2. **scheme**
MARRIAGE_BUREAU =
**class**
**type**
Woman,
Man,
Couple = Woman × Man,
Unmarried_Woman_File = Woman-**set**,
Unmarried_Man_File = Man-**set**,
Couple_File = Couple-**set**,
Database′ = Unmarried_Woman_File × Unmarried_Man_File × Couple_File,
Database = {| db : Database′ • is_wff(db) |}

**value**
is_wff : Database′ → **Bool**
is_wff(wf, mf, cf) ≡
(
∀ (w, m) : Couple •
(w, m) ∈ cf ⇒
w ∉ wf ∧
m ∉ mf ∧
(∀ (w′, m′) : Couple • (w′, m′) ∈ cf ∧ (w′, m′) ≠ (w, m) ⇒ w′ ≠ w ∧ m′ ≠ m)
),

is_married : Woman × Database → **Bool**
is_married(w, (wf, mf, cf)) ≡ (∃ m : Man • (w, m) ∈ cf),

is_married : Man × Database → **Bool**
is_married(m, (wf, mf, cf)) ≡ (∃ w : Woman • (w, m) ∈ cf),

register_woman : Woman × Database $\xrightarrow{\sim}$ Database
register_woman(w, (wf, mf, cf)) ≡
(wf ∪ {w}, mf, cf)
**pre** w ∉ wf ∧ ∼ is_married(w, (wf, mf, cf)),

register_man : Man × Database $\xrightarrow{\sim}$ Database
register_man(m, (wf, mf, cf)) ≡
(wf, mf ∪ {m}, cf)
**pre** m ∉ mf ∧ ∼ is_married(m, (wf, mf, cf)),

marry : Woman × Man × Database $\xrightarrow{\sim}$ Database
marry(w, m, (wf, mf, cf)) ≡ (wf \ {w}, mf \ {m}, cf ∪ {(w, m)}) **pre** w ∈ wf ∧ m ∈ mf
**end**