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State Finished

Completed on Monday, 11 April 2022, 1:50 PM

Time taken 45 mins

Grade 30.50 out of 40.00 (76.25%)

Question 1

Incorrect

Mark 0.00 out of 1.00

Tables in second normal form (2NF):

Select one:

- ☒ a. Eliminate the possibility of a insertion anomalies ❌
- ☐ b. Eliminate all hidden dependencies
- ☐ c. Have all non key fields depend on the whole primary key
- ☐ d. Have a composite key

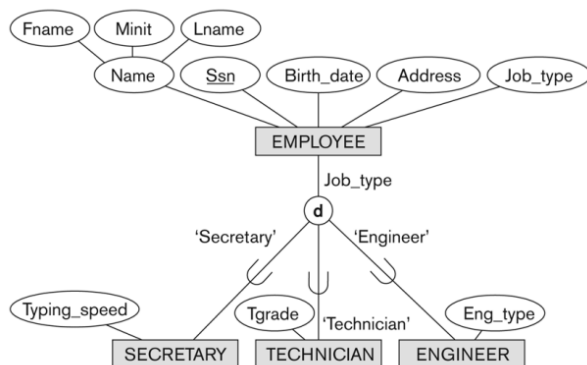
Your answer is incorrect.

The correct answer is: Eliminate all hidden dependencies

Question 2

Correct

Mark 1.00 out of 1.00



Given the digram above, what is correct about the specialization/generalization?

- ☐ a. Disjoint, total
- ☒ b. Disjoint, partial ✔️
- ☐ c. Overlapping, partial
- ☐ d. Overlapping, total

Your answer is correct.

The correct answer is: Disjoint, partial

Question 3

Correct

Mark 3.00 out of 3.00

Given the following schema:

- Hall(hallId, floorNumber, capacity)
- Film(filmId, title, category)
- Screening(id, filmId, session, startingDate, endingDate)

Which of the following expressions provides the following:

Obtain the titles of the films that have not been screened in the early morning session (1:00)

- ☐ a. $\Pi_{filmId}(Screening) - \Pi_{filmId}(\sigma_{session='1:00'}(Screening))$
- ☒ b. $\Pi_{title}\left(Film \times \left(\Pi_{filmId}(Screening) - \Pi_{filmId}(\sigma_{session='1:00'}(Screening))\right)\right)$ ✓
- ☐ c. $\Pi_{category}\left(Film \times \left(\Pi_{filmId}(Screening) - \Pi_{filmId}(\sigma_{session='1:00'}(Screening))\right)\right) \times Hall$
- ☐ d. $\Pi_{title}(Film) - \Pi_{filmId}(\sigma_{session='1:00'}(Screening))$

Your answer is correct.

The correct answer is:

$$\Pi_{title}\left(Film \times \left(\Pi_{filmId}(Screening) - \Pi_{filmId}(\sigma_{session='1:00'}(Screening))\right)\right)$$

Question 4

Correct

Mark 1.00 out of 1.00

Why do we need databases?

Select one or more:

- ☒ a. To store data in a systematic and structured way ✓
- ☐ b. Databases will be replaced by blockchain soon
- ☒ c. To make decisions based on data ✓

Your answer is correct.

The correct answers are: To store data in a systematic and structured way, To make decisions based on data

Question 5

Correct

Mark 1.00 out of 1.00

----- attribute is an attribute where the values of that attribute can be further subdivided into meaningful sub-parts

- ☒ a. Composite ✓
- ☐ b. Complex
- ☐ c. Derived
- ☐ d. Multivalued

Your answer is correct.

The correct answer is:
Composite

Question 6

Correct

Mark 1.00 out of 1.00

The only way of implementing domain constraints is by using FK and PK.

Select one:

- ☐ True
- ☒ False ✓

The correct answer is 'False'.

Question 7

Correct

Mark 2.00 out of 2.00

What is lossless join decomposition?

- ☐ a. Lossless join decomposition is where relation R is decomposed into 3NF relations.
- ☒ b. Lossless join decomposition is a decomposition of a relation R into relations R1 and R2 such that a natural join of the two smaller relations yields back the original relation. ✓
- ☐ c. Lossless join decomposition is a decomposition where a set of attributes X functionally determines a set of attributes Y

Your answer is correct.

