

Java

Sep 11

- Topics: Command Line, IDE, HelloWorld, variables

In the beginning
there was the command line

Integrated Development Environment

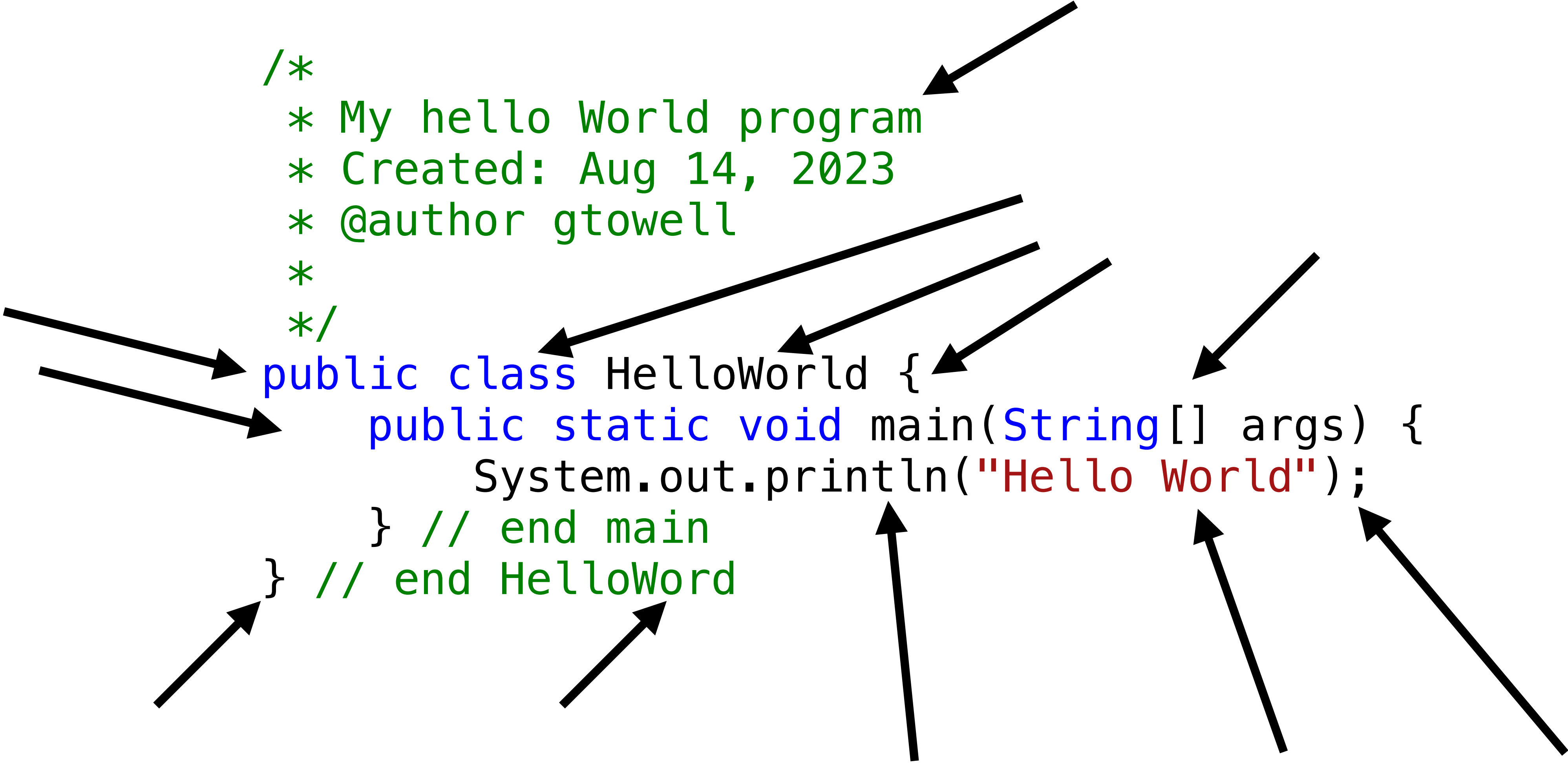
- Visual Studio Code, Eclipse, Cloud 9, Netbeans, XCode, Android Studio, ...
 - goal -- make programming easier
- This semester: Visual Studio Code
 - Free and available on Mac, Windows and Unix
 - You are NOT required to use
 - You will NOT be tested about it
 - I will use it in class
 - I recommend it

