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 3 POSTED

questions?

QUIZ 1 POSTED ON LEARN

- 50 points
- Due tomorrow by 11am
- You have 2 hours to complete the quiz.
  Shouldn't need that much time.
- Can start anytime between now and deadline
- No late submissions accepted
- Only one submission
- Use course slides
- Use IntelliJ

questions?

MASKS REMINDER

OPEN INTELLIJ
& CODE FROM LAST CLASS

CREATE A NEW JAVA CLASS CALLED Friday.java

CREATE AN ARRAY OF RANDOM NUMBERS

PROGRAM THAT CREATES AN ARRAY OF RANDOM NUMBERS

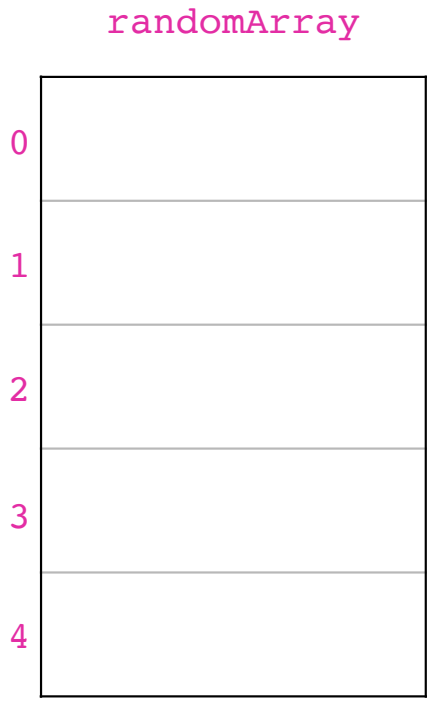
```
import java.lang.Math;

public class Wednesday {

    public static void main(String[] args) {
        double [] randomArray = new double[5];

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

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

LETS STEP THROUGH THE LOOP

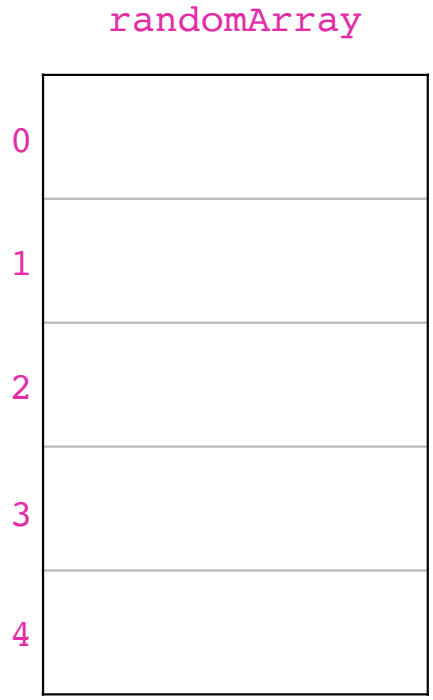
```
double [] randomArray = new double[5];

