In-Class Practice with Structures

1. Define a structure for a sphere. It should include the following 2 fields:
   a. Something to hold the value for the radius (a double):

      b. Something to represent the value for the center:
         a. The center should be represented by an x, y, z point, which would be a “vector”. What could you use to represent the vector?

   So, the structure for the sphere:

   2. How would declare a sphere, call it sph1?

   3. At what point will memory be reserved for a sphere (after question #1 or question #2)?

   4. How would give the value 2.4 to the radius field of sph1?

   5. How would give the value (3, 4, 2) to the center field of sph1?
6. Draw what you imagine sph1 looking like in memory at this point.

7. Declare a pointer for sph1 and assign it to point to sph1.

8. Add that to your drawing in #6.

9. Using sph1Ptr, change the value of the radius to 1.2.
10. Declare another sphere called sph2 using the typedef'd sphere.

11. Declare a pointer to sph2 called sph2Ptr and assign it to point to sph2.

12. Using sph2Ptr, assign the value .8 to the radius of sph2.

13. Using sph2Ptr, assign the value (4, -2, -3) to the center of sph2.

14. Now, imagine that you have another sphere or two, already declared, called sph3 and sph4, and that you want them to be in an array. How would you declare an array that could hold these 4 spheres?

15. How would you fill those four array locations with those spheres?

16. But, what if we create some more spheres and want to add it to the array? What do we do now?

17. What if our program will be creating and deleting spheres frequently? How do we keep up with an array of spheres whose values are being added/deleting constantly???

18. Another solution??