First Program

- Will repeat many of these steps in lab
- Will discuss in detail next

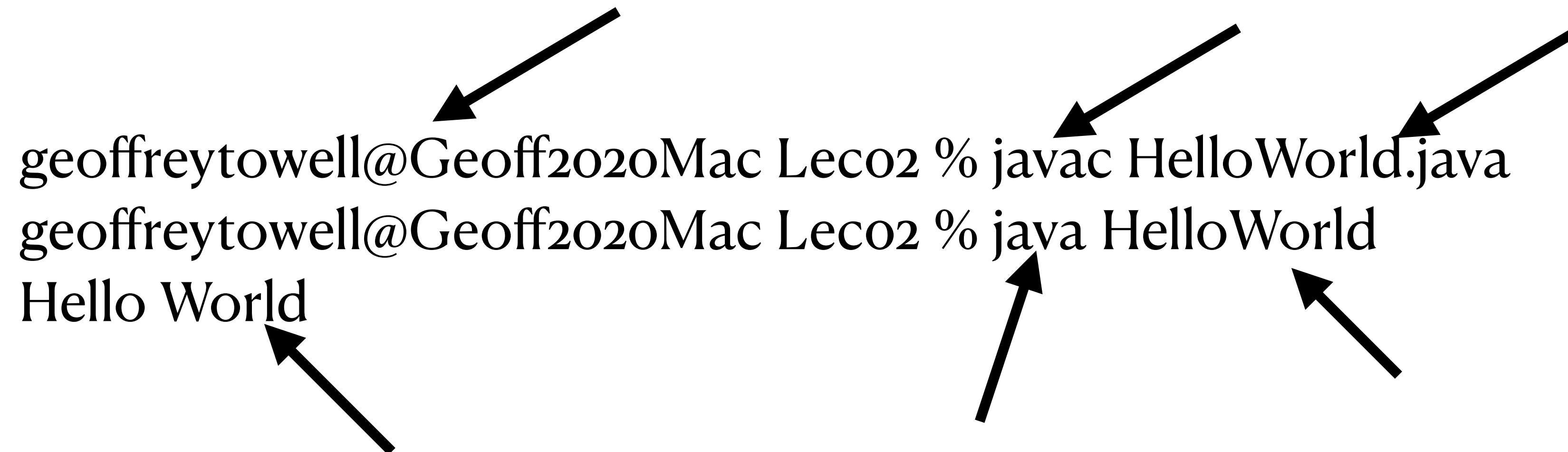
Hello World

```
/*  
 * My hello World program  
 * Created: Aug 14, 2023  
 * @author gtowell  
 */  
public class HelloWorld {  
    public static void main(String[] args) {  
        System.out.println("Hello World");  
    } // end main  
} // end HelloWorld
```

A diagram consisting of ten black arrows pointing to specific parts of the Java code. The arrows originate from various points around the code and point to: 1) the opening comment block, 2) the 'public' keyword, 3) the 'class' keyword, 4) the 'HelloWorld' class name, 5) the 'main' method name, 6) the 'String' parameter, 7) the 'args' parameter, 8) the 'println' method, 9) the 'Hello World' string literal, and 10) the closing brace of the main method.

Compile and Run

- javac
 - "compile" a java program
 - silent if successful, messages about problems if not
- java
 - run a compiled program



```
geoffreytowell@Geoff2020Mac Leco2 % javac HelloWorld.java
geoffreytowell@Geoff2020Mac Leco2 % java HelloWorld
Hello World
```

The image shows a terminal window with two lines of command execution. The first line is `javac HelloWorld.java` and the second line is `java HelloWorld`. The output of the second command is `Hello World`. Four arrows point to specific parts of the commands: one points to the username `geoffreytowell`, one points to the `javac` command, one points to the `java` command, and one points to the `HelloWorld` class name in the second command.

