Opening Exercise

Use a `Random` object to create an object that simulates a standard six-sided die. A `Die` should have a `roll()` method.

```
import java.util.Random;

public class Die
{
  private static Random generator = new Random();

  // FILL IN THE BLANK
}
```

Exercise: Improving Our Solution

How can we modify our `Die`
class to support dice of any number of sides?

```
public class Die
{
  private static Random generator = new Random();

  public Die()
  {
  }

  public int roll()
  {
    int randomValue = generator.nextInt( 6 );
    return randomValue + 1;
  }
}
```

Using Java Objects

We have always created and use objects
through Interactions pane.

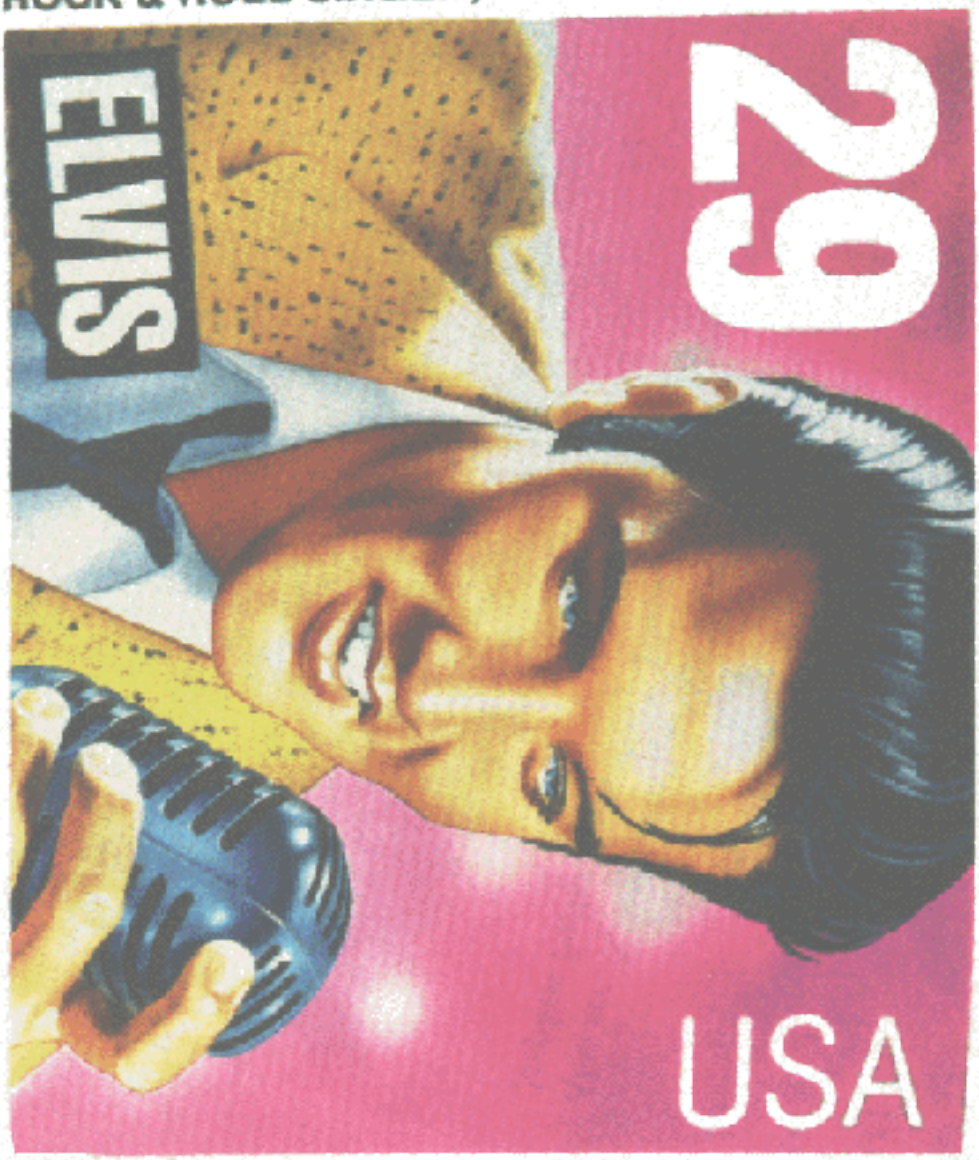
How can we run Java programs
from outside of Dr. Java?

