قواعد بيانات ٢ – CPIT340

نماذج أسئلة اختبار و تدريبات مع الحلول

Hisham Teach

@HishamTeach 0563974497

Ramez Elmasri ○ Sham Navathe

تنبيه هام:

هذا الملف فيه نسخة تجريبية لشابتر واحد فقط ، إذا كنت تحتاج الملف

كامل شوف اخر صفحة بالإضافة يمديك تنشر هذا الملف لو احد من

اصحابك /صحابتك يحتاج تست بانك وتدريبات للمادة.

Table of Contents

Chapter 25: Distributed Databases and Client-Server Architectures

Part one: Answer the following questions by true (T) or false (F):

#Question	Statement	Answer
1	Distributed transparency does not refers to the physical placement of data (files, relations, etc.) which is not known to the user	
2	Replication transparency is done to Maximize access time to the required data	
3	Horizontal Fragmentation create a subset of tuples of a relation whereas vertical Fragmentation create a subset of columns of a relation	
4	To reconstruct R from complete vertical fragments an OUTER UNION is not applied.	
5	Distributed transparency refers to the physical placement of data (files, relations, etc.) which is not known to the user	
6	Replication transparency is done to minimize access time to the required data	
7	Increased reliability and availability mean that a distributed database system has multiple nodes (computers) and if one fails then others are available to do the job.	
8	Fragmentation schema It describes the distribution of fragments to sites of distributed databases.	
9	Data Replication is achieved through a replication schema	
10	Scalability Allows new nodes to be added anytime without changing the entire configuration.	
11	Replication: Copy of fragment may be maintained at several sites.	
12	A relation can be fragmented in two ways.	
13	In Horizontal Fragmentation A selection condition may be composed of several conditions connected by AND or OR.	
14	Each horizontal fragment on a relation can be specified by a σ_{ci} R operation in the relational algebra.	
15	A vertical fragment on a relation can be specified by a $\pi_{Li}(R)$ operation in the relational algebra.	
16	A combination of Vertical fragmentation and Horizontal fragmentation Called Mixed (Hybrid) fragmentation	
17	The objective of Semi Join is to reduce the number of tuples in a relation before transferring it to another site	
18	In distributed Query the Optimization criteria is minizine the data transfer time	
19	in homogeneous distributed database system all the databases running the same DBMS (for example oracle)	
20	difference in Query language is not an issue of federated database system.	
21	Semantic heterogeneity is the difference in meaning, interpretation and intended use of the same or related data.	
22	in distributed database, a query can only answered if the required data is available at that data site.	
23	communication link failure is not an issue of distributed database.	
24	in a client –server distributed data base architecture the database is available at the server site	

Part Two: Select the correct answer from the following:

1- A _____ can be executed by multiple network computers.

A- Query.   B- Transaction.

C- Distributed Database.   D- Centralized Database.

2- A _____ is a collection of multiple logically interrelated database over a computer network.

A- Distributed Database.   B- Query.

C- Centralized Database.   D- Transaction.

3- _____ : it allows to store copies of data at multiple sites, to minimize access time to the required data.

A- Replication.   B- Network Transparency.

C- Fragmentation Transparency.   D- Replication Transparency.

4- Allows new node (computers) to be added anytime without changing the entire configuration. That's mean:

A- Scalability.   B- Reliability and Availability.

C- Availability.   D- Reliability or Availability.

5- Each fragment is stored at site with "optimal" distribution. That's mean:

A- Replication.   B- Allocation.

C- Fragmentation.   D- Distribution Database.

6- Split a relation into logically related and correct parts.

A- Horizontal Fragmentation.   B- Mixed (Hybrid) Fragmentation.

C- Vertical Fragmentation.   D- Data Fragmentation.

7- _____ a set of fragments that includes all attributes and tuples in the database.

A- Fragmentation Schema.   B- Allocation Schema.

C- Data Fragmentation.   D- Allocation.

8- It describes the distribution of fragments to sites of distributed databases. It can be fully or partially replicated or can be partitioned

A- Fragmentation Schema.   B- Allocation Schema.

