$[NAME]$

$[DATE]$

BirthdayBook

$known : \mathbb{P}\, NAME$

$birthday : NAME \pfun DATE$

$known = \mathrm{dom}\, birthday$

InitBirthdayBook

$BirthdayBook$

$known' = \{\}$

AddBirthday

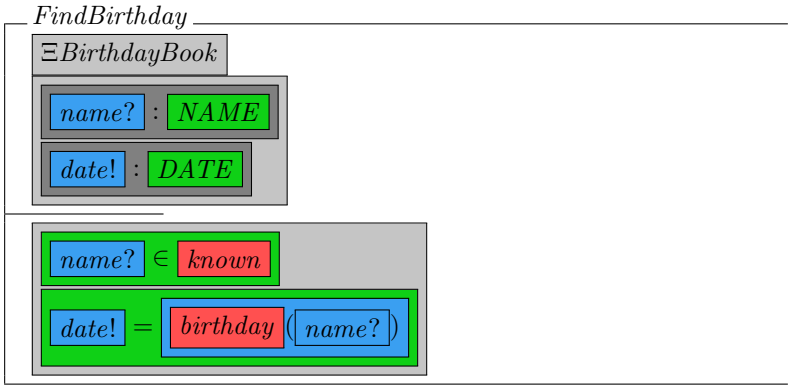
$\Delta BirthdayBook$

$name? : NAME$

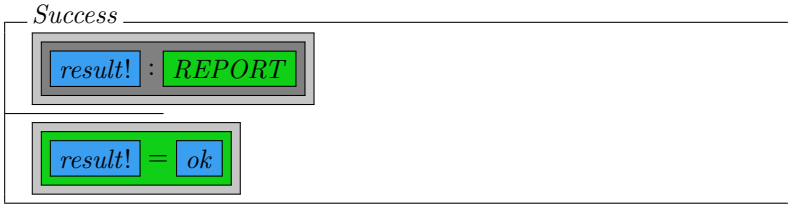
$date? : DATE$

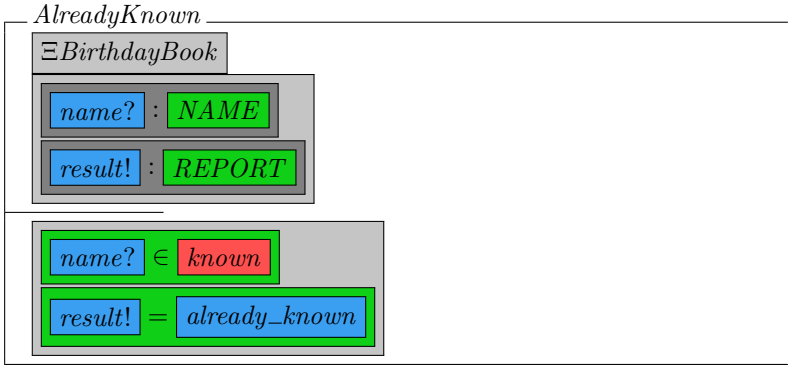
$name? \notin known$

$birthday' = birthday \cup \{ name? \mapsto date? \}$


FindBirthday
ΞBirthdayBook
name? : NAME
date! : DATE
name? ∈ known
date! = birthday (name?)

REPORT ::= ok | already_known | not_known


Success
result! : REPORT
result! = ok


AlreadyKnown
ΞBirthdayBook
name? : NAME
result! : REPORT
name? ∈ known
result! = already_known

NotKnown

$\Xi BirthdayBook$

$name? : NAME$

$result! : REPORT$

$name? \notin known$

$result! = not_known$

$RAddBirthday == (AddBirthday \land Success) \lor AlreadyKnown$

$RFindBirthday == (FindBirthday \land Success) \lor NotKnown$