

**CM20019—COMPUTATION III:
FORMAL LOGIC AND SEMANTICS
EXERCISE SHEET 9, 23.11.2007**

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Problem 1. Write a Prolog program, consisting only of pure Horn clauses, that orders a list of natural numbers by the quicksort algorithm.

Problem 2. Write a Prolog program, consisting only of pure Horn clauses, that computes all permutations of a given list.

Problem 3. Write a Prolog program, consisting only of pure Horn clauses, that finds all normal magic squares of order 3.

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Please consult Wikipedia for the definitions of *quicksort* and *magic square*, respectively, at <http://en.wikipedia.org/wiki/Quicksort> and http://en.wikipedia.org/wiki/Magic_square.

The web page for the course is at [1]. You can find other exercises in Dan Richardson's notes, available from the web page.

References

1. Alessio Guglielmi, *CM20019—Computation III: Formal logic and semantics*, <http://cs.bath.ac.uk/ag/CM20019>, 2007.