Assignment # 4

1. Given this code as a starting point…

```
.data
array SWORD 50 DUP(?)
sentinel SWORD 0FFFFh
.code
mov esi,OFFSET array
mov ecx,LENGTHOF array
L1:     cmp WORD PTR [esi],0     ; check for zero


        (fill in your code here)


quit:
```

…write a program that locates the first nonzero value in the array. If none is found, let ESI point to the sentinel value. Make sure that your code compiles to completion.

2. Write a program that implements the following pseudocode in assembly language. (NOTE: All values are unsigned.)

```
if( ebx <= ecx )
{
  eax = 5;
  edx = 6;
}
```

3. Write a program that implements the following pseudocode in assembly language. (NOTE: All values are signed.)

```
if( ebx <= ecx && ecx > edx )
{
  eax = 5;
  edx = 6;
}
```

4. Write a program that implements the following loop, using unsigned 32-bit integers.

```
while( ebx <= val1)
{
        ebx = ebx + 5;
        val1 = val1 - 1
}
```

5. Create a procedure named CalcGrade that receives an integer value between 0 and 100, and returns a single capital letter in the AL register. Preserve all other register values between calls to the procedure. The letter returned by the procedure should be according to the following ranges:

Score Range	**Letter Grade**
A	90 to 100
B	80 to 89
C	70 to 79
D	60 to 69
F	50 to 59

Write a test program that generates 10 random integers between 50 and 100, inclusive. Each time an integer is generated, pass it to the CalcGrade procedure. You can test your program using a debugger, or if you prefer to use the book's library, you can display each integer and its corresponding letter grade.