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| Ch4  The Term | Definition |
| Join operations | take two relations and return as a result another relation. |
| Outer Join | **An extension of the join operation that avoids loss of information** Uses *null* values. |
| Join condition | * defines which tuples in the two relations match, and what attributes are present in the result of the join |
| Join type | defines how tuples in each relation that do not match any tuple in the other relation (based on the join condition) are treated. |
| view | A provides a mechanism to hide certain data from the view of certain users. using **create view** |
| virtual relation | called a **view** |
| Views Defined Using Other Views | \* A view relation v1 depend directly used in the expression defining  \*V1 to depend on  \*recursive if it depends on itself |
| Materializing a view | create a physical table containing all the tuples in the result of the query defining the view |
| maintain the view | by updating the view whenever the underlying relations are updated. |
| Transactions | Unit of work and its Atomic transaction. begin implicitly and Ended by **commit** **work** or **rollback** **work** |
| Integrity Constraints on a Single Relation | **not null** ,**primary key**,**unique** , **check** (P), where P is a predicate |
| check | Unfortunately: subquery in check clause not supported by pretty much any database  Also not supported by anyone |
| Built-in Data Types in SQL | **date:** Dates,year, month and date  **time:**  Time of day, in hours, minutes and seconds  **timestamp**: date plus time of day  **interval:** period of time |
| create type | construct in SQL creates user-defined type |
| create domain | construct in SQL-92 creates user-defined domain types |
| Large-Object Types | are stored as a *large object*:   1. **blob**: binary large object -- object is a large collection of uninterpreted binary data 2. **clob**: character large object -- object is a large collection of character data |
| Authorization | Forms of authorization on parts of the database:  **Read** - allows reading, but not modification of data.  **Insert** - allows insertion of new data, but not modification of existing data.  **Update** - allows modification, but not deletion of data.  **Delete** - allows deletion of data.  Forms of authorization to modify the database schema:  **Index** - allows creation and deletion of indices.  **Resources** - allows creation of new relations.  **Alteration** - allows addition or deletion of attributes in a relation.  **Drop** - allows deletion of relations. |
| Authorization Specification in SQL   1. grant | statement is used to confer authorization |
| 2-revoke | statement is used to revoke authorization |
| references | privilege to create foreign key |