Practice Drill 4

Question 1

What is the value of each variable after the end of the program?

a)

```
n = 1
k = 2
r = n
if k < n:
    r = k
```

No Change

b)

```
n = 1
k = 2
if n < k:
    r = k
else:
    r = k + n
```

r=2
n=1
k=2

c)

```
n = 1
k = 2
r = k
if r < k:
    n = r
else:
    k = n
```

k=1
n=1
r=2

d)

```
n = 1
k = 2
r = 3
if r < n + k:
    r = 2 * n
else:
    k = 2 * r
```

k=6
n=1
r=3

Question 2

Explain the difference between:

```
s = 0
if x > 0:
    s = s + 1
if y > 0:
    s = s + 1
```

and

```
s = 0
if x > 0:
    s = s + 1
elif y > 0:
    s = s + 1
```

In the first code both the IF statements will always run no matter the con being True or False whereas in the second code elif will only run if the firs condition comes out as False.

Question 3

Suppose `x` and `y` are variables each of which contains a number. Write a code fragment that sets `y` to `x` if `x` is positive and to 0 otherwise.

```
if x >= 0:
    y=x
else:
    y=0
```

Question 4

Write pseudocode for a program that assigns letter grades for a quiz, according to the following table:

Score	Grade
90–100	A
80–89	B
70–79	C
60–69	D
< 60	F

```
DECLARE grade AS CHAR
DECLARE score AS INTEGER
IF score>89 THEN
    grade <-- "A"
ELSEIF score>79 THEN
    grade <-- "B"
ELSEIF score>69 THEN
    grade <-- "C"
ELSEIF score>59 THEN
    grade <-- "D"
ELSE
    grade <-- "F"
```

Question 5

Write a program that reads an integer and prints whether it is negative, zero, or positive.

Question 6

Write a program that reads three numbers from the input and prints *"all the same"* if they are all the same, *"all different"* if they are all different, and *"neither"* otherwise.

Question 7

Write a program that reads from the user input, two things:

- a temperature value (number)
- a single character `C` for Celsius or `F` for Fahrenheit

Print whether water is liquid, solid, or gaseous.

Hint: *Water freezes at 0 degrees Celsius (32 degrees Fahrenheit) and boils at 100 degrees Celsius (212 degrees Fahrenheit).*