Computer Programming Fundamentals

CS 152
Professor: Leah Buechley
TAs: Melody Horn, Noah Garcia, Andrew Geyko, Juan Ormaza
Time: MWF 10:00-10:50am
https://handandmachine.cs.unm.edu/classes/CS152_Fall2021/

ASSIGNMENT 2 GRADED

A FEW WONDERFUL SUBMISSIONS

GRADING CLARIFICATION:
No assignments accepted after 3 late days

FOR ASSIGNMENT 2 ONLY:
If you turn in all other assignments, you have the option of dropping your assignment 2 grade from your average

IF YOU HAVEN'T TURNED IN ASSIGNMENT 2, COME SEE ME!

ASSIGNMENT 3 POSTED

COLLOQUIUM TODAY AT 2PM
WENDY JU, CORNELL
ROBOTS & SELF DRIVING CARS

Show All Stories

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Human–Robot Interaction

What if a car wants you to listen to its voiced instructions or a chair wants you to move out of its way, how do you react to it?

📷 Patricia Kuharic

Related Stories

April 22nd, 2020

'Ghostdrivers' test cultural reactions to autonomous cars

Featured

by Alexandra Chang

As automated machines—driverless cars, robot vacuums, aisle-cleaning robots—become increasingly present, so do questions about how best to design these machines to interact with a world of people. Wendy Ju, Information Science, Jacobs Technion-Cornell Institute at Cornell Tech, studies this human-robot interaction. She spends a lot of time watching and parsing people's actions.

"It's delightful for me to watch people move around in a space," says Ju. "We are not always thinking about the communicative signaling

MET GALA + CS!

Iris van Herpen

OPEN INTELLIJ
& CODE FROM MONDAY

CREATE A NEW JAVA CLASS CALLED
Wednesday.java

TODAY: ARRAYS

ARRAYS ARE LISTS
OR COLLECTIONS OF THINGS
ALL OF THE SAME TYPE

EXAMPLES OF ARRAYS

```
{1, 2, 3, 4, 5}

{5.0, 6.0}

{"cat", "dog", "llama", "bear"}

{'a', 'b', 'c'}
```

DECLARING AN ARRAY
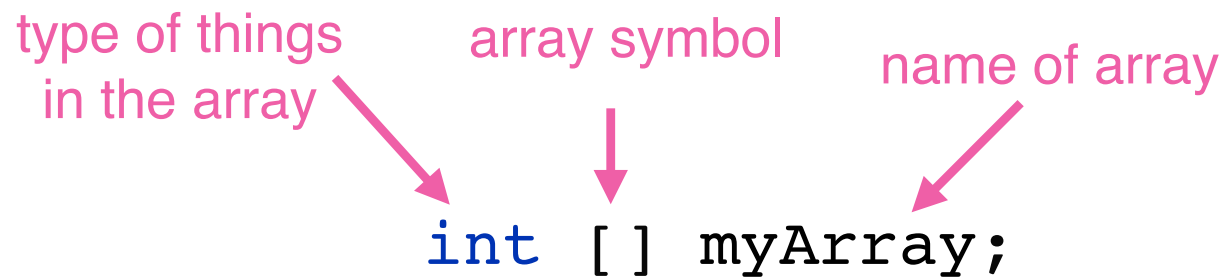
type of things
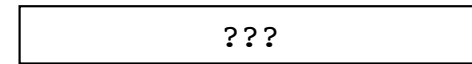in the array

