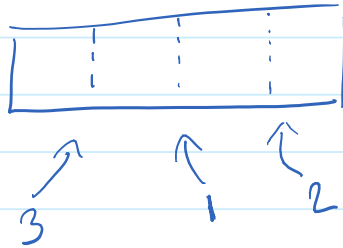
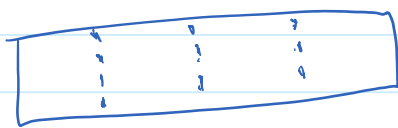


Recursion & Generics

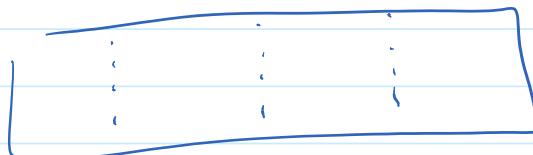
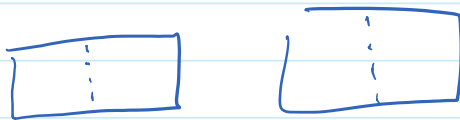
Tuesday, September 1, 2015 11:39 AM



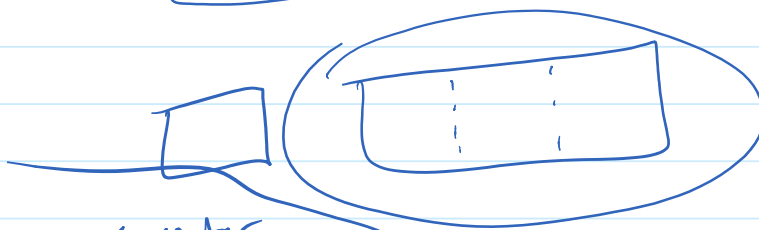
1 2 3
2 3 1



2 1 3



1



Tutoring center

1A 31 ?

W 2-4

Recursion Example

Iterate through an array

int sum = 0; ←

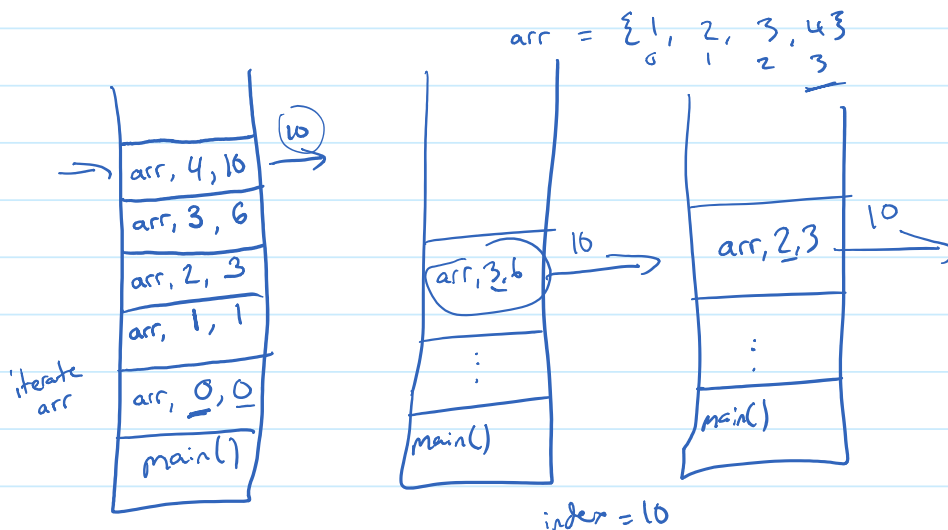
int[] arr = { ... };

"iterative way"

```
int sum = 0;
int[] arr = { ... };
for (int i = 0; i < arr.length; i++) {
    int elem = arr[i];
    sum += elem;
}
```

```
public static int iterateArray(int[] array, int index, int sum) {
    if (index >= array.length) {
        return sum;
    }
    int elem = array[index];
    sum += elem;
    return iterateArray(array, index + 1, sum);
}
```

in main → `int[] arr = { 1, 2, 3, 4 };`
`iterateArray(arr, 0, 0);` // want to sum values in arr



- ① `x = index++` // `x = 10` `index = 11`
- ② `x = ++index` // `x = 11` `index = 11`

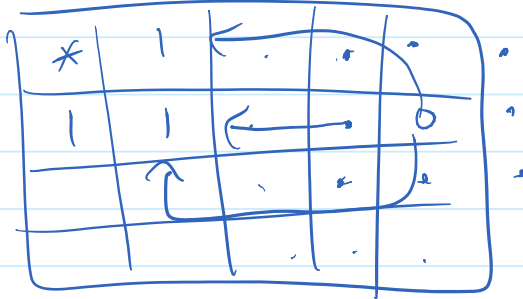
Another example (++)

```
printnum( int num) {  
    println(num);  
}
```

```
main() {  
    int x=1;  
    int y=1;  
    printnum(++x); // 2  
    printnum(y++); // 1  
    printnum(x); // 2  
    printnum(y); // 2
```

num = 4

return $\frac{\text{fib}(\text{--num})}{\text{fib}(3)} + \frac{\text{fib}(\text{--}(\text{--num}))}{\text{fib}(1)}$



Generics

"Daniel" + "Pade"

// public static sum(arr) {

```
public class Array {  
    get(int) // arr[0]  
    set(int, Obj) // arr[0] = "Something"  
    :  
    :  
}
```

Array arr = new Array() // ints?

Simple generic class: A box

String to String
boolean equals

```
public class Box<E> {  
    private E theElement;  
    public Box(E theElement) {  
        this.theElement = theElement;  
    }  
    public void printElement() {  
        System.out.println(theElement);  
    }  
}
```

```
main() {  
    :  
    Box<String> myNameInABox = new Box<String>("Daniel");  
    myNameInABox.printElement();  
}
```

must be an
object type

~~Box<int> intInABox~~

```
Box<Integer> box = new Box<Integer>(new Integer(1));  
    (java.lang.Integer)                not Autoboxing  
Double  
Character  
Boolean
```

```
Box<Integer> box = new Box<Integer>(1);
```

Arrays.asList()

```
int[] arr = {1, 2, 3, 4...}  
want [1, 2, 3, 4...]
```

```
Arrays.asList(arr); → [1, 2, 3, 4]
```

List<int[]>