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**Data Structures and Algorithms II**

**Project 4**

**User’s Manual**

**Setup and Compilation**

1. Download and unzip the submission file from eLearning.
2. The submission file includes:
   * DataSet.cpp
   * DataSet.hpp
   * main.cpp
   * Makefile
   * MonteCarlo.cpp
   * MonteCarlo.hpp
   * readings.txt
   * t1.txt
   * t2.txt
   * t3.txt
   * t4.txt
   * UMLDiagram.pdf
   * UsersManual.docx
3. Environment: This program has been tested in the multi-platform lab and will run there.
4. Compiling: This program includes a Makefile. In the command line, type “make”. The program will create an executable file named dsp4.exe.

**Running the program:** Issue the command “./dsp4.exe” in order to run the program. No command line arguments are required.

**User Input:** The program requires input from text files. When the program runs, it will read these files:

**Part 1**

* t1.txt
* t2.txt
* t3.txt
* t4.txt

The t(n).txt files will have the number of batches, batch size, percentage of the datasets containing bad chips, and percentage of bad chips in a dataset and items sampled. It will look like:

200

1000

25

15

50

**Part 2**

* readings.txt

Reading.txt will have a configuration that has the number of simulations, number of categories, ranges with their occurrences and unit of measurement. It will look like:

100

7

0-2000: 15

2000-4000: 25

4000-8000: 20

8000-12000: 15

12000-18000: 10

18000-24000: 10

24000-28000: 5

ml

**Output:** Part 1 Data Set batches will go to the ds(n).txt files created. Additional output goes to the console. Output will be like:

For Part 1:

Number of batches of items: 200

Number of items in each batch: 1000

Percentage of batches containing bad items: 10%

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

Items sampled from each set: 10

Generating data sets:

Created bad set batch #7

Created bad set batch #11

……

Total bad sets = 27

Analyzing data sets:

Batch #35 is bad

Batch #172 is bad

….

Bad sets found = 3

Base: 0.99 exponent: 10

P(failure to detect bad batch): 0.904382

Percentage of bad batches actually detected: 11.1111%

For Part 2:

Simulated days: 100

Number of categories: 7

Ranges and occurrences in each range:

0-2000: 15

2000-4000: 25

4000-8000: 20

8000-12000: 15

12000-18000: 10

18000-24000: 10

24000-28000: 5

Units of measure: ml

Analytical model: 8500. Expected value is in the 8000-12000/ml range.

Simulation: 8530. Expected value is in the 8000-12000/ml range.