

```

win(Board, Player) :- row_win(Board, Player);
col_win(Board, Player);
diagwin(Board, Player).

row_win(Board, Player) :- Board = [Player,Player,Player,_,_,_,_,_];
Board = [_,_,_Player,Player,Player,_,_];
Board = [_,_,_,_Player,Player,Player].

col_win(Board, Player) :- Board = [Player,_,_Player,_,_Player,_,_];
Board = [_Player,_,_Player,_,_Player,_,_];
Board = [_,_Player,_,_Player,_,_Player].

diagwin(Board, Player) :- Board = [Player,_,_,_Player,_,_,_Player];
Board = [_,_Player,_,_Player,_,_Player,_,_].

omove([a,B,C,D,E,F,G,H,I], Player, [Player,B,C,D,E,F,G,H,I]).
omove([A,a,C,D,E,F,G,H,I], Player, [A,Player,C,D,E,F,G,H,I]).
omove([A,B,a,D,E,F,G,H,I], Player, [A,B,Player,D,E,F,G,H,I]).
omove([A,B,C,a,E,F,G,H,I], Player, [A,B,C,Player,E,F,G,H,I]).
omove([A,B,C,D,a,F,G,H,I], Player, [A,B,C,D,Player,F,G,H,I]).
omove([A,B,C,D,E,a,G,H,I], Player, [A,B,C,D,E,Player,G,H,I]).
omove([A,B,C,D,E,F,a,H,I], Player, [A,B,C,D,E,F,Player,H,I]).
omove([A,B,C,D,E,F,G,a,I], Player, [A,B,C,D,E,F,G,Player,I]).
omove([A,B,C,D,E,F,G,H,a], Player, [A,B,C,D,E,F,G,H,Player]).

xmove([a,B,C,D,E,F,G,H,I], 1, [x,B,C,D,E,F,G,H,I]).
xmove([A,a,C,D,E,F,G,H,I], 2, [A,x,C,D,E,F,G,H,I]).
xmove([A,B,a,D,E,F,G,H,I], 3, [A,B,x,D,E,F,G,H,I]).
xmove([A,B,C,a,E,F,G,H,I], 4, [A,B,C,x,E,F,G,H,I]).
xmove([A,B,C,D,a,F,G,H,I], 5, [A,B,C,D,x,F,G,H,I]).
xmove([A,B,C,D,E,a,G,H,I], 6, [A,B,C,D,E,x,G,H,I]).
xmove([A,B,C,D,E,F,a,H,I], 7, [A,B,C,D,E,F,x,H,I]).
xmove([A,B,C,D,E,F,G,a,I], 8, [A,B,C,D,E,F,G,x,I]).
xmove([A,B,C,D,E,F,G,H,a], 9, [A,B,C,D,E,F,G,H,x]).

xmove(Board, _ Board) :- write('Illegal Move.'), nl.

disp([A,B,C,D,E,F,G,H,I]) :-

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write([A,B,C]),nl,
write([D,E,F]),nl,
write([G,H,I]),nl,nl.
start :- how_to_play, strt([a,a,a,a,a,a,a,a]).
how_to_play :-
    write('Welcome to Tic Tac Toe Game You are x player, Enter positions followed by a
period. '),
    nl,
    disp([1,2,3,4,5,6,7,8,9]).
strt(Board) :- win(Board, x), write('Congratulation !! You win!').
strt(Board) :- win(Board, o), write('AI win!').
strt(Board) :- read(N),
    xmove(Board, N, NewBoard),
    disp(NewBoard),
    oplay(NewBoard, NewnewBoard),
    disp(NewnewBoard),
    strt(NewnewBoard).
can_x_win(Board) :- omove(Board, x, NewBoard), win(NewBoard, x).
oplay(Board,NewBoard) :-
    omove(Board, o, NewBoard),
    win(NewBoard, o),!.
oplay(Board,NewBoard) :-
    omove(Board, o, NewBoard),
    not(can_x_win(NewBoard)).
oplay(Board,NewBoard) :-
    omove(Board, o, NewBoard).
oplay(Board,NewBoard) :-
    not(member(a,Board)),!,
    write('Game Ended Without Winner!'), nl,
    NewBoard = Board.

```

X win:



SWI-Prolog (AMD64, Multi-threaded, version 8.4.0)

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?-

% c:/users/dell/desktop/tic tac toe/tic tac toe compiled 0.00 sec, -1 clauses

?- start.

Welcome to Tic Tac Toe Game You are x player, Enter positions followed by a period.

[1,2,3]

[4,5,6]

[7,8,9]

|: 5.

[a,a,a]

[a,x,a]

[a,a,a]

[o,a,a]

[a,x,a]

[a,a,a]

|: 9.

[o,a,a]

[a,x,a]

[a,a,x]

[o,o,a]

[a,x,a]

[a,a,x]

|: 3.

[o,o,x]

[a,x,a]

[a,a,x]

[o,o,x]

[o,x,a]

[a,a,x]

|: 7.

[o,o,x]

[o,x,a]

[x,a,x]

[o,o,x]

[o,x,o]

[x,a,x]

Congratulation !! You win!

true .

O Win :

```
SWI-Prolog (AMD64, Multi-threaded, version 8.4.0)
File Edit Settings Run Debug Help

?- start.
Welcome to Tic Tac Toe Game You are x player, Enter positions followed by a period.
[1,2,3]
[4,5,6]
[7,8,9]

|: 1.
[x,a,a]
[a,a,a]
[a,a,a]

[x,o,a]
[a,a,a]
[a,a,a]

|: 4.
[x,o,a]
[x,a,a]
[a,a,a]

[x,o,a]
[x,a,a]
[o,a,a]

|: 9.
[x,o,a]
[x,a,a]
[o,a,x]

[x,o,a]
[x,o,a]
[o,a,x]

|: 8.
[x,o,a]
[x,o,a]
[o,x,x]

[x,o,o]
[x,o,a]
[o,x,x]

AI win!
true
```

Tie :

```
SWI-Prolog (AMD64, Multi-threaded, version 8.4.0)
File Edit Settings Run Debug Help

?- start.
Welcome to Tic Tac Toe Game You are x player, Enter positions followed by a period.
[1,2,3]
[4,5,6]
[7,8,9]

| : 1.
[x,a,a]
[a,a,a]
[a,a,a]

[x,o,a]
[a,a,a]
[a,a,a]

| : 9.
[x,o,a]
[a,a,a]
[a,a,x]

[x,o,a]
[a,o,a]
[a,a,x]

| : 8.
[x,o,a]
[a,o,a]
[a,x,x]

[x,o,a]
[a,o,a]
[o,x,x]

| : 3.
[x,o,x]
[a,o,a]
[o,x,x]

[x,o,x]
[a,o,o]
[o,x,x]

| : 4.
[x,o,x]
```



File Edit Settings Run Debug Help

[x,o,a]

[a,a,a]

[a,a,a]

| : 9.

[x,o,a]

[a,a,a]

[a,a,x]

[x,o,a]

[a,o,a]

[a,a,x]

| : 8.

[x,o,a]

[a,o,a]

[a,x,x]

[x,o,a]

[a,o,a]

[o,x,x]

| : 3.

[x,o,x]

[a,o,a]

[o,x,x]

[x,o,x]

[a,o,o]

[o,x,x]

| : 4.

[x,o,x]

[x,o,o]

[o,x,x]

Game Ended Without Winner!

[x,o,x]

[x,o,o]

[o,x,x]

| :