2015 Fall COP 3502 Quiz #1

Date: 9/8/2015

Name: _____

Note: Please answer all coding questions with valid C code. You may assume for any question that the appropriate includes have been made and that i, j and k are declared and ready to use as integer variables (as loop indexes).

Part I - Dynamic Memory Allocation

For each of the following questions, you may assume that both `size1` and `size2` are integer variables that have been assigned to values prior to the line of code you are to write.

1) (4 pts) Write a single line of code that dynamically allocates an array of `size1` variables of type double. Assign the memory allocated to a pointer called `prices.`

_____

2) (2 pts) Write a single line of code that frees the memory allocated in question 1.

_____

3) (6 pts) Write a segment of code that allocates a two dimensional array of characters with dimensions `size1` by `size2`. The array should be prepared to hold `size1` strings of length `size2-1` or less. Assign the memory allocated to a pointer called `words.`

_____

_____

_____

4) (6 pts) Write a segment of code that frees the memory allocated in question 3.

_____

_____

_____

5) (2 pts) This question involves the following struct:

```
struct student {
    char* name;
    int ID;
    double balance;
};
```

Assuming that all pointers are stored using 8 bytes, integer are stored using 4 bytes, and doubles are stored using 8 bytes, what is the value of the expression `sizeof(struct student)`?

_____

6) (10 pts) Write a segment of code that allocates an array of pointers to struct student of length `size1`, then allocates each of the struct student variables, followed by allocating the name pointer in each of the structs to a character array of length `size2`. (Note: there are multiple possible orders for allocating the necessary memory and you may answer with any of these.)

_____

_____

_____

_____

_____

7) (10 pts) Write a segment of code that frees all of the memory allocated in question 6.

_____

_____

_____

_____

_____

8) (1 pt) By what acronym is the College of Engineering and Computer Science known?

_____