

# Weekplan: Distributed Algorithms I

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## References and Reading

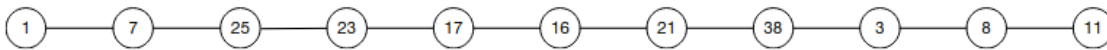
- [1] Jukka Suomela: Distributed algorithms (latest version)  
chapters 1 (warm-up), 6.3, and 6.4 (randomized colouring).

We recommend reading the specified chapters and sections of [1] in detail.

## Exercises

### Exercises on the topic of the simple greedy P3C algorithm

- 1 (w) **Path 3-colouring.** Run the P3C algorithm on the following example:



### 2 Exercises from [1]

- Solve exercise 1.1(a) from [1]
- (Based on exercise 1.2) Argue that it is possible to rewrite the algorithm so that vertices send fewer messages. Which messages are redundant? How would you proceed to rewrite the algorithm?

### Exercises on the topic of the “faster colouring” algorithm

- 3 (w) Consider the node in exercise 1 with ID 25, whose successor has ID 23, and assume we know all IDs are less than 64. Compute its new color  $c(v) = 2i(v) + b(v)$  according to the description in section 1.4.2.

### 4 Exercises from [1]

- solve quiz 1.7
- solve exercise 1.3  
(Hint:  
although you do not know your predecessor, you still know your smallest-labelled neighbour. Utilise this.)
- solve exercise 1.5

### Exercises on the topic of randomised colouring

### 5 Exercises from [1]

- solve exercise 1.4
- solve quiz 6.5
- solve exercise 6.1

**“Star-exercises”**

**6 Exercises from [1]**

- (\*) solve exercise 1.7
- (\*) solve exercise 1.6