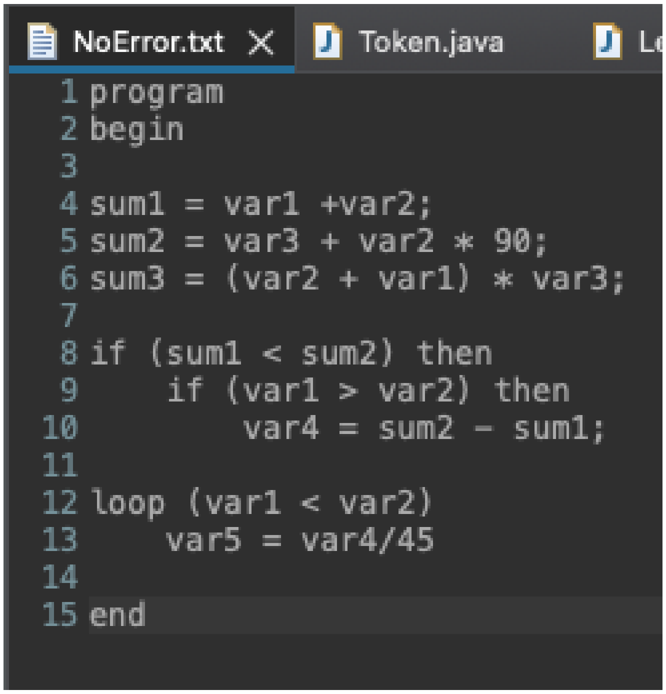
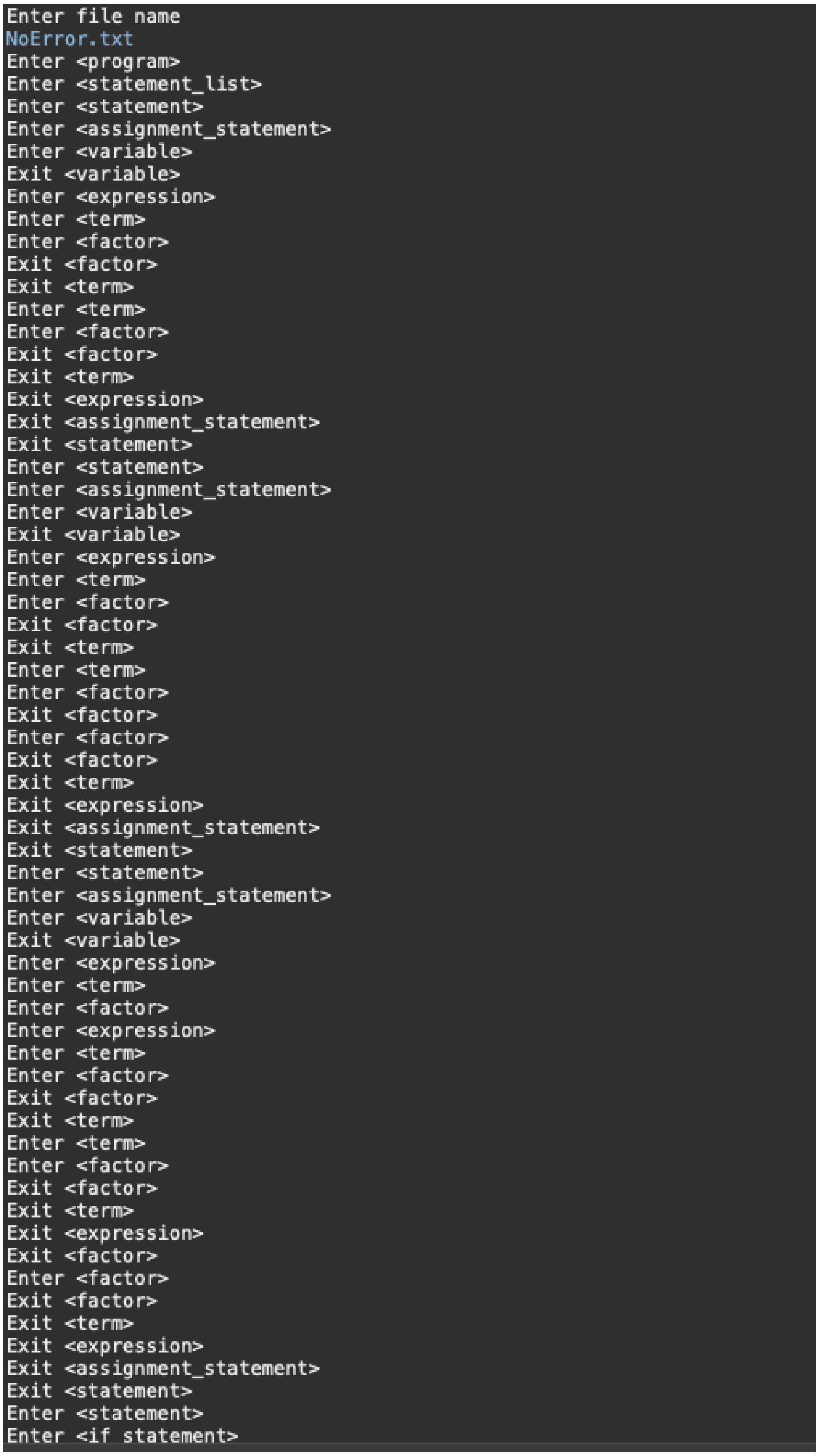
1. **Testing the file with no syntax error.**

