CEng302 ProgLang&AutomataTheory Lab. Work Information

General Information:

Laboratory work: Lab. work consists of performing the experiment of the week and preparing its report. If time is not sufficient, the report may be completed at home.

Submission of the Report: Unless otherwise advised, all the reports should be made ready on the teacher's desk, **before the beginning of the first lecture** which follows the Lab session. (That happens to be the first class hour on Thursday, according to the 2015 spring schedule.) There should be no cover page, and **NO PLASTICS**. In case the report has more than one page, staple the pages together **at the top left-hand corner**. Your name and number should be **at the topmost line, left adjusted**.

The C language is to be used in programming, unless otherwise stated.

Experiment for 2015-03-17:

Background information: An alphabet is given as {***a***, ***b***}. L_1 is the language whose elements consist of all the sentences with even length over this alphabet, each of which has at least one ***a*** and one ***b***. L_2= {***aab***, ***bbba***}. L_3 is the language whose elements consist of all the sentences over {***a***, ***b***}, each of which has a substring in L_2, such that if that substring is deleted, the remaining would be a string in L_1.

Examples:

1- ***a**aab**b*** is in L_3 (the underlined substring is in L_2 and if that is deleted, the remaining is ***ab*** which is in L_1)

2- ***aba**bbba**ba*** is not in L_3 (the underlined substring is in L_2 but if that is deleted, the remaining is ***ababa*** not in L_1)

3- ***baa**bbba**ba*** is **in** L_3 (the underlined substring is in L_2 but if that is deleted, the remaining is ***baaba*** which is not in L_1 ; however, in case the substring ***aab*** of ***b**aab**bba**ba*** which is also in L_2 is deleted instead, the remaining ***bbbaba*** would be a string in L_1.)

Work to be done:

1- Write a program, to enumerate the members of L_1 with length not exceeding 7.

2- Write a program, to determine whether any given string over {***a***, ***b***} with length not exceeding 7 is in L_3 or not.

Questions to be answered:

1- How many elements are there, altogether in L_1 with length not exceeding 7?

List the numbers of sentences according to their lengths. (how many of length 0, how many of length 1, how many of length 2, etc.)

2- For the second part of the work you have done, what are the results you obtained? (Try your program for at least 7 strings, 3 of them being the examples given above.)