

## 1) (5 pts) ALG (Dynamic Memory Management in C)

Given the following C code.

```
int **arr1 = malloc(3 * sizeof(int *));
for(int i = 0; i < 3; ++i)
    arr1[i] = malloc(2 * sizeof(int));
int *arr2 = malloc(3 * 2 * sizeof(int));
```

Answer the following questions about the above lines of code.

- a) Does `arr1` and `arr2` require the same number of total bytes allocated to be stored in the heap space? Please write yes or no. No reason is needed.

**No. Grading: 1 pt All or nothing.**

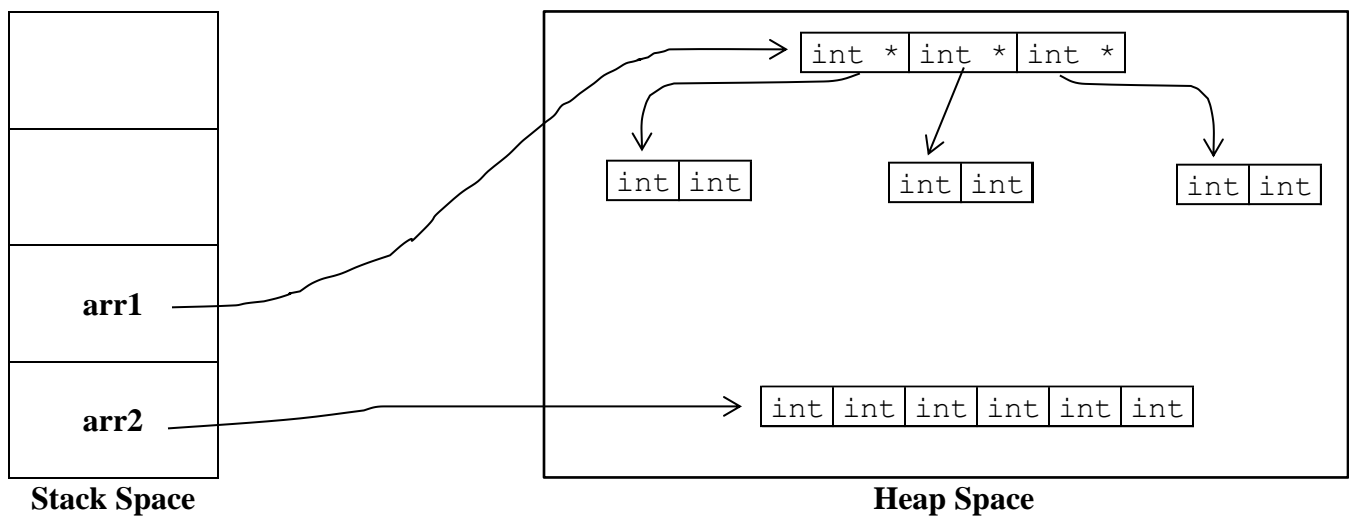
- b) Are all the addresses associated with `arr1` (excluding `arr1` itself on the stack space) adjacent in memory? Please write yes or no only. No reason is needed.

**No. Grading: 1 pt All or nothing.**

- c) Are all the addresses associated with `arr2` (excluding `arr2` itself on the stack space) adjacent in memory? Please write yes or no only. No reason is needed.

**Yes. Grading: 1 pt All or nothing.**

- d) Complete the following stack and heap space visual below showing how the memory state looks for both `arr1` and `arr2` from the above lines of code (after all lines execute properly).



**Grading: 2 pts – 1 pt for Stack (can be either order), 1 pt for heap space**