Review Arrays

## What are the features of an array in Java?

* Holds multiple values- together
* Iterable
* Starts at 0 – 0 index – myArray.length – 1 to access last element
* Stored contiguously in memory
* Fixed length – can’t change it
  + If we create an array that holds 5 items but want to hold a 6th
    - Step 1 create an array of length 6
    - Copy over the values of elements 1-5
    - Add the 6th
* Must be the same data type – homogenous (can hold subtypes), can hold primitive and non-primitive

### How do I declare an array?

Int[] myNumbers; //declares but not initializes

### How do I initialize an array?

#### Method 1:

myNumbers = { 1, 2, 3 }; // using literals

#### Method 2:

myNumbers = new int[3]; // new opeartor

myNumbers[0] = 1;

myNumbers[2] = 3;

### What are the ways to loop through an array?

#### Method 1: For

for (int i = 0; i < myArrays.length – 1; i++) {

myNumbers \*= 2;

}

#### Method 2: For-each

For (int number : myNumbers) {

System.out.println(number \*= 2);

}

#### Method 3: While

int counter = 0;

while (counter < 3){

counter++;

}

New Material – 2D Arrays

### What does a 2D array look like? Where do we commonly use 2D Arrays?

* Look like a list of lists
* Example: list of teams

{{ sue, bob, joe} { james, Jackie, Vivienne} { Jon, Erica, Miles}}

* We can create an array of arrays or an array of arrays of arrays
* Math for matrices – [[1,2,3], [2,3,4], [5,5,7]];
* Multiple items in each bucket on a stack
* Grocery store – each section of the store produce – list of items, meat-list of items, etc.
* List of names – mr. Johnson, Markson, Tompson, mrs. and armelee Kendrick, torres
* Board game tracker – battleship, chess, checkers, connect four, tic-tac-toe

(See Excel Sheet for How it Looks in Memory)

### How can I declare an array of arrays?

int[][] numbers = { {1,2}, {3,4}, {5,6} };

### How can I initialize an array of arrays?

#### Method 1: using the new operator

#### Method 2: using literals!

### How can I access one of the inner arrays?

### How can I access an element inside one of the inner arrays?