

Taming a Professional IDE for the Classroom

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Java at Intro Level

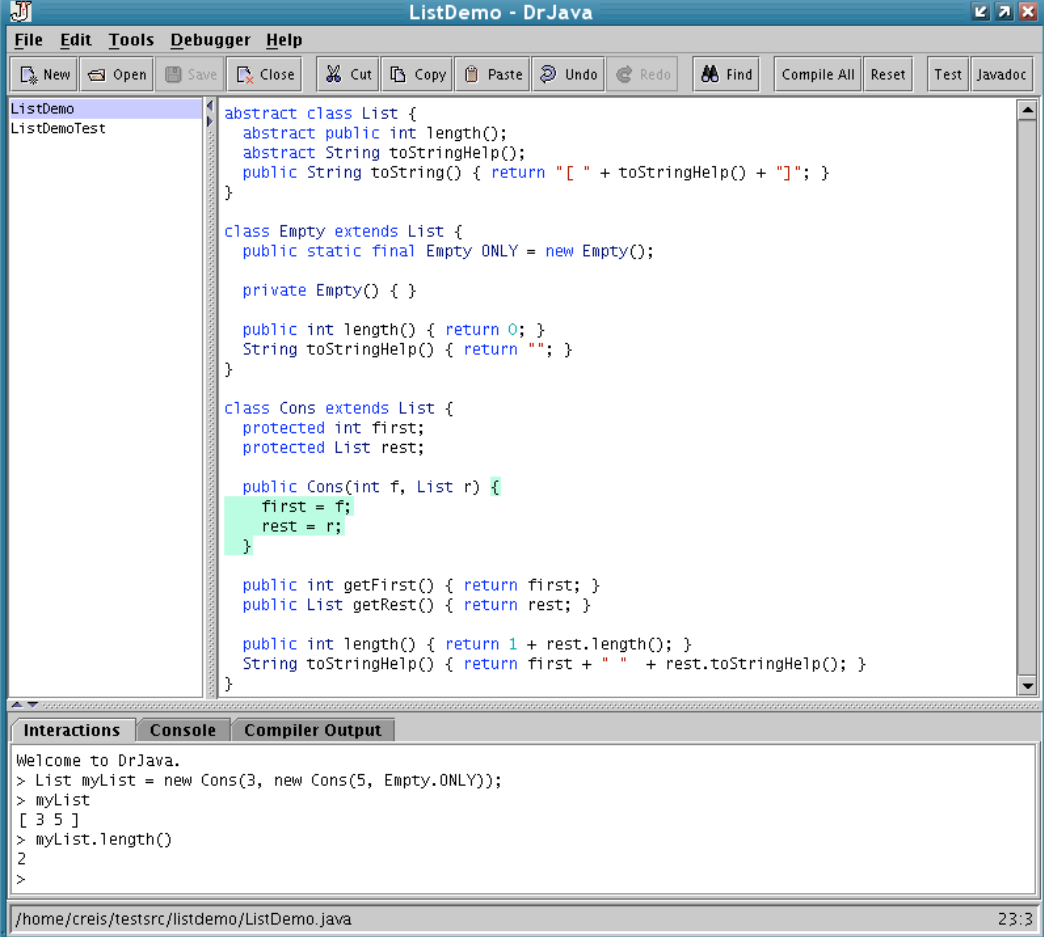
- Widespread, great for OO
- But, lots of complexity...
 - Syntax
 - Command Line, Classpath
 - Console I/O
 - `public static void main(String[] args)`

