Integrative practice
Part 2
Computational mathematics

Professor: Gilberto Huesca Juárez

Name: _____

Student ID: _____

Read the assignment before start
In Canvas, put your name, student ID and group.
This activity is in pairs.
Make the proposed activities and at the end, if there are programs to deliver, upload the files packaged within a ZIP file to Canvas.
The name of the main Java file must be Main.java.
The name of the ZIP file must be Exxxxpart1.zip where xxxxx is your student ID. For example, if your student ID is 123456 , the file name must be E123456part1.zip Use the student ID of the student that uploads the zip to Canvas.
The programs must be properly commented with JavaDoc.
LATE DELIVERY NOT APPLICABLE.
This activity counts as 10% of the final grade.

Make a Java program that reads from a file the elements that define a context-free grammar and that decides if strings can be generated from this grammar.

The grammar will be defined in a txt file. The file shall be defined as follows:

- The first line indicates the set of non-terminal symbols separated by commas composed by only one uppercase character.
- The second line indicates the set of terminal symbols separated by commas composed by only one lowercase character.
- The third line indicates the starting symbol.
- The following lines indicate the productions of the grammar in the following format:

nonTerminalSymbol - > w

where w is a string from $(V \cup \sum)^*$

An example of a line in this file is

A->BaNS

Lambda is indicated with the string lmd. For example

T->lmd

The outcome of the process must be the moves done by an equivalent pushdown automata to generate the string.

Do not worry about validating the values in the input file. Suppose that were built correctly.