C- Data Fragmentation.   D- Allocation.

9- A DBMS as a software system that manages a distributed database while making the distribution _____ to the user.

A- Allows Accesses.   B- Primary Site.

C- Transparent.   D- Recovery.

10- In distributed database system for which type of fragmentation the intersection of two fragments is not null:

A- Vertical.

B- Both.

C- Horizontal.

D- Neither.

11- In distributed database, physical placement of data is:

A- not known to the user.

B- known to the user.

C- with the user.

D- any of the above.

12- DDB and D-DBMS is a combination which is represented by:

A- DBMS.

B- D-DBMS.

C- DDBS.

D- DDB.

13- which of the following schemas contains information about the location of different copies of data:

A- Fragmentation.

B- Replication.

C- Allocation.

D- any of the above.

14- A combination of Vertical fragmentation and Horizontal fragmentation is called _____ Fragmentation:

A- Hybrid.

B- Horizontal.

C- Vertical.

D- None of the above.

15- Data Replication is achieved through a _____ schema:

A- distribution.

B- Fragmentation.

C- Replication.

D- Allocation.

16- A single site is designated as a primary site which serves as a coordinator for transaction management:

A- Primary Site Technique.

B- Primary Copy Technique.

C- Primary Site approach with backup site.

D- Recovery from a coordinator.

Part Three: Writing Questions:

1- What are the main reasons for and potential advantages of distributed databases?

2- What additional functions does a DDBMS have over a centralized DBMS?

3- Write the definition of distributed database:

4- Write the definition of distributed database management system:

5- When its not a DDBS?

6- A transaction can be executed by <u>How Many</u> networked computers?

7- The distributed database is the processes Unit of what ?

8- List some Advantages of Distributed Database System:

9- What is the definition of Fragmentation transparency?

10- What is the difference between Reliability and Availability?

11- A distributed database system has multiple Computers if one of them fails what will happened to the others?

12- Write the definition of Scalability?

13- List the issues with the DDBMS with their definitions:

14- What is the difference between Fragmentation schema and Allocation schema?

15- In how many ways a relation can be fragmented?

16- Write the definition of Horizontal Fragmentation and Vertical Fragmentation:

17- Write the definition of Derived horizontal fragmentation:

18- To reconstruct R from horizontal fragments a UNION will be applied or not?

19- Complete the following : _____ Join includes all tuples in the _____-hand relation and from the _____ hand relation.

20- In distributed database system for which type of fragmentation the intersection of two fragments is not null ?

21- Suppose you have the STAFF relation as below, apply the Horizontal and Mixed (Hybrid) Fragmentation:

   STAFF

STAFF#	Name	Address	Position	Salary
1001	Ahmed	Makkah	Manager	8500
1002	Adnan	Jeddah	Deputy	9500
1003	Ali	Madinah	Assistant	8000
1004	Hadi	Makkah	Assistant	9000

A) 2 Horizontal Fragmentation

B) 2 Mixed (Hybrid) Fragmentation:

22- Discuss the following case : if the primary and backup sites fail, how can be control on these sites?

7

23- Calculate the cost of transferring data over the network as the following scenario:
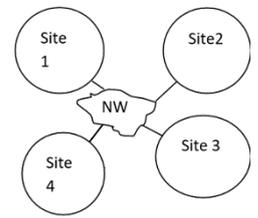
SQL: for each employee, retrieve employee name, salary and department name where the employee works.

Site1: Department

Dnumber	Dname	Mgr_ssn	Mgr_start_date

- o Total Records 100 - Each record is 30 bytes long
- o **Dnumber** filed is 4 bytes long.
- o **Dname** filed is 10 bytes long.
- o **Mgr_ssn** filed is 9 bytes long.

Site2: Employee

SSN	Name	Bdate	Address	Salary	Super_ssn	Dno

- o Total Records 1000 - Each record is 100 bytes long.
- o **SSN** filed is 9 bytes long.
- o **Name** filed is 15 bytes long.
- o **Salary** filed is 8 bytes long.
- o **Dno** filed is 4 bytes long.

