Discrete optimization | Thursday, May 16, 2019
Prof. F. Eisenbrand | EPFL

The problem can be submitted until May 24, 12 :00 noon, either at the exercise session or into the box in front of MA C1 563.

Student(s) [1] :

Question 1 : *The question is worth* 5 *points.*

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 *Reserved for the corrector*

Consider a directed graph $D = (V, A)$ where every vertex $v \in V$ is reachable by any other vertex. A walk in D is called *Euler tour* if it traverses every edge exactly once and it starts and ends at the same vertex. Design an algorithm which checks if D admits an Euler tour and, if so, finds it in time $O(|V| + |A|)$.

Hint : You might want to prove that $D = (V, A)$ has an Euler tour if and only if for every $v \in V$ the number of arcs in A which have v as the head is equal to the number of arcs with v as the tail.

1. You are allowed to submit your solutions in groups of at most three students.