

**CS 1632 Software Quality Assurance**

**Exercise 1**

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1. **Traceability Matrix**

**FUN-ARGS-NUMBER**: THREE\_ARGS\_REASON,

**FUN\_ARGS\_INVALID**: NEGATIVE\_ARGS\_REASON, NAN\_ARG\_REASON

**FUN-DISPLAY-RESULTS**: FLOAT\_PRECISION\_TEST

**FUN-DISPLAY-ITERATIONS**: EQUAL\_ITER\_TEST

**FUN-SMALL-NUM**: LESS\_THAN\_HUNDRED\_WARNING

1. **Test Cases**

THREE\_ARGS\_REASON:

Test Case: Testing to see if less than 4 arguments are accepted by the program.

Preconditions: When "java -ver" is typed into the command line, "java version "1.8.0\_231" is output to the command line.

Execution Steps: Open a command line terminal and type "java -jar GoatGoatCar.jar Goat Car 1000 " and press enter.

Postconditions: The system displays the usage information and exits.

NEGATIVE\_ARGS\_REASON:

Test Case: Testing to see if negative arguments are accepted by the program.

Preconditions: When "java -ver" is typed into the command line, "java version "1.8.0\_231" is output to the command line.

Execution Steps: Open a command line terminal and type "java -jar GoatGoatCar.jar Goat Car 1000 -4" and press enter.

Postconditions: The system displays "<num\_threads> must be an integer greater than 0." then exits.

FLOAT\_PRECISION\_TEST:

Test Case: Testing to see if the floating-point precision of the probabilities is to 3 places after the decimal.

Preconditions: When "java -ver" is typed into the command line, "java version "1.8.0\_231" is output to the command line.

Execution Steps: Open a command line terminal and type "java -jar GoatGoatCar.jar Goat Car 1000 4" and press enter.

Postconditions: the system displays the probability of car under "Switch:" as "67.000%" and the system displays the probability of goat under "Stay" as "67.000%"

EQUAL\_ITER\_TEST:

Test Case: Testing to see if an equal number of iterations are done over all threads.

Preconditions: When "java -ver" is typed into the command line, "java version "1.8.0\_231" is output to the command line.

Execution Steps: Open a command line terminal and type "java -jar GoatGoatCar.jar Goat Car 1000 4" and press enter.

Postconditions: the system displays "250 iterations" after "Thread 0: ", "Thread 1:", "Thread 2: ", and "Thread: 3"

LESS\_THAN\_HUNDRED\_WARNING:

Test Case: Testing if program gives warning when less than 100 iterations is requested.

Preconditions: When "java -ver" is typed into the command line, "java version "1.8.0\_231" is output to the command line.

Execution Steps: Open a command line terminal and type "java -jar GoatGoatCar.jar Goat Car 10 4" and press enter.

Postconditions: the system displays warning that the number is too low and ask user if they wish to continue.

NAN\_ARG\_REASON:

Test Case: Testing if the system provides proper reason for failure and then exits

Preconditions: When "java -ver" is typed into the command line, "java version "1.8.0\_231" is output to the command line.

Execution Steps: Open a command line terminal and type "java -jar GoatGoatCar.jar Goat Car yeet 4"

Postconditions: the system displays reason for the failure and exits.

1. **Defects**

Write your defects here.