Text File:

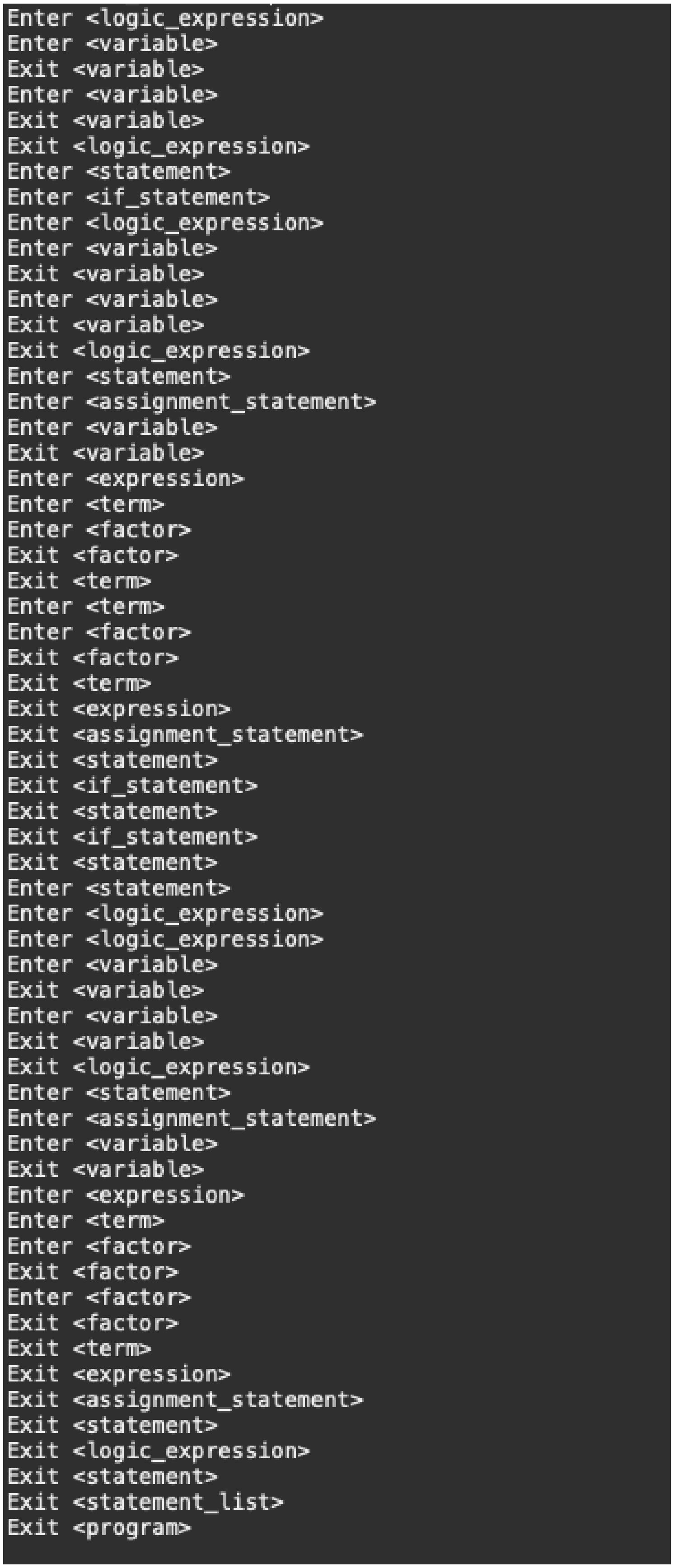


```
program
begin

sum1 = var1 +var2;
sum2 = var3 + var2 * 90;
sum3 = (var2 + var1) * var3;

if (sum1 < sum2) then
    if (var1 > var2) then
        var4 = sum2 - sum1;

loop (var1 < var2)
    var5 = var4/45

end
```

