#include <stdio.h>

#include <stdlib.h>

#include <stdbool.h>

#include <time.h>

const char bot='O',human='X'; int moves=0;

void displayGame(char tic[3][3]){

printf(" 1 2 3 \n");

printf(" |-----------|\n");

printf("1 | %c | %c | %c |\n",tic[0][0],tic[0][1],tic[0][2]);

printf(" |---+---+---|\n");

printf("2 | %c | %c | %c |\n",tic[1][0],tic[1][1],tic[1][2]);

printf(" |---+---+---|\n");

printf("3 | %c | %c | %c |\n",tic[2][0],tic[2][1],tic[2][2]);

printf(" |-----------|\n\n");

return;

}

void userInput(char tic[3][3]){

int x,y;

a\_case:{

displayGame(tic);

printf("x represents row and y represents column\n");

printf("Give Input coordinates (x,y) : ");

scanf("%d,%d",&x,&y);

getchar();

if((x-1>2)||(y-1>2)||(x-1<0)||(y-1<0)){

printf("Illegal Input given: Program Terminated");

exit(1);

}

}

if(tic[x-1][y-1]!=' '){

printf("Already Occupied! please Try Again..\n");

goto a\_case;

}

else{

tic[x-1][y-1]=human;++moves;

displayGame(tic);

}

return;

}

bool winConditions(char tic[3][3],char play){

if (

(tic[0][0] == play && tic[0][1] == play && tic[0][2] == play) ||

(tic[1][0] == play && tic[1][1] == play && tic[1][2] == play) ||

(tic[2][0] == play && tic[2][1] == play && tic[2][2] == play) ||

(tic[0][0] == play && tic[1][0] == play && tic[2][0] == play) ||

(tic[0][1] == play && tic[1][1] == play && tic[2][1] == play) ||

(tic[0][2] == play && tic[1][2] == play && tic[2][2] == play) ||

(tic[0][0] == play && tic[1][1] == play && tic[2][2] == play) ||

(tic[0][2] == play && tic[1][1] == play && tic[2][0] == play)

) return true;

else return false;

}

bool BlockWin(char tic[3][3]){

if((tic[0][0]==tic[0][1])&&tic[0][2]==' '&&tic[0][0]==bot){

tic[0][2]=bot;++moves;return true;

}else

if((tic[0][1]==tic[0][2])&&tic[0][0]==' '&&tic[0][1]==bot){

tic[0][0]=bot;++moves;return true;

}else

if((tic[0][0]==tic[0][2])&&tic[0][1]==' '&&tic[0][0]==bot){

tic[0][1]=bot;++moves;return true;

}else

if((tic[1][0]==tic[1][1])&&tic[1][2]==' '&&tic[1][0]==bot){

tic[1][2]=bot;++moves;return true;

}else

if((tic[1][1]==tic[1][2])&&tic[1][0]==' '&&tic[1][1]==bot){

tic[1][0]=bot;++moves;return true;

}else

if((tic[1][0]==tic[1][2])&&tic[1][1]==' '&&tic[1][0]==bot){

tic[1][1]=bot;++moves;return true;

}else

if((tic[2][0]==tic[2][1])&&tic[2][2]==' '&&tic[2][0]==bot){

tic[2][2]=bot;++moves;return true;

}else

if((tic[2][1]==tic[2][2])&&tic[2][0]==' '&&tic[2][1]==bot){

tic[2][0]=bot;++moves;return true;

}else

if((tic[2][0]==tic[2][2])&&tic[2][1]==' '&&tic[2][0]==bot){

tic[2][1]=bot;++moves;return true;

}else

if((tic[0][0]==tic[1][0])&&tic[2][0]==' '&&tic[0][0]==bot){

tic[2][0]=bot;++moves;return true;

}else

if((tic[0][0]==tic[2][0])&&tic[1][0]==' '&&tic[0][0]==bot){

tic[1][0]=bot;++moves;return true;

}else

if((tic[1][0]==tic[2][0])&&tic[0][0]==' '&&tic[1][0]==bot){

tic[0][0]=bot;++moves;return true;

}else

if((tic[0][1]==tic[1][1])&&tic[2][1]==' '&&tic[0][1]==bot){

tic[2][1]=bot;++moves;return true;

