

1. Random Tile Grid

Student learning outcomes

- Students will demonstrate how to divide a rectangular image into square colored tiles.
- Students will use the HTML input element.
- Students will create onclick event handlers for button elements.
- Students will demonstrate understanding of the DOM (document object model) as it applies to SVG image elements.
- Students will use conditionals, loops, and functions in a real application.

Real world applications:

- Students will reinforce what they have learned about random numbers.
- Students will learn the math required to divide an image or screen into component rectangles and squares. This will enable students to work in charting, graphing, animation, and scientific programming.

Assignment requirements:

- This web page has an SVG image with no contents.
- A script draws many square rectangle elements into the SVG image.
- The rectangle elements will be in different random colors.
- The script can delete the SVG contents and replace it with new tiles in different colors and sizes.
- The page has a user interface that lets the user enter a particular number or size of tiles.
- The script will determine how many tiles based on size, or what is the tile size based on the number of tiles.
- The page will use these JavaScript concepts:
 - A function that emulates the C++ *printf* function
 - `getElementById`
 - `innerHTML`
 - Math functions such as `random`, `floor`, `min`, and `max`

