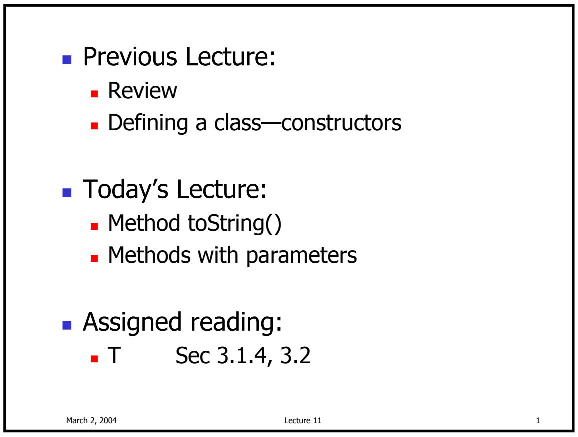
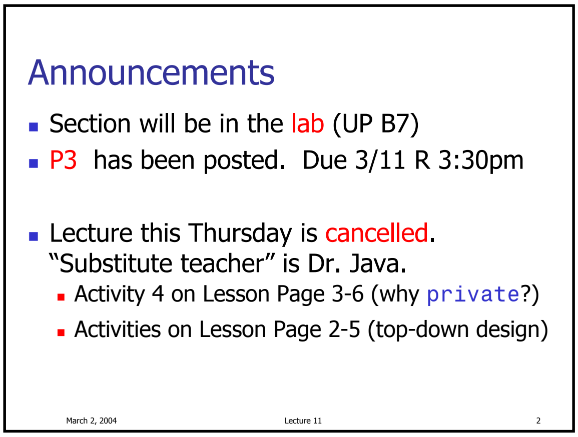
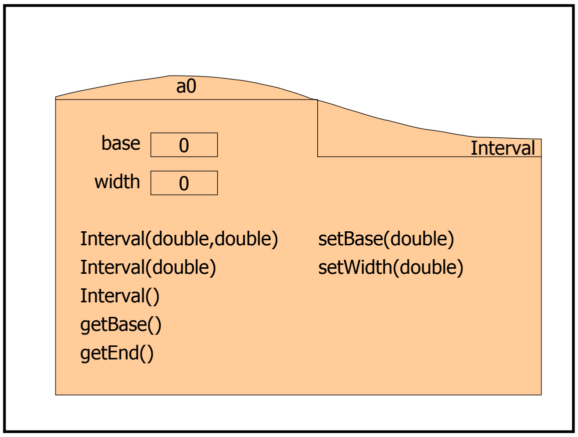


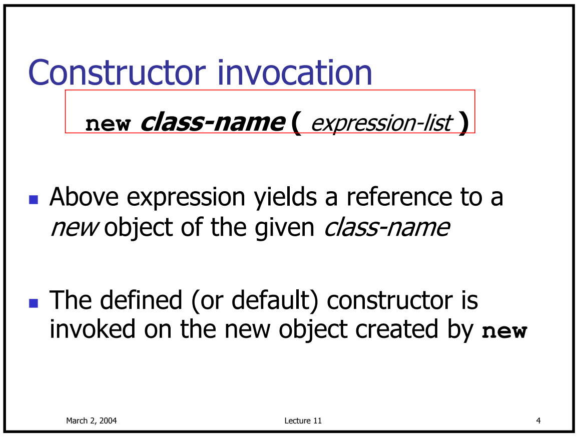
- Previous Lecture:
  - Review
  - Defining a class—constructors
- Today's Lecture:
  - Method toString()
  - Methods with parameters
- Assigned reading:
  - T Sec 3.1.4, 3.2



## Announcements

- Section will be in the lab (UP B7)
- P3 has been posted. Due 3/11 R 3:30pm
- Lecture this Thursday is cancelled. "Substitute teacher" is Dr. Java.
  - Activity 4 on Lesson Page 3-6 (why `private`?)
  - Activities on Lesson Page 2-5 (top-down design)

