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Abstract Machines

Summer Semester 2004

9. Homework   *Deadline: 30 June 2004 12:00*

Exercise 1:   *7 Points*

Consider the predicates *less* and *add* of exercise sheet 8, implementing arithmetic functions of the same name. Translate them to WiM code.

Exercise 2:   *6 Points*

The following PuP programm P is given:

```
p <- X=f(Y,Z), Y=g(Z,Z), Z=a.
?- p.
```

(a) Translate P to WiM code (without optimization).

(b) Execute the WiM code. Show the condition of stack and heap before each `uvar`, `uref` and `ustruct` instruction. Add the changes made by the unifications.

Exercise 3:   *7 Points*

The following PuP programm P is given:

```
app(X,Y,Z) <- X=[], Y=Z.
app(X,Y,Z) <- X=[H|X'], Z=[H|Z'], app(X',Y,Z').
? app(X,[Y,c],[a,b,Z]).
```

(a) Translate P to WiM code (without optimization).

(b) Execute the WiM code showing the sequence of (sub-)goals that are called and the stack and the heap after each of these goals has been processed. Where is backtracking done ?