Problem Solving Lab

EGR-125 C++ Programming for Engineers

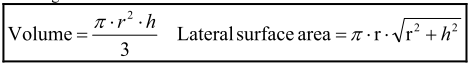
Problem Solving and Programming

Developing a program to solve an engineering problem can be accomplished using the following steps:

* Analyze
  + What are the inputs and outputs?
  + What are the relationships (equations) that link the inputs to the outputs?
  + A good analysis will generally result in a clear description of the program (you can use the analysis step to create the list of inputs and outputs as well as an overall program description that is required at the beginning of all your programs).
* Design
  + What are the logical steps needed to solve the problem (Algorithm)?
  + Break the solution into detailed steps.
  + Be precise (every detail should be addressed).
  + The design steps can be used as comments in your program and are a good place to start coding (start programming by writing the steps as comments in the main section of your program).
* Implementation (Coding)
  + Translate your algorithm (design steps) into C++ code.
  + Use proper declarations and syntax.
* Testing and Debugging
  + Find and correct problems with the code (that missing semi-colon or misspelled identifier)
  + Test your code with various inputs (what are the worst case scenarios?)
  + Correct any logic or coding errors.
* Maintain
  + Update code with improvements, bug fixes, etc.
  + You will not have to maintain programs for this course.

Lab Problem:

1. Create a program that calculates the volume and lateral surface area of a cone given the radius and height of a right circular cone. Prompt the user to enter the radius and height the cone. Calculate the volume and lateral surface area of the cone using the following relationships and print the results.



1. Build and run the program. The inputs and outputs should be clearly understood and neatly arranged.
2. Demonstrate the program to the instructor.
3. Save the program to your desktop as previously demonstrated by the instructor.
4. Zip and upload the project to Blackboard.
5. Copy the project folder to your personal memory storage device. Once you are sure that it has been copied to your memory storage device, delete it from the desktop.