

UNIVERSITÀ DEGLI STUDI DI PADOVA

SCHOOL OF ENGINEERING DEPARTMENT OF INFORMATION  
ENGINEERING

MASTER DEGREE IN COMPUTER ENGINEERING

## Example of a Title

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## **Abstract**

This is an example of an abstract.



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# Chapter 1

## Introduction

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### 1.1 Section 1.1

#### 1.1.1 Subesction 1.1.1

Write something here...

### 1.2 Math equations examples

$$\left\{ \begin{array}{l} \min \sum_{e \in E} c_e x_e \\ \sum_{e \in \delta(h)} x_e = 2 \quad \forall h \in V \\ \sum_{e \in \delta(S)} x_e \leq |S| - 1 \quad \forall S \subset V : v_1 \in S \\ 0 \leq x_e \leq 1 \quad \text{integer} \quad \forall e \in E \end{array} \right. \quad \begin{array}{l} (1.1) \\ (1.2) \\ (1.3) \\ (1.4) \end{array}$$

Constraints 1.2 impose that every node of the graph must be touched by exactly two edges of the cycle. This group of constraints alone isn't enough to guarantee to find a valid Hamiltonian Cycle: we could find lots of isolated cycles.

## 1.3 Pseudocode examples

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**Algorithm 1** Greedy algorithm for the TSP

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**Input** Starting node  $s \in V$ , Set of nodes  $V$

**Output** List of  $n := |V|$  nodes forming an Hamiltonian Cycle, Cost of the cycle

cycle  $\leftarrow [s]$

cost  $\leftarrow 0$

**for**  $i = 0$  to  $n - 2$  **do**

    next  $\leftarrow \operatorname{argmin}_v \{c_{cycle[i],v} \mid v \notin \text{cycle}\}$

    cost  $\leftarrow \text{cost} + c_{cycle[i],next}$

    cycle[ $i + 1$ ]  $\leftarrow$  next

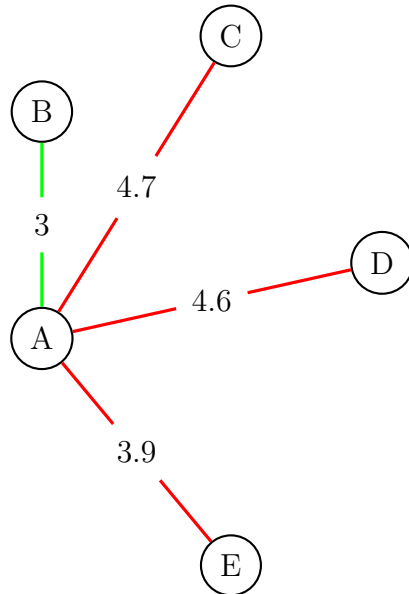
**end for**

cost  $\leftarrow \text{cost} + c_{cycle[n-1],s}$

**return** cycle, cost

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## 1.4 Graphs examples



### 1.4.1 Example of citations

This is a citation to Imai [1].

This is a citation to Rankooh [2].





# Bibliography

- [1] Tatsuya Imai and Alex Fukunaga. “On a Practical, Integer-Linear Programming Model for Delete-Free Tasks and its Use as a Heuristic for Cost-Optimal Planning”. In: *Journal of Artificial Intelligence Research* 54 (Dec. 2015), pp. 631–677. DOI: 10.1613/jair.4936.
- [2] Masood Feyzbakhsh Rankooh and Jussi Rintanen. “Efficient Computation and Informative Estimation of  $h^+$  by Integer and Linear Programming”. In: *Proceedings of the International Conference on Automated Planning and Scheduling* 32 (June 2022), pp. 71–79. DOI: 10.1609/icaps.v32i1.19787.