

CS344 Lab 5 – Weather Data Analysis

Assigned: 9/25/09

Points: 20

Purpose

The purpose of the lab is to learn how to read and write data to and from a file.

Process

In this lab you will create two programs. The first one will create a data file using FORTRAN that projects characteristics about the flight of a weather balloon. The second program will read this data file and compute statistics on the balloon.

Steps

Program 1:

Using FORTRAN create a file called balloon.dat that contains time, altitude, and velocity information. This information is calculated as follows:

$$\begin{aligned} \textit{altitude} &= -0.12t^4 + 12t^3 - 380t^2 + 4100t + 220 \\ \textit{velocity} &= -0.48t^3 + 36t^2 - 760t + 4100 \end{aligned}$$

Where t is the time in hours since the launch of the balloon. *Altitude* is measured in **meters** and *velocity* is **meters/hour**. Write the time, altitude, and velocity to balloon.dat for the time intervals 0 to 20.

Program 2:

Using FORTRAN read in the data from the file balloon.dat and calculate the following information:

- Display the input file
- Maximum height
- Minimum height
- Maximum velocity (**meters/sec**)
- Minimum velocity (**meters/sec**)

The display should be **neatly formatted**. **Do not assume that there is only 21 data points in the file.**

Turn in your work as you did for the previous labs.