A `main()` Method

```
public static void main( String[] args )
{
  Die d1 = new Die();
  Die d2 = new Die();
  System.out.println(d1.roll() + d2.roll());
}
```

The code in the method body is just like the code we write to create and use objects in the Interactions pane. It must create objects to use — it cannot call the methods directly!

ROCK & ROLL SINGER, 1935-1977



How Do We Learn to Use a New Class?

`Random` *is a pretty cool class.*
How can we learn to do more with it?

Read the source code.

Look at its Javadoc.

Javadoc as a Tool

At a command-line prompt:

```
mac os x > javadoc DiffSound.java
```

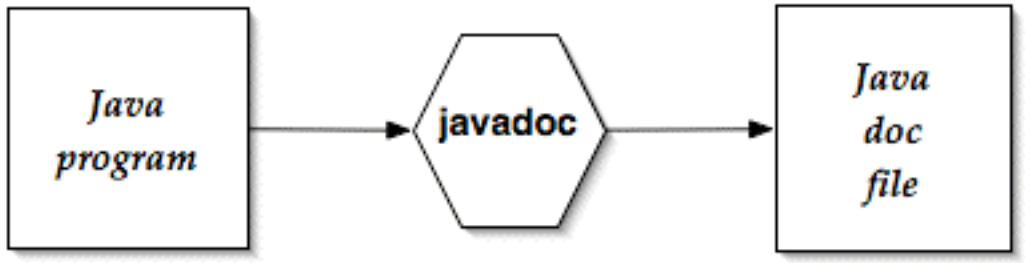
generates the file: DiffSound.html

```
mac os x > javadoc *.java
```

generates hyperlinked documentation
for all the Java source files in the current directory.

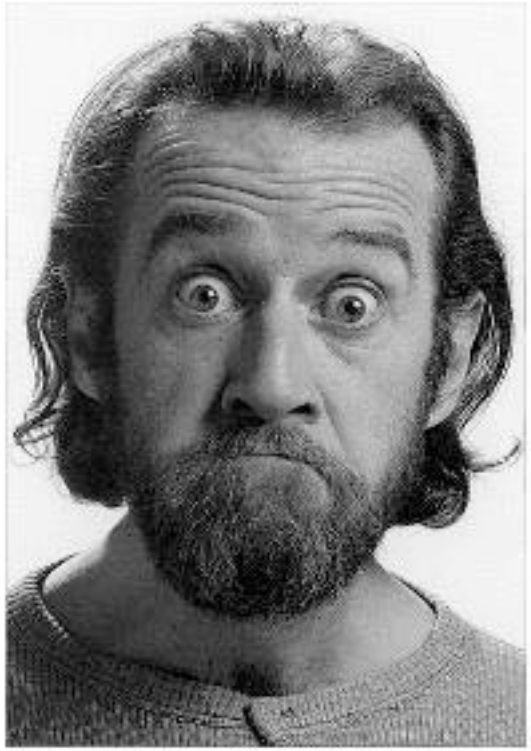
What is Javadoc?

a **program** that **writes a file**

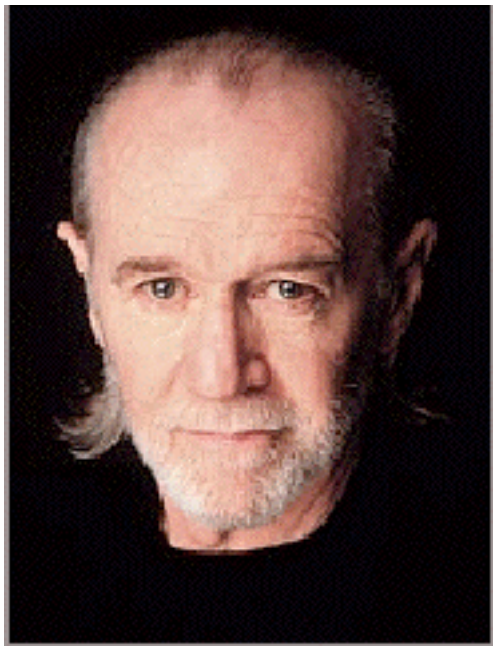


...so what is a file?

