

## Section 2.1, Relational Algebra; Section 3.1, Domain Algebra

1. In order to support the operations of the relational and domain algebras *discussed in the course*, what degrees of activity, volatility and symmetry are important for a data structure to store relations?
2. How many times must sorting be used in executing the following relix code? The relation  $R$  is defined on attributes  $A, B, C$ . Assume sorting is used to do all tasks that require more than simple passes of the data.

```
let  $D$  be equiv + of  $B$  by  $C$ ;  
 $T \leftarrow [A, D]$  in  $R$ ;
```

3. a) In what circumstances may the natural join be implemented by merge logic? b) Under these circumstances, is the merge logic that for set union, intersection, difference, symmetric difference, or something else?

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The author gratefully acknowledges support from the taxpayers of Québec and of Canada who have paid his salary and research grants while this work was developed at McGill University, and from his students (who built the implementations and investigated the data structures and algorithms) and their funding agencies.