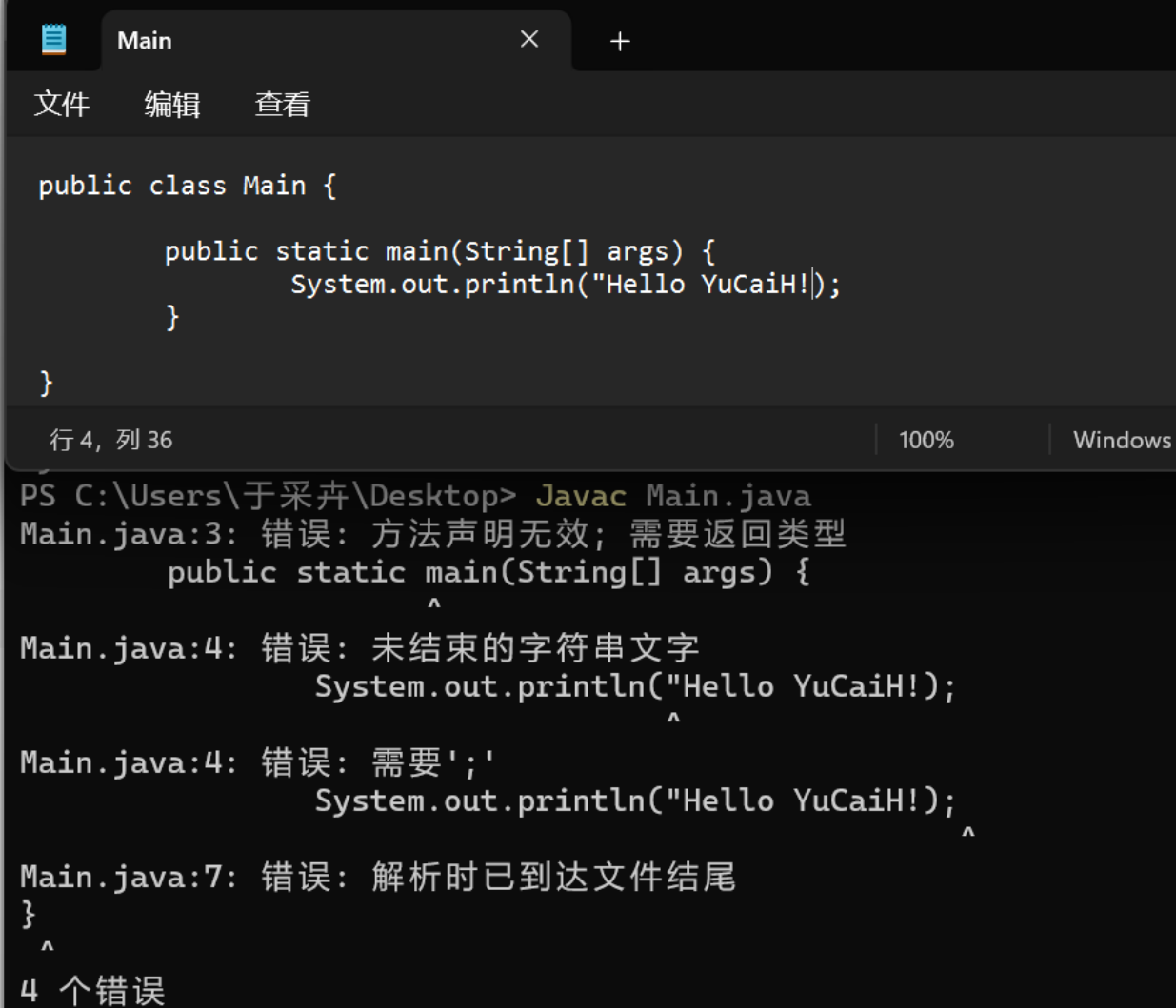


Lecture 15. Programming Errors

Syntax Errors (语法错误)



The screenshot shows a Java IDE with a file named 'Main'. The code in the editor is as follows:

```
public class Main {  
  
    public static main(String[] args) {  
        System.out.println("Hello YuCaiH!");  
    }  
  
}
```

The IDE's status bar at the bottom indicates '行 4, 列 36' (Line 4, Column 36), '100%', and 'Windows'.

