Homework # 9

Due next Wednesday

1. Copy the file hw9prob1data from the class area, which consists of 180 lines of 512 floating point real samples each. Each line contains the projection of an image at an angle theta, where line 1 corresponds to 0 degrees, line 2 to 1 degree, and so forth up to line 180 at 179 degrees. Implement a tomographic processor to reconstruct the original image.

(Hint: You may find it easier to create a simulated data set consisting of a single impulse, and then trace its form at each step of the processing procedure. Once you obtain a usable impulse response, run the code on the actual data.)

2. A byte data file is located in the class directory and entitled hw9prob2data. This is a 512 by 512 byte file with an intensity image of a recognizable landmark. Write a projection routine to generate the 180 projections of the image, each spaced 1 degree apart. Create a tiff image of the projections, similar to the input file for problem 1, and submit.

Next, process your data into a reconstructed image and display, commenting on image artifacts.

Submit file solutions to the above in the usual manner.