

# Chapter 1

## Algorithm for $R$ between two arbitrary points in a mesh

[?] Here is an example for how to specify an algorithm in pseudo-code.

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**Algorithm 1** Byzantine Leader-Based Epoch-Change (process  $p_i$ ).

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1: State
2:    $lastts \leftarrow 0$ : most recently started epoch
3:    $nextts \leftarrow 0$ : timestamp of the next epoch
4:    $newepoch \leftarrow [\perp]^n$ : list of NEWEPOCH messages

5: upon event  $complain(p_\ell)$  such that  $p_\ell = leader(lastts)$  do
6:   if  $nextts = lastts$  then
7:      $nextts \leftarrow lastts + 1$ 
8:     send message  $[NEWPOCH, nextts]$  to all  $p_j \in \mathcal{P}$ 

9: upon receiving a message  $[NEWPOCH, ts]$  from  $p_j$  such that  $ts = lastts + 1$  do
10:    $newepoch[j] \leftarrow NEWPOCH$ 

11: upon exists  $ts$  such that  $\{p_j \in \mathcal{P} \mid newepoch[j] = ts\} \in \mathcal{K}_i$  and  $nextts = lastts$  do
12:    $nextts \leftarrow lastts + 1$ 
13:   send message  $[NEWPOCH, nextts]$  to all  $p_j \in \mathcal{P}$ 

14: upon exists  $ts$  such that  $\{p_j \in \mathcal{P} \mid newepoch[j] = ts\} \in \mathcal{Q}_i$  and  $nextts > lastts$  do
15:    $lastts \leftarrow nextts$ 
16:    $newepoch \leftarrow [\perp]^n$ 
17:   output  $startepoch(lastts, leader(lastts))$ 
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