

Assignment 3

8 October 2012

Due Monday 15 October in class.

Part one

Read the pseudo-code below and answer the questions that follow.

```
step 1. let Y be X + 5
step 2. if Y > 0 then set X to Y * 2
step 3. set X to X * 3
step 4. output X
```

1. Does this algorithm contain a *conditional* statement? If so, which one?
2. Does this algorithm contain *iteration*? If so, which steps repeat?
3. Trace the algorithm with the input $X = 4$. What does it output?
4. Trace the algorithm with the input $X = -3$. What does it output?
5. Trace the algorithm with the input $X = -7$. What does it output?

Part two

Here, C refers to a *sequence* of variables (an array), and the notation $C[I]$ uses the value of I to determine which C to access.

```
step 1. set K to C[1]
step 2. set N to 1
step 3. set I to 2
step 4. if I > 7 then output N then K and stop
step 5. if C[I] = K then set N to N+1 and go to step 9
step 6. output N then K
step 7. set K to C[I]
step 8. set N to 1
step 9. set I to I+1
step 10. go back to step 4.
```

Below are the initial values of the array, and other variables you will use.

K :
N :
I :
C[1] : apple
C[2] : apple
C[3] : banana
C[4] : carrot
C[5] : carrot
C[6] : carrot
C[7] : date