

A black and white photograph of Grace Hopper, a pioneer in computer science, standing in front of an early computer system. She is wearing a dark, belted dress and glasses. She is holding a document in her left hand that has the word "COBOL" printed vertically on it. With her right hand, she is pointing at a panel of the computer. The computer consists of several large, metal cabinets with doors that are open, revealing internal components like relays and switches. Some of the doors have labels, including "7" and "8" at the top, and "COBOL" on a lower panel. The overall scene is a historical representation of early computer debugging.

Debugging

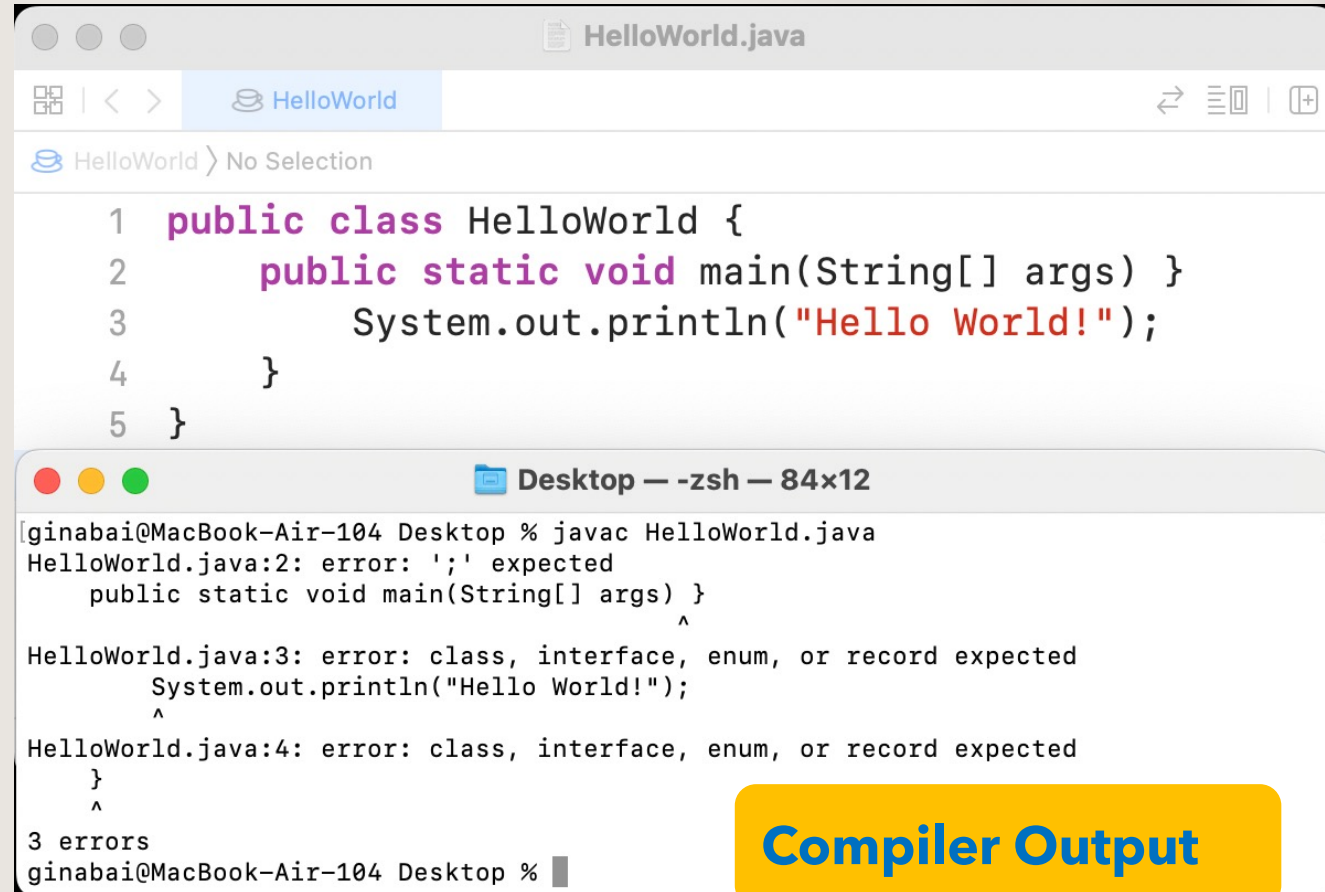
zyBook Chap 1.7, 2.18

Debugging & Strategies

- Debug code → Examine the code to figure out what went wrong, and **remove errors** from the code
- Do not make random or extensive changes to the program!
- Think before you change anything
- Figure out *why* it went wrong

Reacting to Errors

- Always address the **first error** listed in the compiler output before addressing the other errors.
- Always **recompile after making changes** to code because fixing one error will often fix other errors as well.



The screenshot shows an IDE window titled 'HelloWorld.java' with the following code:

```
1 public class HelloWorld {  
2     public static void main(String[] args) {  
3         System.out.println("Hello World!");  
4     }  
5 }
```

Below the code is a terminal window titled 'Desktop — -zsh — 84x12' showing the output of the command `javac HelloWorld.java`:

```
[ginabai@MacBook-Air-104 Desktop % javac HelloWorld.java  
HelloWorld.java:2: error: ';' expected  
    public static void main(String[] args) {  
                                   ^  
HelloWorld.java:3: error: class, interface, enum, or record expected  
        System.out.println("Hello World!");  
        ^  
HelloWorld.java:4: error: class, interface, enum, or record expected  
    }  
    ^  
3 errors  
ginabai@MacBook-Air-104 Desktop %
```

A yellow button labeled 'Compiler Output' is located in the bottom right corner of the terminal window.

```
HelloWorld.java

HelloWorld

HelloWorld > No Selection

1 public class HelloWorld {
2     public static void main(String[] args) }
3         System.out.println("Hello World!");
4     }
5 }
```

File name and line number

```
Desktop — -zsh — 84x12

[ginabai@MacBook-Air-104 Desktop % javac HelloWorld.java
HelloWorld.java:2: error: ';' expected
    public static void main(String[] args) }
                                   ^
HelloWorld.java:3: error: class, interface, enum, or record expected
        System.out.println("Hello World!");
        ^
HelloWorld.java:4: error: class, interface, enum, or record expected
    }
    ^

3 errors
ginabai@MacBook-Air-104 Desktop %
```

Suggested error