#include <iostream>

#include <fstream>

#include<iomanip>

#include <stdio.h>

#include <stdlib.h>

#include <time.h>

using namespace std;

class I\_print{

public:

char arr[9];

virtual void board()=0;

};

class Player{

private:

char a;

public:

Player(){

a=' ';

}

char getSign(){

return a;

}

void setSign(char d){

a = d;

}

Player(char sign){

a = sign;

}

};

class Environment:public I\_print{

public:

Environment(){

arr[1] ='1';

arr[2] ='2';

arr[3] ='3';

arr[4] ='4';

arr[5] ='5';

arr[6] ='6';

arr[7] ='7';

arr[8] ='8';

arr[9] ='9';

}

void board() override {

cout <<" | | " << endl;

cout << " " << arr[1] << " | " << arr[2] << " | " << arr[3] << endl;

cout << "\_\_|\_|\_\_" << endl;

cout << " | | " << endl;

cout << " " << arr[4] << " | " << arr[5] << " | " << arr[6] << endl;

cout << "\_\_|\_|\_\_" << endl;

cout << " | | " << endl;

cout << " " << arr[7] << " | " << arr[8] << " | " << arr[9] << endl;

cout << " | | " << endl << endl;

}

void track(int n,Player &man){

arr[n] = man.getSign();

}

// int check(){

// //FIRST CASE

// if((arr[1]==arr[2]&&arr[2]==arr[3])||(arr[4]==arr[5]&&arr[5]==arr[6])||(arr[7]==arr[8]&&arr[8]==arr[9])){

// if(arr[1]=='X'||arr[5]=='X'||arr[8]=='X'){

//// cout<<"First player has won!!!"<<endl;

// return 0;

// }

// else{

//// cout<<"Second player has won!!!"<<endl;

// return 0;

// }

// }

// //SECOND CASE

// if((arr[1]==arr[4]&&arr[4]==arr[7])||(arr[2]==arr[5]&&arr[5]==arr[8])||(arr[3]==arr[6]&&arr[6]==arr[9])){

// if(arr[1]=='X'||arr[5]=='X'||arr[6]=='X'){

//// cout<<"First player has won!!!"<<endl;

// return 0;

// }

// else{

//// cout<<"Second player has won!!!"<<endl;

// return 0;

// }

// }

//

// //THIRD CASE

//

// if((arr[1]==arr[5]&&arr[5]==arr[9])||(arr[3]==arr[5]&&arr[5]==arr[7])){

// if(arr[1]=='X'||arr[3]=='X'){

//// cout<<"First player has won!!!"<<endl;

// return 0;

// }

// else{

//// cout<<"Second player has won!!!"<<endl;

// return 0;

// }

// }

// bool check = true;

// for(int i = 1;i<=9;i++){

// if(arr[i]!='X'&&arr[i]!='O'){

// check = false;

// }

// }

// if(check){

//// cout<<"GAME is finished. Nobody has won"<<endl;

// return 0;

// }

// return 2;

// }

};

int PLay(Environment &board,Player &first,Player &second){

// if(board.check()==0){

// return 0;

// }

first.setSign('X');

second.setSign('O');

cout<<"First player choose your cell:"<<endl;

bool m = true;

do{

int n;

cin>>n;

if(board.arr[n]=='X'||board.arr[n]=='O') {

cout << "You can not choose this cell" << endl;

m = false;

}

else {

m = true;

board.track(n,first);

}

}while (m == false);

board.board();

if((board.arr[1]==board.arr[2]&&board.arr[2]==board.arr[3])||(board.arr[4]==board.arr[5]&&board.arr[5]==board.arr[6])||(board.arr[7]==board.arr[8]&&board.arr[8]==board.arr[9])){

if(board.arr[1]=='X'||board.arr[5]=='X'||board.arr[8]=='X'){

cout<<"First player has won!!!"<<endl;

return 0;

}

else{

cout<<"Second player has won!!!"<<endl;

return 0;

}

}

//SECOND CASE

if((board.arr[1]==board.arr[4]&&board.arr[4]==board.arr[7])||(board.arr[2]==board.arr[5]&&board.arr[5]==board.arr[8])||(board.arr[3]==board.arr[6]&&board.arr[6]==board.arr[9])){

if(board.arr[1]=='X'||board.arr[5]=='X'||board.arr[6]=='X'){

cout<<"First player has won!!!"<<endl;

return 0;