The correct answer is:

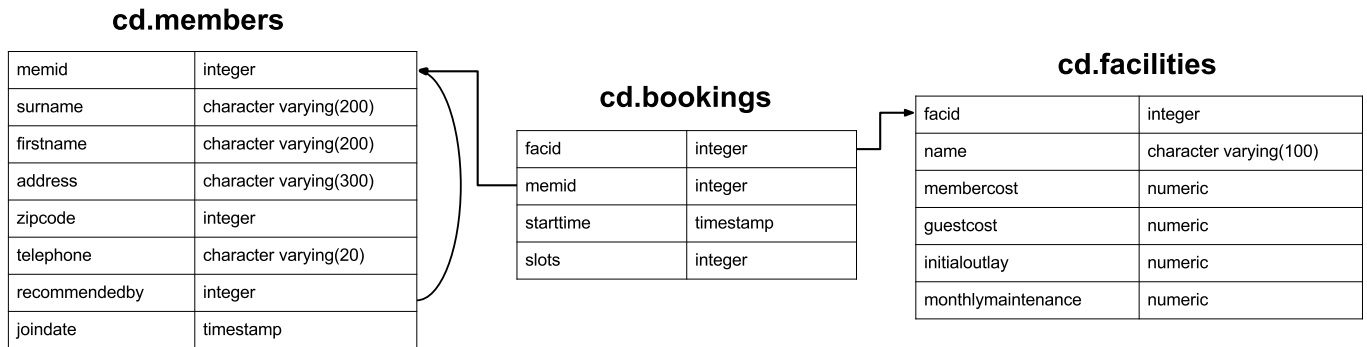
Lossless join decomposition is a decomposition of a relation R into relations R1 and R2 such that a natural join of the two smaller relations yields back the original relation.

Question 8

Correct

Mark 3.00 out of 3.00

You have the following schema:



and you want to retrieve list of facilities that charge a fee to members, and that fee is less than 1/50th of the monthly maintenance cost? Return the facid, facility name, member cost, and monthly maintenance of the facilities in question.

What is the correct query?

- ☒ a. select facid, name, membercost, monthlymaintenance from cd.facilities where membercost > 0 and (membercost < monthlymaintenance/50.0);
- ☐ b. select facid, name, membercost, monthlymaintenance from cd.facilities where membercost > 1/50 and (membercost < monthlymaintenance);
- ☐ c. select facid, name, membercost, monthlymaintenance from cd.facilities where membercost > 0 and (monthlymaintenance<= 1/50.0);
- ☐ d. select facid, name, membercost, monthlymaintenance from cd.facilities where membercost > 0 and (monthlymaintenance< 1/50.0);

Your answer is correct.

The correct answer is:

select facid, name, membercost, monthlymaintenance from cd.facilities where membercost > 0 and (membercost < monthlymaintenance/50.0);

Question 9

Incorrect

Mark 0.00 out of 1.00

What DOES NOT characterize a database?

Select one or more:

- ☐ a. It is optimized for accessing the data
- ☐ b. Records added stay in the database forever
- ☒ c. It has a well-defined data structure ✖
- ☒ d. All users have the same access rights ✔

The correct answers are: All users have the same access rights, Records added stay in the database forever

Question 10

Correct

Mark 1.00 out of 1.00

A functional dependency is a relationship between or among:

Select one:

- ☐ a. Rows
- ☒ b. Attributes ✓
- ☐ c. Relations
- ☐ d. Table

Your answer is correct.

The correct answer is: Attributes

Question 11

Correct

Mark 1.00 out of 1.00

A BCNF is :

Select one:

- ☐ a. Not lossless join but dependency preserving
- ☐ b. None of the above
- ☐ c. Lossless join and dependency preserving
- ☒ d. Lossless join but dependency preserving ✓

Your answer is correct.

The correct answers are: Lossless join and dependency preserving, Lossless join but dependency preserving

Question 12

Correct

Mark 1.00 out of 1.00

What is the operator in relational algebra labeled by σ ?

Select one:

- ☒ a. Selection ✓
- ☐ b. Cartesian Product
- ☐ c. Projection
- ☐ d. Join

Your answer is correct.

The correct answer is: Selection

Question 13

Correct

Mark 1.00 out of 1.00

What are the main functions of DBMS?

Select one or more:

- ☐ a. Ensure your scholarship is paid on time via 1C application
- ☒ b. Perform all operations to the actual data and database schema ✓
- ☒ c. Ensure database consistency ✓

Your answer is correct.

