

SingleBitOperation.java

```

1  package com.example;
2
3
4  public final class SingleBitOperation {
5      /**
6       * Flip the bit at position 'bit' in 'num'
7       */
8      public static int flipBit(final int num, final int bit) {
9  3      return num ^ (1 << bit);
10     }
11     /**
12     * Set the bit at position 'bit' to 1 in the 'num' variable
13     */
14     public static int setBit(final int num, final int bit) {
15 3      return num | (1 << bit);
16     }
17     /**
18     * Clears the bit located at 'bit' from 'num'
19     */
20     public static int clearBit(final int num, final int bit) {
21 4      return num & ~(1 << bit);
22     }
23     /**
24     * Get the bit located at 'bit' from 'num'
25     */
26     public static int getBit(final int num, final int bit) {
27 3      return ((num >> bit) & 1);
28     }
29 }

```

Mutations

[9](#) 1. Replaced Shift Left with Shift Right → KILLED
 2. Replaced XOR with AND → KILLED
 3. replaced int return with 0 for com/example/SingleBitOperation::flipBit → KILLED

[15](#) 1. Replaced Shift Left with Shift Right → SURVIVED
 2. Replaced bitwise OR with AND → KILLED
 3. replaced int return with 0 for com/example/SingleBitOperation::setBit → KILLED

[21](#) 1. Replaced Shift Left with Shift Right → KILLED
 2. Replaced XOR with AND → KILLED
 3. Replaced bitwise AND with OR → KILLED
 4. replaced int return with 0 for com/example/SingleBitOperation::clearBit → KILLED

[27](#) 1. Replaced Shift Right with Shift Left → KILLED
 2. Replaced bitwise AND with OR → KILLED
 3. replaced int return with 0 for com/example/SingleBitOperation::getBit → KILLED

Active mutators

- BOOLEAN_FALSE_RETURN
- BOOLEAN_TRUE_RETURN
- CONDITIONALS_BOUNDARY_MUTATOR

- EMPTY_RETURN_VALUES
- INCREMENTS_MUTATOR
- INVERT_NEGS_MUTATOR
- MATH_MUTATOR
- NEGATE_CONDITIONALS_MUTATOR
- NULL_RETURN_VALUES
- PRIMITIVE_RETURN_VALS_MUTATOR
- VOID_METHOD_CALL_MUTATOR

Tests examined

- com.example.SingleBitOperationTest.setBitTest(com.example.SingleBitOperationTest)
(0 ms)
- com.example.SingleBitOperationTest.getBitTest(com.example.SingleBitOperationTest)
(1 ms)
- com.example.SingleBitOperationTest.clearBitTest(com.example.SingleBitOperationTest)
(0 ms)
- com.example.SingleBitOperationTest.flipBitTest(com.example.SingleBitOperationTest)
(0 ms)

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