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



LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 0

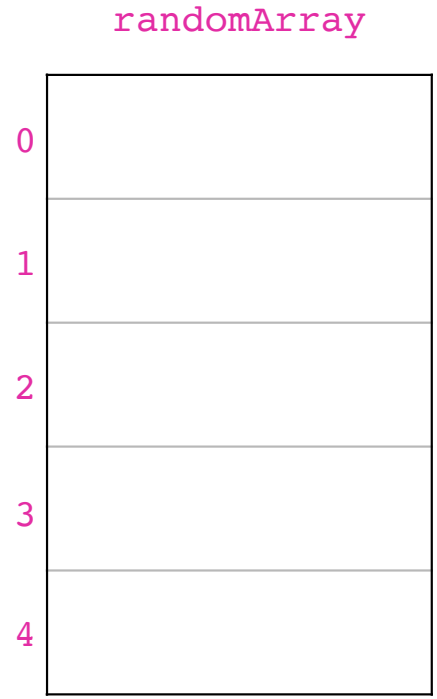


LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 0

i < 5

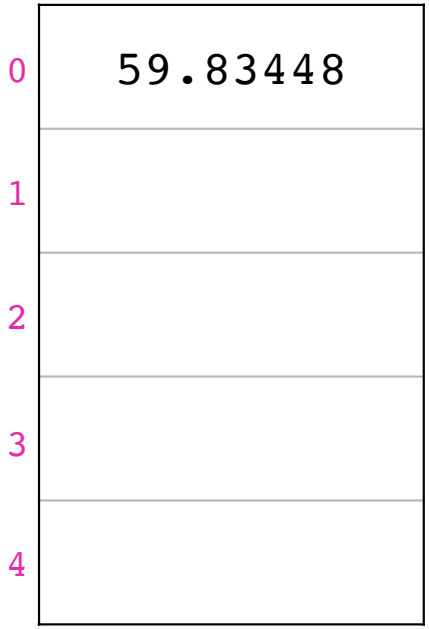


LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 0

randomArray

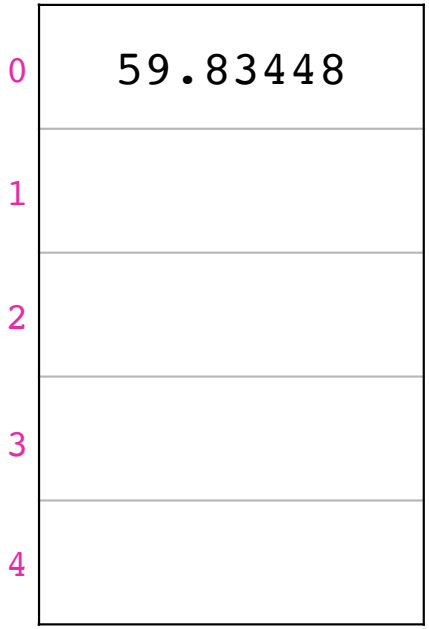


LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 0 + 1

randomArray

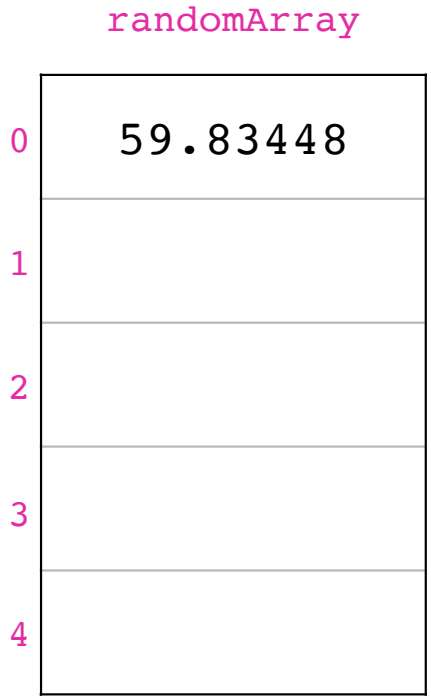


LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 1

i < 5



LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

for (int i=0;i<randomArray.length;i++) {
    randomArray[1] = Math.random()*100;
}
```

i = 1

randomArray

0	59.83448
1	70.03552
2	
3	
4	

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 1 + 1

randomArray

0	59.83448
1	70.03552
2	
3	
4	

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 2

i < 5

randomArray

0	59.83448
1	70.03552
2	
3	
4	

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

for (int i=0;i<randomArray.length;i++) {
    randomArray[2] = Math.random()*100;
}
```

i = 2

randomArray

0	59.83448
1	70.03552
2	63.87241
3	
4	

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 2 + 1

randomArray

0	59.83448
1	70.03552
2	63.87241
3	
4	

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 3

i < 5

randomArray

0	59.83448
1	70.03552
2	63.87241
3	
4	

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

for (int i=0;i<randomArray.length;i++) {
    randomArray[3] = Math.random()*100;
}
```

i = 3

randomArray

0	59.83448
1	70.03552
2	63.87241
3	99.47499
4	

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 3 + 1

randomArray

0	59.83448
1	70.03552
2	63.87241
3	99.47499
4	

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 4

i < 5

randomArray

0	59.83448
1	70.03552
2	63.87241
3	99.47499
4	

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

for (int i=0;i<randomArray.length;i++) {
    randomArray[4] = Math.random()*100;
}
```