The correct answers are: Ensure database consistency, Perform all operations to the actual data and database schema

Question 14

Incorrect

Mark 0.00 out of 1.00

Which of the following statements are not correct:

- ☐ a. Indexes do not take additional space in your storage.
- ☒ b. Indexes make search queries much faster ✗
- ☐ c. Indexes do not slow down the speed of writing queries.
- ☒ d. Indexes like primary key index and unique index help to avoid duplicate row data. ✗

Your answer is incorrect.

The correct answers are:

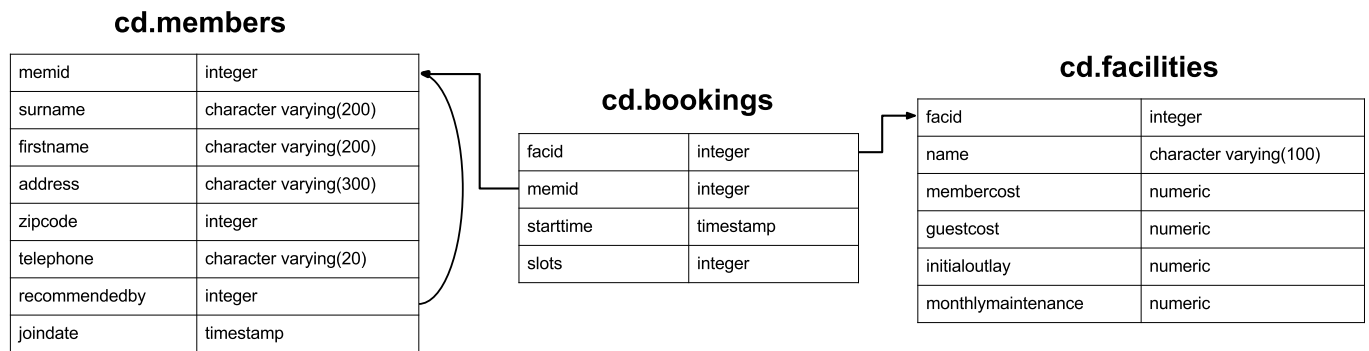
Indexes do not slow down the speed of writing queries.,

Indexes do not take additional space in your storage.

Question 15

Correct

Mark 2.00 out of 2.00



Based on the schema retrieve facility id that has the highest number of slots booked?

- ☐ a. `select facid, sum(slots) as totalslots
from cd.bookings
group by facid
having max(slots) = (select sum(sum2.totalslots) from
(select sum(slots) as totalslots
from cd.bookings
group by facid
) as sum2);`
- ☒ b. `select facid, sum(slots) as totalslots
from cd.bookings
group by facid
having sum(slots) = (select max(sum2.totalslots) from
(select sum(slots) as totalslots
from cd.bookings
group by facid
) as sum2);` ✓
- ☐ c. `select facid, sum(slots) as totalslots
from cd.bookings
group by facid
having max(slots) = (select max(sum2.totalslots) from
(select sum(slots) as totalslots
from cd.bookings
group by facid
) as sum2);`
- ☐ d. `select facid, sum(slots) as totalslots
from cd.bookings
group by facid
having sum(slots) = (select max(sum2.totalslots) from
(select max(slots) as totalslots
from cd.bookings
group by facid
) as sum2);`

Your answer is correct.

The correct answer is: `select facid, sum(slots) as totalslots
from cd.bookings
group by facid
having sum(slots) = (select max(sum2.totalslots) from
(select sum(slots) as totalslots
from cd.bookings
group by facid
) as sum2);`

Question 16

Correct

Mark 1.00 out of 1.00

What is DBMS?

Select one or more:

- ☐ a. Collection of data files which store the data and indexes as well as set of temporary files which are generated while executing SQL queries
- ☒ b. Software which implements all operations over data files and index files ✓
- ☐ c. Relation between 2 entities

Your answer is correct.

The correct answer is: Software which implements all operations over data files and index files

Question 17

Not answered

Marked out of 1.00

What is true about the primary index?

Select one:

- ☐ a. Size of the primary index file is determined by (size of the key value + size of the block pointer) * number of records in the data file
- ☐ b. Primary index forces particular model of records deletion
- ☐ c. Primary index allows very effective record insertion procedure
- ☐ d. Size of the primary index file is determined by (size of the key value + size of the block pointer) * number of blocks in the data file

Your answer is incorrect.

