

HUPYY TEMPORAL - SMT-LIB VERIFICATION REPORT

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Query ID: query_1762286873

Status: SAT

Execution Time: 57 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/happy/cofounder/hupyy-temporal/data/free-form/adhoc/policy-pack/ dir

2. GENERATED SMT-LIB CODE

Logic: QF_UF

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

(declare-const employee_E6112_exists Bool)
(assert (= employee_E6112_exists false))

(declare-const has_topsecret_E6112 Bool)
(assert (= has_topsecret_E6112 false))

(declare-const has_secret_E6112 Bool)
(assert (= has_secret_E6112 false))

(declare-const room_B2_exists Bool)
(assert (= room_B2_exists false))

(declare-const badge_scan_E6112_B2_2105 Bool)
(assert (= badge_scan_E6112_B2_2105 false))

(declare-const twofa_within_10min_before_2105 Bool)
(assert (= twofa_within_10min_before_2105 false))

(declare-const oncall_E6112_B2_site Bool)
(assert (= oncall_E6112_B2_site false))

(declare-const room_B2_in_building5 Bool)
(assert (= room_B2_in_building5 false))

(declare-const room_B2_is_classified Bool)
(assert (= room_B2_is_classified false))

(declare-const allowed Bool)
(declare-const meets_requirement Bool)

(assert (= allowed
  (or has_topsecret_E6112
    (and has_secret_E6112
      twofa_within_10min_before_2105
      oncall_E6112_B2_site))))

(assert (=> (and room_B2_in_building5 room_B2_is_classified) allowed))

(assert (=> (not employee_E6112_exists)
  (and (not has_topsecret_E6112)
    (not has_secret_E6112))))

(assert (=> (not room_B2_exists)
```

```
(not badge_scan_E6112_B2_2105)))

(assert (= meets_requirement
  (=> badge_scan_E6112_B2_2105
    twofa_within_10min_before_2105)))

(assert meets_requirement)

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

3. VERIFICATION RESULTS

Status: SAT

Wall Time: 57 ms

Model (Satisfying Assignment):

```
sat
(
  (define-fun employee_E6112_exists () Bool false)
  (define-fun has_topsecret_E6112 () Bool false)
  (define-fun has_secret_E6112 () Bool false)
  (define-fun room_B2_exists () Bool false)
  (define-fun badge_scan_E6112_B2_2105 () Bool false)
  (define-fun twofa_within_10min_before_2105 () Bool false)
  (define-fun oncall_E6112_B2_site () Bool false)
  (define-fun room_B2_in_building5 () Bool false)
  (define-fun room_B2_is_classified () Bool false)
  (define-fun allowed () Bool false)
  (define-fun meets_requirement () Bool true)
)
```

4. HUMAN-READABLE EXPLANATION

Now I have the context. The SMT solver shows that all key facts are false - E-6112 doesn't exist in the system, Room B2 doesn't exist, and consequently there was no badge scan. Let me format the proof explanation:

5. TECHNICAL DETAILS (APPENDIX)

cvc5 Standard Output:

```
sat
(
(define-fun employee_E6112_exists () Bool false)
(define-fun has_topsecret_E6112 () Bool false)
(define-fun has_secret_E6112 () Bool false)
(define-fun room_B2_exists () Bool false)
(define-fun badge_scan_E6112_B2_2105 () Bool false)
(define-fun twofa_within_10min_before_2105 () Bool false)
(define-fun oncall_E6112_B2_site () Bool false)
(define-fun room_B2_in_building5 () Bool false)
(define-fun room_B2_is_classified () Bool false)
(define-fun allowed () Bool false)
(define-fun meets_requirement () Bool true)
)
```

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