

## CS202 Java Object Oriented Programming

New Language Features in Java 1.5

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## Ten Things I Hate About You

- ◆ The Input/Output Woes
- ◆ The Ugly Cast
- ◆ The Annoying Wrapping/Unwrapping
- ◆ No ENUM??

## Input

```
import javax.swing.JOptionPane;
... ..
String s = JOptionPane.showInputDialog(null, "An integer please:");
int n = Integer.parseInt( s );
```

```
ConsoleReader in = new ConsoleReader();
int n = in.readInt();
```

## Output

```
import java.text.DecimalFormat;
... ..
System.out.println( 5 );
DecimalFormat f = new DecimalFormat( ".###" );
System.out.println( f.format(5.0/3.0) );
```

In C:  
`printf( "%.3f", 5.0/3.0 );`

## Cast

```
ArrayList names = new ArrayList();
names.add( "Peter Parker" );
names.add( "Mary Jane Watson" );
... ..

// print out a list of last names
for( int i=0 ; i < names.size() ; ++i )
{
    String s = (String) names.get(i);
    System.out.println( s.substring( s.lastIndexOf( ' ' ) ) );
}
```

## Wrapping and Unwrapping

```
ArrayList numbers = new ArrayList();
numbers.add( new Integer(10) );
numbers.add( new Integer(22) );
... ..

// calculate the sum of all numbers
int sum = 0;
for( int i=0 ; i < numbers ; ++i )
    sum += ((Integer) numbers.get(i)).intValue();
```

## ENUM

```
int dayOfWeek;
```

- ◆ A day of week can only be one of the seven values: MON, TUE, WED, THR, FRI, SAT, SUN

```
public static final int SUN = 0;
public static final int MON = 1;
public static final int TUE = 2;
public static final int WED = 3;
public static final int THR = 4;
public static final int FRI = 5;
public static final int SAT = 6;
```

and it still doesn't prevent somebody assign -1 to day\_of\_week

## Java 1.5 Improvements

- ◆ Scanner class
- ◆ Formatted output
- ◆ Generic types
- ◆ Auto-boxing/unboxing
- ◆ enum

## Scanner Class

```
Scanner s = new Scanner(System.in);
String param = s.next();
int value = s.nextInt();
s.close();

double sum = 0;
Scanner s2 = new Scanner( new File("test") );
while( s2.hasNext() ) sum += s2.nextDouble();
```

## Formatted Output

- ◆ ... with added bonus of "%n"

```
System.out.printf( "%d, %3.4f%n", 10, 4.0/3 );
```

## Generic Type

- ◆ Type parameter

```
ArrayList<Integer> list = new ArrayList<Integer>();

list.add(new Integer(42));
int total = list.get(0).intValue();
```

## Auto-Boxing/Unboxing

```
ArrayList<Integer> numbers = new ArrayList<Integer>();
numbers.add(10);
numbers.add(22);
... ..

// calculate the sum of all numbers
int sum = 0;
for( int i=0 ; i < numbers ; ++i )
    sum += numbers.get(i);
```

## Enumerated Types

```
public enum DayOfWeek { sun, mon, tue, wed, thr, fri, sat };

DayOfWeek dayOfWeek;

dayOfWeek = sun;
dayOfWeek = 1; // compilation error!
```

## Other Goodies – Enhanced For Loop

*Before*

```
ArrayList<Integer> list = new ArrayList<Integer>();
Iterator i = list.iterator();
while( i.hasNext() ) {
    Integer value = (Integer) i.next();
    ... ..
}
```

*After*

```
ArrayList<Integer> list = new ArrayList<Integer>();
for (Integer i : list) { ... }
```

## Other Goodies – Variable Arguments

```
void argtest ( Object ... args )
{
    for( int i=0 ; i <args.length ; i++ )
        System.out.println( args[i] );
}

... ..

argtest("test", "data");
```

## Additional Readings

- ◆ J2SE 1.5 in a Nutshell – <http://java.sun.com/developer/technicalArticles/releases/j2se15/>
- ◆ J2SDK 1.5.0 API documentation – <http://java.sun.com/j2se/1.5.0/docs/api/overview-summary.html>