

Introduction to Algorithm Engineering

Spring 2022

Homework 1

Issue Date: February 28, 2022

Due Date: March 8, 2022

1. Read the algorithm of Crescenzi et al. to obtain the diameter of an undirected graph. On a graph of about 12 vertices and 20 edges, show how the algorithm works. You can pick a random vertex as the vertex u in the algorithm. Count how many BFS traversals are required in your example.
(4 points) **CO-1, CO-3**
2. Write about the configuration of your machine including details such as the number of cores, the memory hierarchy and its sizes, the access times, the transfer sizes, the clock speed, etc.
(4 points) **CO-1**
3. Implement the sample sort algorithm studied in class. For very large data sets, plot the time taken with respect to the input size, and also with respect to the number of pivots. Write down your observations.
(8 points) **CO-1, CO-3**