") "<<buffer[teamsN[i]]<<endl;
else
{
if(i == 2 || i == 3 || i == 10 || i == 11 || i == 18 || i == 19 || i == 26 || i == 27) cout<<" \t\t\
t??"<<endl;
if(i == 6 || i == 7 || i == 22 || i == 23) cout<<" \t\t\t \t\t\
t??"<<endl;
if(i == 14 || i == 15 ) cout<<" \t\t\t \t\t\t \t\t\
t??"<<endl;
}
}
while(winner==-1)
{
cin>>key;
system("clear");
if((key==2 || key==3) && teamsN[2]!=-1 && teamsN[3]!=-1 && teamsN[6] == -1) teamsN[6] =
teamsN[key];
if((key==10 || key==11) && teamsN[10]!=-1 && teamsN[11]!=-1 && teamsN[7] == -1)
teamsN[7] = teamsN[key];
if((key==6 || key==7) && teamsN[6]!=-1 && teamsN[7]!=-1 && teamsN[14] == -1) teamsN[14]
= teamsN[key];
if((key==0 || key==1) && teamsN[2] == -1) teamsN[2] = teamsN[key];
if((key==4 || key==5) && teamsN[3] == -1) teamsN[3] = teamsN[key];
if((key==8 || key==9) && teamsN[10] == -1) teamsN[10] = teamsN[key];
if((key==12 || key==13) && teamsN[11] == -1) teamsN[11] = teamsN[key];
if((key==14 || key==15) && teamsN[14]!=-1 && teamsN[15]!=-1) winner = teamsN[key];
if((key==18 || key==19) && teamsN[18]!=-1 && teamsN[19]!=-1 && teamsN[22] == -1)
teamsN[22] = teamsN[key];
if((key==26 || key==27) && teamsN[26]!=-1 && teamsN[27]!=-1 && teamsN[23] == -1)
teamsN[23] = teamsN[key];
if((key==22 || key==23) && teamsN[22]!=-1 && teamsN[23]!=-1 && teamsN[15] == -1)
```

```
teamsN[15] = teamsN[key];
if((key==16 || key==17) && teamsN[18] == -1) teamsN[18] = teamsN[key];
if((key==20 || key==21) && teamsN[19] == -1) teamsN[19] = teamsN[key];
if((key==24 || key==25) && teamsN[26] == -1) teamsN[26] = teamsN[key];
if((key==28 || key==29) && teamsN[27] == -1) teamsN[27] = teamsN[key];
for(int i =0; i<30; i++)
{
if(teamsN[i]!=-1)
{
if(i == 2 || i == 3 || i == 10 || i == 11 || i == 18 || i == 19 || i == 26 || i == 27) cout<<" \t\t\t"<<i<<")
"<<buffer[teamsN[i]]<<endl;;
if(i == 6 || i == 7 || i == 22 || i == 23) cout<<" \t\t\t \t\t\t"<<i<<")
"<<buffer[teamsN[i]]<<endl;
if(i == 14 || i == 15 ) cout<<" \t\t\t \t\t\t \t\t\t"<<i<<")
"<<buffer[teamsN[i]]<<endl;
if(i != 2 && i != 3 && i != 10 && i != 11 && i != 18 && i != 19 && i != 26 && i != 27 && i !=
6 && i != 7 && i != 22 && i != 23 && i != 14 && i != 15) cout<<i<<")
"<<buffer[teamsN[i]]<<endl;
}
else
{
if(i == 2 || i == 3 || i == 10 || i == 11 || i == 18 || i == 19 || i == 26 || i == 27) cout<<" \t\t\
t??"<<endl;
if(i == 6 || i == 7 || i == 22 || i == 23) cout<<" \t\t\t \t\t\
t??"<<endl;
if(i == 14 || i == 15 ) cout<<" \t\t\t \t\t\t \t\t\
t??"<<endl;
}
}
}
cout<<endl<<"Winner: "<<buffer[winner]<<endl;
return 0;
}
```

//file grid32.cpp