Site3: Empty

- Find the following Strategies and select which Optimization :
    - Transfer Employee to site 1, execute join at site 1 and send the result to site 4.

    - Transfer Department relation to site 2, execute the join at site 2, and send the result to site 4.

    - Transfer Employee and Department to site 4 via site 3.

Part one: T/F

#Questions	Answer
1	F
2	F
3	T
4	F
5	T
6	T
7	T
8	F
9	T
10	T
11	T
12	T

#Questions	Answer
13	T
14	T
15	T
16	T
17	T
18	T
19	T
20	F
21	T
22	F
23	F
24	T

Part Two: MCQ

#Questions	Answer
1	B
2	A
3	D
4	A
5	B
6	D
7	A
8	B

#Questions	Answer
9	C
10	B
11	A
12	C
13	C
14	A
15	C
16	A

Part Three: Writing

#Questions	Answer
1	DDB provides distributed computing to the database management system. These databases provide reliability and availability that could be the main reason for the potential advantage. Here reliability is the probability of a system being running. And the Availability is the ability of a system being available during a time interval. Furthermore advantages of the DBS include: • Convenience and flexibility of the application development • Higher availability and reliability • Higher performance/data localization • Easier expansion
2	Following are the additional functions does a DDBMS have over a centralized DBMS: • Data distribution tracking • Distribution query processing • Distributed transaction management • Replicated data management • Distributed database recovery • Higher security.
3	a collection of multiple logically interrelated databases distributed over a computer network.
4	as a software system that manages a distributed database while making the distribution transparent to the user
5	• Timesharing computer system. • A loosely or tightly coupled multiprocessor system. • A database system which resides at one of the nodes of a network of computers. This is a centralized database on a network node.
6	multiple networked computers in a unified manner
7	processes Unit of execution (a transaction) in a distributed manner
8	• Management of distributed data with different levels of transparency • Distribution and Network transparency • Fragmentation transparency: • Replication transparency • Increased reliability and availability: And others
9	Allows to fragment a relation horizontally (create a subset of tuples of a relation) or vertically (create a subset of columns of a relation).
10	Reliability refers to system live time, that is, system is running efficiently most of the time. Availability is the probability that the system is continuously available (usable or accessible) during a time interval.
11	A distributed database system has multiple nodes (computers) and if one fails then others are available to do the job
12	Allows new nodes (computers) to be added anytime without changing the entire configuration.
13	**Fragmentation:** Relation may be divided into a number of sub relations, then distributed. **Allocation:** Each fragment is stored at site with "optimal" distribution. **Replication:** Copy of fragment may be maintained at several sites.
14	**Fragmentation schema:** A definition of a set of fragments (horizontal or vertical or horizontal and vertical) that includes all attributes and tuples in the database that satisfies the condition that the whole database can be

	reconstructed from the fragments by applying some sequence of UNION (or OUTER JOIN) and UNION operations. **Allocation schema:** It describes the distribution of fragments to sites of distributed databases. It can be <u>fully</u> or <u>partially replicated</u> or can be <u>partitioned</u>.	
15	A relation can be fragmented in <u>two ways</u> • Horizontal Fragmentation • Vertical Fragmentation • Mixed (Hybrid) fragmentation	
16	• **Horizontal Fragmentation:** It is a horizontal subset of a relation which contain those of tuples which satisfy selection conditions. • **Vertical Fragmentation:** It is a subset of a relation which is created by a subset of columns. Thus, a vertical fragment of a relation will contain values of selected columns. There is no selection condition used in vertical fragmentation.	
17	It is the partitioning of a primary relation to other secondary relations which are related with Foreign keys.	
18	UNION is applied	
19	<u>Full Outer Join</u> includes all tuples in the <u>left</u>-hand relation and from the <u>right</u> hand relation	
20	Both – Horizontal and Vertical Fragmentation	

21

A) 2 Horizontal Fragmentation

• H1: Select * from staff where address = "Makkah";

