

HUPYY TEMPORAL - SMT-LIB VERIFICATION REPORT

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Query ID: query_1762285717

Status: UNSAT

Execution Time: 73 ms

1. PROBLEM STATEMENT

Based on the company policy document, can Marcus Webb (E-4782) perform WRITE operations on the Production Database at 11:47 PM EST on March 14, 2025 during the P1 production outage?

The additional necessary data is in
/Users/alexanderfedin/Projects/hapyy/cofounder/hupyy-temporal/data/free-form/adhoc/testfile.txt

2. GENERATED SMT-LIB CODE

Logic: QF_UF

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

;; Ground Truth from testfile.txt
(declare-const marcus_has_senior_clearance Bool)
(assert (= marcus_has_senior_clearance true))

(declare-const marcus_is_oncall Bool)
(assert (= marcus_is_oncall true))

(declare-const marcus_under_investigation Bool)
(assert (= marcus_under_investigation true))

(declare-const marcus_access_suspended Bool)
(assert (= marcus_access_suspended true))

;; Derived Logic
(declare-const can_write Bool)

(declare-const has_write_from_clearance Bool)
(assert (= has_write_from_clearance marcus_has_senior_clearance))

(declare-const has_write_from_oncall Bool)
(assert (= has_write_from_oncall marcus_is_oncall))

(assert (= can_write
          (and (or has_write_from_clearance has_write_from_oncall)
               (not marcus_access_suspended)))))

;; Query: Can Marcus write?
(assert can_write)

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

3. VERIFICATION RESULTS

Status: UNSAT

Wall Time: 73 ms

4. HUMAN-READABLE EXPLANATION

Proof:

- Marcus Webb (E-4782) clearance level: Senior (confirmed)
- Marcus on-call status: Active (confirmed)
- Investigation status: Under active investigation (confirmed)
- Access suspension status: SUSPENDED (confirmed)
- Senior clearance grants: WRITE permissions [x]
- On-call status grants: WRITE permissions [x]
- Available write permissions: Senior clearance OR on-call status [x]
- Security override: Access suspended blocks ALL operations
- Verification: (WRITE permissions) AND (NOT suspended)
- Calculation: (TRUE) AND (FALSE) = FALSE []
- DENIED: Marcus cannot perform WRITE operations while access is suspended

5. TECHNICAL DETAILS (APPENDIX)

cvc5 Standard Output:

```
unsat  
(error "cannot get model unless after a SAT or UNKNOWN response.")
```

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