

Homework 7

Consider the program with an EDB relation $n(\cdot)$ and the query $?- s(V, c(1, c(0, 2)))$:

$s(X, X) \leftarrow n(X).$

$s(X, c(X, Y)) \leftarrow n(X), n(Y).$

$s(X, c(Y, T)) \leftarrow \text{not } X = Y, n(X), n(Y), s(X, T).$

- Write the naive evaluation of the query in the relational algebra.
- Using the naive evaluation, compute the result of the query for the relation $n(\cdot) = \{0, 1, 2, 3\}$. Write the state of the computation (i.e. the contents of the relation s) after each iteration.
- Construct a realisable RGG, write the ordinary magic transformation. Simplify the magic program.
- Using the naive evaluation, compute the result of the query for the magic program for $n(\cdot) = \{0, 1, 2, 3\}$. Write the state of the computation (i.e. the contents of the relations) after each iteration.
- Write the generalised magic transformation. Simplify the magic program.