# Using Objects

- objects and methods
- String class
- Random class
- Math class

# Calling methods in OO

- Basically, the notation is:
  - method_name()
    - when the method belongs to a class you define
    - my_Display()
  - object_name.method_name()
    - when the method belongs to a Java pre-defined class
    - str1.length()
  - class_name.method_name()
    - when the method belongs to a Java pre-defined class and the class doesn't support objects.
    - Math.sin()

# String Class

- An object of the String class is any collection of characters.
  - It uses double-quotes " "
  - "hello there!"

- A variable of type char is any single character
  - It uses single-quotes ' ' as in 'M'
  - This different from "M", why?

# Comparing characters

- Use the equality operator ( = =) to compare two characters

```
char x = ‘a’;
char y = ‘A’;

if(x = = y)
    System.out.println(“equal”);
else
     System.out.println(“not equal”);
```

# Other methods

- s1.equalsIgnoreCase(s2)

- s1.compareTo(s2)
  - returns a negative value if s1 precedes s2
  - returns a positive value if s1 follows s2
  - returns zero if s1 is equal to s2

- s1.replace(‘a’, ‘I’);
- s1.toUpperCase();  s1.toLowerCase();
- s1.length();
- S1.charAt(3);  s1.indexOf(‘a’);

# Comparing strings for equality

- You cannot use the equality operator (= = ) to compare two strings!

```
String first = “bye”;
String second = “bye”;

if(first = = second)
    System.out.println(“equal”);
else
    System.out.println(“not equal”);
```

The test is always FALSE!  Why?

# Math Class

- java.lang
- Common methods are:
  - sin(double), cos(double), tan(double)
  - max(int, int), min(int, int)
  - sqrt(double), pow(int, int), exp(double)
  - Has two constants: PI and E

Math.random()

- generates a random double [0.0 .. 1.0)
- generates the same outcome as Random.nextDouble()

# Random numbers in Java

- Random Class
  - nextInt(n) – random integer [0..n)
  - nextDouble() – random double [0..1)

```
Random digit = new Random();
int value = digit.nextInt(10);
```

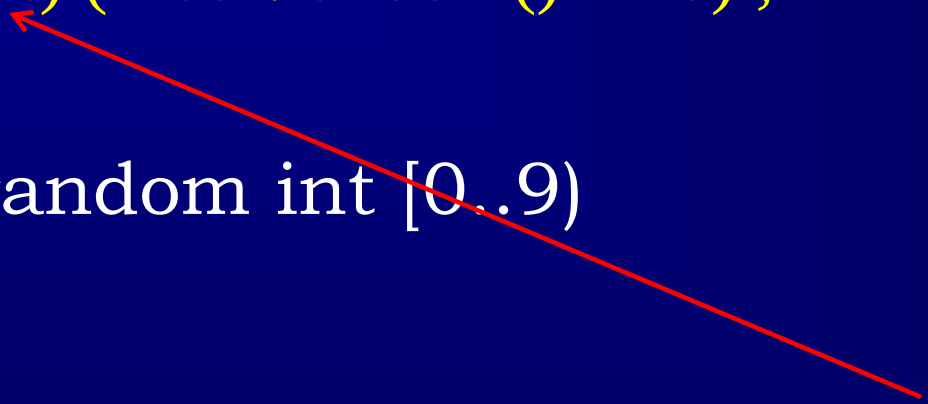
value is a random int [0..9)

# Random numbers in Java II

- We may also use the Math Class to generate a random number

```
int value = (int) (Math.random() * 10) ;
```

value is a random int [0..9)



*casting* in Java

# Readings

- Read the Java API for the following classes
  - String Class
  - Math Class
  - Random Class

# Homework

Homework #1 is due on Tuesday at 11:50pm

Quiz #1 is on Wednesday

- Quizzes during recitation
- First 10 minutes
- Arrive on time – no extra time!
- No make ups!