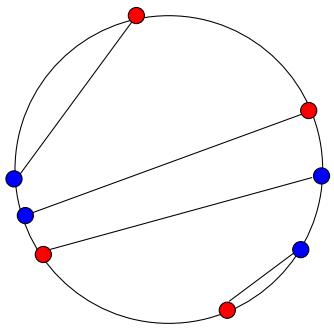
E0 225: Homework 5

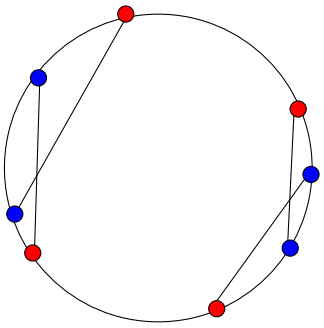
Deadline: Nov 14th, 5pm

Instructions

- Academic dishonesty/plagiarism will be dealt with severe punishment.
- Late submissions are accepted only with prior approval or medical certificate.



(a) Valid matching



(b) Invalid matching

1. We are given a set of n red points and n blue points on a circle. We need to create a *matching* between the red and the blue points, i.e., each red point needs to be assigned to a unique blue point. An edge in the matching is the line segment connecting a red point and a blue point. A matching is considered *valid* if no pair of edges in the matching cross each other; otherwise, it is considered *invalid*. Using dynamic programming, compute a matching (if it exists), such that the length of the longest edge in the matching is minimized. Also, state the running time of your algorithm. You do not have to write the pseudo-code for this problem; but you are expected to clearly state and explain the key dynamic programming recurrence relation.