}

else{

cout<<"Second player has won!!!"<<endl;

return 0;

}

}

//THIRD CASE

if((board.arr[1]==board.arr[5]&&board.arr[5]==board.arr[9])||(board.arr[3]==board.arr[5]&&board.arr[5]==board.arr[7])){

if(board.arr[1]=='X'||board.arr[3]=='X'){

cout<<"First player has won!!!"<<endl;

return 0;

}

else{

cout<<"Second player has won!!!"<<endl;

return 0;

}

}

bool check = true;

for(int i = 1;i<=9;i++){

if(board.arr[i]!='X'&&board.arr[i]!='O'){

check = false;

}

}

if(check){

cout<<"GAME is finished. Nobody has won"<<endl;

return 0;

}

cout<<"Second player choose your cell:"<<endl;

bool nSecond = true;

do{

int n;

cin>>n;

if(board.arr[n]=='X'||board.arr[n]=='O') {

cout << "You can not choose this cell" << endl;

nSecond = false;

}

else {

nSecond = true;

board.track(n,second);

}

}while (nSecond == false);

board.board();

if((board.arr[1]==board.arr[2]&&board.arr[2]==board.arr[3])||(board.arr[4]==board.arr[5]&&board.arr[5]==board.arr[6])||(board.arr[7]==board.arr[8]&&board.arr[8]==board.arr[9])){

if(board.arr[1]=='X'||board.arr[5]=='X'||board.arr[8]=='X'){

cout<<"First player has won!!!"<<endl;

return 0;

}

else{

cout<<"Second player has won!!!"<<endl;

return 0;

}

}

//SECOND CASE

if((board.arr[1]==board.arr[4]&&board.arr[4]==board.arr[7])||(board.arr[2]==board.arr[5]&&board.arr[5]==board.arr[8])||(board.arr[3]==board.arr[6]&&board.arr[6]==board.arr[9])){

if(board.arr[1]=='X'||board.arr[5]=='X'||board.arr[6]=='X'){

cout<<"First player has won!!!"<<endl;

return 0;

}

else{

cout<<"Second player has won!!!"<<endl;

return 0;

}

}

//THIRD CASE

if((board.arr[1]==board.arr[5]&&board.arr[5]==board.arr[9])||(board.arr[3]==board.arr[5]&&board.arr[5]==board.arr[7])){

if(board.arr[1]=='X'||board.arr[3]=='X'){

cout<<"First player has won!!!"<<endl;

return 0;

}

else{

cout<<"Second player has won!!!"<<endl;

return 0;

}

}

bool ccheck = true;

for(int i = 1;i<=9;i++){

if(board.arr[i]!='X'&&board.arr[i]!='O'){

ccheck = false;

}

}

if(ccheck){

cout<<"GAME is finished. Nobody has won"<<endl;

return 0;

}

return PLay(board, first, second);

}

//END FUNCTION

int BotPlay(Environment &board,Player &first){

if(first.getSign()=='X'){

cout<<"First player choose your cell:"<<endl;

bool m = true;

do{

int n;

cin>>n;

if(board.arr[n]=='X'||board.arr[n]=='O') {

cout << "You can not choose this cell" << endl;

m = false;

}

else {

m = true;

board.track(n,first);

}

}while (m == false);

board.board();

}

else{

Player second;

second.setSign('X');

cout<<"Bot will choose cell:"<<endl;

bool nSecond = true;

do{

int n ;

for(int i=1;i<=9;i++){

if(board.arr[i]!='X'&&board.arr[i]!='O'){

n=i;

break;

}

}

if(board.arr[n]=='X'||board.arr[n]=='O') {

nSecond = false;

}

else {

nSecond = true;

board.track(n,second);

}

}while (nSecond == false);

board.board();

}

//FIRST CASE

if((board.arr[1]==board.arr[2]&&board.arr[2]==board.arr[3])||(board.arr[4]==board.arr[5]&&board.arr[5]==board.arr[6])||(board.arr[7]==board.arr[8]&&board.arr[8]==board.arr[9])){

if(board.arr[1]==first.getSign()||board.arr[5]==first.getSign()||board.arr[8]==first.getSign()){

cout<<" Player has won!!!"<<endl;

return 0;

}

else{

cout<<"Bot has won!!!"<<endl;

return 0;

