

Assignment 5

1. Use the CFL pumping lemma to show that $0^i 1^j$ where $j = i^2$ is not a context-free language. Do not try to solve the question by giving values to i and j and show all the cases.
2. Design a turing machine that computes the $f(m,n)$ function below
 - $f(m, n) = \max(m-n, 0)$
 - input is in form $0^m 10^n$,
 - output is in form $0^{f(m,n)}$
 - You should design it in jflap
 - Your design **should work properly in jflap** when you run it.
 - Jflap uses \square symbol to represent blank symbol (B). So you can use it. Do not copy the “ \square ” symbol from this document.

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

- Solution of the second question should be in “**pdf**” format and a solution with hand-writing **will not be accepted**.
 - **Name of your file** should be in format: name_surnameQ2.pdf
- **Name of your jflap file** should be in format: name_surnameQ2.jff
- zip your “pdf” and “jff” file together. Name your zip file with the format: **Name_Surname_HwX** (Example Cagri_Yesil_hw5.zip). Submit to coadsys.