```
#include <iostream>
#include <cstdlib>
#include <cstring>
typedef char text[11];
using namespace std;
int grid32(int numt, text buffer[])
{
```

```
int teamsN[62] = {0,1,-1,-1,2,3,-1,-1,4,5,-1,-1,6,7,-1,-1,8,9,-1,-1,10,11,-1,-1,12,13,-1,-1,14,15,-1,-1,16,17,-1,-1,18,19,-1,-1,20,21,-1,-1,22,23,-1,-1,24,25,-1,-1,26,27,-1,-1,28,29,-1,-1,30,31}, winner = -1;
int key;
for(int i =0; i<62; i++)
{
if(teamsN[i]!=-1) cout<<i<<") "<<buffer[teamsN[i]]<<endl;
else
{
if(i == 2 || i == 3 || i == 10 || i == 11 || i == 18 || i == 19 || i == 26 || i == 27 || i == 34 || i == 35 || i == 42 || i == 43 || i == 50 || i == 51 || i == 58 || i == 59) cout<<" \t\t\t??"<<endl;
if(i == 6 || i == 7 || i == 22 || i == 23 || i == 38 || i == 39 || i == 54 || i == 55) cout<<" \t\t\t \t\t\
t??"<<endl;
if(i == 14 || i == 15 || i == 46 || i == 47) cout<<" \t\t\t \t\t\t \t\t\
t??"<<endl;
if(i == 30 || i == 31) cout<<" \t\t\t \t\t\t \t\t\t \t\t\
t??"<<endl;
}
}
while(winner==-1)
{
cin>>key;
system("clear");
if((key==30 || key==31) && teamsN[30]!=-1 && teamsN[31]!=-1) winner = teamsN[key];
if((key==2 || key==3) && teamsN[2]!=-1 && teamsN[3]!=-1 && teamsN[6] == -1) teamsN[6] = teamsN[key];
if((key==10 || key==11) && teamsN[10]!=-1 && teamsN[11]!=-1 && teamsN[7] == -1) teamsN[7] = teamsN[key];
if((key==6 || key==7) && teamsN[6]!=-1 && teamsN[7]!=-1 && teamsN[14] == -1) teamsN[14] = teamsN[key];
if((key==46 || key==47) && teamsN[46]!=-1 && teamsN[47]!=-1 && teamsN[31] == -1) teamsN[31] = teamsN[key];
if((key==14 || key==15) && teamsN[14]!=-1 && teamsN[15]!=-1 && teamsN[30] == -1) teamsN[30] = teamsN[key];
if((key==18 || key==19) && teamsN[18]!=-1 && teamsN[19]!=-1 && teamsN[22] == -1) teamsN[22] = teamsN[key];
if((key==26 || key==27) && teamsN[26]!=-1 && teamsN[27]!=-1 && teamsN[23] == -1) teamsN[23] = teamsN[key];
if((key==22 || key==23) && teamsN[22]!=-1 && teamsN[23]!=-1 && teamsN[15] == -1) teamsN[15] = teamsN[key];
if((key==38 || key==39) && teamsN[38]!=-1 && teamsN[39]!=-1 && teamsN[46] == -1) teamsN[46] = teamsN[key];
if((key==54 || key==55) && teamsN[54]!=-1 && teamsN[55]!=-1 && teamsN[47] == -1) teamsN[47] = teamsN[key];
if((key==34 || key==35) && teamsN[34]!=-1 && teamsN[35]!=-1 && teamsN[38] == -1)
```