The correct answers are: Primary index allows very effective record insertion procedure, Size of the primary index file is determined by (size of the key value + size of the block pointer) * number of records in the data file, Size of the primary index file is determined by (size of the key value + size of the block pointer) * number of blocks in the data file , Primary index forces particular model of records deletion

Question 18

Correct

Mark 1.00 out of 1.00

What is the output of the relation operator?

Select one:

- ☐ a. Another operator
- ☒ b. A relation ✓
- ☐ c. NULL
- ☐ d. Tuple

Your answer is correct.

The correct answer is: A relation

Question 19

Partially correct

Mark 0.50 out of 1.00

What is to be changed if internal schema is changed?

Select one or more:

- ☒ a. The mapping between conceptual scheme and internal one is to be verified and potentially updated. ✓
- ☐ b. Nothing. The change was done.
- ☒ c. External and conceptual schemas must to be updated ✗

Your answer is partially correct.

You have selected too many options.

The correct answer is: The mapping between conceptual scheme and internal one is to be verified and potentially updated.

Question 20

Correct

Mark 1.00 out of 1.00

There are two important properties of decomposition: a) Non-additive property or losslessness of a corresponding join and b) preservation of the functional dependencies. Only one of them should never be sacrificed when you normalize your schema. Which one?

- ☐ a. Preservation of the functional dependencies
- ☒ b. Non-additive property or losslessness of a corresponding join ✓

Your answer is correct.

The correct answer is:

Non-additive property or losslessness of a corresponding join

Question 21

Correct

Mark 1.00 out of 1.00

Choose ALL correct statements about naming in ERD

- ☒ a. Singular names for entity types ✓
- ☒ b. Role names are in lowercase letters ✓
- ☐ c. Entity type and relationship type names are in lowercase letters
- ☐ d. Attribute names and roles names have their initial letter capitalized

Your answer is correct.

The correct answers are:

Role names are in lowercase letters, Singular names for entity types

Question 22

Correct

Mark 1.00 out of 1.00

What is the conceptual difference between data, knowledge and information

Select one:

- ☐ a. They are synonyms
- ☒ b. Knowledge is our personal map of the world, while data is just set of facts and information is just structured data ✓
- ☐ c. Data and information are the same, while knowledge involves the person who has it

Your answer is correct.

The correct answer is: Knowledge is our personal map of the world, while data is just set of facts and information is just structured data

Question 23

Incorrect

Mark 0.00 out of 1.00

What is/are definitely false for database and its schema

Select one or more:

- ☒ a. Any selection from the database will match its schema ✗
- ☒ b. Any projection with number of attributes less than number of attributes in the database will match its schema ✓
- ☐ c. When database is changed its schema must be updated
- ☒ d. When database schema is updated then the database itself must be updated ✗

Your answer is incorrect.

The correct answers are: When database is changed its schema must be updated, Any projection with number of attributes less than number of attributes in the database will match its schema

Question 24

Correct

Mark 1.00 out of 1.00

What is the difference between database and database schema

Select one or more:

- ☒ a. Database is modified much more often than database schema ✓
- ☒ b. There is no actual data in the database schema ✓
- ☐ c. There is no relation between database and schema

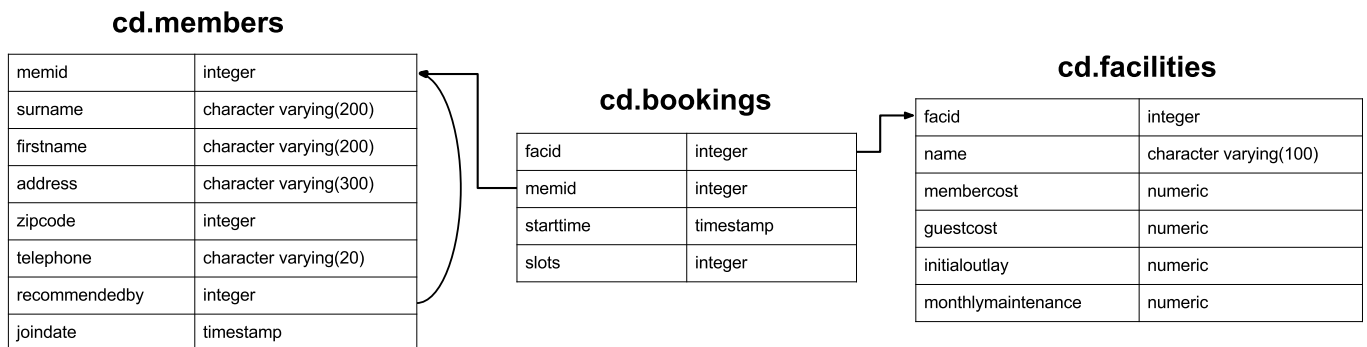
Your answer is correct.

