IN2009: Language Processors

2006/2007 Coursework 2

Organisation: This coursework assessment may be completed individually, or in pairs, and there is no penalty for working in a pair. You will hand work in as individuals but the handin procedure will allow you to say who you collaborated with (and you must do so!). *Pairs* only – not threesomes!

Hand in: The deadline and the electronic handin procedure, and exactly what you should hand-in, are documented online. Obviously you should change file and directory permissions while you are working so that your work is not visible to others – remember plagiarism carries severe penalties.

Modify the MiniJava implementation to undertake *type checking*.

The work

You will extend the MiniJava implementation, including the typechecker. Copy the MiniJava implementation directory to where you want to work, using:

```
cp -R /soi/sw/courses/daveb/IN2009/minijava/chap5
```

This is available as a zip file on Cityspace too. Files README in the various directories give a brief description of the structure of the implementation, and the symbol table mechanism and typechecker were studied in Session 5.

1. Add the operators / (divide), > (greater than), || (or), and `a?b:c` (shortcut for `if(a){b}else{c}`) to your implementation. They have the same syntax and meaning as they do in Java (you may need to research this if you are not familiar with how it works!), and appropriate typechecks should be implemented for them (`op1 ? op2 : op3` returns `op2` if `op1` is true, and returns `op3` if `op1` is false). [30%]

2. Add appropriate typechecking for the `for` statement you implemented in assessment 1 (for those who did not hand in the first coursework, I will publish some guidance on what needs to be added - this will be published <u>after</u> two weeks from the deadline of assessment 1). [50%]

3. For highest marks: add appropriate typechecking for the `throw` and `try` statements implemented in assessment 1. ***Please do not attempt this section until you have completed the previous two - they are worth a much higher proportion of the marks!*** [20%]

The `for` statement

A clarification of the `for` statement. To reduce the confusion caused by the definition of `for` used in assessment 1, please follow this new definition for assessment 2:

$$< Statement > \; - > \; < for > \; (< Id >=< Exp >; < Exp >; < Id >=< Exp >) \, \{< Statement >\}$$

This definition solves the issue of repeating ; and also removes the possibility of nested `for` or `while` loops in the conditional part.