CS 135 - Computer Science I

Design Assignment 5 (DA5-10/19)

Programming Assignment 6 (PA5-10/22)

Objectives:

1) You will use a set of standardized I/O functions to implement a program
2) You will use global constants to assist with program clarity
3) You will create and use simple mathematical functions to support development of a structured program
4) You will make decisions in a program depending on user input
5) You will implement a structured design process for developing a program

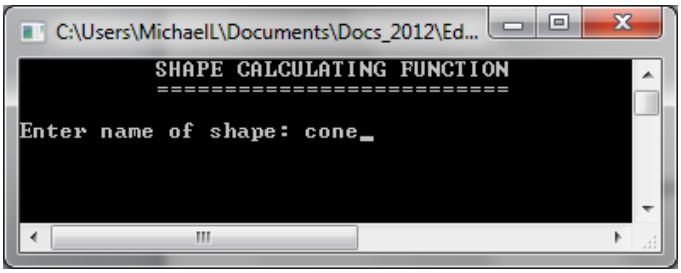
Tasks:

Creating a Shape Calculation Program

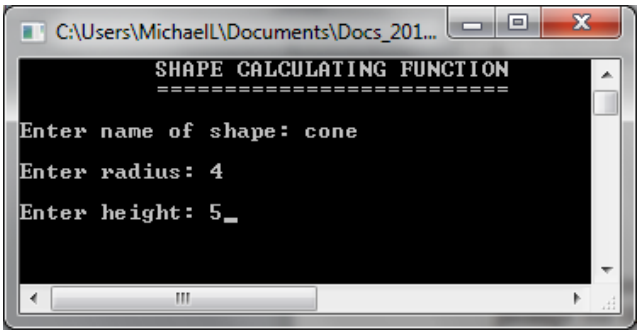
1) This program will be called **`shapes3.cpp`**. You can also download the example program **`shapes3EX_v0x.exe`** to view the operation of the program. You must also use the formatted command line I/O tools (and no other I/O tools); you may also download this file as needed.

2) You will be turning in a Design Assignment on Friday, 19 October; you have the mid-term examination on Wednesday, but you will also have most of the laboratory time on Tuesday to work on this. You will have the opportunity in your laboratory to work with another person for steps 1, 2, and 3 of your design process; this is acceptable with two constraints: 1) All students should place their own name at the beginning of their source code file, but for this assignment, if you work with someone else, you must place their name after yours and indicate that the person was your partner; and 2) you may not share or work on any code together after step 3 as usual.

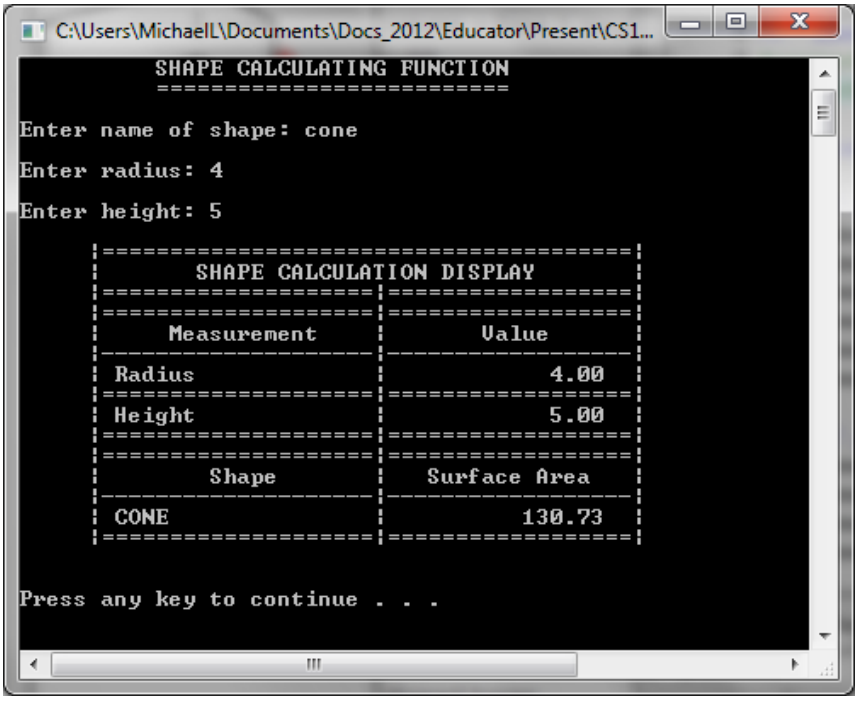
3) This is a fairly simple program that starts with a title and a prompt as shown.



