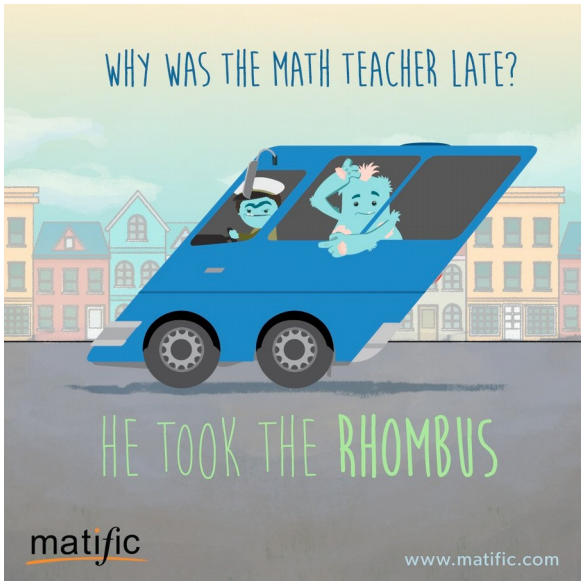
CSC 218
Homework, Asst. #5

Purpose: Learn to use arithmetic instructions, control instructions, compare instructions, and conditional jump instructions.
Due: Tuesday (2/12)
Points: 50

Assignment:

Write a simple assembly language program to calculate the some geometric information for each Rhombus[1] (parallelogram with all sides equal) in a series of Rhombus's. The program should find the area, perimeter, and semi-perimeter for each Rhombus. Once the areas, perimeters, and semi-perimeters are computed, the program should find the minimum, maximum, middle value, sum, and average for the areas, perimeters, and semi-perimeters.
All data must be treated as unsigned values (i.e., use of MUL and DIV, not IMUL or IDIV). The JA/JB/JAE/JBE must be used (as they are for unsigned data).

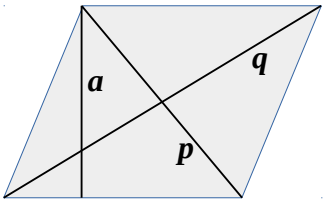


Note, for an even number of values, the estimated median it is the integer average of the first, last, and two middle values.

$$areas[n] = \frac{pDiags[n] \times qDiags[n]}{2}$$

$$perimeters[n] = 4 \times aSides[n]$$

$$semiPerimeters[n] = \frac{perimeters[n]}{2}$$



Do ***not*** change the sizes/types of the provided data sets. You may declare additional variables as needed.

Note, no template is provided. Create the program source file based on the previous assignments.

Submission:

When complete, submit:

- *A copy of the **source file** via the class web page (assignment submission link). Assignments received after the start time of class (section 1, 5:30pm or section 2, 2:30pm) will not be accepted.*

1 For more information, refer to: http://en.wikipedia.org/wiki/Rhombus

Assignment #5 Provided Data Sets:

Use the following provided data declarations for assignment #5.
Note, a copy of the data set is provided on the class web site.

```
; -----
;  Data Set

aSides       dw     2148,  794, 2622, 2623, 2138
             dw     1671, 2145, 1552, 1219, 1675
             dw      812,  800,  815, 2633, 1205
             dw     1676, 2147, 1555, 2140, 3113
             dw      808, 2145, 2651, 2645, 3615
             dw     1677,  820, 1526, 2147, 3611
             dw     1552, 1219, 1675, 1671

pDiags       dw     1133, 1114, 1123, 1131, 1134
             dw     1164, 1153, 2234, 1123, 1165
             dw     1144, 1112, 1123, 1142, 1123
             dw     1165, 1164, 2273, 1156, 1134
             dw     1153, 1153, 1243, 1153, 1135
             dw     1144, 1169, 2134, 1133, 1132
             dw     2234, 1123, 1165, 1164

qDiags       dd     4145, 1134, 5123, 5123, 4123
             dd     3134, 4134, 2156, 2164, 3142
             dd     1153, 1153, 1184, 5142, 2134
             dd     3145, 4134, 2123, 4123, 6123
             dd     1134, 4134, 5156, 5164, 7142
             dd     3153, 1153, 2184, 4142, 7134
             dd     2156, 2164, 3142, 3134

length       dd     34

aMin         dd     0
aEstMed      dd     0
aMax         dd     0
aSum         dd     0
aAve         dd     0

pMin         dd     0
pEstMed      dd     0
pMax         dd     0
pSum         dd     0
pAve         dd     0

sMin         dd     0
sEstMed      dd     0
sMax         dd     0
sSum         dd     0
sAve         dd     0

; ------------------------------------------------------------
; Uninitialized data

section      .bss

areas        resd   34
perims       resd   34
sPerims      resd   34
```