

A decorative graphic on the left side of the slide, consisting of a network of white lines and small circles on a dark blue background, resembling a circuit board or a neural network.

# PROGRAM ERRORS

zyBook 1.5

# PROGRAM ERRORS

- Syntax Errors / Compile-time Errors – do not compile
- Runtime Errors – compile, do not run
- Logic Errors – compile and run, but not correct

# SYNTAX ERRORS

- Occur when you misuse Java.
- Caught by the compiler
- Also called **compile-time errors**
- Strategy → **Fix first compiler error and recompile.**
- Examples:
  - Missing semicolon ; at the end of a statement
  - Missing or mismatching curly brace, { or }
  - Missing keyword
  - Misspelling a keyword or identifier
  - Incorrect class name

```
1 public class Hello {  
2  
3 }
```

```
$ ls
```

```
bin src
```

```
$ more src/HelloWorld.java
```

```
public class Hello {  
  
}
```

```
$ javac -d bin -cp bin src/HelloWorld.java  
HelloWorld.java:1: error: class Hello is  
public, should be declared in a file named  
Hello.java
```

```
public class Hello {  
^
```

```
1 error
```

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

```
$ javac -d bin -cp bin src/HelloWorld.java  
src/HelloWorld.java:3: error: ';' expected  
    System.out.println("Hello World!")  
                        ^
```

```
1 error
```

# RUNTIME ERRORS

- Runtime errors that are so severe that Java stops your program from executing.
- We are **able to compile** the program, but we are **not able to run** the program.
- Examples
  - Missing main method
  - Incorrect spelling for main
  - Dividing by 0

```
1  /**
2   * This is an example class that illustrates
3   * printing a message to the screen
4   *
5   * @author Jessica Young Schmidt
6   */
7  public class HelloWorld {
8      /**
9       * Starts the program.
10     *
11     * @param args command line arguments
12     */
13     public static void mian(String[] args) {
14         System.out.println("Hello World!");
15     }
16 }
```

```
$ ls
```

```
bin          src
```

```
$ javac -d bin -cp bin src/HelloWorld.java
```

```
$ ls bin
```

```
HelloWorld.class
```

```
$ java -cp bin HelloWorld
```

```
Error: Main method not found in class
HelloWorld, please define the main method
as:
```

```
    public static void main(String[] args)
or a JavaFX application class must extend
javafx.application.Application
```



# LOGIC ERRORS

- Code that does not perform the task it is intended to perform
- Code **compiles and runs** but is not correct
- Strategy → Test programs thoroughly!

```
1  /**
2   * This is an example class that illustrates
3   * printing a message to the screen
4   *
5   * @author Jessica Young Schmidt
6   */
7  public class HelloWorld {
8      /**
9       * Starts the program.
10     *
11     * @param args command line arguments
12     */
13     public static void main(String[] args) {
14         System.out.println("Hello World!");
15         System.out.println("2 * 3 = " +
16                             (2 + 3));
17     }
18 }
```

```
$ ls
bin                               src

$ javac -d bin -cp bin src/HelloWorld.java
$ ls bin
HelloWorld.class

$ java -cp bin HelloWorld
Hello World!
2 * 3 = 5
```