```
teamsN[38] = teamsN[key];
if((key==42 || key==43) && teamsN[42]!=-1 && teamsN[43]!=-1 && teamsN[39] == -1)
teamsN[39] = teamsN[key];
if((key==50 || key==51) && teamsN[50]!=-1 && teamsN[51]!=-1 && teamsN[54] == -1)
teamsN[54] = teamsN[key];
if((key==58 || key==59) && teamsN[58]!=-1 && teamsN[59]!=-1 && teamsN[55] == -1)
teamsN[55] = teamsN[key];
if((key==0 || key==1) && teamsN[2] == -1) teamsN[2] = teamsN[key];
if((key==4 || key==5) && teamsN[3] == -1) teamsN[3] = teamsN[key];
if((key==8 || key==9) && teamsN[10] == -1) teamsN[10] = teamsN[key];
if((key==12 || key==13) && teamsN[11] == -1) teamsN[11] = teamsN[key];
if((key==16 || key==17) && teamsN[18] == -1) teamsN[18] = teamsN[key];
if((key==20 || key==21) && teamsN[19] == -1) teamsN[19] = teamsN[key];
if((key==24 || key==25) && teamsN[26] == -1) teamsN[26] = teamsN[key];
if((key==28 || key==29) && teamsN[27] == -1) teamsN[27] = teamsN[key];
if((key==32 || key==33) && teamsN[34] == -1) teamsN[34] = teamsN[key];
if((key==36 || key==37) && teamsN[35] == -1) teamsN[35] = teamsN[key];
if((key==40 || key==41) && teamsN[42] == -1) teamsN[42] = teamsN[key];
if((key==44 || key==45) && teamsN[43] == -1) teamsN[43] = teamsN[key];
if((key==48 || key==49) && teamsN[50] == -1) teamsN[50] = teamsN[key];
if((key==52 || key==53) && teamsN[51] == -1) teamsN[51] = teamsN[key];
if((key==56 || key==57) && teamsN[58] == -1) teamsN[58] = teamsN[key];
if((key==60 || key==61) && teamsN[59] == -1) teamsN[59] = teamsN[key];
for(int i =0; i<62; i++)
{
if(teamsN[i]!=-1)
{
if(i == 2 || i == 3 || i == 10 || i == 11 || i == 18 || i == 19 || i == 26 || i == 27 || i == 34 || i == 35 || i ==
42 || i == 43 || i == 50 || i == 51 || i == 58 || i == 59) cout<<" \t\t\t"<<i<<")
"<<buffer[teamsN[i]]<<endl;
if(i == 6 || i == 7 || i == 22 || i == 23 || i == 38 || i == 39 || i == 54 || i == 55) cout<<" \t\t\t \t\t\
t"<<i<<") "<<buffer[teamsN[i]]<<endl;
if(i == 14 || i == 15 || i == 46 || i == 47) cout<<" \t\t\t \t\t\t \t\t\t"<<i<<")
"<<buffer[teamsN[i]]<<endl;
if(i == 30 || i == 31) cout<<" \t\t\t \t\t\t \t\t\t \t\t\t"<<i<<")
"<<buffer[teamsN[i]]<<endl;
if(i != 2 && i != 3 && i != 10 && i != 11 && i != 18 && i != 19 && i != 26 && i != 27 && i !=
34 && i != 35 && i != 42 && i != 43 && i != 50 && i != 51 && i != 58 && i != 59 && i != 6
&& i != 7 && i != 22 && i != 23 && i != 38 && i != 39 && i != 54 && i != 55 && i != 14 &&
i != 15 && i != 46 && i != 47 && i != 30 && i != 31) cout<<i<<") "<<buffer[teamsN[i]]<<endl;
}
else
{
if(i == 2 || i == 3 || i == 10 || i == 11 || i == 18 || i == 19 || i == 26 || i == 27 || i == 34 || i == 35 || i ==
```

```
42 || i == 43 || i == 50 || i == 51 || i == 58 || i == 59) cout<<" \t\t\t??"<<endl;
if(i == 6 || i == 7 || i == 22 || i == 23 || i == 38 || i == 39 || i == 54 || i == 55) cout<<" \t\t\t \t\t\
t??"<<endl;
if(i == 14 || i == 15 || i == 46 || i == 47) cout<<" \t\t\t \t\t\t \t\t\
t??"<<endl;
if(i == 30 || i == 31) cout<<" \t\t\t \t\t\t \t\t\t \t\t\
t??"<<endl;
}
}
}
cout<<endl<<"Winner: "<<buffer[winner]<<endl;
return 0;
}
```