

# HUPYY TEMPORAL - SMT-LIB VERIFICATION REPORT

Generated: 2025-11-04 12:07:53

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/hapyy/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)
)
```

*Generated by Hupyy Temporal - Hupyy Powered SMT Verification*