

CS 62 Quiz

Mallocing a 2D Array

Mawhorter Spring 2017

(Please write your name at the bottom of the back page of this quiz)

Look at the following code which allocates a 3x3 array of integers:

```
int main(int argc, char** argv) {
    int rows = 3;
    int cols = 3;

    int **array = malloc(rows*sizeof(int*));
    int *row = malloc(cols*sizeof(int));

    for (int r = 0; r < rows; ++r) {
        array[r] = row;
    }

    // some code that uses the array
}
```

1. This code doesn't work as intended (the array was going to be used to play a game of tic-tac-toe). Explain why, and explain what happens when we change the first element of the array to a 1 using `array[0][0] = 1` (hint: the code *doesn't* crash).

(continue to part 2 on the back of this page)

2. If `sizeof(int)` is 4 and `sizeof(int*)` is 8, exactly how many total bytes of memory does the above code allocate? In order to play a game of tic-tac-toe properly, how many bytes of memory *should* it allocate?

Name: _____