Data Structures and Algorithms I
SCS 1201

Assignment 02

Question

Assume a machine that has a single register and six instructions.

LD	**A**	which places the operand **A** into the register.
ST	**A**	which places the contents of the register into the variable **A**.
AD	**A**	which adds the contents of variable **A** to the register.
SB	**A**	which subtracts the contents of the variable **A** from the register.
ML	**A**	which multiplies the contents of the register by the variable **A**.
DV	**A**	which divides the contents of the register by the variable **A**.

Write C a program that accepts a postfix expression containing single-letter operands and the operators **+,-,*,** and **/** and which prints a sequence of instructions to evaluate the expression and leave the result in the register.

Use variables of the form **TEMPn** as temporary variables.

For example, the postfix expression **ABC*+DE-/** should yield the printout.

```
LD    B
ML    C
ST    TEMP1
LD    A
AD    TEMP1
ST    TEMP2
LD    D
SB    E
ST    TEMP3
```

LD TEMP2

DV TEMP3

ST TEMP4

Note: Your submission should include the following

a. Complete C code for the above scenario
b. A report including the methodology, fully commented programs and valid test data and test results

Upload your submission in a zip file with your INDEX NUMBER to the LMS on or before **14th of July 2021** (before **11.55 pm**) and **plagiarism will be considered very seriously.**

You have to appear for a **viva** of this assignment. The exact date, the time slot for each individual viva will be announced in due course.