Practice QUESTions (and answers)

BYOB

1) List indexing

a) Get (or iterate over) every row in a list

```
set [ INDEX ] to 1
repeat [ length of list [ LIST ]]
    get item [ INDEX ] of [ LIST ]
    change [ INDEX ] by 1
```

b) Get a specific element (say, letter) in a row of a list (of, say, words)
   (i.e. get item [ X ] of row [ Y ] of [ LIST ])

```
get letter [ X ] of [ get item [ Y ] of list [ LIST ] ]
```

2) Repeat Until vs. Repeat

What's wrong with this?

```
set [ LIST ] to [ 1, 1, 2, 2, 3, 13, 3, 4, 4, 5]
set [ INDEX ] to 1
set [ NUMTOFIND ] to 13
repeat while [ [ [ item [ INDEX ] of [ LIST ] ] > [ NUMTOFIND ] ] and
            [ item [ INDEX ] of [ LIST ] ] < [ NUMTOFIND ] ]]
    change [ INDEX ] by [ 1]
report [ INDEX ]
```

What if the number isn't in the list?

How would you fix it?

```
repeat [ length of [ LIST ]]
    if [ item [ INDEX ] of [ LIST ] = [ NUMTOFIND ]]
        report [ INDEX ]
    change [ INDEX ] by [ 1]
report [ 0 ]
```

3) Joining / appending / concatenating letters/words (vs adding)

a) Generate a string of [ NUM ] characters of the [ LETTER ]
4) Modifying a list while its length is changing

a) Remove a certain duplicate item from a list:

```plaintext
set [ LIST ] to [ 1, 1, 2, 2, 3, 3, 4, 4, 5]
set [ INDEX ] to 1
set [ NUMTOREMOVE ] to 3
repeat [ length of [ LIST ]]
    if [ item [ INDEX ] of [ LIST ] = [ NUMTOREMOVE ]
        remove item [ INDEX ] of [ LIST ]
        change [ INDEX ] by [ 1 ]
```

Does this work?

**No, it misses every other item!**

If it doesn’t work, how would you fix it?

```plaintext
repeat [ length of [ LIST ]]
    if [ item [ INDEX ] of [ LIST ] = [ NUMTOREMOVE ]
        remove item [ INDEX ] of [ LIST ]
        change [ INDEX ] by [ 1 ]
```

5) Problems that implicitly deal with the scope of variables

Variables: X and Y

```plaintext
modify [ X ] block
    script variable [ Y ]
    set [ Y ] to 2
    change [ X ] by [ 1 ]
    change [ Y ] by [ 1 ]
    say [ X ]       (a)
    say [ Y ]       (b)
```

```plaintext
set [ X ] to [ 1 ]
set [ Y ] to [ 1 ]
modify [ X ] block
say [ X ]       (c)
```
What would (a), (b), (c), and (d) make the sprite say?

a:2, b:3, c:1, d:1

**What are the big ideas in reading for week #:**

1)  *Prof. Harvey's Intro to Abstraction, BtB (55-60)*

   *Is Abstraction the key to Computing? (CACM),*

   AP CS Principles *Rationale, Big Ideas, and Practices*

2)  *Kinect's Future, a Game Controller in Everything,*

   *Justices Split on Violent Games,*

   *Designing Games with a Purpose (GWAP)*

3)  *Scratch: Programming for All (CACM)*

4)  *BtB chapter 1*