

Due on Fri. Mar. 19, 2010

Each student is required to do this assignment **individually**. Type all of your answers in an electronic file (you can use plain text or Microsoft Word), which includes your explanation and data of inputs and output. All computer programs should be saved in separated files. Send your answer sheet and program files to the course email account:

`cs0411@peace.lakeheadu.ca`

In the email, you should indicate your name, student ID, assignment number and a list of attachments. All the program files should be sent as attachments of the email.

Assignments which do not meet above requirement risk reduced marks or even no marks.

The grade of the assignment will depend on:

Documentation and readability: 20 %

Correctness: 80 %

Problem 1.

Suppose R is the radius of base of a cylinder and h is the altitude of that cylinder. Then the volume V of the cylinder and the surface S of the cylinder are

$$V = \pi R^2 h, \quad S = 2\pi R(R + h).$$

Write a subroutine which reads the values of R , h and returns the values of volume and surface of the cylinder.

Then write a Fortran program which reads the data from a file `file1.dat` and writes the values of volume and surface into a file called `VandS.dat`. The content of `file1.dat` is as same as that in assignment 4. This file can be found at the webpage:

<http://peace.lakeheadu.ca/cs0411/file1.dat>

Print out the file `VandS.dat`. It should look like:

| R | h | volume | surface |
|-------|-------|----------|----------|
| 23.00 | 12.00 | *****.** | *****.** |
| 3.00 | 43.00 | | |
| 67.80 | 23.00 | | |
| 2.00 | 3.00 | | |

| | |
|-------|-------|
| 4.00 | 6.00 |
| 5.00 | 75.00 |
| 3.00 | 45.00 |
| 67.00 | 0.70 |
| 5.78 | 45.00 |
| 23.00 | 14.00 |

Problem 2.

Write a character-valued function `LetterGrade` that assigns a letter grade to an integer score using the following grading:

| | | |
|----------|---|----------|
| 90 – 100 | : | <i>A</i> |
| 80 – 89 | : | <i>B</i> |
| 70 – 79 | : | <i>C</i> |
| 60 – 69 | : | <i>D</i> |
| 50 – 59 | : | <i>E</i> |
| Below 50 | : | <i>F</i> |

Then write a Fortran program which reads students' names, assignment grade *assin*, midterm grade *mid* and final exam grade *final* and outputs the final letter grade, where the final grade is computed as:

$$assin \times 30\% + mid \times 20\% + final \times 50\%.$$

The outputs should look like:

| Name | Grade |
|------------|-------|
| ===== | |
| R. Amaral | A |
| A. Patrick | B |
| | ... |