Homework 5

1) Design a turing machine that will convert a positive decimal number to binary. At the beginning of the execution decimal number is surrounded by blank symbols. Decimal number is represented by 'X' symbol as many as the decimal number. For example if the decimal number is '5', then there will be five 'X' symbols on the tape consequetively.

Initial state for decimal value '5':

B	B	B	B	X	X	X	X	X	B

Final state:

B	1	0	1	B	B	B	B	B	B

2) Convert the following grammar to its CNF form:

S -> ASA | aB | CaB
A -> B | CB
B -> b | ε

3) Using the grammar G below, use the CYK algorithm to determine whether string "aabab" is in L(G) or not.

S -> AB | BC
A -> BA | a
B -> CC | b
C -> AB | a

Attention: Prepare and submit your homework with the given properties below. Otherwise your homework will not be accepted.

- Solution of the question 2 and 3 should be in "**pdf**" format and solution with hand-writing **will not be accepted**. Thus, use an editor (word, latex or etc.) to write the solution and convert to pdf.

- Solution of the first question should be prepared with the program **JFLAP**. Design your turing machine and test it. After you finish it, save your model (.jff file). You can look at the link below to see how to construct PDA in JFLAP.

- You have two files **Name_Surname_Hw5 .pdf** and **Name_Surname_Hw5 .jff.** Zip your two files (Example Cagri_Yesil_hw5.zip). Submit to coadsys.