

2012_December

A1.

- (a) It is an attribute that uniquely identifies each record in a database table.
- (b) Multi value is an attribute having any number of values for a particular record.
- (c) Weak entity is an entity without a primary key.
- (d) Entities are objects or concepts that can have data stored about them and is represented by rectangle shape in Entity-Relationship-Diagram.
- (e) Ternary relationship is a relationship in which three entities participate.

A2.

Two features of 'Primary Key' are as follows:

- (a) Primary Key constraint enforces uniqueness of rows.
- (b) It cannot have null value.

A3.

- Centralized database: It is a database that is located, stored, and maintained in a single location.
- Distributed database: It is a database that is located, stored, and maintained in a multiple location.
- Client-server database: It is a database where a server stores and maintains database and provides data services to clients at different places who requests.

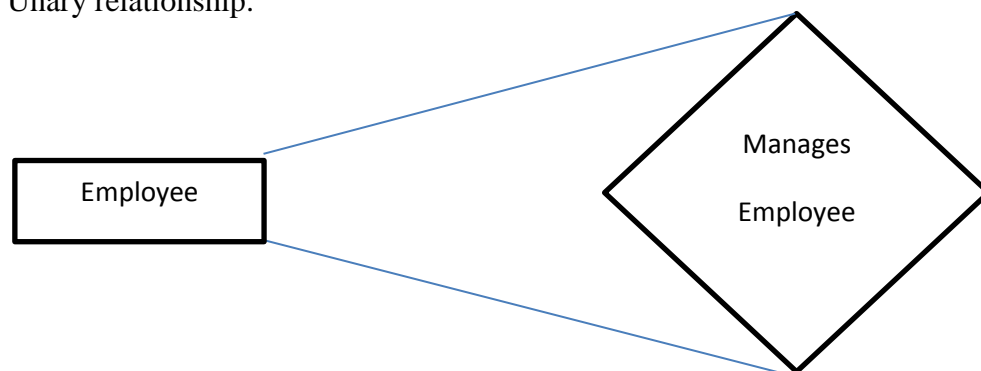
Note: You can refer internet too

A4.

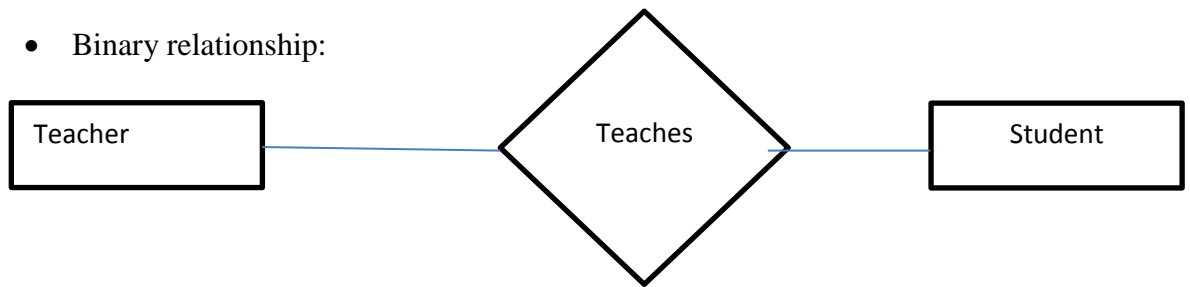
- (a) Relationship is the link between the entities that participate in it.

(b)

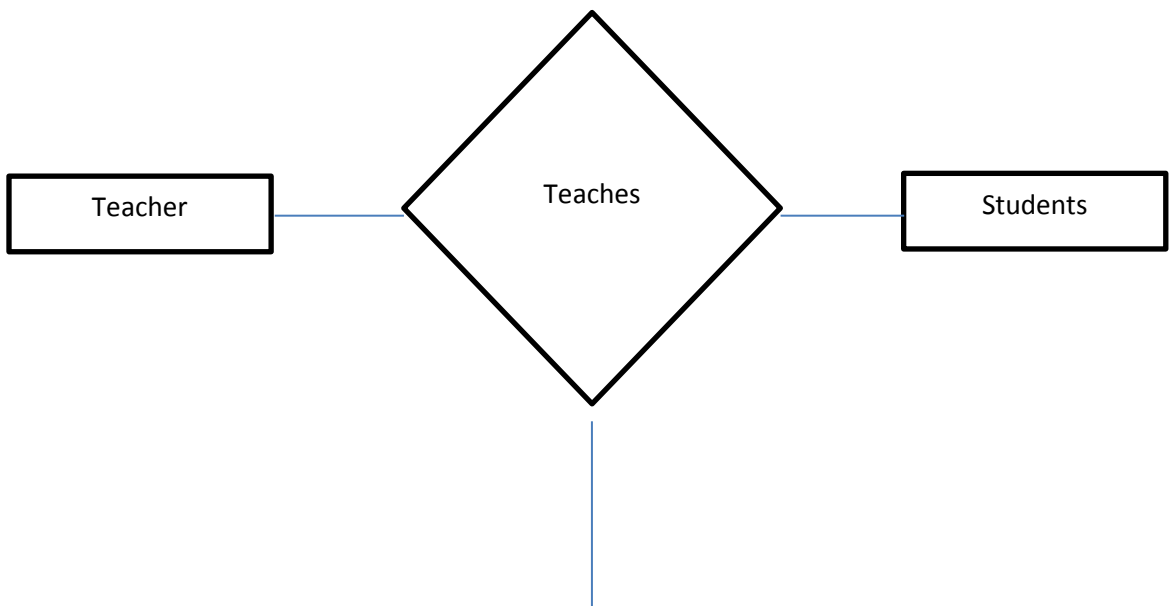
- Unary relationship:



