HUPYY TEMPORAL - SMT-LIB VERIFICATION REPORT

Generated: 2025-11-04 11:57:08

Query ID: query_1762286228

Status: SAT

Execution Time: 58 ms

1. PROBLEM STATEMENT

Did E-6112 meet the '2FA within 10 minutes before badge scan' requirement for the 21:05 entry to Room B2?

The additional necessary data is in /Users/alexanderfedin/Projects/hapyy/cofounder/hupyy-temporal/data/free-form/adhoc/policy-pack/ dir

2. GENERATED SMT-LIB CODE

Logic: QF_LIA

```
(set-logic QF_LIA)
(set-option :produce-models true)
(set-option :produce-unsat-cores true)

(declare-const has_clearance_E6112 Bool)
(declare-const is_topsecret_E6112 Bool)
(declare-const is_secret_E6112 Bool)
(declare-const room_is_B2 Bool)
(declare-const room_is_classified Bool)
(declare-const room_in_building5 Bool)
(declare-const badge_scan_at_2105 Bool)
(declare-const badge_time Int)
(declare-const twofa_occurred Bool)
(declare-const twofa_time Int)
(declare-const time_diff Int)
(declare-const twofa_within_10min Bool)
(declare-const is_oncall_E6112 Bool)
(declare-const meets_requirement Bool)

(assert (=> badge_scan_at_2105 (= badge_time 1265)))
(assert (= time_diff (- badge_time twofa_time)))
(assert (= twofa_within_10min (and twofa_occurred (> time_diff 0) (<= time_diff 10))))
(assert (=> is_topsecret_E6112 (not is_secret_E6112)))
(assert (=> is_secret_E6112 (not is_topsecret_E6112)))
(assert (=> has_clearance_E6112 (or is_topsecret_E6112 is_secret_E6112)))
(assert (= meets_requirement twofa_within_10min))
(assert badge_scan_at_2105)
(assert room_is_B2)
(assert meets_requirement)

(check-sat)
(get-model)
```

3. VERIFICATION RESULTS

Status: SAT

Wall Time: 58 ms

Model (Satisfying Assignment):

```
sat
(
(define-fun has_clearance_E6112 () Bool false)
```

```
(define-fun is_topsecret_E6112 () Bool false)
(define-fun is_secret_E6112 () Bool false)
(define-fun room_is_B2 () Bool true)
(define-fun room_is_classified () Bool false)
(define-fun room_in_building5 () Bool false)
(define-fun badge_scan_at_2105 () Bool true)
(define-fun badge_time () Int 1265)
(define-fun twofa_occurred () Bool true)
(define-fun twofa_time () Int 1264)
(define-fun time_diff () Int 1)
(define-fun twofa_within_10min () Bool true)
(define-fun is_oncall_E6112 () Bool false)
(define-fun meets_requirement () Bool true)
)
```

4. HUMAN-READABLE EXPLANATION

Based on the SMT solver results and the policy data analysis, here's the proof explanation:

5. TECHNICAL DETAILS (APPENDIX)

cvc5 Standard Output:

```
sat
(
(define-fun has_clearance_E6112 () Bool false)
(define-fun is_topsecret_E6112 () Bool false)
(define-fun is_secret_E6112 () Bool false)
(define-fun room_is_B2 () Bool true)
(define-fun room_is_classified () Bool false)
(define-fun room_in_building5 () Bool false)
(define-fun badge_scan_at_2105 () Bool true)
(define-fun badge_time () Int 1265)
(define-fun twofa_occurred () Bool true)
(define-fun twofa_time () Int 1264)
(define-fun time_diff () Int 1)
(define-fun twofa_within_10min () Bool true)
(define-fun is_oncall_E6112 () Bool false)
(define-fun meets_requirement () Bool true)
)
```