i = 4

randomArray

0	59.83448
1	70.03552
2	63.87241
3	99.47499
4	76.07163

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 4 + 1

randomArray

0	59.83448
1	70.03552
2	63.87241
3	99.47499
4	76.07163

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 5

5 < 5

	randomArray
0	59.83448
1	70.03552
2	63.87241
3	99.47499
4	76.07163

LETS STEP THROUGH THE LOOP

```
double [] randomArray = new double[5];

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

i = 5

5 < 5

	randomArray
0	59.83448
1	70.03552
2	63.87241
3	99.47499
4	76.07163

questions?

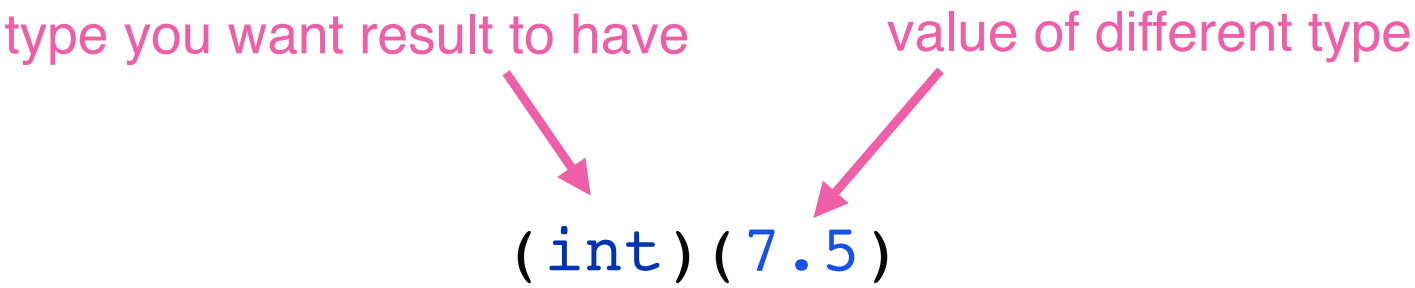
IF YOU GET CONFUSED
GO THROUGH THIS PROCESSES

CASTING
TYPE CONVERSION

CHANGING FROM ONE TYPE TO ANOTHER

CHANGING FROM ONE NUMBER TYPE TO ANOTHER

CASTING



CASTING TO AN INT
DROPS DECIMALS DOESN'T ROUND

cast	result
`(int)(7.5)`	7
`(int)(27.005)`	27
`(int)(9.999)`	9
`(int)(0.298)`	0

CASTING

```
double randomDouble;
int randomInt;
randomDouble = Math.random()*100;

randomInt = (int)(randomDouble);
```

CASTING ALL ON ONE LINE

```
int randomInt = (int)(Math.random()*100);
```

CASTING & ORDER OF OPERATIONS

cast

example result

```
int randomInt = (int)(Math.random()*100);
```

67

```
int randomInt = (int)Math.random()*100;
```

0

always 0
casts Math.random() to 0
before multiplication

use parentheses

questions?

AN ARRAY OF RANDOM INTS

ARRAY OF RANDOM INTS BETWEEN 0 and 100

```
int [] randomArray = new int[10];

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

PRINT OUT, SEPARATED BY A TAB

```
int [] randomArray = new int[10];

for (int i=0;i<randomArray.length;i++) {
    randomArray[i] = (int)(Math.random()*100);
    System.out.print(randomArray[i] + "\t");
}
```

```
25  73  1   47  6   88  41  72  76  92
```

\t = symbol for tab

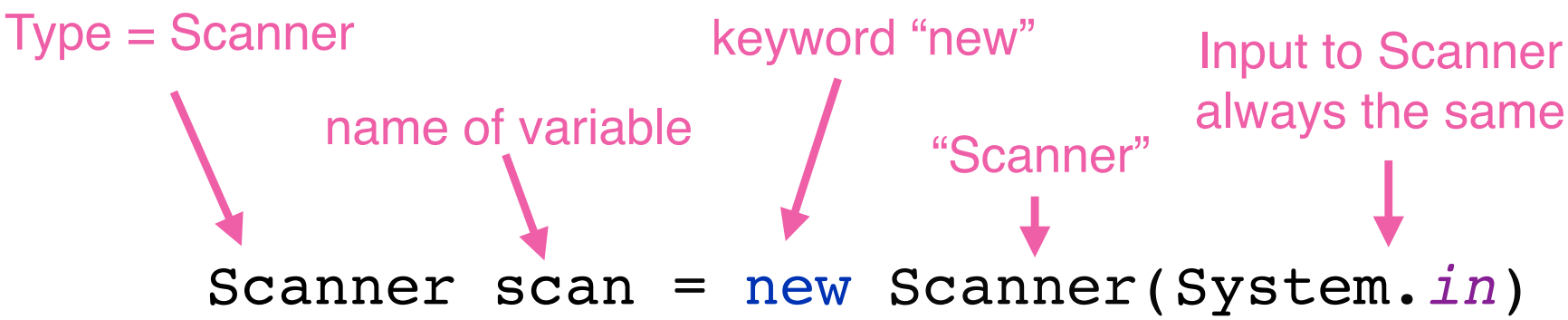
questions?

