COP 3502 Section 18 Quiz #1 - Part A (Dynamic Memory Allocation)

Date: 5/29/2020

Start Time: 3:30 pm EST
End Time: 3:55 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 18. It is strongly suggested you directly type into a document in your computer and don't recopy the question 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) dynamically allocate an integer array of size 1,000,000, (call the pointer variable array) and (b), initializing all the values in the array such that in index i, the value i is stored. ((a) will take 1 line, and (b) will take 2 lines.)

2) (10 pts) Included below is a section of code allocating memory dynamically for a data structure. A required struct for the section of code is included. Properly free the memory that is allocated by the code segment. Just write the code that would go where the comment says, "Free everything here."

```
typedef struct item {
    char* name;
} item;

int main(void) {

    int n;
    scanf("%d", &n);
    item* list = malloc(n*sizeof(item));

    for (int i=0; i<n; i++) {
       char temp[100];
       scanf("%s", temp);
       list[i].name = malloc((strlen(temp)+1)*sizeof(char));
       strcpy(list[i].name, temp);
    }

    // Do stuff.

    // Free everything here.

    return 0;
}
```

3) (5 pts) Give a practical example where one would use an array of arrays to store data, where the different arrays in the large array were different sizes themselves.