Execution:

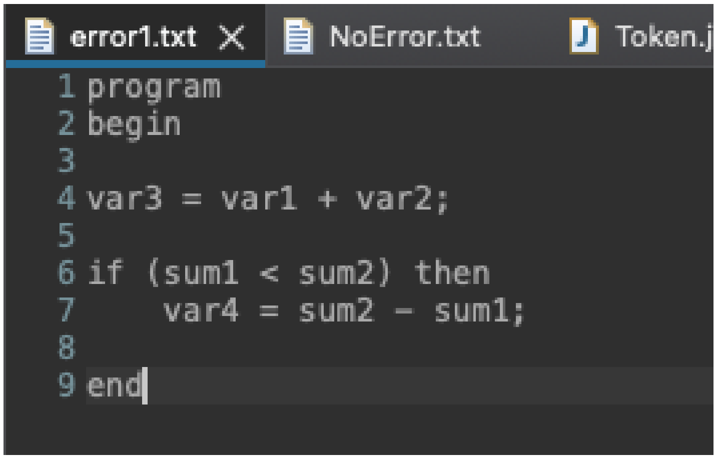


```
Enter file name
NoError.txt
Enter <program>
Enter <statement_list>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Enter <expression>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <assignment_statement>
Exit <statement>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Enter <expression>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Enter <term>
Enter <factor>
Exit <factor>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <assignment_statement>
Exit <statement>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Enter <expression>
Enter <term>
Enter <factor>
Enter <expression>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <factor>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <assignment_statement>
Exit <statement>
Enter <statement>
Enter <if_statement>
```



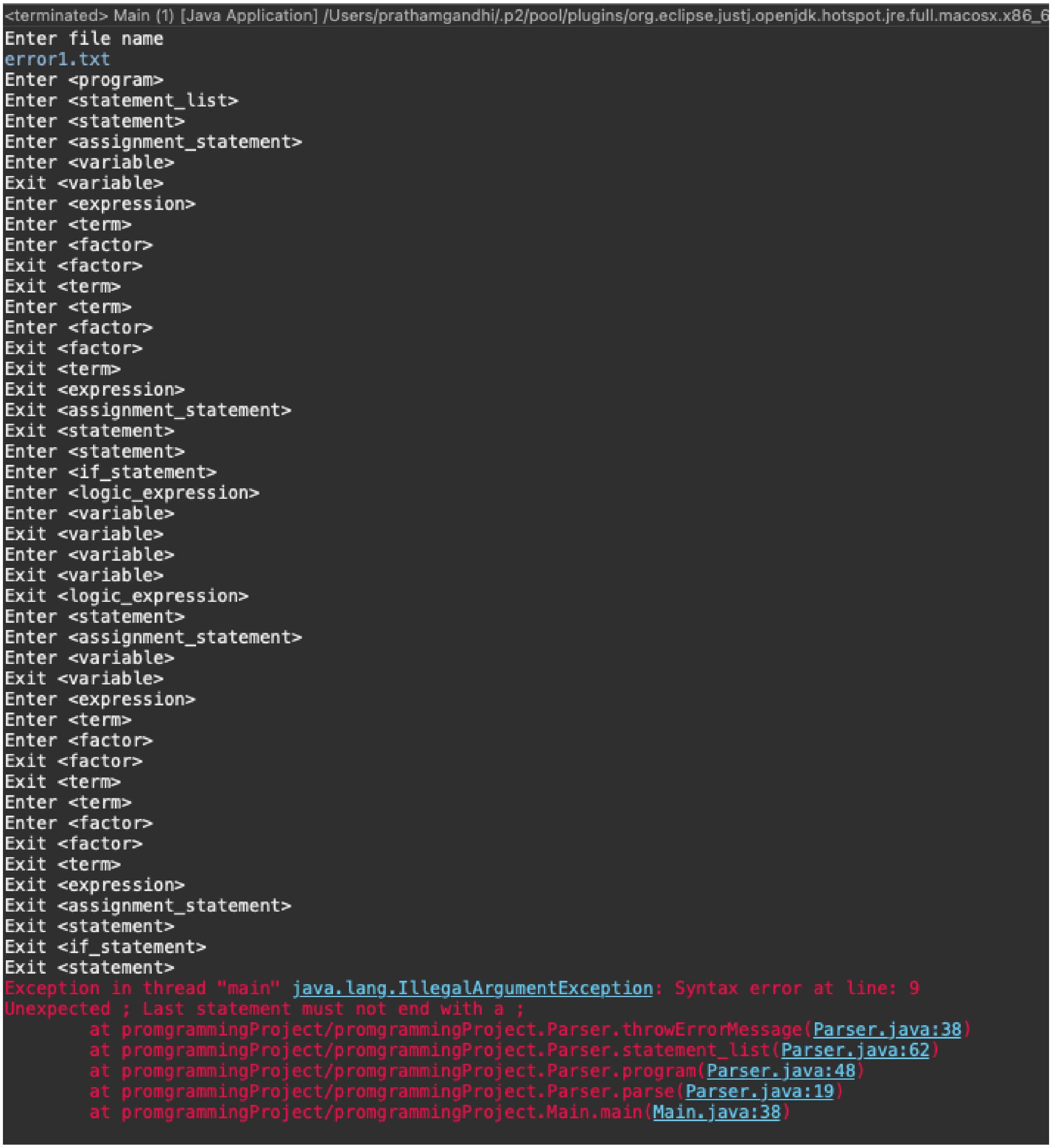
```
Enter <logic_expression>
Enter <variable>
Exit <variable>
Enter <variable>
Exit <variable>
Exit <logic_expression>
Enter <statement>
Enter <if_statement>
Enter <logic_expression>
Enter <variable>
Exit <variable>
Enter <variable>
Exit <variable>
Exit <logic_expression>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Enter <expression>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <assignment_statement>
Exit <statement>
Exit <if_statement>
Exit <statement>
Exit <if_statement>
Exit <statement>
Enter <statement>
Enter <logic_expression>
Enter <logic_expression>
Enter <variable>
Exit <variable>
Enter <variable>
Exit <variable>
Exit <logic_expression>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Enter <expression>
Enter <term>
Enter <factor>
Exit <factor>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <assignment_statement>
Exit <statement>
Exit <logic_expression>
Exit <statement>
Exit <statement_list>
Exit <program>
```