A File is ...

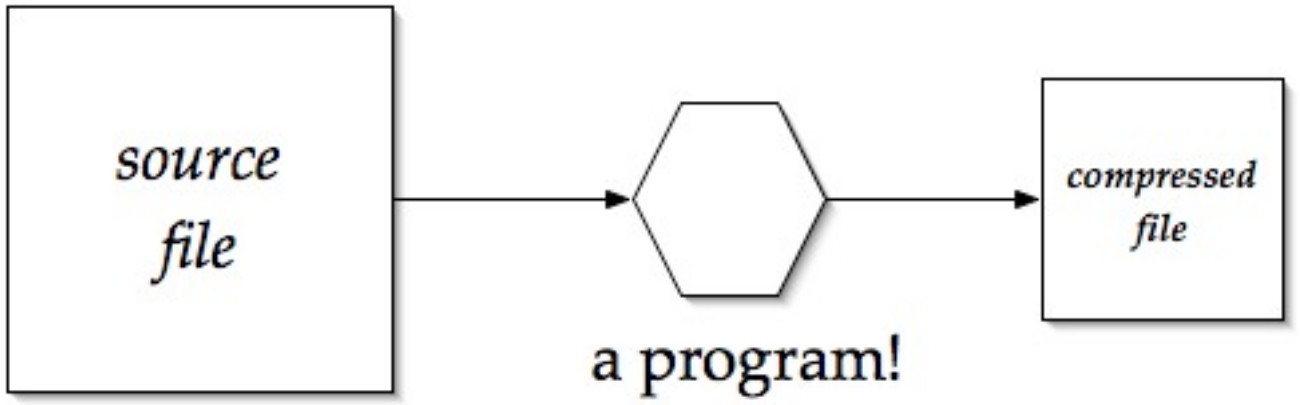


a place
for your stuff



Data Compression and Files

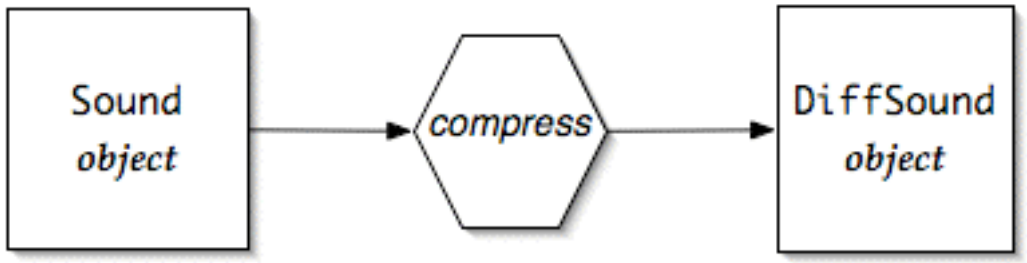
This is what I showed to demonstrate compression:



But this isn't actually how
our data compression
for Sound worked.

Our Sound Compression

It did this:



To save our DiffSound objects,
we need to write them to a file.

How to Write to a File

A simple way of writing a file is:

1. Create a file object.
2. Write data to it using its `write()` and `newLine()` methods.
3. Close the file.

#2 and #3 are just like what we've done in the past.
#1 requires a "*trust me*" moment or two — for now.

Our Compressed File

... is bigger than the original!

Why?

Our Compressed File

`FileWriter`s are for creating *text* files,
and text is an inefficient encoding!

This semester, we will spend our time
dealing with text as our third medium.

To save our data in a more compact format,
we will have to learn about
another kind of file object —
in CS II or by our own research!

How Do We Learn to Use a New Class?

`BufferedWriter` *is a pretty cool class.*
How can we learn to do more with it?

Read the source code.

Look at its Javadoc.