}else

if((tic[0][1]==tic[2][1])&&tic[1][1]==' '&&tic[0][1]==bot){

tic[1][1]=bot;++moves;return true;

}else

if((tic[1][1]==tic[2][1])&&tic[0][1]==' '&&tic[1][1]==bot){

tic[0][1]=bot;++moves;return true;

}else

if((tic[0][2]==tic[1][2])&&tic[2][2]==' '&&tic[0][2]==bot){

tic[2][2]=bot;++moves;return true;

}else

if((tic[0][2]==tic[2][2])&&tic[1][2]==' '&&tic[0][2]==bot){

tic[1][2]=bot;++moves;return true;

}else

if((tic[1][2]==tic[2][2])&&tic[0][2]==' '&&tic[1][2]==bot){

tic[0][2]=bot;++moves;return true;

}else

if((tic[0][0]==tic[1][1])&&tic[2][2]==' '&&tic[0][0]==bot){

tic[2][2]=bot;++moves;return true;

}else

if((tic[0][0]==tic[2][2])&&tic[1][1]==' '&&tic[0][0]==bot){

tic[1][1]=bot;++moves;return true;

}else

if((tic[1][1]==tic[2][2])&&tic[0][0]==' '&&tic[1][1]==bot){

tic[0][0]=bot;++moves;return true;

}else

if((tic[0][2]==tic[1][1])&&tic[2][0]==' '&&tic[1][1]==bot){

tic[2][0]=bot;++moves;return true;

}else

if((tic[2][0]==tic[0][2])&&tic[1][1]==' '&&tic[2][0]==bot){

tic[1][1]=bot;++moves;return true;

}else

if((tic[2][0]==tic[1][1])&&tic[0][2]==' '&&tic[2][0]==bot){

tic[0][2]=bot;++moves;return true;

}else

if((tic[0][0]==tic[0][1])&&tic[0][2]==' '&&tic[0][0]==human){

tic[0][2]=bot;++moves;return true;

}else

if((tic[0][1]==tic[0][2])&&tic[0][0]==' '&&tic[0][1]==human){

tic[0][0]=bot;++moves;return true;

}else

if((tic[0][0]==tic[0][2])&&tic[0][1]==' '&&tic[0][0]==human){

tic[0][1]=bot;++moves;return true;

}else

if((tic[1][0]==tic[1][1])&&tic[1][2]==' '&&tic[1][0]==human){

tic[1][2]=bot;++moves;return true;

}else

if((tic[1][1]==tic[1][2])&&tic[1][0]==' '&&tic[1][1]==human){

tic[1][0]=bot;++moves;return true;

}else

if((tic[1][0]==tic[1][2])&&tic[1][1]==' '&&tic[1][0]==human){

tic[1][1]=bot;++moves;return true;

}else

if((tic[2][0]==tic[2][1])&&tic[2][2]==' '&&tic[2][0]==human){

tic[2][2]=bot;++moves;return true;

}else

if((tic[2][1]==tic[2][2])&&tic[2][0]==' '&&tic[2][1]==human){

tic[2][0]=bot;++moves;return true;

}else

if((tic[2][0]==tic[2][2])&&tic[2][1]==' '&&tic[2][0]==human){

tic[2][1]=bot;++moves;return true;

}else

if((tic[0][0]==tic[1][0])&&tic[2][0]==' '&&tic[0][0]==human){

tic[2][0]=bot;++moves;return true;

}else

if((tic[0][0]==tic[2][0])&&tic[1][0]==' '&&tic[0][0]==human){

tic[1][0]=bot;++moves;return true;

}else

if((tic[1][0]==tic[2][0])&&tic[0][0]==' '&&tic[1][0]==human){

tic[0][0]=bot;++moves;return true;

}else

if((tic[0][1]==tic[1][1])&&tic[2][1]==' '&&tic[0][1]==human){

tic[2][1]=bot;++moves;return true;

}else

if((tic[0][1]==tic[2][1])&&tic[1][1]==' '&&tic[0][1]==human){

tic[1][1]=bot;++moves;return true;

}else

if((tic[1][1]==tic[2][1])&&tic[0][1]==' '&&tic[1][1]==human){

tic[0][1]=bot;++moves;return true;

