

An Event-B Specification of SL0_Machine
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MACHINE SL0_Machine

SEES L0_Context

VARIABLES

books_in_library
books_on_shelf
books_on_loan
users
newuser

INVARIANTS

inv1 : users \subseteq USER
inv2 : books_in_library \subseteq BOOK
inv3 : books_on_shelf \subseteq books_in_library
inv4 : books_on_loan \in books_in_library \leftrightarrow users
inv5 : books_on_shelf = books_in_library \setminus dom(books_on_loan)
inv6 : newuser \in USER
newuser holds the result of the last NewUser event

EVENTS

Initialisation

begin
act1 : users, books_in_library, books_on_shelf, books_on_loan := $\emptyset, \emptyset, \emptyset, \emptyset$
act2 : newuser : |newuser' \in USER
end

Event AddBook $\hat{=}$

any
book
where
grd1 : book \in BOOK
grd2 : book \notin books_in_library
then
act1 : books_in_library := books_in_library \cup {book}
act2 : books_on_shelf := books_on_shelf \cup {book}
end

Event NewUser $\hat{=}$

choose a newuser that is not currently a user of the library

when
grd1 : users \neq USER
then
act1 : newuser, users : |(users' = users \cup {newuser'}) \wedge (newuser' \in (USER \setminus users))
end

END