CS161 Final Proficiency Demonstrations

A true magic square is one where the numbers in a 2-d array are arranged such that the sum of each column, each row, and each diagonal equal the same number. Example of a magic square (all columns, rows, and diagonals equal 15!!!):

```
2 7 6
9 5 1
4 3 8
```

Write a program to **create a 3x3 two-dimensional** array on the stack:

- Fill the array with random numbers, 1 – 9 (inclusive), for each element in the array
- Write a function, **bool fun(int a[][3], int size)**, to:
    - Determines if the array is a magic square.
    - Return true if the array is magic, and false otherwise.

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Write a program to **dynamically allocate** memory for a one-dimensional array on the heap:

- Please allow the user to specify the size of the array at runtime
- Fill the array with random numbers, 0 or 1, for each element in the array
- Write a function, **void fun(int a[], int size),** to:
    - Print to the screen, the total number of 1s
    - Print to the screen, the total number of 0s