2. **Testing the file with a semicolon in the last statement.**



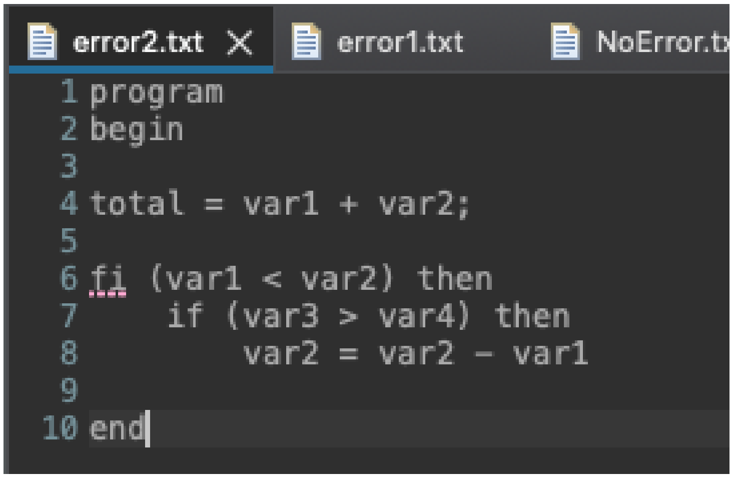
```
program
begin

var3 = var1 + var2;

if (sum1 < sum2) then
    var4 = sum2 - sum1;

end
```

Execution:



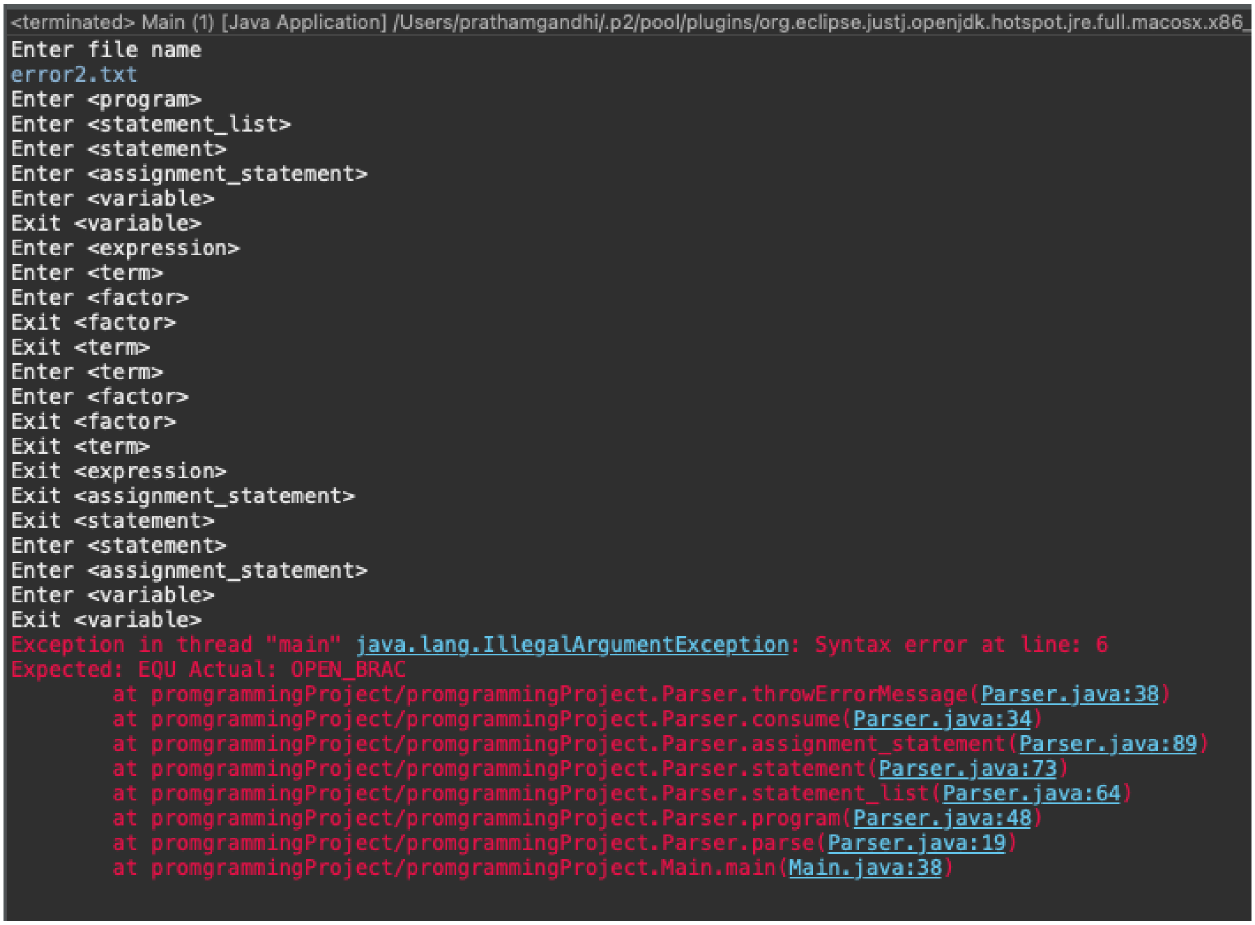
```
<terminated> Main (1) [Java Application] /Users/prathamgandhi/.p2/pool/plugins/org.eclipse.justj.openjdk.hotspot.jre.full.macosx.x86_6
Enter file name
error1.txt
Enter <program>
Enter <statement_list>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Enter <expression>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <assignment_statement>
Exit <statement>
Enter <statement>
Enter <if_statement>
Enter <logic_expression>
Enter <variable>
Exit <variable>
Enter <variable>
Exit <variable>
Exit <logic_expression>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Enter <expression>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <assignment_statement>
Exit <statement>
Exit <if_statement>
Exit <statement>
Exception in thread "main" java.lang.IllegalArgumentException: Syntax error at line: 9
Unexpected ; Last statement must not end with a ;
        at promgrammingProject/promgrammingProject.Parser.throwErrorMessage(Parser.java:38)
        at promgrammingProject/promgrammingProject.Parser.statement_list(Parser.java:62)
        at promgrammingProject/promgrammingProject.Parser.program(Parser.java:48)
        at promgrammingProject/promgrammingProject.Parser.parse(Parser.java:19)
        at promgrammingProject/promgrammingProject.Main.main(Main.java:38)
```

3. Testing the file with a misspelled if.



```
 1 program
 2 begin
 3
 4 total = var1 + var2;
 5
 6 fi (var1 < var2) then
 7     if (var3 > var4) then
 8         var2 = var2 - var1
 9
10 end
```