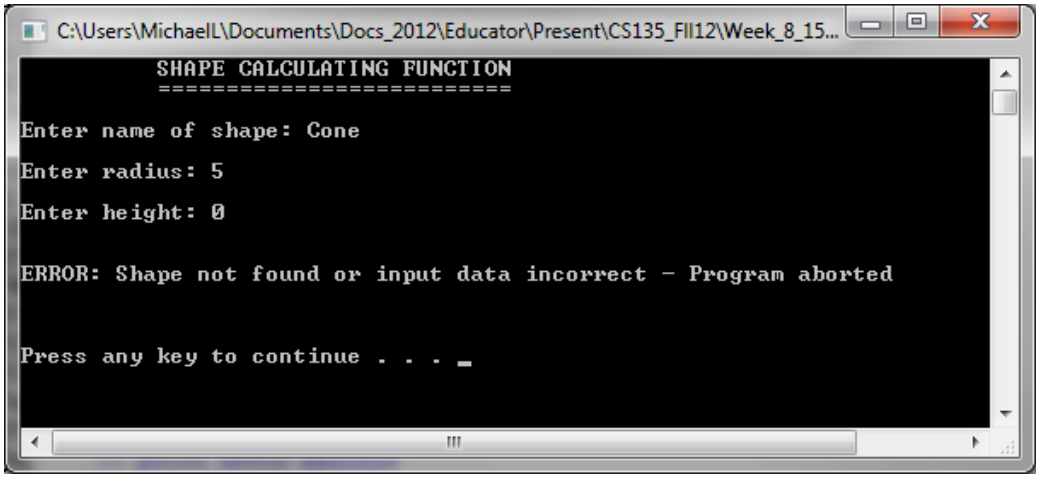
4) Once the cone, cylinder, sphere, or cube name has been entered, the program will correctly prompt for the data needed for that shape, then calculate the surface area for that shape. The program must be able to handle the name with any combination of upper or lower case letters as shown. You have previously been provided the tools to handle this condition.



5) The program will finish by calculating and displaying the surface area in a simple table as shown.



6) If the program does not receive correct input, including incorrect shape, misspelled shape name, or a measurement of zero or below, it must halt all operations and provide an error message as follows.



7) The program must use at least ten functions. There are places where functions are appropriate and where they are not; you will be graded on your development of appropriate and necessary functions. You will also have opportunities to reuse functions from previous programs as well, but remember not to build your program around the previous functions. If you attempt to create this program using the same design from previous programming projects, you will find that it takes longer and will not be correct. Create your design first, then use the tools you need.

8) You must provide the following screen shots:

   a) one screen shot for each shape calculation (i.e., at least four screen shots), including various upper and lower case letters (e.g., cOnE, CYLinder, etc)

   b) one screen shot for an incorrect shape or spelling (e.g., sfere) showing the error screen

Turning in your Design Assignment:

Information:

Week: 8
Laboratory: 8
Design Assignment: 5
Due Date: 10/19, 6:00 pm

To turn in:

The first five steps of the Six Step Programming Process, including:

1. shapes3_s1.cpp
2. shapes3_s2.cpp
3. shapes3_s3.cpp
4. shapes3_s4.cpp
5. shapes3_s5.cpp

Upload these as separate files. Note that following the instructions for uploading your work is critical; you will lose points if you do not follow these instructions. Do not upload any files or in any format other than that specified here.

For information on how to turn in Design Assignments, refer to the "How to Turn in Design Assignments" in the "General Course Information" folder

Important grading note: Due to the large number of students and the small number of people grading assignments, a fraction of the Design Assignments will be graded each week. If your DA is not graded that week, you will receive full credit; if it is graded, you will receive feedback and the appropriate grade. The random process will ensure that all students will be graded an equal number of times across the semester, and it also provides the possibility of getting graded more than one week in a row. You must do your best on each DA and assume you will be graded each week.

Important DA feedback note: If your DA does not get graded in one particular week, you should do the following:

1. At least look at the provided sample DA when it is uncovered on the Tuesday after the PA is due; make sure your structure, organization, and problem-solving strategies are comparable

2. Stop by one of the Instruction Team offices (i.e., Instructors, TAs, Tutors, etc.) and ask them to help you review your DA so you can be sure to do well when you are graded

Turning in your Programming Assignment:

Information:

Week: 8
Laboratory: 8
Programming Assignment: 6
Due Date: 10/22, 6:00 pm

To turn in:

1. The Word file containing the following:

    a. There should be at least five screen shots for the programs as specified in item #7 previously in this document

    b. Remember to clearly annotate every displayed result

2. The executable file:
    a. shapes3.exe (shapes_s6.exe is also acceptable)

3. The source code file:
    a. shapes_6.cpp

These files must be compressed and uploaded as one zip file. To do this, select all of the required files, right click on them, and select “Send To”, then select “Compressed (zipped) Folder”.

Once the folder is created, it will be placed in the same folder in which you are working. Change the name of the zipped folder to “LastnameFirstname_PAX” (where ‘X’ is the number of the Programming Assignment) as shown in the following example: “LeveringtonMichael_PA3” (no quotes). After you have renamed the zipped folder, double click on it to verify that it has all the files it is supposed to have.

Note that following the instructions for uploading your work is critical; you will lose points if you do not follow these instructions. Do not upload any files or in any format other than that specified here.

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