***COSC1347 - Experimenting with Pointer Variables***

Assume the following declarations for this worksheet. Write little programs to help you answer the questions– don't just guess!!   
 ***int i, j, \*p, \*q;***

1. What is printed by the following code? Attach your program’s output to this worksheet. Draw diagrams on your output page that show how **p** and **i** and their values are related.  
     
   ***p = &i;  
   i = 99;  
   cout <<"value of i: " << i << endl;  
   cout <<"value of \*p: " << \*p <<endl;  
   cout <<"value of p: " << p <<endl;  
   cout <<"address of i: " << &i <<endl;***
2. Fill in the table.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **C++ statement** | **Legal?** | **What it does OR why it is not legal** |
| a. | ***p = i;*** |  |  |
| b. | ***p = &i;*** |  |  |
| c. | ***p = q;*** |  |  |
| d. | ***\*p = \*q;*** |  |  |
| e. | ***\*p = q;*** |  |  |
| f. | ***i = \*p;*** |  |  |
| g. | ***i = p;*** |  |  |
| h. | ***p = new int;*** |  |  |
| i. | ***i = new int;*** |  |  |
| j. | ***p = NULL;*** |  |  |
| k. | ***delete p;*** |  |  |
| l. | ***delete i;*** |  |  |

1. Can you set the value of a pointer variable to a specific hex value? Give an example in C++ code.
2. Can two pointer variables point to the same variable? Give an example in C++ code.
3. When do you use the & operator (give all instances you can think of)?
4. When do you use the unary \* operator (give all instances you can think of)?
5. Write a program that dynamically allocates an array of type **double** of the size requested by the user. Fill the array with values, print the array values. Use the delete operator to give the memory back. Attach the code and the output.  
      
   What can you do with your pointer variable AFTER the delete command? Experiment with different ideas.