

GEOP 320
Spring 2009
Amplitude Gain Programming Project
(Due date: 1/6/2009)

Objective

- The objective of this project is to write programs that perform the following operations:
 1. AGC amplitude gain.
 2. t^m amplitude gain.
- The grade of this project will be equivalent to 20% of the total course grade.
- The project grade will be used to substitute 80% of the midterm exam in the final course grade.

Project Description

- (1) The group is charged with the following tasks.
 - (a) Writing two programs (25%):
 - A. One that performs AGC gain recovery on the input seismic trace.
 - B. One that performs t^m gain recovery on the input seismic trace.
 - (b) Testing your program on the inputs provided below (25%). This testing should be demonstrated during a lab session.
 - (c) Write a brief (3-5 pages) report providing the following parts (25%):
 - A printout of the program.
 - Results of the testing.
 - Comments on the strengths and weaknesses of the program.
 - (d) Professionally present your project (25%).
- (2) Use the input seismic trace on the next page to test your program.

Notes

- Your program should be flexible to accept input seismic trace of any length.
- The user should only provide the following inputs:
 1. The input seismic trace (amplitudes and corresponding times).
 2. The AGC window length for the AGC gain program.
 3. The m exponent for the case of the t^m program.
- The program should be able to output the gained seismic trace using the desired operation.

- **Input Seismic Trace**

| <u>T (s)</u> | <u>A</u> |
|--------------|----------|
| 0.004 | 2.5E+08 |
| 0.008 | 1.25E+08 |
| 0.012 | 83333333 |
| 0.016 | 62500000 |
| 0.02 | 50000000 |
| 0.024 | 41666667 |
| 0.028 | 35714286 |
| 0.032 | 31250000 |
| 0.036 | 27777778 |
| 0.04 | 25000000 |
| 0.044 | 22727273 |
| 0.048 | 20833333 |
| 0.052 | 19230769 |
| 0.056 | 17857143 |
| 0.06 | 16666667 |
| 0.064 | 15625000 |
| 0.068 | 14705882 |
| 0.072 | 13888889 |
| 0.076 | 13157895 |
| 0.08 | 12500000 |
| 0.084 | 11904762 |
| 0.088 | 11363636 |
| 0.092 | 10869565 |
| 0.096 | 10416667 |
| 0.1 | 10000000 |
| 0.104 | 9615385 |
| 0.108 | 9259259 |
| 0.112 | 8928571 |
| 0.116 | 8620690 |