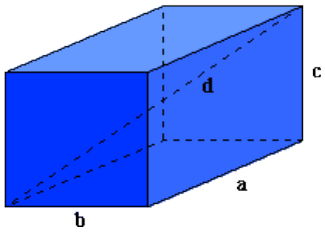
CSC 218
Homework, Asst. #5

Purpose:	Learn to use arithmetic instructions, control instructions, compare instructions, and conditional jump instructions.
Due:	Tuesday (6/13)
Points:	50

Assignment:

Write a simple assembly language program to calculate the some geometric information for each rectangular parallelepiped in a series of rectangular parallelepipeds. Specifically, the program will find the volume and surface area for each of the rectangular parallelepipeds in a set of rectangular parallelepipeds. Once the values are computed, the program should find the minimum, maximum, middle value, sum, and average for the volumes and surface areas.



Note, for an odd number of items, the middle value is defined as the middle value. For an even number of values, it is the integer average of the two middle values. The data does ***not*** need to be sorted.

$$volumes(n) = asides(n) * bsides(n) * csides(n)$$

$$surfaceAreas(n) = 2\left[asides(n) * bsides(n) + asides(n) * csides(n) + bsides(n) * csides(n)\right]$$

Do ***not*** change the sizes/types of the provided data sets. All data is *unsigned*. As such, the DIV/MUL would be used (not IDIV/IMUL). The JA/JB/JAE/JBE must be used (as they are for unsigned data).

There is no provided main.
You may declare additional variables as needed.

Hint:

Pay close attention to the data types. The *aSides[]* array is bytes, the *bSides[]* array is words, and the *cSides[]* array is double-words.

Submission:

When complete, submit:

- *A copy of the **source file** via the class web page.*
  Assignments received after the start time of class will not be accepted.

Assignment #5 Provided Data Sets:

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

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

aSides        db        10,    14,    13,    37,    54
              db        31,    13,    20,    61,    36
              db        14,    53,    44,    19,    42
              db        27,    41,    53,    62,    10
              db         9,     8,     4,    10,    15
              db         5,    11,    22,    33,    70
              db        15,    23,    15,    63,    26
              db        24,    33,    10,    61,    15
              db        14,    34,    13,    71,    81
              db        38,    73,    29,    17,    93

bSides        dw       133,   114,   173,   131,   115
              dw       164,   173,   174,   123,   156
              dw       144,   152,   131,   142,   156
              dw       115,   124,   136,   175,   146
              dw       113,   123,   153,   167,   135
              dw       114,   129,   164,   167,   134
              dw       116,   113,   164,   153,   165
              dw       126,   112,   157,   167,   134
              dw       117,   114,   117,   125,   153
              dw       123,   173,   115,   106,    13

cSides        dd      1145,  1135,  1123,  1123,  1123
              dd      1254,  1454,  1152,  1164,  1542
              dd      1353,  1457,   182,  1142,  1354
              dd      1364,  1134,  1154,  1344,   142
              dd      1173,  1543,  1151,  1352,  1434
              dd      1355,  1037,   123,  1024,  1453
              dd      1134,  2134,  1156,  1134,  1142
              dd      1267,  1104,  1134,  1246,   123
              dd      1134,  1161,  1176,  1157,  1142
              dd      1153,  1193,  1184,   142,  2034

length        dd     50

vMin          dd     0
vMid          dd     0
vMax          dd     0
vSum          dd     0
vAve          dd     0

saMin         dd     0
saMid         dd     0
saMax         dd     0
saSum         dd     0
saAve         dd     0

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

section       .bss

volumes       resd   50
surfaceAreas  resd   50
```

Note, the ".bss" section is for uninitialized data. The "resd" is for reserve double-words.