BDA QUESTIONS

1.-Describe what is a journal file and the information that it contains. Describe the database recovery process when a secondary memory failure appears.

The journal file is a file used to recover the database when a main or secondary memory failure appears. In the journal file the DBMS saves all operations included in the transactions.

In order to recover the database when a secondary memory failure appears, the DBMS restores the database using the most recent backup and then, all the transactions which appears confirmed in the journal file since the backup moment will be redone. Note that it is not necessary to undo transactions that are cancelled in the journal file.

2.-Describe briefly the logical and physical independence in the ANSI/SPARC Architecture (II).

Logical independence between the logical schema and the external schemas: The external schemas and the application programs cannot be affected by the modifications in the logical schema of data which are not used by these programs.

Physical independence between the internal schema and the logical schema: The logical schema cannot be affected by changes in the internal schema which refer to the implementation of the data structures, access modes, page size, search path, etc.

3.-Define the following concepts:

Conceptual schema: Description of the information system from the organizational point of view, independently of the used DBMS and of the use or not of database techniques.

Logical schema: Database definition in terms of the data model used in the DBMS, without including any detail about the physical representation of the database.

Internal (physical) schema: Database description in terms of its (physical) representation in secondary memory.

4.-Define briefly the properties of a transaction (II).

Atomicity: A transaction is an indivisible unit that is either performed in its entirety or is not performed at all ("All or nothing").

Consistency: The transaction must transform the DB from one consistent state to another consistent state (all integrity constraints must be met).

Isolation: Transactions execute independently of one another: All the modifications introduced by a non-confirmed transaction are not visible to other transactions.

Durability: The effects of a successfully completed (committed) transaction are permanently recorded in the DB and must not be lost because of a subsequent system or other transaction failure.