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import components.simplereader.SimpleReader;
import components.simplereader.SimpleReader1L;
import components.simplewriter.SimpleWriter;
import components.simplewriter.SimpleWriter1L;
import components.utilities.Reporter;
import components.xmltree.XMLTree;
import components.xmltree.XMLTree1;

/**
 * Program to evaluate XMLTree expressions of {@code int}.
 *
 * @author Put your name here
 */
public final class XMLTreeIntExpressionEvaluator {

    /**
     * Private constructor so this utility class cannot be instantiated.
     */
    private XMLTreeIntExpressionEvaluator() {

    }

    /**
     * Evaluate the given expression.
     *
     * @param exp
     *         the {@code XMLTree} representing the expression
     * @return the value of the expression
     * @requires <pre>
     * [exp is a subtree of a well-formed XML arithmetic expression] and
     * [the label of the root of exp is not "expression"]
     * </pre>
     * @ensures evaluate = [the value of the expression]
     */
    private static int evaluate(XMLTree exp) {
        assert exp != null : "Violation of: exp is not null";

        int num1 = 0;
        int num2 = 0;
        int result = 0;
        String label = exp.label();

        if (exp.numberOfChildren() > 0) {
            num1 = evaluate(exp.child(0));
            if (exp.numberOfChildren() > 1) {
                num2 = evaluate(exp.child(1));
            }

            if (label.equals("plus")) {
                result = num1 + num2;
            } else if (label.equals("minus")) {

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        result = num1 - num2;
    } else if (label.equals("times")) {
        result = num1 * num2;
    } else if (label.equals("divide")) {
        // Making sure we do not divide by 0
        if (num2 == 0) {
            Reporter.fatalErrorToConsole("Cannot divide by zero.");
        } else {
            result = num1 / num2;
        }
    }
} else {
    result = Integer.parseInt(exp.attributeValue("value"));
}

return result;
}

/**
 * Main method.
 *
 * @param args
 *         the command line arguments
 */
public static void main(String[] args) {
    SimpleReader in = new SimpleReader1L();
    SimpleWriter out = new SimpleWriter1L();

    out.print("Enter the name of an expression XML file: ");
    String file = in.nextLine();
    while (!file.equals("")) {
        XMLTree exp = new XMLTree1(file);
        out.println(evaluate(exp.child(0)));
        out.print("Enter the name of an expression XML file: ");
        file = in.nextLine();
    }

    in.close();
    out.close();
}
}

```