Main characteristics of database approach versus file-processing system:

* Self-describing nature of a database system
  + Database system consists of not only database itself but a complete definition or description of the database structure and constraints. Contains meta-data stored in the database catalog. Data definition of file-processing system is typically part of application programs themselves, so information about a file is coded within each program that accesses the data item, unlike the database approach in which the DBMS catalog stores definitions of files, and the DBMS software refers to the catalog when it accesses a file.
* Insulation between programs and data, and data abstraction
  + In file-processing system, the structure of data files is embedded in application programs, so changes to the structure of a file require changing all programs that access the file. Structure of files in database approach are stored in the DBMS catalog separately from the access programs.
* Sharing of data and multiuser transaction processing
  + File-processing systems may store data in silos that cannot be easily accessed by other users or user groups, making data sharing difficult. All data is sorted together in the DBMS approach so that users or user groups throughout an organization can easily access data. Multiple users can update and access the same data or file in the database approach through concurrency control and ACID transactions. In file-processing system, multiple users often cannot work on the same data or files at the same time.

A file-processing system does not have the self-describing nature that a database system has. The database system consists of not only database itself but a complete definition or description of the database structure and constraints. It contains meta-data stored in the database catalog. The data definition of file-processing system is typically part of application programs themselves, so information about a file is coded within each program that accesses the data item, unlike the database approach in which the DBMS catalog stores definitions of files, and the DBMS software

The database approach has insulation between programs and data, as well as data abstraction, while file-processing systems do not. In file-processing system, the structure of data files is embedded in application programs, so changes to the structure of a file require changing all programs that access the file. Structure of files in database approach are stored in the DBMS catalog separately from the access programs.

The database approach enhances the sharing of data and features multiuser transaction processing. File-processing systems may store data in silos that cannot be easily accessed by other users or user groups, making data sharing difficult. All data is sorted together in the DBMS approach so that users or user groups throughout an organization can easily access data. Multiple users can update and access the same data or file in the database approach through concurrency control and ACID transactions. In file-processing system, multiple users often cannot work on the same data or files at the same time.

Redundancy control is a key characteristic of the DBMS approach that ensures data is not stored in multiple locations and saves storage space. File-processing systems allow for copies of data and files to be stored in different locations.

DBMSs have backup and recovery protocols in place that allows user to easily save and recover data. File-processing systems do not have backup and recovery systems built in.

While file-processing systems do not have efficient search functions, DBMSs efficiently execute queries and updates through indexing and caching.

Other advantages to the DBMS approach include persistent storage for program objects, such as Java and C++ structs or class definitions; providing multiple user interfaces tailored to specific user groups; enforcing integrity constraints to help ensure data is consistent and accurate; and using rules and triggers to permit inferencing of new information automatically.