

Programing Assignment 4
CS-185, Spring '99, Dr. C. S. Tritt

Due 4/28/99

Write a program and a module containing one or more functions or subroutines that reads experimental data from a file, scales it and writes the results to a file in bar chart form.

The input data file is to be called *experiment.txt*. The first line in the input file will contain an integer test ID number. The next line will contain a time step value (in seconds), an offset value (in mV) and a scale value (N/mV). The next line will contain the maximum measurement value in the file. The remaining lines will contain individual measurement values. For example, a typical data file might contain:

```
2345
5.0 10.0 0.8
110.3
10.1
22.3
36.2
50.5
62.7
74.6
86.3
96.9
104.5
110.3
100.8
90.7
80.4
70.2
```

Measured values, m , are to be scaled as followed. First, they are to be converted into engineering units, $e = (m - \text{offset}) * \text{scale}$. Second, they are to be normalized and converted to integers so the maximum value is 50, $n = \text{nint}(e/\text{max}*50.)$. The resulting normalized values should then be plotted in bar chart form.

The output file is to be called *results.txt*. It should contain the test ID number on the first line. The second line should contain the maximum measured value (full scale). The remaining lines in the file should contain times followed by bars indicating the value of the measured value at that time. For example, the output file corresponding to the input file above would contain:

```
Test ID: 2345
Full Scale: 80.24 N
0.0 ***...
5.0 ****...
```