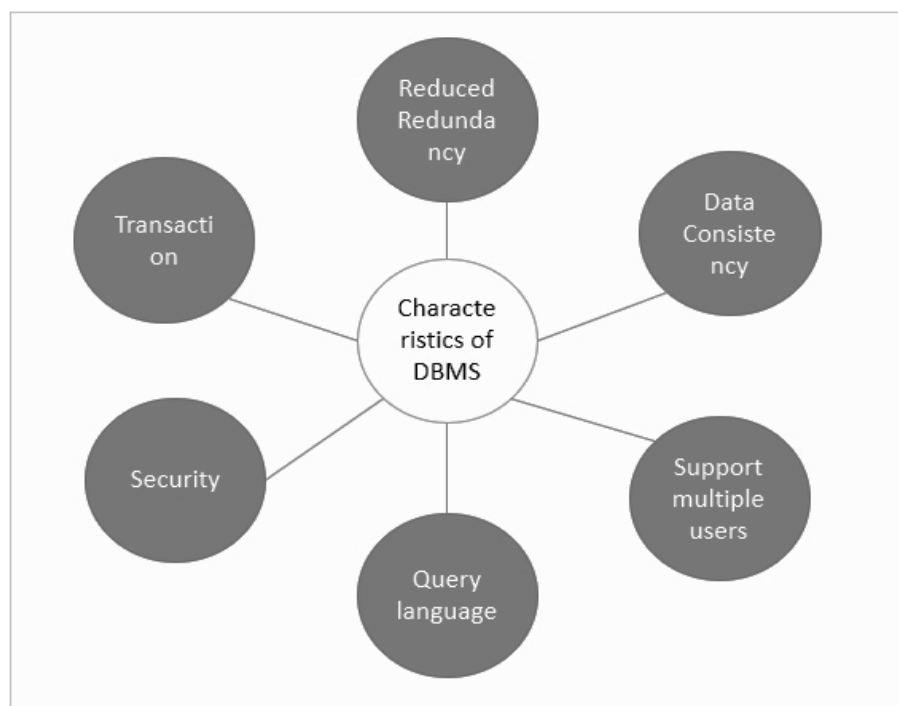


4. e) Explain the characteristics of DBMS.

There are so many characteristics of a database management system, which are as follows –

- A database management system is able to store any kind of data in a database.
- The database management system has to support ACID (atomicity, consistency, isolation, durability) properties.
- The Database management system allows so many users to access databases at the same time.
- Backup and recovery are the two main methods which allow users to protect the data from damage or loss.
- It also provides multiple views for different users in a single organization.
- It follows the concept of normalization which is helpful to minimize the redundancy of a relation.
- It also provides users query language, helpful to insert, retrieve, update, and delete the data in a database.

The characteristics of DBMS are explained below in pictorial form –



4.d) what is join? Explain different types of join operations.

A SQL Join statement is used to combine data or rows from two or more tables based on a common field between them. Different types of Joins are:

- INNER JOIN
- LEFT JOIN
- RIGHT JOIN
- FULL JOIN

INNER JOIN: The INNER JOIN keyword selects all rows from both the tables as long as the condition satisfies. This keyword will create the result-set by combining all rows from both the tables where the condition satisfies i.e value of the common field will be same.

Syntax:

```
SELECT table1.column1,table1.column2,table2.column1,....  
FROM table1  
INNER JOIN table2  
ON table1.matching_column = table2.matching_column;
```

LEFT JOIN: This join returns all the rows of the table on the left side of the join and matching rows for the table on the right side of join. The rows for which there is no matching row on right side, the result-set will contain null. LEFT JOIN is also known as LEFT OUTER JOIN.

Syntax:

```
SELECT table1.column1,table1.column2,table2.column1,....  
FROM table1  
LEFT JOIN table2  
ON table1.matching_column = table2.matching_column;
```

RIGHT JOIN: RIGHT JOIN is similar to LEFT JOIN. This join returns all the rows of the table on the right side of the join and matching rows for the table on the left side of join. The rows for which there is no matching row on left side, the result-set will contain null. RIGHT JOIN is also known as RIGHT OUTER JOIN.

Syntax:

```
SELECT table1.column1,table1.column2,table2.column1,....  
FROM table1  
RIGHT JOIN table2  
ON table1.matching_column = table2.matching_column;
```

FULL JOIN: FULL JOIN creates the result-set by combining result of both LEFT JOIN and RIGHT JOIN. The result-set will contain all the rows from both the tables. The rows for which there is no matching, the result-set will contain NULL values.

Syntax:

```
SELECT table1.column1,table1.column2,table2.column1,....  
FROM table1  
FULL JOIN table2  
ON table1.matching_column = table2.matching_column;
```