

## XMLTreeIntExpressionEvaluator.java

```

1 import components.simplereader.SimpleReader;
2
3 /**
4  * Program to evaluate XMLTree expressions of integers.
5  *
6  * @author Vishal Kumar
7  */
8 public final class XMLTreeIntExpressionEvaluator {
9
10     /**
11      * Private constructor so this utility class cannot be instantiated.
12      */
13     private XMLTreeIntExpressionEvaluator() {
14
15     }
16
17     /**
18      * Evaluate the given expression.
19      *
20      * @param exp
21      *      the {@code XMLTree} representing the expression
22      * @return the value of the expression
23      * @requires <pre>
24      * [exp is a subtree of a well-formed XML arithmetic expression] and
25      * [the label of the root of exp is not "expression"]
26      * </pre>
27      * @ensures evaluate = [the value of the expression]
28      */
29     private static int evaluate(XMLTree exp) {
30         assert exp != null : "Violation of: exp is not null";
31         int value = 0;
32
33         // statement to get past the first root node
34         if (exp.label().equals("expression")) {
35             value += evaluate(exp.child(0));
36         }
37         // base case
38         else if (exp.hasAttribute("value")) {
39             value += Integer.parseInt(exp.attributeValue("value"));
40         }
41         // recursive if else block to evaluate math operations
42         else if (exp.label().equals("plus")) {
43             value += evaluate(exp.child(0)) + evaluate(exp.child(1));
44         } else if (exp.label().equals("minus")) {
45             value += evaluate(exp.child(0)) - evaluate(exp.child(1));
46         } else if (exp.label().equals("times")) {
47             value += evaluate(exp.child(0)) * evaluate(exp.child(1));
48         } else {
49             value += evaluate(exp.child(0)) / evaluate(exp.child(1));
50         }
51
52         // return final value
53         return value;
54     }
55
56     /**
57      * Main method.
58      */
59 }

```

# XMLTreeIntExpressionEvaluator.java

```
63  *
64  * @param args
65  *      the command line arguments
66  */
67  public static void main(String[] args) {
68      SimpleReader in = new SimpleReader1L();
69      SimpleWriter out = new SimpleWriter1L();
70
71      out.print("Enter the name of an expression XML file: ");
72      String file = in.nextLine();
73      while (!file.equals("")) {
74          XMLTree exp = new XMLTree1(file);
75          out.println(evaluate(exp.child(0)));
76          out.print("Enter the name of an expression XML file: ");
77          file = in.nextLine();
78      }
79
80      in.close();
81      out.close();
82  }
83
84 }
```