

Home Work 2

Introduction to Bioinformatics Algorithms, Winter 2011

Given on Monday, January 17, 2011. Due on Sunday, January, 23 (E.mail to TA).

State your answers legibly and concisely. Your solutions will be graded on correctness, elegance, **clarity** and originality. Your proofs should **avoid getting bogged down in too much detail**. Your algorithms should be as efficient as possible (inefficient algorithms will result in lower grades). Please note that the work handed in must be your own. No late assignments will be accepted without prior arrangement. Each problem is 20 points.

Problem 1. A linear bacterial genome A becomes circular and afterwards break (at an unknown position x) to form a linear genome B. During this process, there were many insertions, deletions, and substitutions, and B now looks quite different from A. You are given linear genomes A and B and asked to find a position x , **Warning: it is not a well-defined problem formulation.**

- Transform this problem into a well-defined computational problem and suggest a polynomial algorithm for its solution.

Problem 2. Solve problem 6.22 from the book.

Problem 3. Solve problem 6.27 from the book.

Problem 4. Solve problem 6.31 from the book.

Problem 5. Solve problem 6.37 from the book.