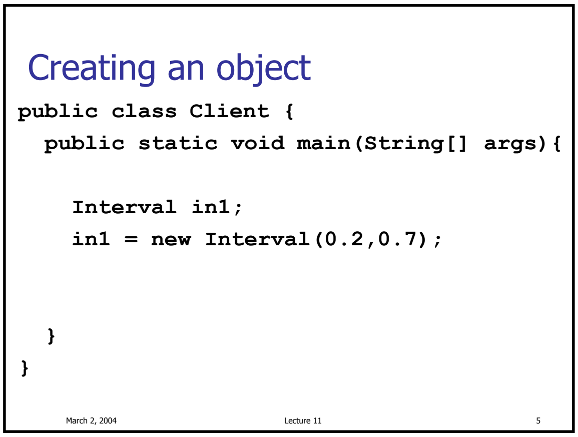




## Constructor invocation

**new** ***class-name*** **(** *expression-list* **)**

- Above expression yields a reference to a *new* object of the given *class-name*
- The defined (or default) constructor is invoked on the new object created by **`new`**



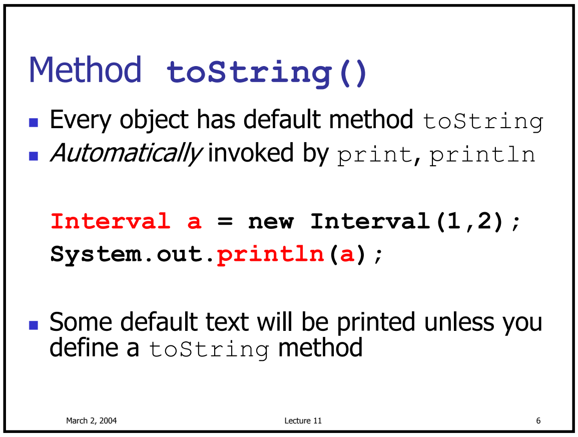
## Creating an object

```
public class Client {
  public static void main(String[] args){

    Interval in1;
    in1 = new Interval(0.2,0.7);



  }
}
```

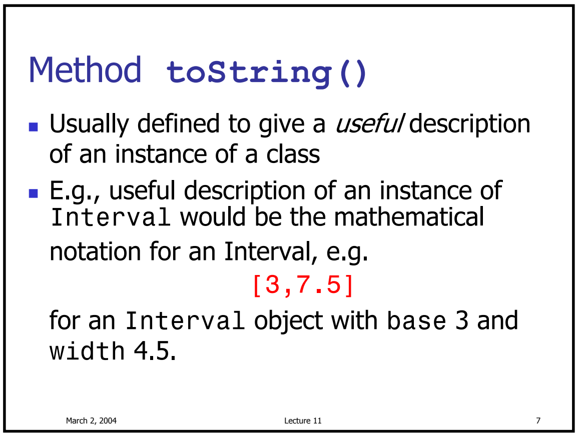


## Method **`toString()`**

- Every object has default method `toString`
- *Automatically* invoked by `print`, `println`

```
Interval a = new Interval(1,2);
System.out.println(a);
```

- Some default text will be printed unless you define a `toString` method

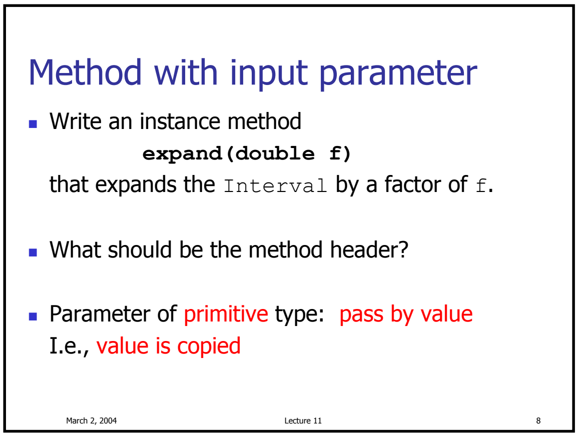


## Method `toString()`

- Usually defined to give a *useful* description of an instance of a class
- E.g., useful description of an instance of `Interval` would be the mathematical notation for an Interval, e.g.

