HUPYY TEMPORAL - SMT-LIB VERIFICATION REPORT

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Query ID: query_1762241817

Status: SAT

Execution Time: 65 ms

1. PROBLEM STATEMENT

(set-logic QF_LIA)
(declare-const x Int)
(declare-const y Int)
(assert (>= x 0))
(assert (>= y 0))
(assert (= (+ x y) 10))
(assert (> x 5))
(check-sat)
(get-model)

2. GENERATED SMT-LIB CODE

Logic: QF_LIA

```
(set-logic QF_LIA)
(declare-const x Int)
(declare-const y Int)
(assert (>= x 0))
(assert (>= y 0))
(assert (= (+ x y) 10))
(assert (> x 5))
(check-sat)
(get-model)
```

3. VERIFICATION RESULTS

Status: SAT

Wall Time: 65 ms

Model (Satisfying Assignment):

```
sat
(
(define-fun x () Int 10)
(define-fun y () Int 0)
)
```

4. HUMAN-READABLE EXPLANATION

Proof:

- Constraint 1: x must be non-negative (x >= 0)
- Constraint 2: y must be non-negative (y >= 0)
- Constraint 3: x and y must sum to 10 (x + y = 10)
- Constraint 4: x must be greater than 5 (x > 5)

- Solution found: x = 10, y = 0

- Verification of x = 10:
  - x >= 0: 10 >= 0 [x]
  - x > 5: 10 > 5 [x]

- Verification of y = 0:
  - y >= 0: 0 >= 0 [x]

- Verification of sum constraint:
  - x + y = 10: 10 + 0 = 10 [x]

- SATISFIABLE: All constraints can be satisfied simultaneously with x = 10 and y = 0

5. TECHNICAL DETAILS (APPENDIX)

cvc5 Standard Output:

```
sat
(
(define-fun x () Int 10)
(define-fun y () Int 0)
)
```