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1  |----- MODULE JupiterInterface -----|
   | This module declares the parameters and defines the operators that describe the interface of a |
   | family of Jupiter specs. |
6  | EXTENDS Integers, SequenceUtils, OT |
7  |-----|
8  | CONSTANTS
9      Client,      the set of client replicas
10     Server,      the (unique) server replica
11     Char,        set of characters allowed
12     InitState    the initial state of each replica

14 | VARIABLES
15     state,      state[r]: state (the list content) of replica r ∈ Replica
16     cincoming,  cincoming[c]: incoming channel at the client c ∈ Client
17     sincoming,  incoming channel at the Server
18     chins      a set of chars allowed to insert; this is for model checking

20 | Comm(Msg)  $\triangleq$  INSTANCE CSComm
22 | Replica  $\triangleq$  Client ∪ {Server}
24 | List  $\triangleq$  Seq(Char ∪ Range(InitState))      all possible lists/strings
25 | MaxLen  $\triangleq$  Cardinality(Char) + Len(InitState) the max length of lists in any states;
26 | We assume that all inserted elements are unique.

28 | ClientNum  $\triangleq$  Cardinality(Client)
29 | Priority  $\triangleq$  CHOOSE f ∈ [Client → 1 .. ClientNum] : Injective(f)
30 |-----|
31 | ASSUME
32 |     ∧ Range(InitState) ∩ Char = {}      due to the uniqueness requirement
33 |-----|
34 | TypeOKInt  $\triangleq$ 
35 |     ∧ state ∈ [Replica → List]
36 |     ∧ chins ⊆ Char

38 | InitInt  $\triangleq$ 
39 |     ∧ state = [r ∈ Replica ↦ InitState]
40 |     ∧ chins = Char
41 |-----|
   | The set of all operations. Note: The positions are indexed from 1. |
45 | Rd  $\triangleq$  [type : { "Rd" }]
46 | Del  $\triangleq$  [type : { "Del" }, pos : 1 .. MaxLen]
47 | Ins  $\triangleq$  [type : { "Ins" }, pos : 1 .. (MaxLen + 1), ch : Char, pr : 1 .. ClientNum] pr: priority
49 | Op  $\triangleq$  Ins ∪ Del      Now we don't consider Rd operations
50 |-----|
   | \ * Modification History |

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