Exercise #4.1

Question: Translate the following pseudo-code assignment statements into IBM PC assembly language. Assume that all variables are **signed words**.

    a.   X = A+ 19 –B

Answer:

```
X       dw      0           ; define X as a word size variable.
        mov     ax, A       ; move A to ax.
        mov     bx, B       ; move B to bx.
        add     ax, 19      ; add 19 on top of ax.
        sub     ax, bx      ; subtract bx from ax.
        mov     X, ax       ; assign ax to X.
```

    b.   X = X + 1

Answer:

```
inc     X
```

Question: Suppose that Digit is a byte variable containing a digit character (e.g., '3'). Write assembly code to convert Digit to its numeric value and store it in the word variable Value.

Answer:

```
            .model small
            .stack 100
            .data
Digit       db      '3'         ; the byte variable to be converted.
Value       dw      0           ; the word variable to store answer.
            .code
prog        proc
            mov     ax, @data
            mov     ds, ax
            sub     Digit, '0'  ; subtract '0' from Digit
            mov     bl, Digit   ; store the value of Digit in bl.
            mov     bh, 0       ; extend bl to bx.
            mov     Value, bx   ; assign bx to the variable Value.
```

```
prog    endp
        end     prog
```