}else

if((tic[0][2]==tic[1][2])&&tic[2][2]==' '&&tic[0][2]==human){

tic[2][2]=bot;++moves;return true;

}else

if((tic[0][2]==tic[2][2])&&tic[1][2]==' '&&tic[0][2]==human){

tic[1][2]=bot;++moves;return true;

}else

if((tic[1][2]==tic[2][2])&&tic[0][2]==' '&&tic[1][2]==human){

tic[0][2]=bot;++moves;return true;

}else

if((tic[0][0]==tic[1][1])&&tic[2][2]==' '&&tic[0][0]==human){

tic[2][2]=bot;++moves;return true;

}else

if((tic[0][0]==tic[2][2])&&tic[1][1]==' '&&tic[0][0]==human){

tic[1][1]=bot;++moves;return true;

}else

if((tic[1][1]==tic[2][2])&&tic[0][0]==' '&&tic[1][1]==human){

tic[0][0]=bot;++moves;return true;

}else

if((tic[0][2]==tic[1][1])&&tic[2][0]==' '&&tic[1][1]==human){

tic[2][0]=bot;++moves;return true;

}else

if((tic[2][0]==tic[0][2])&&tic[1][1]==' '&&tic[2][0]==human){

tic[1][1]=bot;++moves;return true;

}else

if((tic[2][0]==tic[1][1])&&tic[0][2]==' '&&tic[2][0]==human){

tic[0][2]=bot;++moves;return true;

}else

return false;

}

void BotFirstMoveFour(char tic[3][3]){

int q=moves;

if(moves==q&&tic[0][0]==bot&&tic[0][2]==bot&&tic[1][1]==' '&&((tic[2][2]==' '&&tic[1][2]==' ')||(tic[2][0]==' '&&tic[1][0]==' '))){

tic[1][1]=bot;++moves;

}else

if(moves==q&&tic[0][0]==bot&&tic[2][0]==bot&&tic[1][1]==' '&&((tic[0][2]==' '&&tic[2][2]==' ')||(tic[2][2]==' '&&tic[2][1]==' '))){

tic[1][1]=bot;++moves;

}else

if(moves==q&&tic[0][0]==bot&&tic[2][2]==bot&&tic[1][0]==' '&&tic[2][1]==' '&&tic[2][0]==' '){

tic[2][0]=bot;++moves;

}else

if(moves==q&&tic[0][0]==bot&&tic[2][2]==bot&&tic[0][2]==' '&&tic[0][1]==' '&&tic[1][2]==' '){

tic[0][2]=bot;++moves;

}else

if(moves==q&&tic[2][2]==bot&&tic[2][0]==bot&&tic[1][1]==' '&&((tic[0][2]==' '&&tic[1][2]==' ')||(tic[0][0]==' '&&tic[1][0]==' '))){

tic[1][1]=bot;++moves;

}else

if(moves==q&&tic[2][2]==bot&&tic[0][2]==bot&&tic[1][1]==' '&&((tic[0][0]==' '&&tic[0][1]==' ')||(tic[2][1]==' '&&tic[2][0]==' '))){

tic[1][1]=bot;++moves;

}else

if(moves==q&&tic[2][0]==bot&&tic[0][2]==bot&&tic[2][2]==' '&&tic[2][1]==' '&&tic[1][2]==' '){

tic[2][2]=bot;++moves;

}else

if(moves==q&&tic[2][0]==bot&&tic[0][2]==bot&&tic[0][0]==' '&&tic[0][1]==' '&&tic[1][0]==' '){

tic[0][0]=bot;++moves;

}else{

for(int d=0;d<3;d++){

for(int o=0;o<3;o++){

if(tic[d][o]==' '){

tic[d][o]=bot;++moves;return;}}}

}

}

void BotMoveFirst(char tic[3][3]){

if(moves==0){

srand(time(NULL));

int q= rand()%4+1;

if(q==1) tic[0][0]=bot;

else if(q==2) tic[0][2]=bot;

else if(q==3) tic[2][0]=bot;

else if(q==4) tic[2][2]=bot;

++moves;return;

