

# Introduction to Java

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1/16/01 Introduction to Java 1

## Java: a brief introduction

- History
  - software development for consumer electronics devices, such as toasters, microwave ovens, and Personal Digital Assistants (PDA's).
  - Sun Microsystems funded in 1991 an internal research project code-named "Green", headed by James Gosling.
  - New language designed to be
    - small,
    - reliable and
    - architecture-independent

1/16/01 Introduction to Java 2

## Java: a brief introduction

- Release of NCSA Mosaic and the explosion of the World Wide Web in 1993 which saved the project
- Sun Description:**
  - Java:** *A simple, object-oriented, network-savvy (distributed), interpreted, robust, secure, architecture neutral, portable, high-performance, multithreaded and dynamic language.*

1/16/01 Introduction to Java 3

## Java: concepts

Java compiling scheme

```

graph TD
    A[File called : file.java  
Java source] --> B[Java compiler]
    B --> C[File called : file.class  
Java bytecode]
    C --> D[Java Virtual Machine  
(Interpreter)]
    D --> E[Hardware]
  
```

1/16/01 Introduction to Java 4

## Classes and Objects

```

classDiagram
    class Circle {
        circumference()
        area()
    }
    class ColoredCircle {
        setColor()
    }
    Circle <|-- ColoredCircle
  
```

```

class Circle {
  public double x, y, r; // Center and radius
  // Our constructor method
  public Circle(double x, double y, double r) {
    this.x = x;
    this.y = y;
    this.r = r;
  }
  public double circumference() {
    return 2 * 3.1415 * r;
  }
  public double area() {
    return 3.1415 * r * r;
  }
}

class ColoredCircle extends Circle {
  Color color; // The color of the circle
  /* The constructor method for this class */
  public ColoredCircle() {
    super(); // Call to the superclass constructor method
    this.color=Color.black;
  }
  /* This method set the color for the current circle */
  public void setColor(Color c) {
    color=c;
  }
}
  
```

1/16/01 Introduction to Java 5

## Java Features

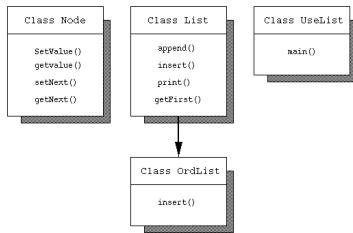
- Packages
 

Every *class* is part of a *package*. A *package* name consists of different names separate by periods. That's the syntax you use with the import statement. `import java.net.*` references all the *classes* in the *package* java.net.

  - Garbage Collection: no explicit memory allocation**
  - JDK (Java Developer Kit) at <http://java.sun.com>**
    - `javac` - The Java compiler
    - `java` - The java interpreter
    - `javadoc` -- `javadoc filenames.java`
    - `jdb` - The Java debugger. `jdb class-name`

1/16/01 Introduction to Java 6

## Example: Sorted List



1/16/01

Introduction to Java

7

## Sorted List Example

- [Node.java](#)
- [List.java](#)
- [OrdList.java](#)
- To test with a main program: [UseList.java](#)
- To compile: `javac -classpath . UseList.java`
- To run: `java -classpath . UseList`
  - List : 11 3 6 5 7 9
  - Sorted list : 3 5 6 7 9 11

1/16/01

Introduction to Java

8