1. Write a function to compute the day of the year (on the Gregorian calendar), given the numerical values of year, month, and day of month. For example, given 2013, 12, 31, the output of your function should be 365. Ignore leap years. Name your function "DayOfYear". (Display nothing.)

2. (continue 1) Modify your code to account for leap years. Leap years occur every 4 years, except for any year that is divisible by 100 and not divisible by 400. For example, 2000 was a leap year, but 2100 will not be a leap year. (Display nothing.)

3. (continue 1-2) Modify your code to set the output = 0 when an input value is inappropriate. (Display nothing.)

4. (continue 1-2-3) Test your function (and display the output) with these data:
year=2013, month=12, day=31
year=2000, month=12, day=31
year=2100, month=12, day=31
year=2013, month=13, day=31
year=2013, month=0, day=31
year=2013, month=12, day=32
year=2013, month=12, day=0

5. Use the following code to plot atmospheric CO2 (in ppm) vs time (in years). (Display plot only.)
```
load CO2_13  % from Dropbox folder "scripts"
plot(d(:,1),d(:,2)), grid
```

6. (continue 5) Fit the CO2 data to a polynomial of order 2, and show the resulting polynomial on the same graph with the original data. (Display plot only.)

7. (continue 5-6) Given the CO2 data and polynomial fit, compute atmospheric CO2 in [1955,2055]. Display the CO2 value for the year 2055. (No other display.)

8. Given the three simultaneous equations: 3x+2y+z=-10, 2x+xz=1, 4x+5z=-19
   Find x, y, and z using symbolic methods. Display x, y, and z.

9. Repeat 8 using numerical methods, and initial guesses of all zeros. Display x, y, and z.

10. Repeat 9, but use all initial guesses = -4. Display x, y, and z.

11. Solve this equation for t=[0,20], and initial conditions = 0.
    Let x=1 for 0≤t<10 and zero otherwise. Use an anonymous function.

$$\frac{d^2y}{dt^2}+1.6e^{(-0.16y)}\frac{dy}{dt}+16y=16x$$

12. Plot y vs t, and show x on the same axis. Add appropriate labels.

13. Repeat 12, to find a symbolic solution. [Empty structure would indicate no solution.]

14. When you finish all other problems,
    run this code in Command Window.

```
clear all, close all, figure(2014)
c=[72,97,112,112,121,32];
y=fix(1e4/5)+ceil(13.5);
v=[char(c),num2str(y),char([32,33,33])];
text(0.06,0.6,v,'fontsize',48,'color',[1,0,0]), axis off
```