More With Java

Errors and IO

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BU Summer Challenge

July 9th, 2025

Grab a rubber duck from the box

Errors in Java

We all make mistakes

Yesterday I said the Boolean type was called `bool`...

It's actually `boolean`

`bool` is what it is called in C++

I don't even know C++?

I've fixed the slides from yesterday.

Let's get started...

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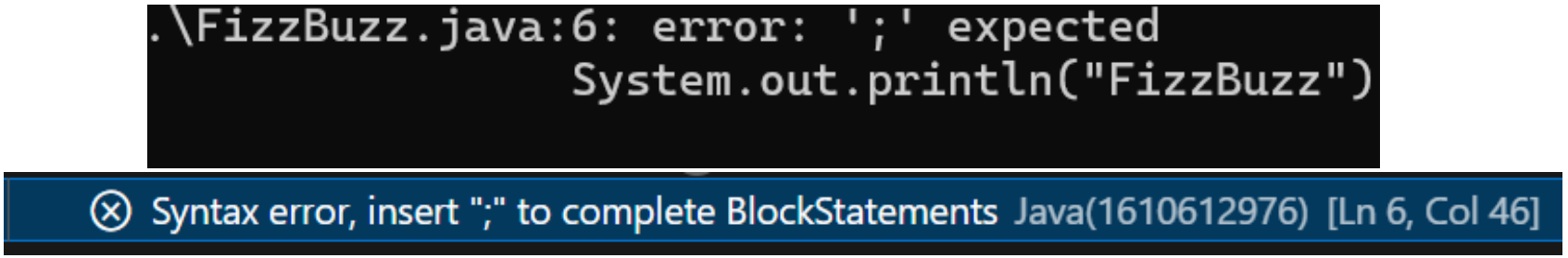

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- Unless *handled*, exceptions will cause your program to halt

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`IllegalArgumentException`	`ArithmeticException`	`NumberFormatException`
`NullPointerException`	`ArrayIndexOutOfBoundsException`	`ClassCastException`

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```
Exception in thread "main" java.lang.IllegalArgumentException: n must be greater
        at FizzBuzz.printBobNTimes(FizzBuzz.java:8)
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public int average(int a, int b) {
    return a + b / 2;
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- She also created one of the first "high level" programming languages (where code is written in English-like syntax rather than binary/symbols)

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- Later in the week we'll talk about *testing*, code that runs other to check that it works as expected

Demo Time!

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- This method is also effective with *animate* things too (like friends!)

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- We can use /* ... */ to write longer, multiline comments, anything after /* will be commented out until the matching */

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- In practice, not every method needs a JavaDoc (if everything is clearly named and straightforward)

IO in Java

Basic IO

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- How can we make our program interactive?

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- Before we can instantiate the Scanner, we need the File

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- We will wrap our code into a try-catch block

Scanner Example

```java
import java.util.Scanner;
import java.io.File;
import java.io.FileNotFoundException;

public class IOExample {
    public static void main(String[] args) {
        File inputFile = new File(pathname:"moby-dick.txt");
        try {
            Scanner fileReader = new Scanner(inputFile);
        } catch (FileNotFoundException e) {
            System.out.println(x:"File 'moby-dick.txt' was not found.");
        }
    }
}
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- The scanner tries to read *even if there are no more tokens* leading to exceptions
- We can check first using `hasNext()`, `hasNextLine()`, `hasNextInt()`

Scanner Example

```java
import java.util.Scanner;
import java.io.File;
import java.io.FileNotFoundException;

public class IOExample {
    public static void main(String[] args) {
        System.out.println(System.getProperty(key:"user.dir"));
        File inputFile = new File(pathname:"moby-dick.txt");
        try {
            Scanner fileReader = new Scanner(inputFile);
            int numLines = 0;

            while (fileReader.hasNext()) {
                fileReader.nextLine();
                numLines = numLines + 1;
            }
            System.out.println(numLines);
            fileReader.close();

        } catch (FileNotFoundException e) {
            System.out.println(x:"File 'moby-dick.txt' was not found.");
        }
```

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```
Enter an int!
10
You input: 10
```

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- Important for making perfomant programs and other languages require more of this manual resource management

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- FileWriter also needs to be closed!

Challenge

Create a program that creates a new file and writes "Hello World!" in it! As an extra challenge, use System.in to allow the user to choose the file name! Also try handling the case where the file already exists