**Exercises**

**Create an algorithm (PSEUDOCODE and FLOWCHART) for the following problems.**

**LE4\_11 *Vowel and Consonant***. Determine whether the letter entered by the user is vowel or consonant. *Do not use predefine functions (isAlpha, tolower, toupper, etc.).*

Sample/Test Output  
Enter a letter: A VOWEL!  
==========================================  
Enter a letter: a VOWEL!  
==========================================  
Enter a letter: G CONSONANT!  
==========================================  
Enter a letter: $ INVALID INPUT!  
==========================================  
Enter a letter: 5 INVALID INPUT!

**LE4\_12 *Quadratic Equation.*** Compute the **real roots of a quadratic equation** . The roots can be calculated using the following formulas: . It will prompt the user to enter the constants (a, b, c) and display the roots based on the following rules:

* If both ***a***and ***b***are zero, there is no solution
* If ***a***is zero, there is only one root (-c/b).
* If the discriminate (b2-4ac) is negative, there are no real roots
* For all other combinations, there are two roots.

**LE4\_13 *Student’s Final Grade.*** Determine a student’s final grade and indicate whether it is passing or failing. The final grade is calculated as the average of four marks (between 0 and 100). Passing grade of 50.

Sample/Test Output  
1st Mark : 100 2nd Mark : 85 3rd Mark : 96 4th Mark : 88  
FINAL GRADE: 92.25 REMARKS : PASSED  
================================================================================  
1st Mark : 55 2nd Mark : 70 3rd Mark : 10 4th Mark : 50  
FINAL GRADE: 46.25 REMARKS : FAILED  
================================================================================  
1st Mark : 100 2nd Mark : 120 3rd Mark : 96 4th Mark : 88  
INVALID INPUT!