The correct answers are: Database is modified much more often than database schema, There is no actual data in the database schema

Question 25

Incorrect

Mark 0.00 out of 3.00



Based on the schema which of these statements add the spa to the facilities (Name: 'Spa', membercost: 20, guestcost: 30, initialoutlay: 100000, monthlymaintenance: 800) and automatically generates the value for the next facid?

- ☒ a. insert into cd.facilities
(facid, name, membercost, guestcost, initialoutlay, monthlymaintenance)
select (select GREATEST(facid) from cd.facilities)+1, 'Spa', 20, 30, 100000, 800; ✗
- ☐ b. insert into cd.facilities
(facid, name, membercost, guestcost, initialoutlay, monthlymaintenance)
select (select sum(facid) from cd.facilities)+1, 'Spa', 20, 30, 100000, 800;
- ☒ c. insert into cd.facilities
(facid, name, membercost, guestcost, initialoutlay, monthlymaintenance)
select (select max(facid) from cd.facilities)+1, 'Spa', 20, 30, 100000, 800; ✓
- ☐ d. insert into cd.facilities
(facid, name, membercost, guestcost, initialoutlay, monthlymaintenance)
select (select max(guestcost) from cd.facilities)+1, 'Spa', 20, 30, 100000, 800;

Your answer is incorrect.

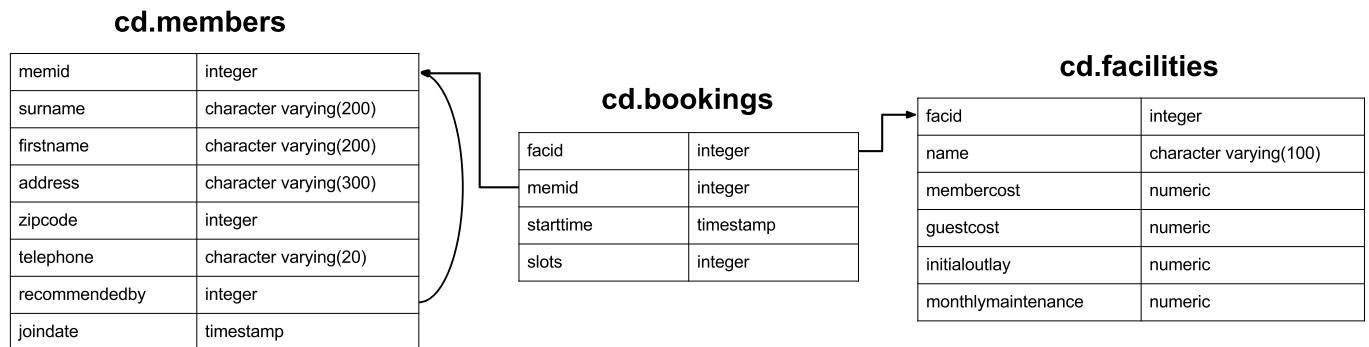
The correct answer is: insert into cd.facilities

(facid, name, membercost, guestcost, initialoutlay, monthlymaintenance)
select (select max(facid) from cd.facilities)+1, 'Spa', 20, 30, 100000, 800;

Question 26

Partially correct

Mark 1.00 out of 2.00



Based on the schema which of these queries retrieve a list of all members who have recommended another member?

