In the Name of God
Course: ES_03-04_1st term
Project 2
Assigned: 28-7-1403
Due: Your representative will announce me.

1 Choose an earth model (consisting of 5 horizontal layers with a thickness of each layer about 300-500 m over a half-space). Assume that each layer's velocity is constant and increases as the layer number increases. Take the density of each layer according to the Gardner relation. (a) Calculate the reflectivity series. (b) Convolve it with a zero-phase wavelet. Take the sampling interval for both sequences 4 ms. Plot the reflectivity series, the source-time function, and their convolution in two-way time. (c) Plot reflections for reflected *P*-waves for the split spread survey consisting of 60 stations (take the near offset, and trace interval 150, and 25 m, respectively). (d) Add the 1st, 2nd and 3rd order multiples between the free surface and the 1st reflector of the earth model of 1a. (e) Generate a new shot record over (d). Plot results of (d) and (e).

2 Calculate and plot the normal-moveout velocity profile over the shot record of 1c using the semblance formula (Eq. (9.59) by Sheriff and Geldart, 1995). Choose the velocity step of 100 m/s.

3 Calculate and plot the interval velocity, average velocity, root-mean-square velocity, and stacking velocity vs. tow-way time over the model of 1a.

Your PPTs should have a table of contents, theories, flowcharts, computer codes, conclusions, and references. I encourage you to work in groups, but you must have your PPTs. Please e-mail your PPTs to my Gmail one day before the due date.
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Regards,
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