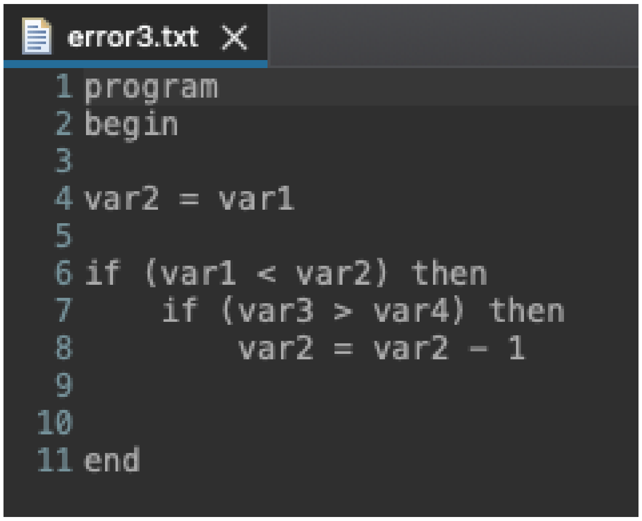
Execution:



```
<terminated> Main (1) [Java Application] /Users/prathamgandhi/.p2/pool/plugins/org.eclipse.justj.openjdk.hotspot.jre.full.macosx.x86_
Enter file name
error2.txt
Enter <program>
Enter <statement_list>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Enter <expression>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <assignment_statement>
Exit <statement>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Exception in thread "main" java.lang.IllegalArgumentException: Syntax error at line: 6
Expected: EQU Actual: OPEN_BRAC
        at promgrammingProject/promgrammingProject.Parser.throwErrorMessage(Parser.java:38)
        at promgrammingProject/promgrammingProject.Parser.consume(Parser.java:34)
        at promgrammingProject/promgrammingProject.Parser.assignment_statement(Parser.java:89)
        at promgrammingProject/promgrammingProject.Parser.statement(Parser.java:73)
        at promgrammingProject/promgrammingProject.Parser.statement_list(Parser.java:64)
        at promgrammingProject/promgrammingProject.Parser.program(Parser.java:48)
        at promgrammingProject/promgrammingProject.Parser.parse(Parser.java:19)
        at promgrammingProject/promgrammingProject.Main.main(Main.java:38)
```