IDEs Can Help

- Help with language syntax
- Easy compile / run buttons

Pedagogic IDEs

- Great for Intro:
 - Simple and interactive
- Limited features
- No plug-ins



```
File Edit Tools Debugger Help
New Open Save Close Cut Copy Paste Undo Redo Find Compile All Reset Test Javadoc
ListDemo
ListDemoTest
abstract class List {
    abstract public int length();
    abstract String toStringHelp();
    public String toString() { return "[" + toStringHelp() + "]; }
}

class Empty extends List {
    public static final Empty ONLY = new Empty();
    private Empty() { }

    public int length() { return 0; }
    String toStringHelp() { return ""; }
}

class Cons extends List {
    protected int first;
    protected List rest;

    public Cons(int f, List r) {
        first = f;
        rest = r;
    }

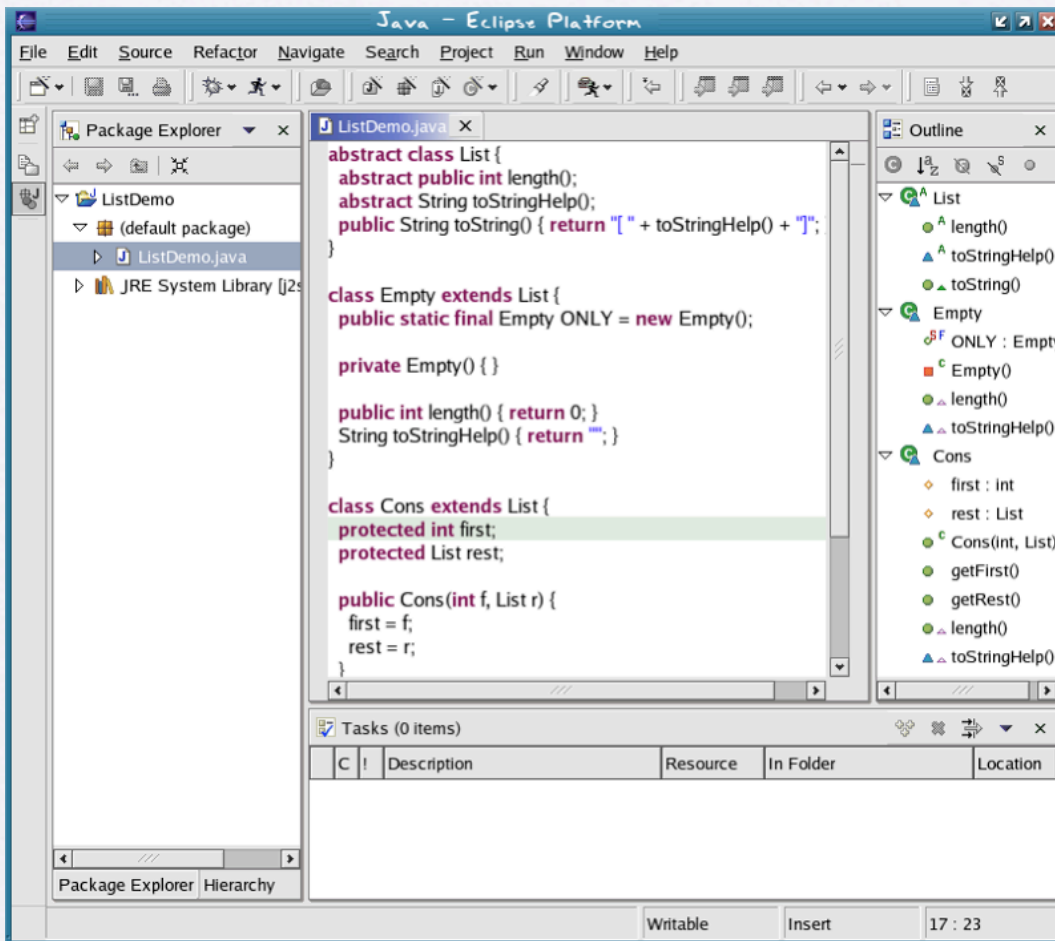
    public int getFirst() { return first; }
    public List getRest() { return rest; }

    public int length() { return 1 + rest.length(); }
    String toStringHelp() { return first + " " + rest.toStringHelp(); }
}

Interactions Console Compiler Output
Welcome to DrJava.
> List myList = new Cons(3, new Cons(5, Empty.ONLY));
> myList
[ 3 5 ]
> myList.length()
2
>
/home/creis/testsrc/listdemo/ListDemo.java 23:3
```

DrJava

Professional IDEs



- Many advanced features
- Plug-ins (Eclipse)
- Bad for Intro:
 - Complex UI
 - Console I/O, main

Eclipse

Modify Eclipse

- Improve for intro level
- Why not use a Pedagogic IDE?
 - Other educational plug-ins
 - Consistent IDE across curriculum
 - Easy transition to advanced tools

DrJava Plug-in for Eclipse

- Simplify Eclipse's interface
- Add Interactions Pane

Interactions Pane

- On-the-fly evaluation
- No need for `main`, console I/O
- Lecture demos, student tinkering

Vs. Eclipse Scrapbook

- Can evaluate code outside `main`, but...
- All-at-once evaluation
- Less convenient, powerful, intuitive

Demo

Related Plug-ins

- Gild, Penumbra
 - Further simplify Eclipse's interface
 - Courseware integration

Result

- Eclipse + DrJava: ready for Intro Level
 - Effective on-the-fly evaluation
 - Integrate with other plug-ins
 - Easy path for growth