

# Homework Assignment 6: Fifteen Puzzle

## EXTRA FEATURES

The following are **six extra features** you can complete to add new functionality to your program. The first extra feature you complete is worth **+1 “oops” point** on HW6; this can be used to make up for a  $-1$  you might receive on some other part of the program, but it cannot earn you more than 100% on HW6, and it cannot be applied to any other programs besides HW6. If you did not lose any points on HW6, your first extra feature is worth **+1 late day** instead. If you choose to complete more than one extra feature, each additional feature you complete is also worth **+1 late day**. If you choose to do any of these extra features, in your JavaScript file's comment header, indicate which one(s) you did.

Regardless of how many additions you write, the page behavior and appearance **should still work as specified**. You may not modify the XHTML/CSS files; each feature must be done entirely through JavaScript. If you have an idea for an extra credit feature other than those listed below, please ask us and we may approve it.

### Extra Feature #1. End-of-game Notification

Provide some sort of visual notification when the game has been won; that is, when the tiles have been rearranged into their original order. An alert is not sufficient; you should modify the appearance of the page. You may display an image(s) if you like, but since there is no way to submit extra images, put them in your Webster space and use absolute URLs when linking to them.

### Extra Feature #2. Ability to Slide Multiple Squares at Once

Make it so that if you click any square in the empty square's row or column—even squares more than one space away from the empty square—all squares between it and the empty square slide over. (This is much more pleasant to play!) If you do this extra feature, several more squares become movable, so be sure each movable square (basically any square in the same row or column as the empty square) highlights on hover as described before.

### Extra Feature #3. Animations and/or Transitions

Instead of each tile immediately appearing in its new position, make them animate. For example, you could use an interval timer to move tiles between several intermediate positions to create a “sliding” effect. You can do any sort of animation or other styling, as long as the game ends up in the proper state after a reasonable amount of time.

### Extra Feature #4. Game Time

Create an on-screen timer and counter which keep track of the time elapsed in seconds and number of moves for the current game. Keep a record of the best times/number of moves seen so far, and when the puzzle has been solved, display the time and number of moves from the most recent game as well as the record for each.

### Extra Feature #5. Multiple Backgrounds

Provide several background images (at least 4) to choose from. Every time the page is loaded, a random one of these should be displayed. Then the user should be allowed to select a different background at any time (using a select box, for example). Put your backgrounds in your Webster space and link to them using absolute URLs.

### Extra Feature #6. Different Puzzle Sizes

Place a control on the board to allow the game to be broken apart in other sizes besides  $4 \times 4$ , such as  $3 \times 3$  or  $6 \times 6$ .