}

if(moves==2){

if(tic[1][1]==human){

srand(time(NULL));

int q=rand()%2+1;

if(q==1&&moves==2&&tic[0][0]==bot) {tic[2][2]=bot;++moves;}

if(q==1&&moves==2&&tic[0][2]==bot) {tic[2][0]=bot;++moves;}

if(q==1&&moves==2&&tic[2][0]==bot) {tic[0][2]=bot;++moves;}

if(q==1&&moves==2&&tic[2][2]==bot) {tic[0][0]=bot;++moves;}

if(q==2&&moves==2&&(tic[0][0]==bot||tic[2][0]==bot)) {tic[1][2]=bot;++moves;}

if(q==2&&moves==2&&(tic[0][2]==bot||tic[2][2]==bot)) {tic[1][0]=bot;++moves;}

}

else {

if(tic[0][0]==bot){

if(moves==2&&tic[0][1]==' '&&tic[0][2]==' '){tic[0][2]=bot;++moves;}

if(moves==2&&tic[1][0]==' '&&tic[2][0]==' '){tic[2][0]=bot;++moves;}

if(moves==2&&tic[2][2]==' '){tic[2][2]=bot;++moves;}

}else

if(tic[0][2]==bot){

if(moves==2&&tic[0][1]==' '&&tic[0][0]==' '){tic[0][0]=bot;++moves;}

if(moves==2&&tic[2][0]==' '){tic[2][0]=bot;++moves;}

if(moves==2&&tic[1][2]==' '&&tic[2][2]==' '){tic[2][2]=bot;++moves;}

}else

if(tic[2][0]==bot){

if(moves==2&&tic[0][2]==' '){tic[0][2]=bot;++moves;}

if(moves==2&&tic[0][0]==' '&&tic[1][0]==' '){tic[0][0]=bot;++moves;}

if(moves==2&&tic[2][2]==' '&&tic[2][1]==' '){tic[2][2]=bot;++moves;}

}else

if(tic[2][2]==bot){

if(moves==2&&tic[2][1]==' '&&tic[2][0]==' '){tic[2][0]=bot;++moves;}

if(moves==2&&tic[1][2]==' '&&tic[0][2]==' '){tic[0][2]=bot;++moves;}

if(moves==2&&tic[0][0]==' '){tic[0][0]=bot;++moves;}

}

return;

}

}

if(moves==4){

int x=BlockWin(tic);

if(x==false) BotFirstMoveFour(tic);

return;

}

if(moves==6) {int zx=BlockWin(tic);

if(zx==false){

for(int a=0;a<3;a++){

for(int y=0;y<3;y++){

if(tic[a][y]==' '){

tic[a][y]=bot;++moves;return;

}

}

}

}

}

}

bool casecheck=false;

void BotMoveSecond(char tic[3][3]){

if(moves==1){

if(tic[1][1]!=human){

tic[1][1]=bot;++moves;

}

else{

srand(time(NULL));

int z= rand()%4+1;

if(z==1) tic[0][0]=bot;

else if(z==2) tic[0][2]=bot;

else if(z==3) tic[2][0]=bot;

else if(z==4) tic[2][2]=bot;

++moves;return;

}

}

if(moves==3){

int q=BlockWin(tic);

if(q==false&&tic[1][1]==bot){

if((tic[0][1]==human&&tic[2][1]==human)||(tic[1][0]==human&&tic[1][2]==human)){

srand(time(NULL));

int e= rand()%4+1;

if(e==1) tic[0][0]=bot;

else if(e==2) tic[0][2]=bot;

else if(e==3) tic[2][0]=bot;

else if(e==4) tic[2][2]=bot;

casecheck=true;++moves;return;

}

}else

if(q==false){

if(tic[1][1]==bot){

if(tic[0][1]==' '){

tic[0][1]=bot;++moves;return;

}

if(tic[2][1]==' '){

tic[2][1]=bot;++moves;return;

}

if(tic[1][0]==' '){

tic[1][0]=bot;++moves;return;

}

if(tic[1][2]==' '){

tic[1][2]=bot;++moves;return;

