

**PHYS-4007/5007: Computational Physics**  
**Problem Set 1 (Due: 11 September 2009)**

1. (20 pts) Write a program in both Fortran 77 and IDL that does the following:
  - Asks the user to enter their name (first and last in that order) and age.
  - Calculates the square of their age and the square-root of their age.
  - Prints their name, age, age-squared, and the square-root of their age to the screen in the format:

Last Name, First Name:   nn   n.nnnEee   n.nnnn

where age is printed as an integer, age-squared is printed in scientific notation, and the square-root of age as a real number in floating point notation. Make sure that the ':' mark appears after the name and before the numbers. For example, for me the output would look like:

Luttermoser, Donald:   52   2.704E03   7.2111

2. (30 pts) Write a code in IDL that calculates the maximum height obtained ( $y_{\max}$ ), down range distance ( $x_{\max}$ ), and total time of flight ( $T$ ) for a projectile launched with an initial velocity  $v_o$  and projection angle  $\theta_o$ . Your code should request the user to input both  $v_o$  and  $\theta_o$  and output  $y_{\max}$ ,  $x_{\max}$ , and  $T$  with no more than 4 significant digits. Assume the projectile is launched from ground level and ignore air resistance.

You do not need to write anything on paper for this assignment. Just email both your Fortran 77 and IDL codes to me at **lutter@etsu.edu** by the due date listed above.