Problem Set # 4

Engineering 104 - Fundamentals of Engineering Computing

Complete the following problems in `Excel` and include as part of the submission of the appropriate assignment. Your assignment file should include a proper heading, comments and have a clear organizational structure. Each problem in the combined assignment should have its own tab in a combined `Excel` workbook.

Excel, Lecture #4 Problems - Excel III (9 Points)

Problem 4.1 (5 Points)

An engineer measures the diameters and lengths of a number of steel rods. Calculate the cross-sectional area and total volume of each of the rods.

Rod	***Diameter***	***Length***
A	0.125 in	12.80 in
B	0.15 in	1.1 ft
C	0.1250 in	1.1 ft
D	.01250 in	1.105 ft
E	0.38 in	8.11 in
F	0.3750 in	8.110 in
G	0.3750 in	8.1 in
H	2.2 in	5.29 in
I	2.20 in	5.290 in

Complete this in Excel. Note that not all the lengths are in inches. Your results should be in a table like this:

Rod	Diameter (in)	Length (mixed)	Length (in)	Area (in^2)	Volume (in^3)
A	0.125	12.80			
B	0.15	1.1			
C	0.1250	1.1			
D	.01250	1.105			
E	0.38	8.11			
F	0.3750	8.110			
G	0.3750	8.1			
H	2.2	5.29			
I	2.20	5.290			

Note: When you use the 'increase decimal' or 'decrease decimal' buttons to control the number of digits

displayed, this affects the display only, not the way the number is stored in Excel. Therefore if you have limited the digits displayed in the Area cell, it is still ok to use the Area cell in the computation of Volume because internally you have not done any rounding. Therefore you are not violating the rule about not rounding intermediate results. Remember that conversion constants do not limit precision.

Problem 4.2 (4 Points)

Import the census data file census_data.csv. Also see the data description in census_data.pdf. You will perform a 2-level sort, first sort the table by Region, then sort based on State Name. Create a table of region Name and regions population. Get Region names from the pdf file. Compute each Region's percentage of the US population. Format the percentage as a percentage with no digits after the decimal. Display the region names and percent populations as a pie chart. Make sure you can tell which region goes with which portion of the pie chart.