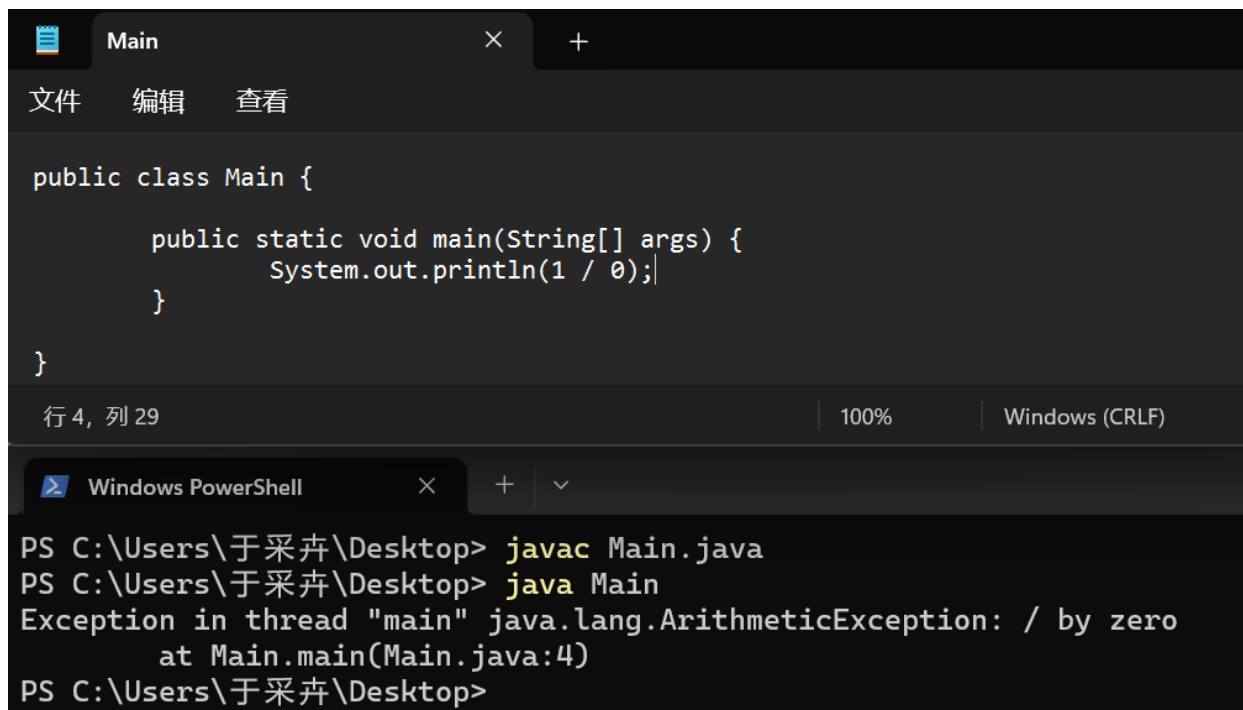
Below the code editor, the command prompt shows the execution of the command:

```
PS C:\Users\于采卉\Desktop> javac Main.java
```

The output of the command is as follows:

```
Main.java:3: 错误: 方法声明无效; 需要返回类型  
    public static main(String[] args) {  
            ^  
Main.java:4: 错误: 未结束的字符串文字  
        System.out.println("Hello YuCaiH!");  
                           ^  
Main.java:4: 错误: 需要';'  
        System.out.println("Hello YuCaiH!");  
                           ^  
Main.java:7: 错误: 解析时已到达文件结尾  
    }  
    ^  
4 个错误
```

Runtime Error



The screenshot shows an IDE with a file named 'Main'. The code is a Java class with a static main method that prints '1 / 0'. Below the code editor, a Windows PowerShell terminal window shows the compilation and execution of the program. The compilation is successful, but the execution throws an 'ArithmeticException: / by zero' at line 4, column 29.