Single purpose programs

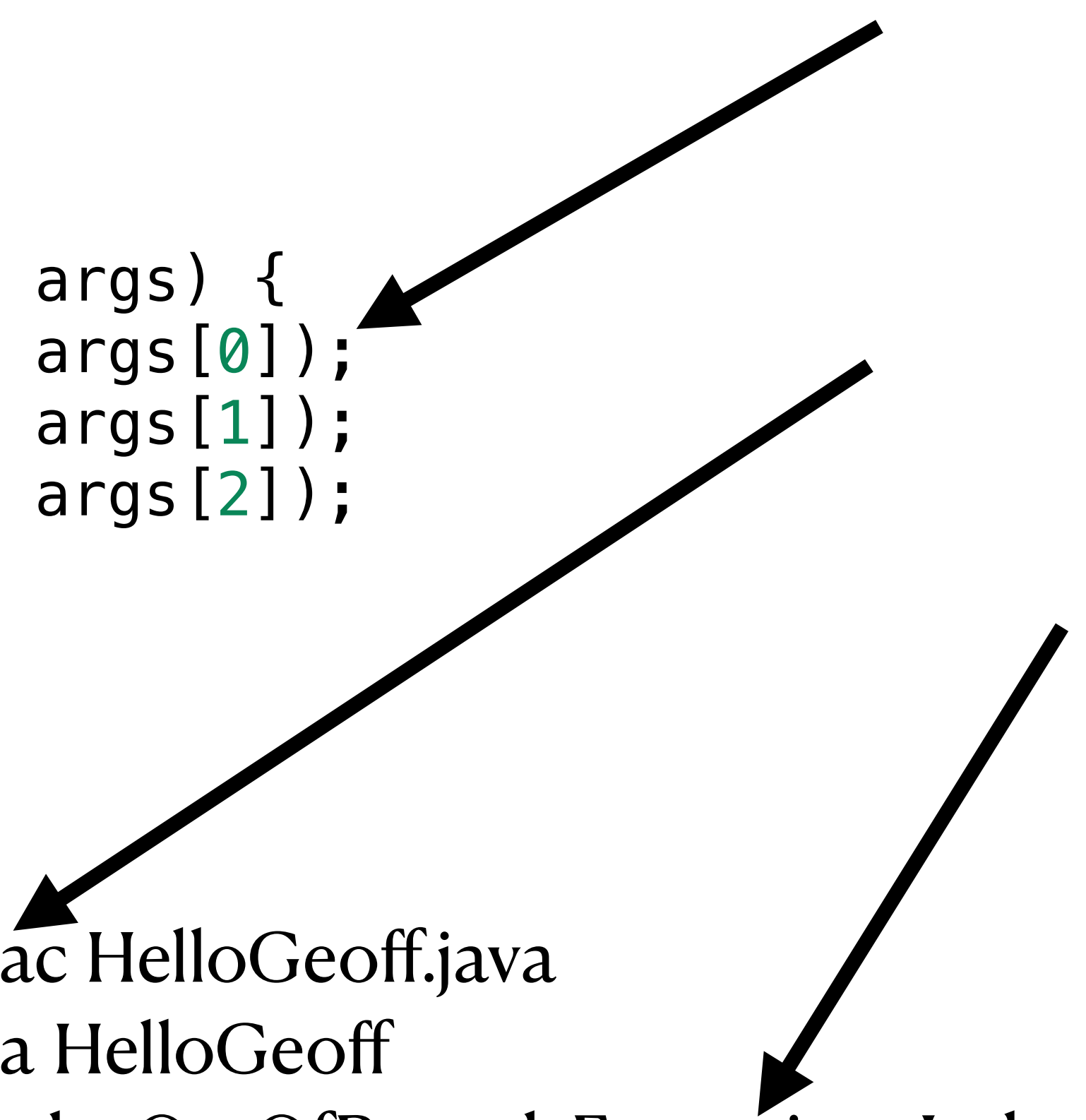
- Hello World can only ever do one thing
 - Single purpose programs are not often useful, but sometimes very much so
 - modelling of stellar evolution
- Edit
 - compile & run
- "Variables"
 - HelloWorld could have one.

Command Line parameters

- `java HelloWorld 42 a 3.14 geoff`
 - each of the strings after HelloWorld is passed to the program in the "args" variable
 - `args[0] <- "42"`
 - `args[1] <- "a"`
 - `args[2] <- "3.14"`
 - `args[3] <- "geoff"`
- So what happens when we do this?

Using Command Line Parameters

```
/*
 * Hello to command line parameters
 * Created: Aug 14, 2023
 * @author gtowell
 */
public class HelloGeoff {
    public static void main(String[] args) {
        System.out.println("Hello" + args[0]);
        System.out.println("Hello" + args[1]);
        System.out.println("Hello" + args[2]);
    }
}
```



geoffreytowell@Geoff2020Mac Leco2 % javac HelloGeoff.java

geoffreytowell@Geoff2020Mac Leco2 % java HelloGeoff

Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: Index 0 out of bounds for length 0
at HelloGeoff.main(HelloGeoff.java:8)