32606 ACID PROPERTIES AND INTEGRITY CONSTRAINTS

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Q1:

* 1. Entity Integrity:

The entity integrity stipulated each table in the relation database should have a primary key and the attributes of this primary key fields cannot be null and must be unique. That means when we use the primary key as a condition to search data we can only get one row of data. For example, when we use the query “select \* from nasa2\_astronaut where id = 1;” there where one result come out. That means id conform to the entity integrity , because every astronaut in this table has an id, and when we search each id we can only get only 1 astronaut’s data. However, if we use the query “select \* from nasa2\_astronaut where name = ‘sam’;” that will comes out make rows of data. That means name is not conform to the entity integrity, because when we use name as a condition to search data, there will have many rows of data.

* 1. Domain Integrity:

The Domain Integrity rule is one of important rule that used to construct data. This rule can protect the data in database will not be compromised by user when they modify it. For example, when we create a column called name in database has “name varchar(25) not null”. When user update a name but provide an integer. Then this name will not be accepted by database, because the column should provide a varchar not an int. Also if the user upload data and the column name be null, the data will not be accepted by database, because the name column cannot be null.

* 1. Referential Integrity:

Referential integrity is defining a reference rule between a foreign key and a primary key. When a reference object need to be deleted all the other data which relay on this data also need to be deleted. For example, when we have 2 tables, one is called classroom and it has a classroom\_id as a primary key and the other table is called students, it has students id as a primary key and classroom\_id referenced to the classroom table. Thus if we want to delete all the students which referenced to this class room should also be deleted or referenced into another exist classroom\_id.

Q2:

2.1 Atomicity:

Atomicity means when a transaction happened all the action in this transaction should be all finished or all failed. Only finish a part of action in one transaction will not be allowed. If there has an error in one transaction. All the action will be stopped, and all the data will be rollback to this transaction execute. This step just like we pay online, we have to provide correct card number, holder name and expired day. Only if we provide all 3 field right, this order will be placed otherwise this order cannot be paid.

2.2 Consistency:

Consistency means when a transaction start and finished, the integrity of the database cannot

be compromised. This means when the information written into the database must fully comply with all the preset rules. For example a restaurant owner takes $1000 to give employee A and employee B. when the process happened the total money should be $1000

in other words, TotalMoney = EmployeeA’s money + EmployeeB’s money + Owner’s money = $1000.

2.3 Isolation:

The isolation used to protect data in database, when not only user want to use the database.

As we know database allows multiple concurrent transaction to read, write, and modify the data. To avoid data inconsistencies due to cross-execution when multiple transaction are executed concurrently. The isolation are divided into four different level include: Read uncommitted, read committed, repeatable read and serializable. For example: If two students want to write code with each other, they must wait one person finish his work after that the other people should pull all the previous peoples work and start his own work, he cannot work on the origin file.

2.4 Durability:

The durability means when the transaction finished and accepted by the database, all the data will be serializable, the data will not be lost by exception and downtime