STAFF#	Name	Address	Position	Salary
1001	Ahmed	Makkah	Manager	8500
1004	Hadi	Makkah	Assistant	9000

• H2: Select * from staff where address <> "Makkah";

STAFF#	Name	Address	Position	Salary
1002	Adnan	Jeddah	Deputy	9500
1003	Ali	Madinah	Assistant	8000

B) 2 Mixed (Hybrid) Fragmentation:

• If you Select H1 Then:

STAFF#	Name
1001	Ahmed
1004	Hadi

STAFF#	Address	Position	Salary
1001	Makkah	Manager	8500
1004	Makkah	Assistant	9000

22	Many asnwers like : all sites will vote on the site that have less deadlock , a lot of security, can not be denied	
23	1) Total transafer size = (33x1000)+ 100,000 = 33,000 + 100,000 = 133,000 bytes 2) Total transafer size = (33x1000)+ 3,000 = 3000 = <u>36,000 bytes</u> 3) Total transafer size to site 3 = 100,000 + 3,000 = 103,000 bytes| Total transafer size from site 3 to site 4 = 103,000+ 103,000 = 206,000 bytes	

انتظر منك تقلي كيف كانت تجربتك مع الملزمة 😊 ممكن تتواصل معي عبر الواتساب او تويتر :
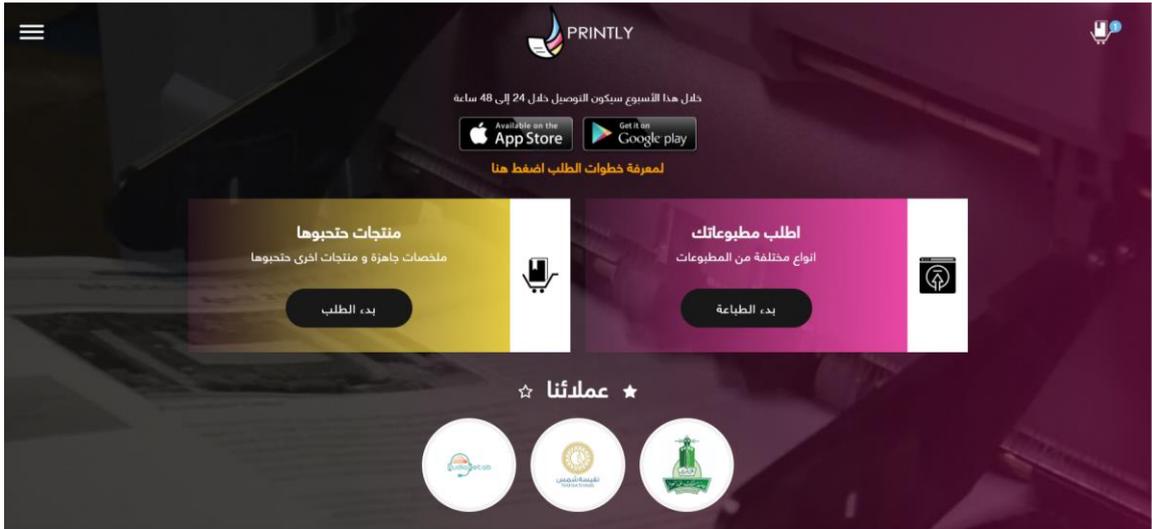

Hisham Teach

🐦 @HishamTeach   📞 0563974497

<u>تحتاج ملازم لباقي المواد ؟ ما عليك كلمني وانا رح ازبطك بشيء فعليا يستاهل</u>

تحتاج طباعة لباقي موادك الدراسية ؟

استخدم منصة برنتلي واحصل على خصم باستخدام الكود: FCIT2020

https://printly-sa.com

محتاج مساعدة ؟ تواصل واتساب

📱 0563974497

بإمكانك الحصول على التكملة من خلال النقر على الرابط:

https://printly-sa.com/shopbook.php?id=600

لمشاهدة شرح المادة بالكامل (مجاني):

https://hishamteachstore.netlify.app/cpit340

لمشاهدة باقي الملازم:

https://hishamteachstore.netlify.app/itfcit