**Partiel : Administration des bases de données**

# Exercice 1 (8 points)

# Exercice 2 (4 points)

This is a database consisting of a single table whose state on the disk is as follows:

|  |  |
| --- | --- |
| **Element** | **value** |
| A | 13 |
| B | 40 |
| C | 35 |
| D | 4 |
| E | 18 |

Indicate whether each of the following two logs can constitute a possible redo log of this database.

|  |  |
| --- | --- |
| **Log 1** | **Log2** |
| <Start T1>  <T1, C, 35>  <T1, D, 450>  <Start T2>  <T2, C, 18>  <T2, B, 39>  <commit T1>  <Start Chkpt>  <End Chkpt>  <T2, D, 18>  <Start T3>  <T3, C, 35>  <T3, E, 18>  <commit T3>  <commit T2> | <Start T1>  <T1, D, 4>  <Start T2>  <T2, E, 6>  <T1, A, 5>  <Start Chkpt>  <End Chkpt>  <Start T3>  <T3, C, 35>  <T3, A, 13>  <commit T2>  <T3, B, 40>  <commit T3>  <T1,A,11>  <commit T1> |

# Eercice 3 (8 points)

1. Using the physical operators seen in class, give two possible physical plans for each of the following queries, indicating each time which plan looks best:
   1. Select Title, Author from book where author =”Einstein”
   2. Select B.Title, B.Author, B.BookId from Book B, Order O where B.BookId= O.BookId and B.category=”Mystery”
2. Give an example of physical storage of a relation R for which we would have: cost of reading (table-scan) a relation R = number of tuples of relations R.
3. Give an algorithm to implement the set union in each of the following cases:

a) At least one of the arguments may be fully loaded in memory

b) Neither of the two arguments can be fully loaded into memory

1. Let B (R) be the number of disk blocks needed to store the relation R. Let M be the number of buffers available in the main memory for the DBMS. It is assumed that the buffers in the main memory are the same size as the disk blocks. Give an algorithm to sort the relation R in the case where B (R)> M2?