

## 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, 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 ]

```
set [ TEXT ] to []  
repeat [ NUM ]  
    set [ TEXT ] to [ join [ TEXT ] to [ LETTER ] ]
```

#### 4) Modifying a list while its length is changing

a) Remove a certain duplicate item from a list:

```
set [ LIST ] to [ 1, 1, 2, 2, 3, 3, 3, 4, 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?

```
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

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

```
set [ X ] to [ 1 ]  
set [ Y ] to [ 1 ]  
modify [ X ] block  
    say [ X ]      (c)
```

say [ Y ] (d)

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](#)