}

}

}

}

if(moves==3){

if(tic[1][1]==human){

srand(time(NULL));

int g=rand()%2+1;

if((tic[0][0]==human&&tic[2][2]==bot)||(tic[2][2]==human&&tic[0][0]==bot)){

if(g==1){tic[2][0]=bot;++moves;return;}

if(g==2){tic[0][2]=bot;++moves;return;}

}

if((tic[2][0]==human&&tic[0][2]==bot)||(tic[0][2]==human&&tic[2][0]==bot)){

if(g==1){tic[2][2]=bot;++moves;return;}

if(g==2){tic[0][0]=bot;++moves;return;}

}

}

}

if(moves==3){

if(tic[1][1]==bot){

if(tic[0][0]==human&&tic[2][2]==' '&&tic[0][2]==' '&&tic[2][0]==' '){tic[2][2]=bot;++moves;return;}

if(tic[2][2]==human&&tic[0][0]==' '&&tic[0][2]==' '&&tic[2][0]==' '){tic[0][0]=bot;++moves;return;}

if(tic[2][0]==human&&tic[0][2]==' '&&tic[0][0]==' '&&tic[2][2]==' '){tic[0][2]=bot;++moves;return;}

if(tic[0][2]==human&&tic[2][0]==' '&&tic[0][0]==' '&&tic[2][2]==' '){tic[2][0]=bot;++moves;return;}

}

}

if(moves==3&&tic[1][1]==bot){

srand(time(NULL));

int gi=rand()%2+1;

if(tic[0][0]==human&&tic[2][2]==human){

if(gi==1){tic[0][1]=bot;++moves;return;}

if(gi==2){tic[2][1]=bot;++moves;return;}

}

if(tic[2][0]==human&&tic[0][2]==human){

if(gi==1){tic[1][0]=bot;++moves;return;}

if(gi==2){tic[1][2]=bot;++moves;return;}

}

}

if(moves==5){

if(casecheck==true){

for(int j=0;j<3;j++){

if(tic[0][j]==human&&tic[1][j]==human&&tic[2][j]==' '){

tic[2][j]=bot;++moves;return;

}

if(tic[1][j]==human&&tic[2][j]==human&&tic[0][j]==' '){

tic[0][j]=bot;++moves;return;

}

if(tic[j][0]==human&&tic[j][1]==human&&tic[j][2]==' '){

tic[j][2]=bot;++moves;return;

}

if(tic[j][2]==human&&tic[j][1]==human&&tic[j][0]==' '){

tic[j][0]=bot;++moves;return;

}

}

}

else

if(BlockWin(tic)==false){

for(int d=0;d<3;d++){

for(int o=0;o<3;o++){

if(tic[d][o]==' '){

tic[d][o]=bot;++moves;return;}}}

}

}

if(moves==7){

int bw=BlockWin(tic);

if(bw==false){

for(int d=0;d<3;d++){

for(int o=0;o<3;o++){

if(tic[d][o]==' '){

tic[d][o]=bot;++moves;return;

}

}

}

}

}

}

int main(void){

char tic[3][3],q;int h,b;

for(int w=0;w<3;w++){for(int e=0;e<3;e++)tic[w][e]=' ';}

while(1){

printf("Player - X Computer - O\n");

printf("y - yes , n - no ; Enter y or n.\n");

scanf("%c",&q);

getchar();

if((q=='y')||(q=='n'))break;

if((q!='y')||(q!='n'))printf("Illegal Input \n");

}

if(q=='y'){

while(1){

userInput(tic);

h=winConditions(tic,human);

b=winConditions(tic,bot);

if(h==true) {printf("\nYou Won\n");break;}

if(b==true) {printf("\nComputer Won\n");break;}

if(moves==8) {printf("\nIt is a Draw\n");break;}

BotMoveSecond(tic);

h=winConditions(tic,human);

b=winConditions(tic,bot);

if(h==true) {printf("\nYou Won\n");break;}

if(b==true) {printf("\nComputer Won\n");break;}

if(moves==8) {printf("\nIt is a Draw\n");break;}

}

}

if(q=='n'){

while(1){

BotMoveFirst(tic);

h=winConditions(tic,human);

b=winConditions(tic,bot);

if(h==true) {printf("\nYou Won\n");break;}

if(b==true) {printf("\nComputer Won\n");break;}

if(moves==8) {printf("\nIt is a Draw\n");break;}

userInput(tic);

h=winConditions(tic,human);

b=winConditions(tic,bot);

if(h==true) {printf("\nYou Won\n");break;}

if(b==true) {printf("\nComputer Won\n");break;}

if(moves==8) {printf("\nIt is a Draw\n");break;}

}

}

return 0;

}