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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 databaseAlso 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
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| 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 SQL1. grant
 | statement is used to confer authorization |
| 2-revoke | statement is used to revoke authorization |
|  references  | privilege to create foreign key |