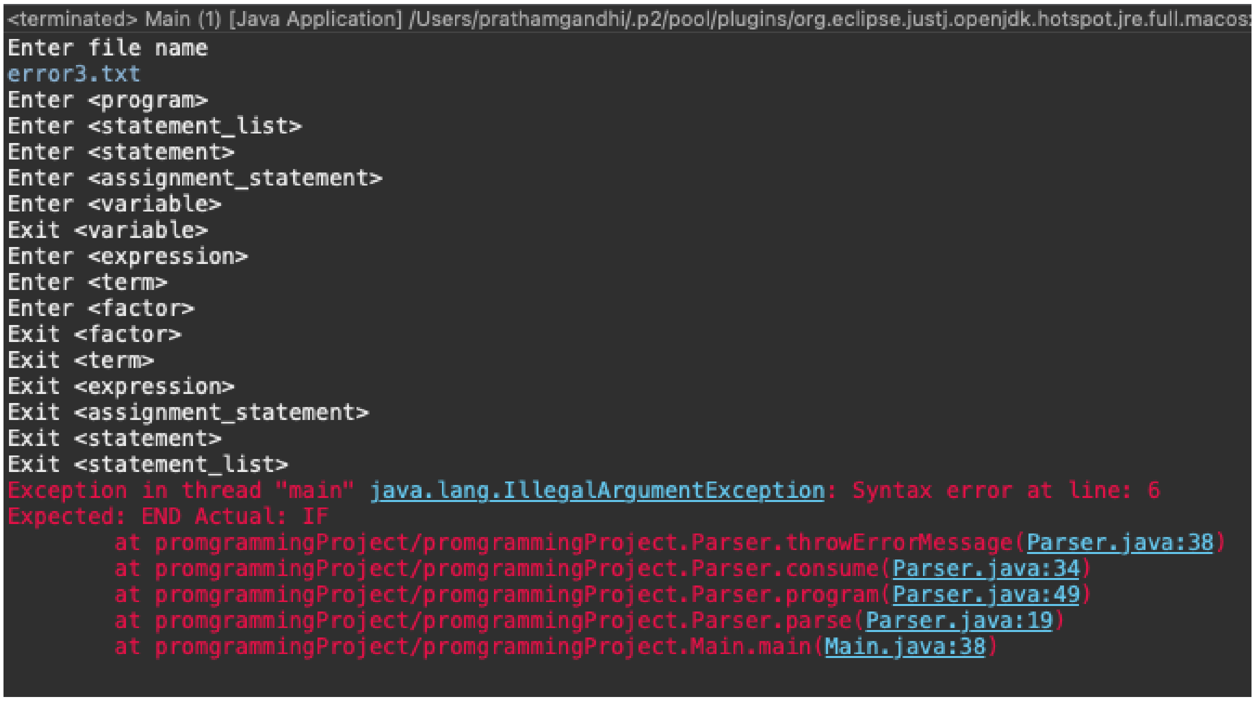
fi gets recognized as an identifier

4. **Testing the file with a missing semicolon in the first assignment statement.**



```
 1 program
 2 begin
 3
 4 var2 = var1
 5
 6 if (var1 < var2) then
 7     if (var3 > var4) then
 8         var2 = var2 - 1
 9
10
11 end
```

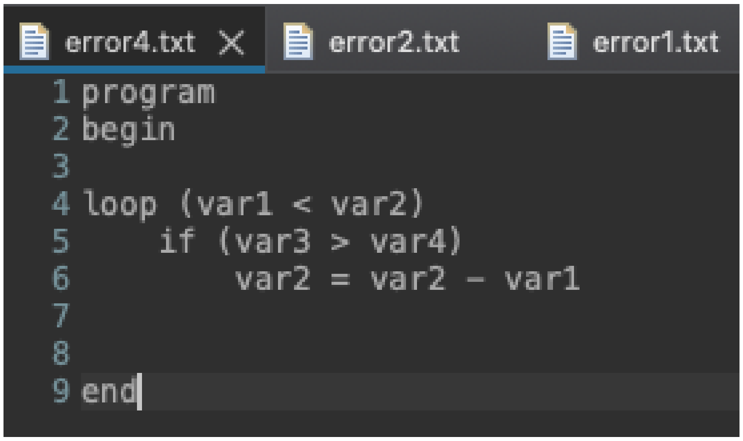
Execution:



```
<terminated> Main (1) [Java Application] /Users/prathamgandhi/.p2/pool/plugins/org.eclipse.justj.openjdk.hotspot.jre.full.macos
Enter file name
error3.txt
Enter <program>
Enter <statement_list>
Enter <statement>
Enter <assignment_statement>
Enter <variable>
Exit <variable>
Enter <expression>
Enter <term>
Enter <factor>
Exit <factor>
Exit <term>
Exit <expression>
Exit <assignment_statement>
Exit <statement>
Exit <statement_list>
Exception in thread "main" java.lang.IllegalArgumentException: Syntax error at line: 6
Expected: END Actual: IF
	at promgrammingProject/promgrammingProject.Parser.throwErrorMessage(Parser.java:38)
	at promgrammingProject/promgrammingProject.Parser.consume(Parser.java:34)
	at promgrammingProject/promgrammingProject.Parser.program(Parser.java:49)
	at promgrammingProject/promgrammingProject.Parser.parse(Parser.java:19)
	at promgrammingProject/promgrammingProject.Main.main(Main.java:38)
```

