CME3203 Theory of Computation

**2022-2023 Fall Semester**

**Due Date: 27.12.2022**

**Assignment – Converting CFGs to Chomsky Normal Form**

A context-free grammar is in Chomsky Normal form if every production is of the form

$$A \rightarrow BC$$

$$A \rightarrow a$$

Where a denotes a terminal and A, B, C denote variables where neither B nor C is the start variable.

In addition, there is a production

$$S \rightarrow \varepsilon$$

if and only if ε belongs to the language.

In your assignment you should convert Context Free Grammar (from CFG.txt) to Chomsky Normal Form. Save CFG.txt to your debug folder, not write the path name in your code. Then you should write each eliminate state on the screen. At the end CNF should be given to the user.

You can implement your solution in C# or java.

**CFG.txt (E is alphabet, € is empty string, - is →)**

E=0,1

S-A1A

A-0B0|€

B-A|10

**Output of the program**

CFG Form

S-A1A

A-0B0|€

B-A|10

Eliminate €

……

……..

Eliminate unit production

……..

……..

Eliminate terminals

……..

……..

Break variable strings longer than 2

……..

……..

CNF

S-AC|WA|AW|1

A-ZD|ZE|ZZ

B-WZ

C-WA

D-BZ

E-AZ

W-1

Z-0

**Report include:**

Description, psedeu code,

One sample screenshots of the program (represent each eliminate states)

In upload folder(studentnumber1_studentnumber2) : program code, report

Assignment will be done as a group of 2 people.