answer – 33.1

1605023

Compare database query processing and information retrieval query processing.

Solution

In database query processing, SQL or SQL-like queries are written and only those records/tuples with true value in WHERE condition (for query keywords) are selected. On the other hand, in information retrieval query processing, all the records/tuples are ranked based on a relevance score w.r.t. query keywords. Therefore, fuzziness is observed in query result.

Ans.

answer – 33.2

A triangle has the coordinates (0,0), (5,0), (0,5). Represent the triangle by

a. lines b. points in the database.

Solution

a. {(0,0), (5,0), ID1}, {(5,0), (0,5), ID1}, {(0,5), (0,0), ID1}

b. {(0,0), ID1}, {(5,0), ID1}, {(0,5), ID1}

Ans.

answer – 33.3

1605023

Show the representation of the given polygon using a single tuple in relational model.

Solution

The tuple's representation in relational model for the given polygon :

$$\{(x_1, y_1), (x_2, y_2), (x_3, y_3), (x_4, y_4), (x_5, y_5), ID_1\}$$

The database manager handles the variable length issue of these types of tuples.

Ans.

answer – 34.1

1605023

Explain how the polyhedrals (such as cube) can be represented by tetrahedrals.

Solution

We can represent any arbitrary polyhedral by dividing them into one or more tetrahedrals, just like triangulating polygons in two-dimensional space.

cube and tetrahedral are closely related. Picking every other vertices of a cube so that no two are joined by an edge but any pair is joined by a diagonal of the cube's face begets a regular tetrahedral. All edges of that shape are equal and, therefore, all face angles are 60°.

Thus, a cube can be represented by in total of 5 tetrahedrals.

Ans.

1605023

answer – 35.1

If an application requires r reads and w writes per second, RAID 1 requires r+2w I/O operations per second. How?

Solution

In RAID 1, we can read a data block from any one of the disks. Also, we have to write to each disk for updating a data block. In RAID 1, a certain data block resides in a disk as well as in its mirror. Hence, in the afore-mentioned scenario, r+2w/sec I/O operations are required.

Ans.

answer – 35.2

If an application requires r reads and w writes per second, RAID 5 requires r+4w I/O operations per second. How?

Solution

In RAID 5, we read only the data block itself to extract some data. Also, we have to read the data block and its corresponding parity block into memory, update both of them, and then, write them back to disk for writing to a data block. Thus, in RAID 5, read operation involves 1 I/O operation and write operation involves 4 I/O operations. Therefore, in the aforementioned scenario, r+4w/sec I/O operations are required.

Ans.