- ☒ a. `select distinct recs.firstname as firstname, recs.surname as surname`
`from`
`cd.members mems`
`inner join cd.members recs`
`on recs.memid = mems.recommendedby`
`order by surname, firstname;`
- ☐ b. `select distinct recs.firstname as firstname, recs.surname as surname`
`from`
`cd.members mems`
`outer join cd.members recs`
`on recs.memid = mems.recommendedby`
`order by surname, firstname;`
- ☐ c. `select distinct recs.firstname as firstname, recs.surname as surname`
`from`
`cd.members mems`
`left join cd.members recs`
`on recs.memid = mems.recommendedby`
`order by surname, firstname;`
- ☐ d. `select distinct recs.firstname as firstname, recs.surname as surname`
`from`
`cd.members as mems, cd.members as recs`
`where`
`recs.memid = mems.recommendedby`
`order by surname, firstname;`

Your answer is partially correct.

You have correctly selected 1.

The correct answers are:

```
select distinct recs.firstname as firstname, recs.surname as surname
from
  cd.members mems
  inner join cd.members recs
    on recs.memid = mems.recommendedby
order by surname, firstname; ,
```

```
select distinct recs.firstname as firstname, recs.surname as surname
from
  cd.members as mems, cd.members as recs
where
  recs.memid = mems.recommendedby
order by surname, firstname;
```

Question 27

Correct

Mark 1.00 out of 1.00

Which of the following constraints are valid on standard SQL?

- ☒ a. NOT NULL ✓
- ☒ b. PRIMARY KEY ✓
- ☒ c. FOREIGN KEY ✓
- ☐ d. ALLOW
- ☒ e. UNIQUE ✓
- ☐ f. All are valid
- ☐ g. EXIST
- ☒ h. CHECK ✓
- ☐ i. NOT VALID

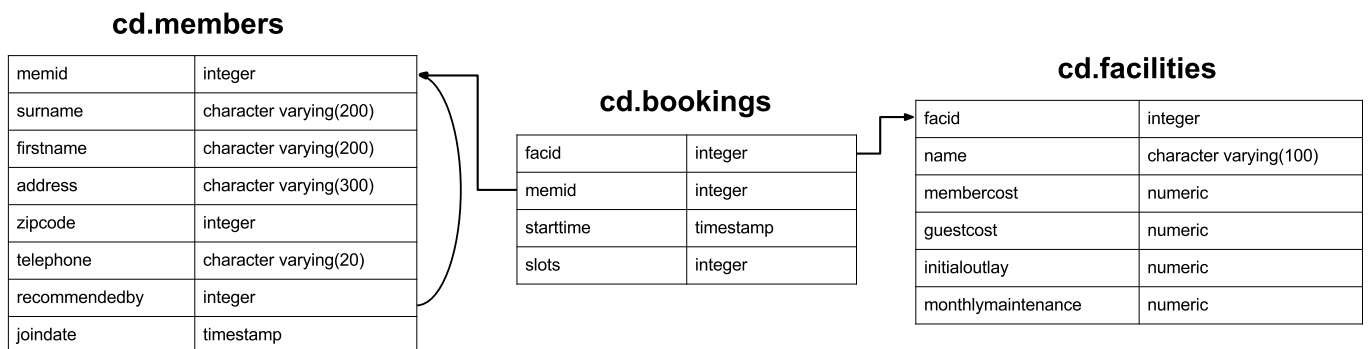
Your answer is correct.

The correct answers are: PRIMARY KEY,
UNIQUE,
CHECK,
FOREIGN KEY,
NOT NULL

Question 28

Correct

Mark 2.00 out of 2.00



Based on the schema find the first and last name of the last member(s) who signed up?

- ☐ a. select firstname, surname, joindate from cd.members where joindate = date.now;
- ☒ b. select firstname, surname, joindate from cd.members where joindate = (select max(joindate) from cd.members); ✓
- ☐ c. select firstname, surname, max(joindate) from cd.members where joindate = (select max(joindate) from cd.members);
- ☐ d. select firstname, surname, joindate from cd.members where joindate < (select max(joindate) from cd.members);

Your answer is correct.

The correct answer is:

select firstname, surname, joindate from cd.members where joindate = (select max(joindate) from cd.members);

Question 29

Correct

Mark 1.00 out of 1.00

Normalization is the process that represent a relationship between a whole object and its component parts.

Select one:

- ☐ True
- ☒ False ✓

The correct answer is 'False'.

Question 30

Correct

Mark 1.00 out of 1.00

There are two important properties of decomposition: a) Non-additive property or losslessness of a corresponding join and b) preservation of the functional dependencies. Only one of them should never be sacrificed when you normalize your schema. Which one?

Select one:

- ☒ True ✓
- ☐ False

The correct answer is 'True'.