AN INTERACTIVE PROGRAM USING SCANNER

SCANNER

```
import java.lang.Math;
import java.util.Scanner;

public class Wednesday {

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

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

    }
}
```

CREATE A SCANNER VARIABLE

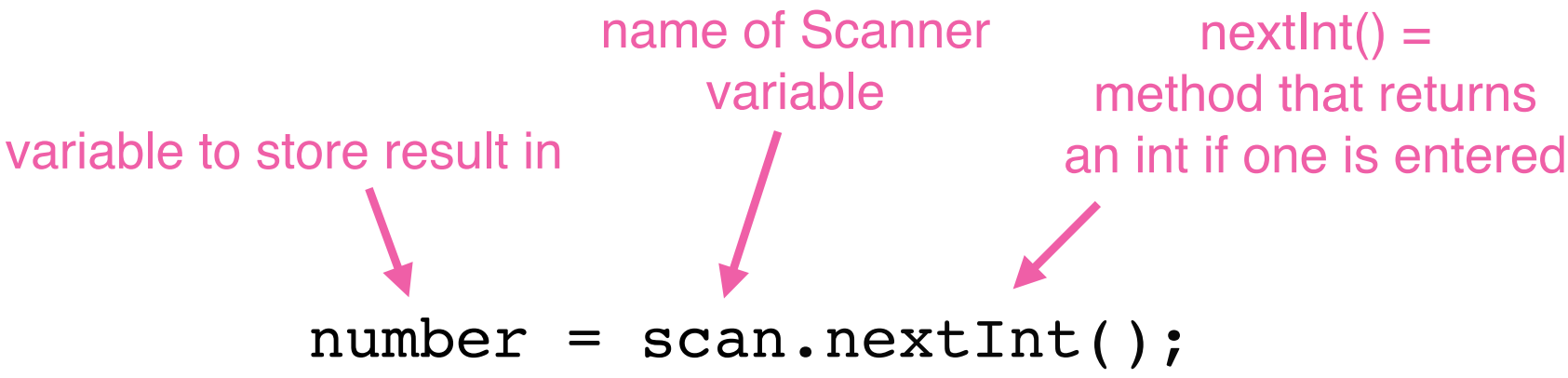


READING INPUT

```
Scanner scan = new Scanner(System.in);
System.out.print("Enter a number: ");
int number;
number = scan.nextInt();
```

```
Enter a number: 6
```

GETTING INPUT FROM A SCAN



GETTING INPUT FROM A SCAN

nextInt() will crash program if an int is not entered

```
number = scan.nextInt();
```

READING INPUT & PRINTING IT

```
Scanner scan = new Scanner(System.in);
System.out.print("Enter a number: ");
int number = scan.nextInt();
System.out.println("The number you entered is: " + number);
```

```
Enter a number: 6
The number you entered is: 6
```

questions?

USE INPUT TO SET THE SIZE OF AN ARRAY

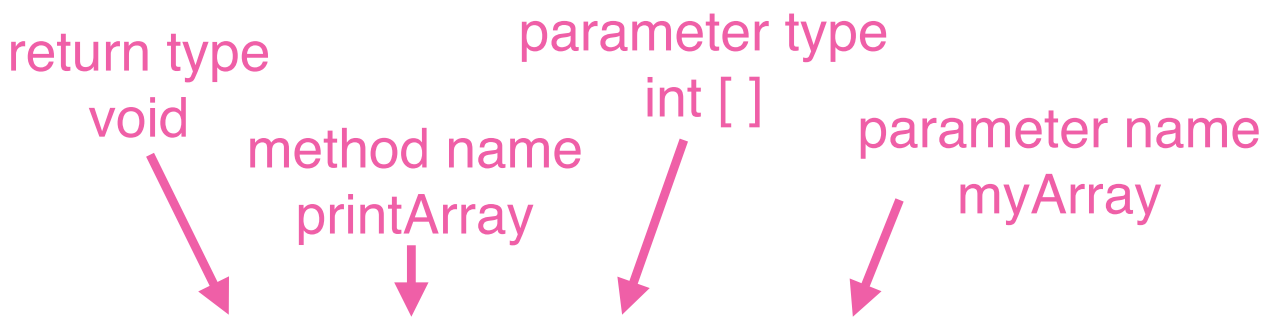
ARRAY SIZE WITH INPUT

```
import java.lang.Math;
import java.util.Scanner;

public class Wednesday {

    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter a size for the array: ");
        int size = scan.nextInt();

        int [] randomArray = new int[size];

        for (int i=0;i<randomArray.length;i++) {
            randomArray[i] = (int)(Math.random()*100);
            System.out.print(randomArray[i] + "\t");
        }
    }
}
```

questions?

CREATE A METHOD FOR PRINTING

METHOD WITH ARRAY PARAMETER



type information has to tell method you are passing an array

METHOD WITH ARRAY PARAMETER

```
static void printArray (int[] myArray) {

    for (int i=0;i<myArray.length;i++) {
        System.out.print(myArray[i] + "\t");
    }

}
```

METHOD WITH ARRAY PARAMETER

```
static void printArray (int[] myArray) {

    for (int i=0;i<myArray.length;i++) {
        System.out.print(myArray[i] + "\t");
    }

}
```

you use your input parameter inside your method