

COEN 244 (Winter 2020) - Assignment 1

Assignment 1 – COEN 243 Review

Deadline: Monday 27 by 11:59pm

Type: Group Assignment

Weight: 5%

Submission instructions:

- Create a cpp file for each question
 - Add name and student ID of both partners at the top of each cpp file
 - Compress the files using zip or other tools
 - Submit the zip file on Moodle
 - Do not submit executable files
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Questions:

1. (30 marks) Write a program that takes a Roman number and returns its equivalent in our current numerical systems. To know more about Roman numbers, please refer to the following link: https://en.wikipedia.org/wiki/Roman_numerals.

In this question use a null terminated character array to represent a string, you cannot use the class string.

2. (35 marks) Write a program that takes an arithmetic expression as a string and returns its value. For example, if the user enters "5*3+2+4" then the program should return 21. Assume that the user enters a valid expression. The program should handle the following arithmetic operators *, +, /, -. Bonus (20 points): Add the ability to handle parentheses.

In this question use a null terminated character array to represent a string, you cannot use the class string.

3. (35 marks) Pig Latin is a language game. Each word is spoken starting with its first vowel. Any preceding consonants are moved to the end of the word and added to a vocalic syllable to form a new syllable. For example, the word "Eye" is pronounced "Eye-way" in pig Latin.

The rules for converting a string into a pig Latin form are as follows:

- If the string begins with a vowel, add the string "-way" at the end of the string. For example, the pig Latin form of the string "eye" is "eye-way". Note that pig Latin consider 'y' as a vowel, meaning we have the following vowels in total: a, e, i, o, u, y, A, E, I, O, U, and Y.
- If the string does not begin with a vowel, follow these steps:
 - Add "-" at the end of the string.
 - Rotate the string one character at a time (that is, move the first character of the string to the end of the string and so on) until the first character of the string becomes a vowel.
 - Add the string "ay" at the end.For example, the pig Latin form of the string "There" is "ere-Thay".

- Strings such as "1234" contain no vowels. The pig Latin form of the string "1234" is "1234-way". That is, the pig Latin form of a string that has no vowels in it is the string followed by the string "-way".

Write a program that (1) takes an English sentence and outputs its pig Latin version, and (2) takes a pig Latin sentence and produces the original English one.

For this question, you must use the class string and string functions.