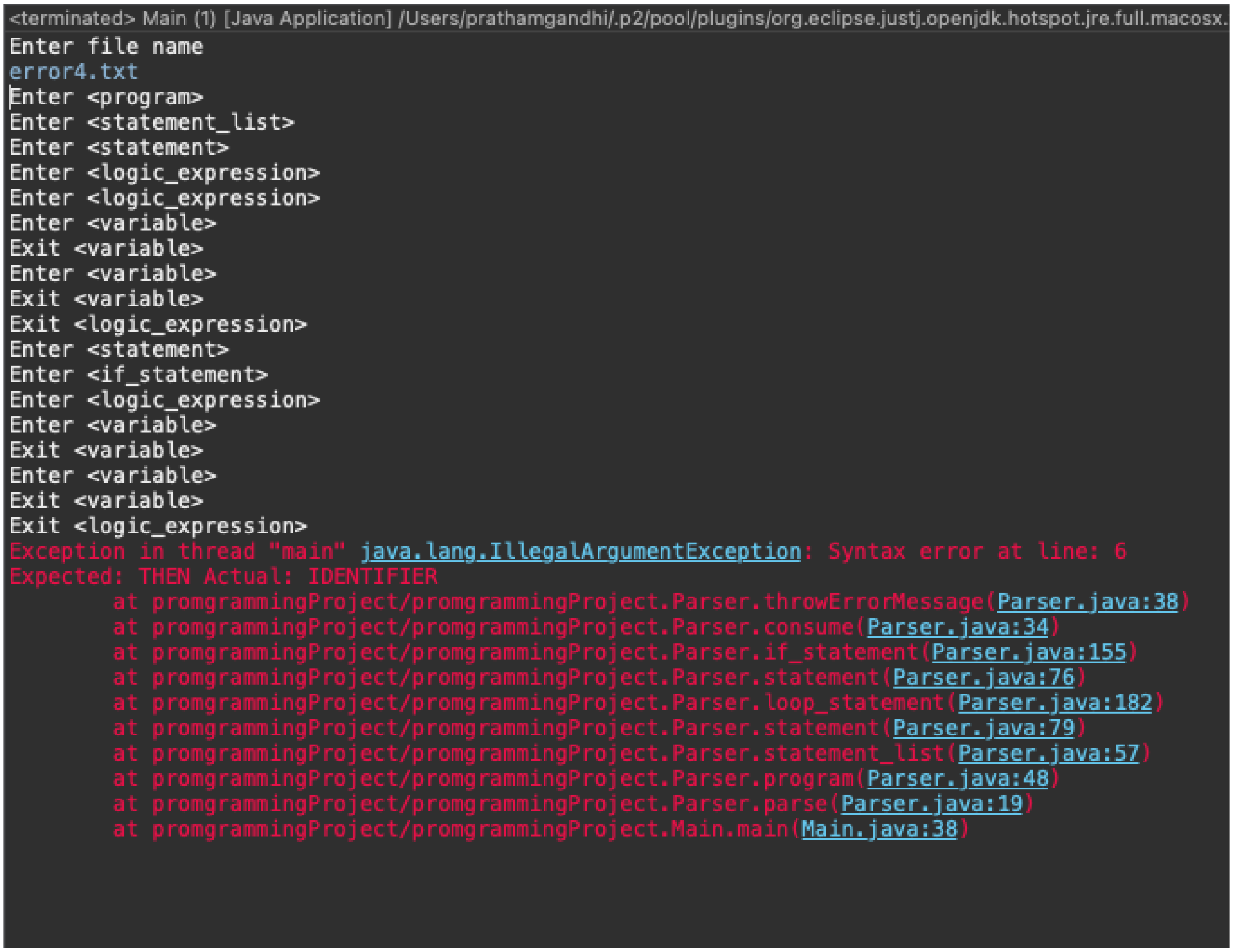
Since there is no semicolon, gets recognized as the last statement of the program.

5. **Testing the file that has a missing then keyword.**



```
1 program
2 begin
3
4 loop (var1 < var2)
5     if (var3 > var4)
6         var2 = var2 - var1
7
8
9 end
```

Execution:



```
<terminated> Main (1) [Java Application] /Users/prathamgandhi/.p2/pool/plugins/org.eclipse.justj.openjdk.hotspot.jre.full.macosx.
Enter file name
error4.txt
Enter <program>
Enter <statement_list>
Enter <statement>
Enter <logic_expression>
Enter <logic_expression>
Enter <variable>
Exit <variable>
Enter <variable>
Exit <variable>
Exit <logic_expression>
Enter <statement>
Enter <if_statement>
Enter <logic_expression>
Enter <variable>
Exit <variable>
Enter <variable>
Exit <variable>
Exit <logic_expression>
Exception in thread "main" java.lang.IllegalArgumentException: Syntax error at line: 6
Expected: THEN Actual: IDENTIFIER
	at promgrammingProject/promgrammingProject.Parser.throwErrorMessage(Parser.java:38)
	at promgrammingProject/promgrammingProject.Parser.consume(Parser.java:34)
	at promgrammingProject/promgrammingProject.Parser.if_statement(Parser.java:155)
	at promgrammingProject/promgrammingProject.Parser.statement(Parser.java:76)
	at promgrammingProject/promgrammingProject.Parser.loop_statement(Parser.java:182)
	at promgrammingProject/promgrammingProject.Parser.statement(Parser.java:79)
	at promgrammingProject/promgrammingProject.Parser.statement_list(Parser.java:57)
	at promgrammingProject/promgrammingProject.Parser.program(Parser.java:48)
	at promgrammingProject/promgrammingProject.Parser.parse(Parser.java:19)
	at promgrammingProject/promgrammingProject.Main.main(Main.java:38)
```