'''

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Write a C++ program to implement the game Tic Tac Toe. Apply the concept of

polymorphism.

'''

#include <iostream>

#include <stdlib.h>

using namespace std;

char board[3][3] = {{'1','2','3'},{'4','5','6'},{'7','8','9'}};

int choice;

int row,column;

char turn = 'X';

bool draw = false;

void display\_board()

{

cout<<"PLAYER - 1 [X]\t PLAYER - 2 [O]\n\n";

// cout<<"\t\t | | \n";

cout<<"\t\t "<<board[0][0]<<" | "<<board[0][1]<<" | "<<board[0][2]<<" \n";

// cout<<"\t\t | | \n";

// cout<<"\t\t | | \n";

cout<<"\t\t "<<board[1][0]<<" | "<<board[1][1]<<" | "<<board[1][2]<<" \n";

// cout<<"\t\t | | \n";

// cout<<"\t\t | | \n";

cout<<"\t\t "<<board[2][0]<<" | "<<board[2][1]<<" | "<<board[2][2]<<" \n";

// cout<<"\t\t | | \n";

}

void player\_turn()

{

if(turn == 'X')

{

cout<<"\n\tPlayer - 1 [X] turn : ";

}

else if(turn == 'O')

{

cout<<"\n\tPlayer - 2 [O] turn : ";

}

cin>> choice;

switch(choice)

{

case 1: row=0; column=0; break;

case 2: row=0; column=1; break;

case 3: row=0; column=2; break;

case 4: row=1; column=0; break;

case 5: row=1; column=1; break;

case 6: row=1; column=2; break;

case 7: row=2; column=0; break;

case 8: row=2; column=1; break;

case 9: row=2; column=2; break;

default:

cout<<"Invalid Move";

}

if(turn == 'X' && board[row][column] != 'X' && board[row][column] != 'O')

{

board[row][column] = 'X';

turn = 'O';

}

else if(turn == 'O' && board[row][column] != 'X' && board[row][column] != 'O')

{

board[row][column] = 'O';

turn = 'X';

}

else

{

cout<<"Box already filled!\n Please choose another!!\n\n";

player\_turn();

}

display\_board();

}

bool gameover()

{

for(int i=0; i<3; i++)

{

if (board[i][0] == board[i][1] && board[i][0] == board[i][2] || board[0][i]

== board[1][i]

&& board[0][i] == board[2][i])

{

return false;

}

if(board[0][0] == board[1][1] && board[0][0] == board[2][2] || board[0][2]

== board[1][1]

&& board[0][2] == board[2][0])

{

return false;

}

}

for(int i=0; i<3; i++)

{

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

{

if(board[i][j] != 'X' && board[i][j] != 'O')

{

return true;

}

draw = true;

return false;

}

}

}

//Main

int main()

{

cout<<"\t\t\tT I C -- T A C -- T O E -- G A M E\t\t\t";

cout<<"\n\t\t\t\tFOR 2 PLAYERS\n\t\t\t";

while(gameover())

{

display\_board();

player\_turn();

gameover();

}

if(turn == 'X' && draw == false)

{

cout<<"\n\nCongratulations!Player with 'O' has won the game";

}

else if(turn == 'O' && draw == false)

{

cout<<"\n\nCongratulations!Player with 'X' has won the game"<<endl;

}

else

{

cout<<"\n\nGAME DRAW!!!\n\n";

}

return 0;

}