**Thati Vang**

**Data Structures and Algorithms II**

**Project 4**

**User’s Manual**

**Setup and compilation**

1. Download and unzip the submission from eLearning on a Linux box in the multi-platform lab.
2. The submission includes:
   * file.cpp
   * file.hpp
   * main.cpp
   * Makefile
   * monteCarlo1.cpp
   * monteCarlo1.hpp
   * monteCarlo2.cpp
   * monteCarlo2.hpp
   * readings.dat
   * Makefile
   * spec.cpp
   * spec.hpp
   * t1.dat
   * t2.dat
   * t3.dat
   * t4.dat
   * umlDiagram.pdf
   * usersManual.pdf (this document)
3. Environment: This program has been tested in the multi-platform lab and will run there.
4. Compiling: This program includes a Makefile. At the command line in Linux, type make. The program produces an executable entitled main.

**Running the program:** Be sure t1.dat, t2.dat, t3.dat, t4.dat, and readings.dat are in the same directory as the executable. Issue the command ./main to execute the program. No command line arguments are required or checked.

**User input:** No user interaction with the program is required.

**Output:** Output will go to the console. Output to console will be similar to this:

PART 1

Simulation 1:

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Simulation 2:

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Simulation 3:

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Simulation 4:

Number of batches of items: 500

Number of items in each batch: 1000

Percentage of batches containing bad items: 1%

Percentage of items that are bad in a bad set: 1%

Items sampled from each set: 50

Generating Data sets:

Bad Set Batch # Total Bad Total Items % Bad

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0 8 1000 1

100 11 1000 1

200 13 1000 1

300 9 1000 1

400 13 1000 1

Total bad sets = 5

Analyzing Data Sets:

Batch #200 is bad

Batch #300 is bad

Base: 0.990000, Exponent = 50

P(failure to detect bad batch) = 0.605006

Percentage of bad batches actually detected = 40.00%

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PART 2

Simulated days: 100

Number of categories: 7

Ranges and occurrences in each range:

Range Historical Data Simulated Data

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0-2000 15 17

2000-4000 25 30

4000-8000 20 17

8000-12000 15 10

12000-18000 10 4

18000-24000 10 17

24000-28000 5 5

Units of measure: ml

Analytical: 8500.00. Expected value is in the 8000-12000/ml range.

Simulation: 8560.00. Simulated value is in the 8000-12000/ml range.