Assignment on STL

Note : Use STL at appropriate places to solve the following questions.

1. Write a find() function using STL in C++ that finds the first match for a simple regular expression in a string. Use ? to mean ‘‘any character,’’ ∗ to mean any number of characters not matching the next part of the regular expression, and [abc] to mean any character from the set specified between the square braces (here a , b , and c). Other characters match themselves. For exam-ple, find(s,"name:") returns a pointer to the first occurrence of name: in s ; find(s,"[nN]ame:") returns a pointer to the first occurrence of name: or Name: in s ; and find(s,"[nN]ame(∗)") returns a pointer to the first occurence of Name or name followed by a (possibly empty) parenthesized sequence of characters in s.

2. Write a program in C++ to create lists of students taking Math, English, French, and Biology. Pick about 20 names for each class out of a set of 40 names. The program lists students who take both Math and English. It also Lists students who take French but not Biology or Math. It also lists students who do not take a science course. Finally, it lists students who take French and Math but neither English nor Biology.

3. Write a function in C++ to produce all anagrams of the word food. That is, all four-letter combinations of the let-ters f,o,o, and d. Do not generate duplicates. Generalize this program to take a word as input and produce anagrams of that word.

4. Write a program that produces anagrams of sentences; that is, a program that produces all permutations of the words in the sentences (rather than permutations of the letters in the words).

5. Write a program that lists the distinct words in a file in alphabetical order. Make two versions: one in which a word is simply a whitespace-separated sequence of characters and one in which a word is a sequence of letters separated by any sequence of non-letters

6. Define a queue using (only) two stacks.

7. Write a small program that removes adjacent repeated words from a file.
Eg -> Statement: Write a small program that that removes adjacent repeated words from from a file file.

The program should remove a **that**, a **from**, and a **file** from the previous statement.

8. Define a format for records of references to papers and books kept in a file. Write a program that can write out records from the file identified by year of publication, name of author, keyword in title, or name of publisher. The user should be able to request that the output be sorted according to similar criteria.

9. Write a program in C++ which reads a sequence of (name, value) pairs as command line argument and prints a sorted list according to the name in descending order. The names may be duplicated in the command line arguments. The program also prints a sorted list (name, total, mean,median, variance) .

10. Write a program in C++ which reads a sequence of lines of text from a file into a fixed-sized character buffer. Remove all whitespace characters and replace each alphanumeric character with the next character in the alphabet (replace z by a and 9 by 0). Write out the resulting line.