Ch 8 In-class Exercise (Code Segments Only)

I. The general form of a pre-test loop is

    while(condition) statement

and the general from of a post-test loop is

    do
        statement
    while (condition)

1. Show that any post-test loop can be re-programmed using a pre-test loop.
2. Show that any pre-test loop can be re-programmed using a post-test loop.

II. Rewrite the following pseudo code segment using a counter-controlled loop structure in the specified languages:

    k=(j+13)/27
loop:
    if k>10 then goto out
    k=k+1
    i=3*k-1
    goto loop
out: . . .

Discuss which language, for this code, has the best readability, writeability, and combination of the two.
3. Java
4. Fortran
5. Ada

III. Rewrite the following code segment using a multiple-selection statement (not an if) in the following languages:

```
if ((k==1) || (k==2)) j=2*k-1
if ((k==3) || (k==5)) j=3*k+1
if(k==4) j=4*k-1
if((k==6)|| (k==7) || (k==8)) j=k-2
```

6. Ruby
7. Python

IV. COND is a function in the Scheme functional programming language.

8. Translate the following call to Scheme's COND to C and set the resulting value to y.

```
(COND
    (( > x 10) x)
    (( < x 5) (* 2 x ))
((= x 7) (+ x 10))
)
```