}

}

//SECOND CASE

if((board.arr[1]==board.arr[4]&&board.arr[4]==board.arr[7])||(board.arr[2]==board.arr[5]&&board.arr[5]==board.arr[8])||(board.arr[3]==board.arr[6]&&board.arr[6]==board.arr[9])){

if(board.arr[1]==first.getSign()||board.arr[5]==first.getSign()||board.arr[6]==first.getSign()){

cout<<"Player has won!!!"<<endl;

return 0;

}

else{

cout<<"Bot has won!!!"<<endl;

return 0;

}

}

//THIRD CASE

if((board.arr[1]==board.arr[5]&&board.arr[5]==board.arr[9])||(board.arr[3]==board.arr[5]&&board.arr[5]==board.arr[7])){

if(board.arr[1]==first.getSign()||board.arr[3]==first.getSign()){

cout<<"Player has won!!!"<<endl;

return 0;

}

else{

cout<<"Bot has won!!!"<<endl;

return 0;

}

}

bool ccheck = true;

for(int i = 1;i<=9;i++){

if(board.arr[i]!='X'&&board.arr[i]!='O'){

ccheck = false;

}

}

if(ccheck){

cout<<"GAME is finished. Nobody has won"<<endl;

return 0;

}//END CASES

if(first.getSign()=='X'){

Player second;

second.setSign('O');

cout<<"Bot will choose cell:"<<endl;

bool nSecond = true;

do{

int n ;

for(int i=1;i<=9;i++){

if(board.arr[i]!='X'&&board.arr[i]!='O'){

n=i;

break;

}

}

if(board.arr[n]=='X'||board.arr[n]=='O') {

nSecond = false;

}

else {

nSecond = true;

board.track(n,second);

}

}while (nSecond == false);

board.board();

}

else{

cout<<"Second player choose your cell:"<<endl;

bool m = true;

do{

int n;

cin>>n;

if(board.arr[n]=='X'||board.arr[n]=='O') {

cout << "You can not choose this cell" << endl;

m = false;

}

else {

m = true;

board.track(n,first);

}

}while (m == false);

board.board();

}

//FIRST CASE

if((board.arr[1]==board.arr[2]&&board.arr[2]==board.arr[3])||(board.arr[4]==board.arr[5]&&board.arr[5]==board.arr[6])||(board.arr[7]==board.arr[8]&&board.arr[8]==board.arr[9])){

if(board.arr[1]==first.getSign()||board.arr[5]==first.getSign()||board.arr[8]==first.getSign()){

cout<<" Player has won!!!"<<endl;

return 0;

}

else{

cout<<"Bot has won!!!"<<endl;

return 0;

}

}

//SECOND CASE

if((board.arr[1]==board.arr[4]&&board.arr[4]==board.arr[7])||(board.arr[2]==board.arr[5]&&board.arr[5]==board.arr[8])||(board.arr[3]==board.arr[6]&&board.arr[6]==board.arr[9])){

if(board.arr[1]==first.getSign()||board.arr[5]==first.getSign()||board.arr[6]==first.getSign()){

cout<<"Player has won!!!"<<endl;

return 0;

}

else{

cout<<"Bot has won!!!"<<endl;

return 0;

}

}

//THIRD CASE

if((board.arr[1]==board.arr[5]&&board.arr[5]==board.arr[9])||(board.arr[3]==board.arr[5]&&board.arr[5]==board.arr[7])){

if(board.arr[1]==first.getSign()||board.arr[3]==first.getSign()){

cout<<"Player has won!!!"<<endl;

return 0;

}

else{

cout<<"Bot has won!!!"<<endl;

return 0;

}

}

bool cdcheck = true;

for(int i = 1;i<=9;i++){

if(board.arr[i]!='X'&&board.arr[i]!='O'){

cdcheck = false;

}

}

if(cdcheck){

cout<<"GAME is finished. Nobody has won"<<endl;

return 0;

}//END CASES

return BotPlay(board,first);

}

int main() {

Environment game;

string s;

cout<<"Bot mode or Normal mode (two players):"<<endl;

cin>>s;

if(s=="Normal") {

game.board();

Player first;

Player second;

PLay(game, first, second);

}

if(s=="Bot"){

Player first;

cout<<"X or O:"<<endl;

char f;

cin>>f;

first.setSign(f);

BotPlay(game,first);

}

return 0;

}