Nata Lase
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1. What are the advantages and disadvantages of SQL?
   Keunggulan: sangat kuat, jaminan keamanan, layanan, dll dari Microsoft mengenai EULA, command mudah dipelajari, dpt diterapkan di berbagai DBMS lain.
   Kelemahan: tidak bisa mengambil keuntungan dari PHP, sangat geeky, sangat khusus, tidak menyertakan control command flow (SQL3).

2. Describe the eight base data type in SQL

Table 6.1 ISO SQL data types.

Data type	Declarations			
boolean	BOOLEAN			
character	CHAR	VARCHAR		
bit	BIT	BIT VARYING		
exact numeric	NUMERIC	DECIMAL	INTEGER	SMALLINT
approximate numeric	FLOAT	REAL	DOUBLE PRECISION	
datetime	DATE	TIME	TIMESTAMP	
interval	INTERVAL			
large objects	CHARACTER LARGE OBJECT		BINARY LARGE OBJECT	

3. Discuss the functionality and importance of the integrity enhancement feature (IEF).
   Integrity Enhancement Feature (IEF) terdiri dari batasan-batasan yang kita inginkan dalam rangka menjaga database untuk tetap konsisten.
   IEF memiliki 5 batas integrity:
   – Required data
   – Domain constraints
   – Entity integrity
   – Referential integrity
   – Enterprise constraints

4. Discuss each of the clauses of the CREATE TABLE statement.
   CREATE TABLE TableName
   {(colName dataType [NOT NULL] [UNIQUE]
   [DEFAULT defaultOption]
   [CHECK searchCondition] [,...]}
   [PRIMARY KEY (listOfColumns),]
   {[UNIQUE (listOfColumns),] […,]}

{[FOREIGN KEY (listOfFKColumns)
REFERENCES ParentTableName [(listOfCKColumns)],
[ON UPDATE referentialAction]
[ON DELETE referentialAction]] [,…]}
{[CHECK (searchCondition)] [,…] })

• Creates a table with one or more columns of the specified *dataType*.
• Primary keys should always be specified as NOT NULL
Keuntungan: Mempermudah komplexitas, dapat berfungsi sebagai agregasi (sum, count, etc), storage lebih kecil dan lebih aman.
Kekurangan: Bila struktur data pada table berubah, kita harus mengubah query view table tersebut

5. Discuss the advantages and disadvantages of view

Advantages	Disadvantages
Data independence	Update restriction
Currency	Structure restriction
Improved security	Performance
Reduced complexity	
Convenience	
Customization	
Data integrity	

6. Describe how the process of view resolution works
- The view column names in SELECT list are translated into their corresponding column names in the defining query:
SELECT s.staffNo AS staffNo, COUNT(*) As cnt
- View names in FROM are replaced with corresponding FROM lists of defining query:
FROM Staff s, PropertyForRent p
- WHERE from user query is combined with WHERE of defining query using AND:
WHERE s.staffNo = p.staffNo AND branchNo = 'B003'
- GROUP BY and HAVING clauses copied from defining query:
GROUP BY s.branchNo, s.staffNo
- ORDER BY copied from query with view column name translated into defining query column name
ORDER BY s.staffNo

7. What restrictions are necessary to ensure that a view is updatable?
Jika sistem basis datanya mendukung reserves mapping dari view ke table. Dapat menetapkan nama untuk setiap kolom dalam tampilan.

8. What is a materialized view and what are the advantages of a maintaining a materialized view rather than using the view resolution process?
   Seperti halnya sebuah view, tapi dia memiliki deskripsi material yg lebih jelas sehingga memiliki fasilitas seperti halnya sebuah table, dapat diupdate, memiliki index dsb.
   Perbedaan: lebih cepat, memiliki struktur yg lebih jelas, dapat memiliki index, data didalamnya terupdate setiap waktu sesuai dengan data pada masternya.

9. Describe the difference between discretionary and mandatory access control. What type of control mechanism does SQL support?
   DAC : akses berdasarkan kepemilikan file. siapa yg bikin, dia yg mengatur akses. bahkan pemilik sistem tidak memiliki full akses.
   MAC : akses berdasarkan kepemilikan sistem, root yg nantinya mengatur hak akses.

10. Describe how the access control mechanism of SQL work.

Table	Attribute	Type	Length	Null
Student	Student_Id (PK)	Char	10	No
	Name	Varchar	50	No
	Class	Char	1	No
	Major	Char	2	No
Course	Course_Id (Pk)	Char	8	No
	CourseName	Varchar	30	No
	CreditHours	SmallInt	2	No
	Department	Char	4	No
Section	SectionIdentifier	Char	3	No
	Course_Id	Char	8	No
	Semester	Varchar	15	No
	Year	Char	2	No
	Instructor	Varchar	25	No
Grade_Report	Student_Id	Char	10	No
	SectionIdentifier	Char	3	No
	Grade	Char	1	No
Prerequisite	Course_Id	Char	8	No
	Prerequisite_Id	Char	8	No

Figure 1. A Database that stores student and course information

11. Consider the tables shown in Figure 1, write SQL DDL statements to :

a. Create Schema or Database

```
CREATE DATABASE BiNus
```

b. Define the database (Create Table).

```
CREATE TABLE Student
(
	Student_Id Char(10) primary key not null,
	Name Varchar(50) not null,
	Class Char(1) not null,
	Major Char(2) not null
)
```

c. Change attribute

```
UPDATE Student
SET class='04POM'
WHERE Student_Id='1301020731'
```

d. Drop a Table

```
DROP TABLE Student
```

e. Create View

```
CREATE VIEW NoTelp
AS
	SELECT * FROM Student
```