- Binary relationship:



- Ternary relationship:



Books

A5.

```
SELECT CONCAT ([Subject name], 'subject belongs to', department) AS [Subject-Department]  
FROM SUBJECT;
```

A6.

Three types of data model are as follows:

- i. Relationship model
- ii. Hierarchical model
- iii. Network model

A7.

Four types of JOIN are as follows:

- i. INNER JOIN
- ii. LEFT JOIN
- iii. RIGHT JOIN
- iv. FULL JOIN

A8.

Characteristics of database approach are as follows:

- i. Self-describing nature of database
- ii. Insulation between Program and data
- iii. Sharing of data and multiuser system
- iv. Support multiple views of data

A9.

Three components of the relational data model are:

- i. Data structure
- ii. Data integrity
- iii. Data manipulation

B1.

(a)

- i.

```
SELECT Student_Name, Student_ID
FROM STUDENT
WHERE Enrol_Date(Year)= '2008';
```

OR

```
SELECT Student_Name, Student_ID
FROM STUDENT
WHERE Enrol_Date BETWEEN '2008-01-01' AND '2008-12-31';
```

- ii.

```
SELECT Student_Name, Student_ID
FROM STUDENT
WHERE Enrol_Date BETWEEN '2007-08-01' AND '2008-08-01';
```

- iii.

```
SELECT Student_Name, Mark
FROM STUDENT
WHERE Mark > (SELECT Mark
               FROM STUDENT
               WHERE Name= 'Wendy');
```

(b)

- i.

```
SELECT C.CUST_NAME
FROM CUSTOMER AS C
```

```
INNER JOIN ORDER AS O ON O.CUST_ID=C.CUST_ID  
WHERE O.ORDER_DATE<'2006-06-15';
```

- ii.

```
SELECT C.CUST_NAME  
FROM CUSTOMER AS C  
INNER JOIN ORDER AS O ON O.CUST_ID=C.CUST_ID  
ORDER BY CUST_NAME ASC;
```
- iii.

```
DROP TABLE ORDER;
```
- iv.

```
INSERT INTO ORDER  
VALUES (10000, '2006-09-15', 'A222');
```
- v.

```
UPDATE CUSTOMER  
SET Cust_Name= 'Mary  
WHERE Cust_Name= 'Jane';
```

B2.

(a)

Three levels of DBMS architecture are as follows:

- i. Internal or Physical level
- ii. Conceptual or Logical level
- iii. External or view level

Note:refer to 3 levels of abstraction in **notebook** or search in Internet.

(b)

- i. 9.5
- ii. 27
- iii. 2
- iv. Computer
- v. 3

(c)

```
SELECT (5+219)* 15;
```

(d)

- i. _
- ii. [charlist]
- iii. AND operator
- iv. OR operator
- v. NOT operator
- vi. BETWEEN
- vii. = (equal to)
- viii. LIKE
- ix. IS NULL

(e)

```
SELECT GETDATE() AS TODAY  
FROM TEST;
```

(f)

Cartesian product means the product of rows of first table to the rows of second table
i.e. if there are n rows in first table and m rows in second table then their Cartesian
product is $m \times n$ rows.

(g) NULL means the values which are unknown.

B3.

(a) SELECT *

FROM Hotel

WHERE City= 'Singapore';

(b) SELECT Type, AVG(Price)

FROM Room

GROUP BY Type;

(c) SELECT COUNT(*)

FROM Guest;

(d) SELECT COUNT(*)

FROM Guest AS G

INNER JOIN Booking AS B ON B.Guest_No=G.Guest_No

WHERE Date_From > '2007-12-31';

(e)

Eight benefits of using Database Approach as compare to using file processing approach are as follows:

- i. Minimum data redundancy
- ii. Provide multiple views of data
- iii. Restriction of Unauthorized access
- iv. Improved data sharing
- v. Data independence
- vi. Enforcing integrity constraint
- vii. Providing recovery and backup system
- viii. Transaction processing

(f)

- i. Logical data independence is the ability to change the conceptual schema without having to change external schema or application programs.
- ii. Physical data independence is the ability to change the physical data without impacting the logical schema or data.

(g) SELECT robotname

FROM robottable

WHERE robotname IN ('R2D2', 'C3PO');

(h) SELECT DateAdd(month,6,purchase_date) AS [Warranty Date]

FROM Purchases;