Question 1

A teacher gives you a list of students with their marks in many subjects and asks you to calculate each student's average in all subjects combined. The input is in the form of a .csv (comma-separated value) file. One method could be to get this task done quickly in Excel, but this has to be done over many sheets, so your friend suggests you to automate this process using awk instead. Write an awk script that takes input and outputs the same content but with average included.

Example: If input is =>
Name,MA110,CS104,MS101,BB101
Kavya,98,87,99,91
Saksham,100,80,90,95
Priya,90,75,81,96

The output should be =>

Name	MA110	CS104	MS101	BB101	Average
Kavya	98	87	99	91	93.75
Saksham	100	80	90	95	91.25
Priya	90	75	81	96	85.5

Output fields are separated by tab space ("\t").
The first line will be headings.
Note:-
1) The first field is always the name of the student; the following fields are all subjects/their marks
2) The number of subjects can be ANY number >= 1. It means that it can vary from test case to test case.
3) Write the script in marks.awk

Script command to execute:-
awk -f marks.awk input.csv > output.txt

Question 2

Suppose you are a TA for a course, and you gave the students a lab to do. They had a week to complete all the files required for that lab. The files are submitted to Bodhitree, and Bodhitree gives you a space-separated text file with all the

names of the files submitted by each student. Now, there are ~200 students; hence, you'd like to check their submissions using an autograder to automate the process, but wrong submission formats disrupt the process. So write an awk script that takes that text file given by Bodhitree and returns a comment "Correct Submission Format" or "Wrong Submission Format" for each student.

Example: If Bodhitree gives this text file =>
Roll_Number Source_Code Outputs Report
22B1053 .cpp .txt .pdf
23B0901 my_code.cppnew my_out.txt my_report.pdf
23B0902 a.cpp res.txt res.pdf
23B0903 .cpp wow.txt lol.pdf
23B0904 - - -

The output should be =>
Roll_Number;Source_Code;Outputs;Report;Comments
22B1053;.cpp;.txt;.pdf;-
23B0901;my_code.cppnew;my_out.txt;my_report.pdf;Wrong Submission Format
23B0902;a.cpp;res.txt;res.pdf;Correct Submission Format
23B0903;.cpp;wow.txt;lol.pdf;Wrong Submission Format
23B0904;-;-;-;Wrong Submission Format

Output fields are separated by semi-colon (";").
The first line will be headings. The second line will have the extensions that correct submissions are supposed to have, for example: ".cpp", ".txt", ".pdf"
Files like "test.cppnew" or "test.new.cpp" are invalid if ".cpp" extension is given.
If a valid filename is <name>.cpp, then name can be ANY non-empty string with **a-z** or **A-Z** or **0-9** or **underscore**. (Valid for other extensions as well).

Note:-
1) The first field is always the roll no. of the student; the following fields are file formats
2) The number of files can be ANY number >= 1. It means that it can vary from test case to test case.
3) If a file is not submitted, "-" is placed there.
4) Comment for 2nd line is "-".
5) Write the script in format.awk

6) A test case has been provided in "q2-test_input.txt" with results in "q2-expected_output.txt"
Hints: Regex matching is a feasible method of matching submission formats. Create regex expressions from the extensions given in 2nd line and use "~" or "!~" operator for regex comparison.

Script command to execute:-
awk -f format.awk q2-test_input.txt > output.txt

Question 3
A simple question. You are given a paragraph in paragraph.txt, made up with strings "student_name" and "roll_no". You are given another mapping in a file input.txt which matches student names with their roll number, separated by ":". Write a script using sed-awk to replace ALL the instances of those 2 strings as per the mapping given in input.txt file
Example: input.txt content =>
Kavya:22B1053
Himanshu:22B0956

Paragraph.txt context =>
Once there was a student named student_name with roll number roll_no.

The output should be =>
Once there was a student named Kavya with roll number 22B1053.

Once there was a student named Himanshu with roll number 22B0956.

Note:-
1) The mapping file doesn't need to always be called "input.txt" or paragraph file be always called "paragraph.txt", the names of the files will be passed as command line arguments; the first one acting as input.txt and second as paragraph.txt
2) Leave an extra line gap between two paragraphs.
3) cut command can be used instead of awk, but try using inline awk.

Script command to execute:-
./replace.sh input.txt paragraph.txt > output.txt