  `[3,7.5]`

  for an `Interval` object with `base` 3 and `width` 4.5.



## Method with input parameter

- Write an instance method

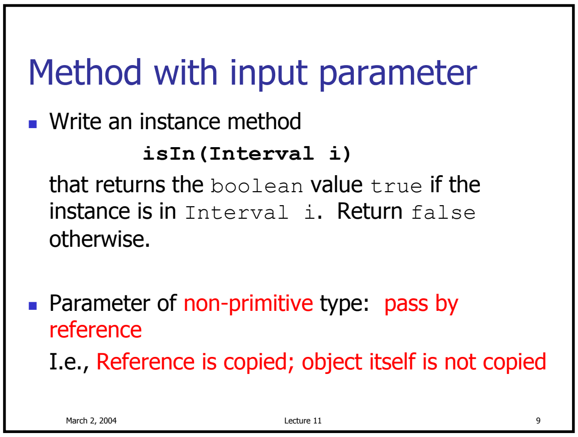
  **`expand(double f)`**

  that expands the `Interval` by a factor of `f`.

- What should be the method header?

- Parameter of primitive type: pass by value

  I.e., value is copied



## Method with input parameter

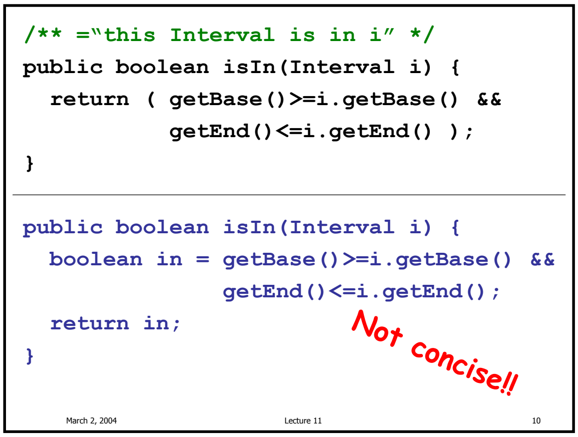
- Write an instance method

  **`isIn(Interval i)`**

  that returns the `boolean` value `true` if the instance is in `Interval i`. Return `false` otherwise.

- Parameter of non-primitive type: pass by reference

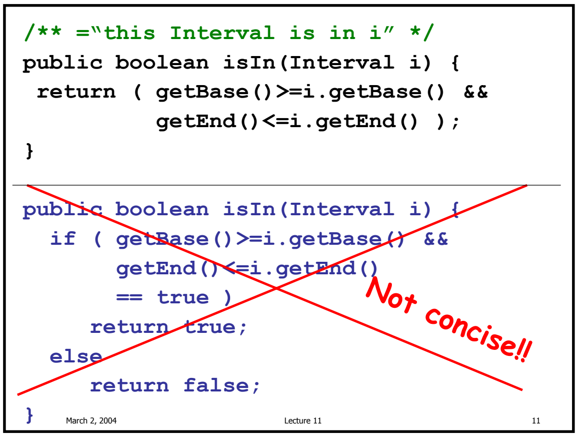
  I.e., Reference is copied; object itself is not copied



```
/** =“this Interval is in i” */
public boolean isIn(Interval i) {
  return ( getBase()>=i.getBase()  &&
           getEnd()<=i.getEnd() );
}
```

```
public boolean isIn(Interval i) {
  boolean in = getBase()>=i.getBase()  &&
               getEnd()<=i.getEnd();
  return in;
}
```

Not concise!!



```
/** =“this Interval is in i” */
public boolean isIn(Interval i) {
 return ( getBase()>=i.getBase()  &&
          getEnd()<=i.getEnd() );
}
```

~~public boolean isIn(Interval i) {~~
~~if ( getBase()>=i.getBase() &&~~
~~getEnd()<=i.getEnd()~~
~~== true )~~
~~return true;~~
~~else~~
~~return false;~~
~~}~~

Not concise!!