Assigned: Wednesday, April 17, 2024 (Week 9).
Due: Wednesday, May 1, 2024 (Week 11).
Graded Points: 10%

XML Expression Evaluator

Objectives

1 Familiarity in using `XML to represent arithmetic expressions`,
2 Practicing recursion to evaluate arithmetic expressions, and
3 Implementing expressions evaluator in Java.

The Problem

Your task is to implement an expression evaluation program in **Java** to recursively evaluate any arithmetic expressions represented as `XML`. The program should be able to evaluates **any expression** with integer numbers and basic operators. The expressions are stored in XML format (see below) so the program should **load the file** and parse into suitable data structure first.

Arithmetic Expressions

The program should support arithmetic expressions with integer operands, **binary operators +, –, *, and /. The precedence rules are the standard ones from arithmetic** (i.e., parenthesized expressions are evaluated first, then multiplicative operators, and finally additive operators).

Sample XML

<?xml version="1.0" encoding="UTF-8"?><expr type="binary"><operator value="+"/><expr type="binary"><operator value="*"/><expr type="atom"><atom value="3"/></expr><expr type="binary"><operator value="+"/><expr type="atom"><atom value="5"/></expr><expr type="atom"><atom value="4"/></expr></expr></expr><expr type="binary"><operator value="*"/><expr type="atom"><atom value="9"/></expr><expr type="atom"><atom value="8"/></expr></expr></expr>

More about XML at : http://www.w3schools.com/xml/default.asp

Expected output:

Expression = 3 * (5 + 4) + 9 * 8
Result = 99