Mathematisch–Naturwissenschaftliche Fakultät
Fachbereich Informatik (WSI)
Praktische Informatik
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Homework Assignment 6
Software Design & Programming Techniques (WS2014)

The deadline for this assignment is Dec 3, 23:59. Hand in the assignments via email to jonathan.brachthaeuser@uni-tuebingen.de. Please include all names of the group members in your email.

1 Visitor Pattern

Answer the following questions regarding the Visitor Pattern:

1. What is the Visitor Pattern? Shortly describe "Intent", "Solution" and "Consequences" for this pattern.

2. Given the following class design for arithmetic expressions:

```
interface Exp
class Literal extends Exp { int value; }
class Addition extends Exp { Exp left, right; }
class Multiplication extends Exp { Exp left, right; }
```

Use the visitor pattern to implement:

   (a) A basic evaluator that computes the result of evaluating a given expression

   (b) A pretty printer that uses a minimal amount of parenthesis. That is $(3 + (4 * 5))$ should be printed $3 + 4 * 5$.

3. One of the participants (either the *visitor* or the *elements* in the data structure) has to control the order in which the traversal is performed. Motivate each of the two choices and explain possible drawbacks.