National University of Computer and Emerging Sciences, Lahore Campus

Course:	Programming Fundamentals	Course Code:	CS 118
Program:	BS(Computer Science)	Semester:	Fall 2020
Due Date	24-Dec-2020	Total Marks:	20
Section:	CS-1G	Page(s):	1
Type:	Assignment 3	Weightage	3

Important Instructions:

1. Submit your solution named as your roll number, i.e., 20_1111.cpp. Do not zip your file.
2. You are not allowed to copy solutions from other students. We will check your code for plagiarism using plagiarism checkers. If any sort of cheating is found, negative marks will be given to all students involved.
3. Late submission of your solution is not allowed

Question 1:

Part (a):

Write a C++ function **compress** which is passed as parameter a file name. Your task is to compress the contents of the file and write the compressed data to another file whose name is also passed as parameter. The compression will work as follows:

1. While doing compression, whenever it finds the same character written consecutively, it writes the character in the compressed format only once, and before that character, it writes the count of that character. The file can have any number of characters. The file may also contain whitespaces, such as spaces, next line characters, tabs, etc. which must also be handled. In order to read all characters, including whitespaces, you can use noskipws.

   For example:
   If the input file contains: cccaaabeddd a, then the compressed output will contain: 3c3abe3d3 a. If the same character is not repeated consecutively, then it will be written only once in the compressed output, and 1 will not be written before that.

   Another Example:
   File input=aaaaaaaaaabbbComputerc
   Compressed Output: 10a3bComputerc

Note: The file that we need to compress will not contain any integers.

Part (b):

Write a C++ function **uncompress** which is passed as parameter the name of a compressed. Your task is to uncompress the contents of the file and write the uncompressed data to another file whose name is also passed as parameter.

Note: The file that we need to uncompress will not contain any integers as part of data of uncompressed version. The compressed file will only contain integers as count.
File input=10a3bComputerc
Uncompressed Output: aaaaaaaaaabbbComputerc