



## CSE 215: Programming Language II

Sec – 5 & 6, Faculty: SvA

Homework # 1, Marks: 50

**Deadline: 31.07.2021**

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### Problem 1

**15 points**

Your friend is paranoid about privacy and wants to encrypt everything. But your friend does not know anything about programming. So, he wants you to code a program for him, which will automate the encryption process for him. The program will first take a plain text/input text and an encryption key (integer). Then, it will reverse the plain text, replace whitespaces with '\*' then shift the alphabets of the plain text according to the encryption key. Finally, it would show the cipher-text/ encrypted text.

Input Structure:

- T, plain text.
- K, encryption key.

Example:

Input	Output
Blackdaws love my sphinx of quartz 1	ausbvr_gp_yojiqt_zn_fwpm_txbeldbmC
megadeth 7	oalkhnlt
abc 1	dcb
hello world 6	jrxucJurrkn

Notes: You don't have to handle digits, and special characters.

**Problem 2****15 points**

A mad scientist wants to build a calculator that works differently. It handles operations like subtraction(-), multiplication(\*), summation(+), power(^) and division(/). It will do the operations and finally return the summation of results of all the operations. Remember, the final result can not be negative. So, make it positive.

Input structure:

- N, number of input lines (each input line is denoted by Q)
- X1 O X2 is the structure of Q, where X1 is the first number, X2 is the second number, and O is the operator (\*, /, +, -, ^).

Example :

Input	Output
4 2 * 8 92 / 5 110 + 200 90 - 110	2 * 8 is 16 92 / 5 is 18.4 110 + 200 is 310 90 - 110 is -20 The final result is 324.5
4 1 + 2 1 - 100 6 / 2 4 ^ 2	1 + 2 is 3.0 1 - 100 is -99.0 6 / 2 is 3.0 4 ^ 2 is 16.0 The final result is 77.0

Notes: Outputs should be shown once all the inputs are provided.

**Problem 3****10 points**

Your friend is doing linear algebra. But he finds it hard to add two matrices. So he wants you to write a program for him which will add two matrices. The program will display, "I tried, but could not add them" if the matrices are not addable. (Two matrices are not addable when their dimensions don't match.) Else it will add the two matrices and display the output matrix.

Input:

- $A_{00} - A_{RN}$ , elements of the 1st matrix.
- $B_{00} - B_m$ , elements of the 2nd matrix.

Example:

Input	Output
3 4 5 6  1 1 1 1	4 5 6 7
2 2 4 5  2 2 2 2 2 3	I tried, but could not add them

**SUBMISSION GUIDELINES**

- Write 3 separate classes for the 3 problems and submit them in the assignment in the classroom.
- You will be given zero if any sort of copying is found.
- Separate viva session may take place after the submission if there is any need for further clarification.

**GOOD CODING STYLE****(10 points)**

At beginning of every class you should include your name, ID, course and section number in comments. You should also put comments in parts of your code where you feel the implementation or the reasoning is not so trivial. The indentation and block styles should be uniform through out your written codes. The data fields, local variables, method and class names should be relatable and meaningful and should follow the Java convention.