
Protocol 4.7. Establishing a rooted tree.

Restrictions: \mathcal{NB} ; identifier function $id : V \rightarrow \mathbb{N}$

State Trans. Sys.: $(\{\text{ROOT}, \text{IDLE}, \text{DONE}\}, \{(\text{ROOT}, \text{DONE}), (\text{IDLE}, \text{DONE})\})$

Initialization: One node in state **ROOT**, all other nodes in state **IDLE**

Local data: $parent : V \rightarrow \mathbb{N} \cup \{-1\}$, initialized $parent := -1$

ROOT

Spontaneously

broadcast (`tree`, id)

#Broadcast root identifier

become **DONE**

IDLE

Receiving (`tree`, i)

set $parent := i$

#Store parent id

broadcast (`tree`, id)

#Broadcast node identifier

become **DONE**