array symbol

name of array

`int [] myArray;`

this tells your program you'll be using an array and declares its name
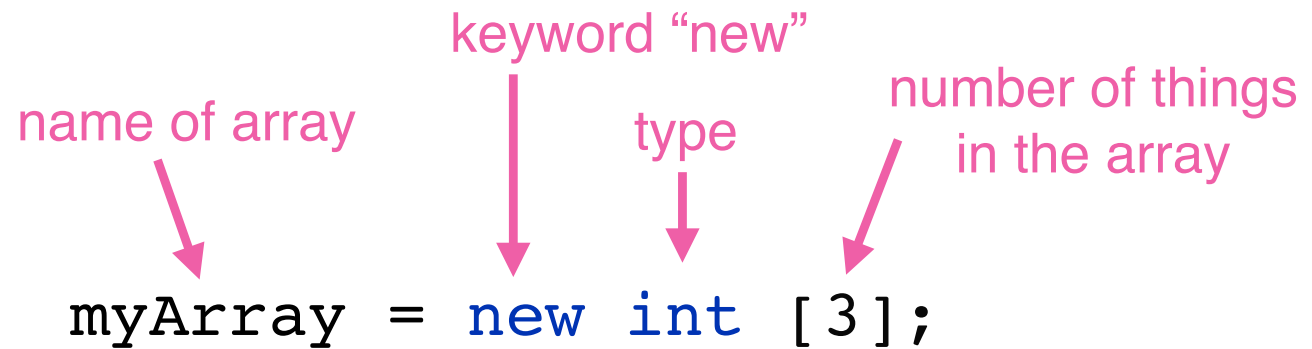
int [] myArray;

myArray

| ??? |

THEN YOU CREATE THE ARRAY

keyword "new"

name of array

type

number of things
in the array

```
myArray = new int [3];
```

this tells your program the size of your array
and allocates space in memory for the array

in java the size of the array cannot change

```
int [] myArray;
myArray = new int [3];
```

in the computer's
memory somewhere

myArray

| ??? | ??? | ??? |

CAN DO THIS ALL TOGETHER

```java
int [] myArray = new int [3];
```

STORING VALUES IN AN ARRAY

location, "index"
starts at 0

name of array

value

```
myArray[0] = 0;
myArray[1] = 10;
myArray[2] = 20;
```

this stores actual values in the array

PUTTING IT ALL TOGETHER

```
int [] myArray;
myArray = new int [3];
myArray[0] = 0;
myArray[1] = 10;
myArray[2] = 20;
```
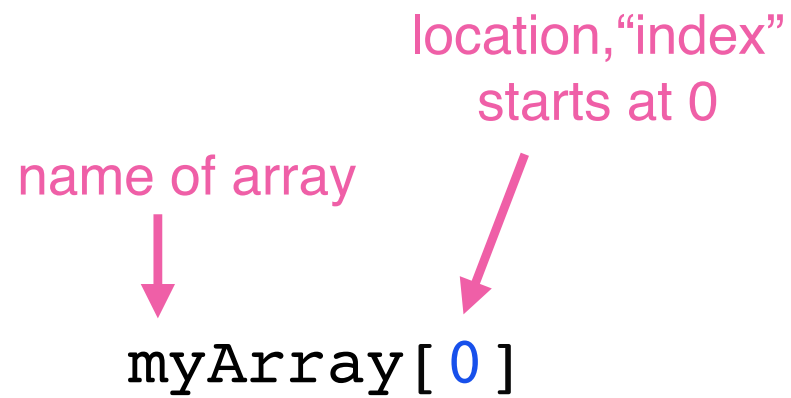
in the computer's memory somewhere
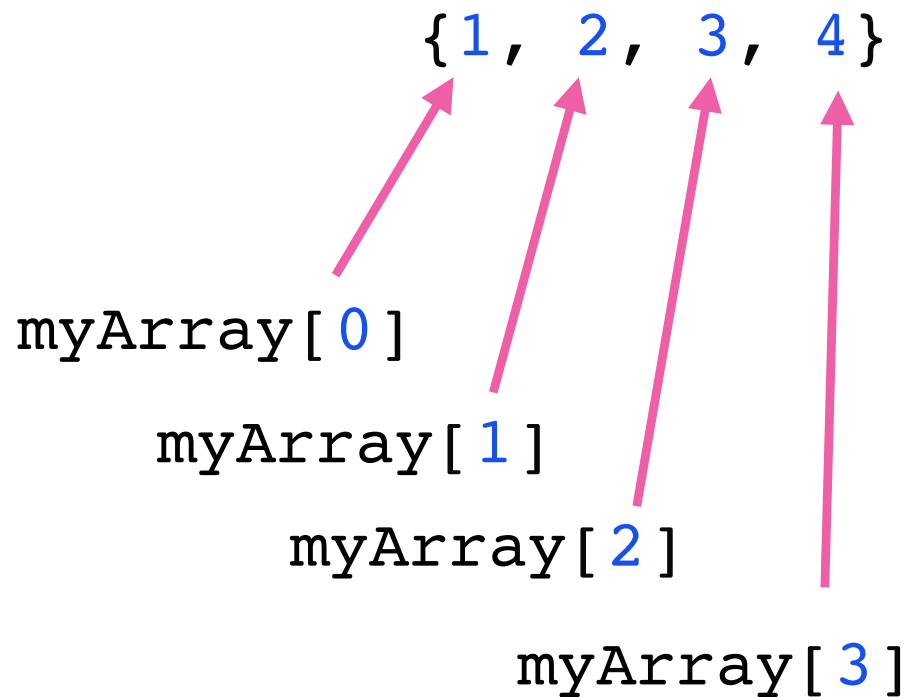
myArray

