

```

01: MATCH (variable:VARIABLE_DEF {isFinal:true})
    -[mutation:STATE_MODIFIED_BY|STATE_MAY_BE_MODIFIED_BY]
    ->(mutatorExpr)
02: WITH variable, mutation, mutatorExpr, database.
    procedures.getEnclMethodFromExpr(mutatorExpr)
    as mutatorMethod
03: MATCH (mutatorMethod)<-[:DECLARES_METHOD|
    DECLARES_CONSTRUCTOR|HAS_STATIC_INIT]-(mutatorEnclClass)
    <-[:HAS_TYPE_DEF|:HAS_INNER_TYPE_DEF]
    -(mutatorCU:COMPILATION_UNIT)
04: WHERE NOT(variable:ATTR_DEF AND mutation.isOwnAccess AND
    mutatorMethod.isInitializer)
05: WITH variable, database.procedures.
    getEnclosingClass(variable) as variableEnclClass,
    REDUCE(seed='', mutationWarn IN COLLECT( ' Line ' +
    mutatorExpr.lineNumber + ', column ' + mutatorExpr.column
    + ', file \'' + mutatorCU.fileName + '\') |
    seed + '\n' + mutationWarn ) as mutatorsMessage
06: MATCH (variableEnclClass)<-[:HAS_TYPE_DEF|
    :HAS_INNER_TYPE_DEF]-(variableCU:COMPILATION_UNIT)
07: RETURN 'Warning [CMU-Obj50] The state of variable \'' +
    variable.name + '\' (in line ' + variable.lineNumber +
    ', file \'' + variableCU.fileName +
    '\') is mutated, but declared final. The state of \'' +
    variable.name + '\' is mutated in:' + mutatorsMessage

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FIGURE 2. Cypher code implementing the OBJ50-J CERT CMU Java recommendation.