

Homework 7

Due: Monday May 9, 5pm

Problem 1. Consider the following two string sequences:

$$A = \text{ring, sast, si, thi}$$

$$B = \text{ing, str, isisa, th}$$

Do these two sequences have a Post correspondence solution? If yes give the solution.

Problem 2. A Disjunctive Normal Form (DNF) formula, is a boolean formula f which is of the form $f = c_1 \vee c_2 \vee \cdots \vee c_m$, where $c_k = (l_{i_1} \wedge l_{i_2} \cdots \wedge l_{i_p})$, and each l_{i_q} is some literal, where a literal is a boolean variable x_j or its complement $\overline{x_j}$. For example, the formula $(x_1 \wedge x_2) \vee (x_3 \wedge \overline{x_4})$ is a DNF formula.

Consider the problem of determining whether there is an assignment of binary values to the variables of a DNF formula such that the formula is satisfied (its value is 1). Show that this problem is in P .

Problem 3 Show that 4-CNF Sat problem is NP -complete. Each clause consists of exactly 4 literals..