

# Latex exercises on writing algorithms

## 1 Exercise 1

Write Algorithm 1! Test how to refer to it in the text (like here).

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**Alg. 1 PartitioningClustering**( $S, n, k$ )

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**Input:** Data set  $S$ ,  $n = |S|$ , number of clusters  $k$

**Output:** Centroids  $c_1, \dots, c_k$

```
1  begin
2      Select randomly  $k$  data points  $p_1, \dots, p_k \in S$ 
3      for all  $p_i$  // Initialization
4          begin
5               $c_i = p_i$ 
6               $C_i = \{p_i\}$ 
7          end
8      while (not converged) // Update clusters
9          begin
10             for all  $p_i \in S$ 
11                 begin
12                     Search  $c_j$  such that  $d(p_i, c_j)$  is minimal
13                      $C_j = C_j \cup \{p_i\}$ 
14                 end
15             Update centroids  $c_i$ 
16         end
17     end
```

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## 2 Exercise 2

Test how to write the following kind of method using an itemize list!

Step 1  $x = x + 1$

Step 2  $y = x^2 + 1$

Step 3 If  $y \leq n$  return to Step 1.

### **2.1 Exercise 3**

Write an algorithm or a method to your paper!