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1 ─────────────────────── MODULE $Block$ ───────────────────────

3 LOCAL INSTANCE TLC For $Assert()$
4 LOCAL INSTANCE $FiniteSets$ For $Cardinality()$
5 LOCAL INSTANCE $Sequences$ For $Len()$
6 LOCAL INSTANCE $Integers$ For $1 .. n$

8 $Block \triangleq [id : Nat,\ parent : Nat \cup \{\text{"null"}\}]$ Genesis block: $[id{:}0,\ parent{:}\text{"null"}]$

10 $IsPath(blocks) \triangleq \forall b \in blocks : \wedge b \in Block$
11 $\hspace{4.5cm} \wedge b.id \neq b.parent$
12 $\hspace{4.5cm} \wedge \forall ob \in blocks \setminus \{b\} : \wedge ob.parent \neq b.parent$
13 $\hspace{8.3cm} \wedge ob.id \neq b.parent$
14 $\hspace{4.2cm} \wedge \vee \wedge b.id = 0$
15 $\hspace{5.2cm} \wedge b.parent = \text{"null"}$
16 $\hspace{4.7cm} \vee \wedge b.id \neq 0$
17 $\hspace{5.2cm} \wedge \exists pb \in blocks : b.parent = pd.id$

21 $IsPrefix(path1,\ path2) \triangleq \text{TRUE}$

23 $GetPrefix(paths) \triangleq \text{CHOOSE } p \in paths : \text{TRUE}$

25 $HeadBlock(blocks) \triangleq \text{CHOOSE } b \in blocks : \text{TRUE}$

27 $TailBlock(blocks) \triangleq \text{CHOOSE } b \in blocks : \text{TRUE}$

29 $HasPath(s,\ t,\ blocks) \triangleq \text{TRUE}$

31 $GetPath(s,\ t,\ blocks)$

33 $IsChain(blocks) \triangleq \forall b \in blocks : \wedge b \in Block$
34 $\hspace{4.8cm} \wedge b.id \neq b.parent$
35 $\hspace{4.8cm} \wedge \text{LET } head = HeadBlocks(blocks) \text{IN} \quad HasPath(head,\ b,\ blocks)$
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\ * Modification History
\ * Last modified $Thu\ Jun$ 06 14:53:15 CST 2019 by $tangzaiyang$
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