

COP 3502 Section 16 Quiz #1 - Part A (Dynamic Memory Allocation)

Date: 5/29/2020

Start Time: 1:30 pm EST

End Time: 1:55 pm EST

Directions: Please type up answers in either a Word Document (.doc, docx) or a Text Document (.txt) and upload your document AND SUBMIT IT to the appropriate assignment in Webcourses COP 3502 Section 16. It is strongly suggested you directly type into a document in your computer and don't recopy the questions due to the time constraints. On the document you submit, put your first and last name in the top left hand corner. On the following line, write "My Quiz 1A Answers", centered. Following that, place your answers, numbered, in order (1, 2, 3).

1) (10 pts) Write three lines of code in C that do the following: (a), declare an integer variable n, (b) read in from standard input an integer and store it in the variable n, (c) dynamically allocate an array of n doubles called array, all set to 0.0. Note, you MUST DO each step, including (c) with a single line of code. (Note: for doubles, if all bits are set to 0, then the value of the number is 0.0 as well.)

2) (10 pts) Included below is a section of code allocating memory dynamically for a data structure. Assume that the struct involved (sodacan) does NOT have any dynamically allocated memory. Properly free the memory that is allocated by the code segment.

```
int n;
scanf("%d", &n);
int* sizes = malloc(n*sizeof(int));
sodacan** cans = malloc(n*sizeof(sodacan*));

for (int i=0; i<n; i++) {
    scanf("%d", &sizes[i]);
    cans[i] = malloc(sizes[i]*sizeof(sodacan));
}
```

3) (5 pts) In the class example csllist.c, we created a list that dynamically grew and shrank as necessary. What was the rationale for doubling the list size instead of adding 1 when the list filled up?