Universität Greifswald
Institute für Mathematik and Informatik
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4. Übung "Bioinformatik", SS 16

Aufgabe 1: (20 Credits)
Let X, Y, Z and Z' be distinct strings s.t. the set $\{X, Y, Z, Z'\}$ is substring-free.
Prove the following statement:

If $\mathrm{ov}(X,Y) \geq \max\{\mathrm{ov}(X,Z), \mathrm{ov}(Z',Y)\}$, then $\mathrm{ov}(X,Y)+\mathrm{ov}(Z',Z) \geq \mathrm{ov}(X,Z)+\mathrm{ov}(Z',Y)$.

Aufgabe 2: 10(+10)= (10 (20) Credits)
Let S be a string that has periods of length p and q where $q \leq p$ and $|S| > p + q$.

(a) Show that S has a period of length $p - q$.

(b) Show that S has a period of length $\gcd(p, q)$.
Hint: Euclidean Algorithm

Exercise (2b) is optional and you can get 10 bonus-credits.

Deadline: Monday - May 2, 2016 - 2pm