0	10	20
0	1	2

ACCESSING AN ARRAY ITEM

location,"index"
starts at 0

name of array

`myArray[0]`

ACCESSING AN ARRAY ITEM

{1, 2, 3, 4}

myArray[0]

myArray[1]

myArray[2]

myArray[3]

ACCESSING AN ARRAY ITEM

```java
int [] myArray;
myArray = new int [3];
myArray[0] = 0;
myArray[1] = 10;
myArray[2] = 20;
System.out.println(myArray[0]);
```

GETTING THE LENGTH OF AN ARRAY

```java
myArray.length

int [] myArray;
myArray = new int [3];
myArray[0] = 0;
myArray[1] = 10;
myArray[2] = 20;
System.out.println(myArray[0]);
System.out.println(myArray.length);
```

questions?

ANOTHER WAY TO DECLARE & CREATE AN ARRAY IN ONE LINE

type of things
in the array

array symbol

name of array

value of array

```
int [] myArray = {1, 2, 3, 4};
```

BUT (WEIRDLY) YOU CAN'T DO THIS

```
int [] myArray;
myArray = {1, 2, 3, 4};
```

```
java: illegal start of expression
```

FOR LOOPS ♥ ARRAYS

```
int [] myArray;
myArray = new int[3];

for (int i=0; i<3; i++) {
    myArray[i] = i*10;
}
```

if you want to do anything to the elements in an array or do anything that uses the elements in an array, use a for loop

FOR LOOPS 💗 ARRAYS

condition: (i < length of array)

⬇

```
for (int i=0; i<3; i++) {
    myArray[i] = i*10;
    System.out.println(myArray[i]);
}
```

use i to reference array items
loop will access every item in array

FOR LOOPS ♥ ARRAYS

condition: (i < length of array)

```
for (int i=0; i<myArray.length; i++) {
    myArray[i] = i*10;
    System.out.println(myArray[i]);
}
```

questions?

LET'S CREATE AN ARRAY OF RANDOM NUMBERS

LET'S CREATE AN ARRAY OF RANDOM NUMBERS

FIND THE LARGEST NUMBER IN THE ARRAY

FIND THE SMALLEST NUMBER IN THE ARRAY

A FULL PROGRAM

```java
import java.lang.Math;

public class Wednesday {

    public static void main(String[] args) {
        double [] randomArray = new double[10];

        for (int i=0;i<randomArray.length;i++) {
            randomArray[i] = Math.random()*100;
            System.out.println(randomArray[i]);
        }

        minMax(randomArray);

    }

    static void minMax (double [] myArray) {
        double min = 100;
        double max = -1;
        for (int i=0;i<myArray.length;i++) {
            if (myArray[i] < min) {
                min = myArray[i];
            }
            if (myArray[i] > max) {
                max = myArray[i];
            }
        }
        System.out.println("The smallest number is: " + min);
        System.out.println("The largest number is: " + max);
    }

}
```