

Daffodil International University
Department of Computer Science and Engineering
Semester Assessment, Spring 2021
Course: Compiler Design Lab, Course No: CSE332, Section- PC-D+UC-A
Full Marks: 40, Time: 3 hrs

1. Write a C program that accepts strings starting with even number of **c**'s followed by two or three **a**'s and end by odd number of **b**'s. Write down the regular expression for the string in your answer script first. And then give the C code.
2. Suppose you have designed a new language. In your language you indicate a line comment with a **!!**. And for indicating a block comment you surround the comment starting with the string **\$** and end the block comment with the string **#**. Now perform comment removal.

Example of line comment:

!! This is a line comment

Example of block comment:

*\$ This is a
block comment #*

3. Read the following operations and perform the required operation in the string without using any library functions:

A string is simply an ordered collection of symbols selected from some alphabet and formed into a word; the length of a string is the number of symbols that it contains.

An example of a length 21 **DNA string** (whose alphabet contains the symbols 'A', 'C', 'G', and 'T') is "ATGCTTCAGAAAGGTCTTACG"

Given: A DNA string **s** of length at most 100.

Return: Four integers (separated by spaces) counting the respective number of times that the symbols 'A', 'C', 'G', and 'T' occur in **s**.

Sample Dataset:

AGCTTTTCATTCTGACTGCAACGGGCAATATGTCTCTGTGTGGATTAAAAAAGAGTGTCTGA
TAGCAGC

Sample Output:

20 12 17 21

4. Write a code that can identify a valid identifier from an invalid identifier. Consider that, **if**, **else**, **int**, **float**, **break**, **double** are valid keywords of that language. Differentiate the keywords from the variables also.

| Sample Input: | Sample Output: |
|----------------------|------------------------------|
| if | valid identifier keyword |
| ab12 | valid identifier variable |
| 23ab | invalid identifier |