EE 150 Quiz #3

Due: Oct. 21, 1996 2:45 pm (in class)

Imagine you are creating a tic-tac-toe game. One of the functions you need to write is called `is-this-a-win-state` which returns 1 if the board is a win for X, returns 2 if the board is a win for O, returns -1 if the board is a dead-game with no winner, and returns zero if the board is not a win for anyone (yet, i.e. the board is not filled).

```
p1 | p2 | p3        p1 through p9 are integer values - they have value 0
------------        if the board space is empty, value 1 if the space is
p4 | p5 | p6        filled with an ``X'' and value 2 if the space is filled
------------        with a ``O''.
p7 | p8 | p9
```

Given the following skeleton for the function, give an implementation using ANDs (&&) and ORs (||) of each of the conditions 1 thru 3 that will make the following function behave as advertised.

```
int is-this-a-win-state(int p1, int p2, int p3, int p4, int p5, int p6
                        int p7, int p8, int p9)
{
if  (condition #1)
return 1;           /* then Player X wins */
else
if (condition #2)
return 2;           /* then Player O wins */
else
if (condition #3)
return 0;          /* No winner yet, board not completed */
        else
return -1;         /* then Game board is filled, dead-game */
}
```

Hint: First figure out how many ways player X can win. Any of these ways is enough for a win. Repeat for player O. **Hint 2 for #3:** Remember, you only get to an "else" if the "then" position was not reached. If X did not win and Y did not win, then what condition indicates the game is not over?