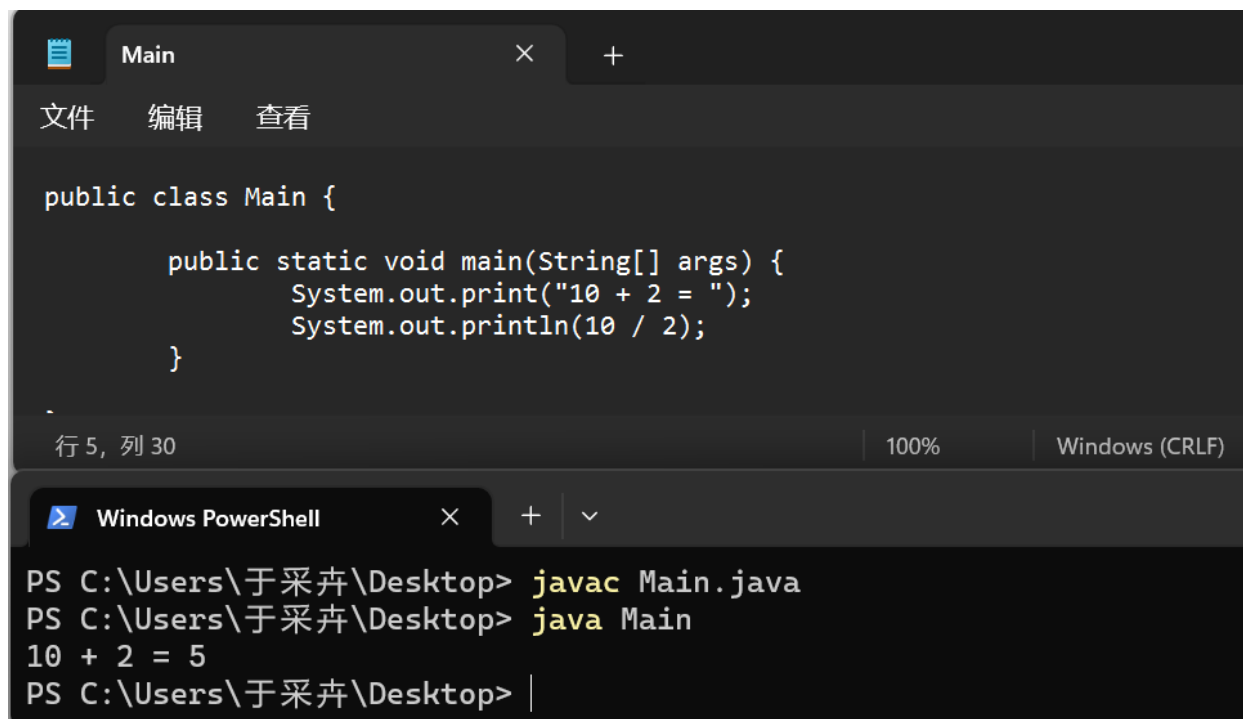
```
public class Main {  
  
    public static void main(String[] args) {  
        System.out.println(1 / 0);  
    }  
  
}
```

行 4, 列 29 | 100% | Windows (CRLF)

```
PS C:\Users\于采卉\Desktop> javac Main.java  
PS C:\Users\于采卉\Desktop> java Main  
Exception in thread "main" java.lang.ArithmeticException: / by zero  
    at Main.main(Main.java:4)  
PS C:\Users\于采卉\Desktop>
```

The compiler does not detect runtime errors (编译器不检测运行时错误)

Logical Errors



The screenshot shows an IDE with a file named 'Main'. The code is a Java class with a static main method that prints '10 + 2 =' followed by the result of '10 / 2'. Below the code editor, a Windows PowerShell terminal window shows the compilation and execution of the program. The output is '10 + 2 = 5', which is a logical error because the division result is 5, not the expected 2.

```
public class Main {  
  
    public static void main(String[] args) {  
        System.out.print("10 + 2 = ");  
        System.out.println(10 / 2);  
    }  
  
}
```

行 5, 列 30 | 100% | Windows (CRLF)

```
PS C:\Users\于采卉\Desktop> javac Main.java  
PS C:\Users\于采卉\Desktop> java Main  
10 + 2 = 5  
PS C:\Users\于采卉\Desktop> |
```

程序员编写程序时犯的逻辑错误

Common Errors

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Neso Academy Java Course!");  
    }  
}
```

Missing Braces – Syntax Error

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Neso Academy Java Course!");  
    }  
}
```

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Neso Academy Java Course!")  
    }  
}
```

Missing Semicolons – Syntax Error

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Neso Academy Java Course!");  
    }  
}
```

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Neso Academy Java Course!");  
    }  
}
```

Missing Quotations – Syntax Error

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Neso Academy Java Course!");  
    }  
}
```

```
public class Main {  
    public static void Main(string[] args) {  
        System.out.println("Neso Academy Java Course!");  
    }  
}
```

Misspelling Names – Syntax Error

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Neso Academy Java Course!");  
    }  
}
```