EE 5103 - Assignment 2

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Total points: 10

Due: Feb 11 by 11:59 PM

Submission instructions:

Name your source files as <LastNameFirstName-q1>.cpp , <LastNameFirstName-q2>.cpp, etc. (e.g. KrishnanRam-q1.cpp). Place them in a folder called <LastNameFirstName> and zip the folder to get <LastNameFirstName>.zip. Upload the file to blackboard.

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Q1 (2 points)

Write a simple program in C++ to display the output below exactly as shown (i.e., it should include white space to position the pyramid toward the right, as shown).

>./a.out

```
                    *
                   ^^^
                  *****
                 ^^^^^^^
                *********
               ^^^^^^^^^^^
```

Important:

You are not allowed to use a "string" (or a character string literal) data type in your code. So DO NOT take an apporach similar to the following:

```
cout << "                    *" << endl;
cout << "                   ^^^" << endl;
cout << "                  *****" << endl;
```

Instead, use a for loop or a while loop to print various characters. Observe that the first line contains 1 char, the second line contains 3 chars, the third line contains 5 chars, etc. Also, the characters alternate from one line to another. Use these observations to your advantage in framing your logic inside your for/while loop.

Q2 (2 points)

Write a C++ program to display all unique permutations of an input string. For an input string of “dog”, the output should be: “dog”, “dgo”, “odg”, “ogd”, “god”, “gdo”. However, for “Bob”, the output should be: “bob”, “bbo”, “obb”.

Q3 (2 points)

Write a C++ program to display all subsets of a given set of numbers (read about power set of a given set, if you are not familiar with this concept). For an input set of numbers of {1,2,3}, the output should be displayed exactly in the following format using { and }:

{1,2,3}

{1,2}

{1,3}

{2,3}

{1}

{2}

{3}

{}

Q4 (2 points)

Write a C++ program that reads a telephone number from the user and outputs if the telephone number is in the right format. For the purpose of this question, a telephone number is in the right format, if the format is (qqq) qqq-qqqq. Here q is a digit from 0 to 9. Also, the very first q cannot be a zero.

Q5 (2 points)

Write a C++ program that reads a sequence of doubles. The program should then print the mean, median, mode, standard deviation and variance of that sequence.