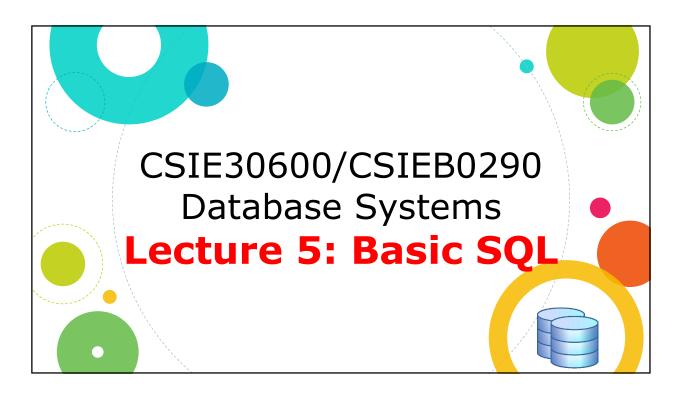
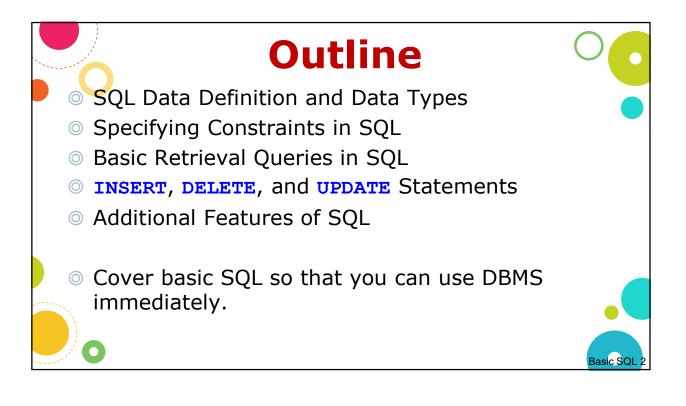
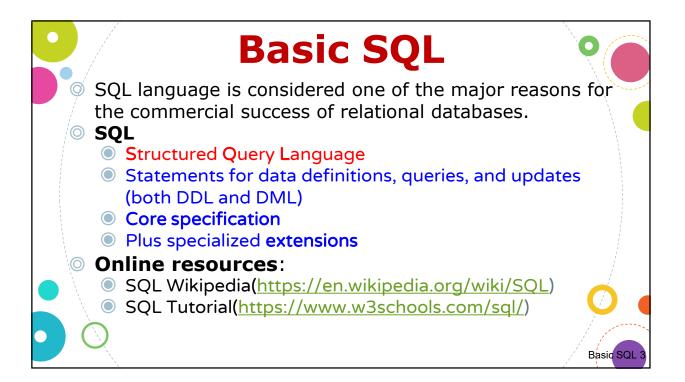
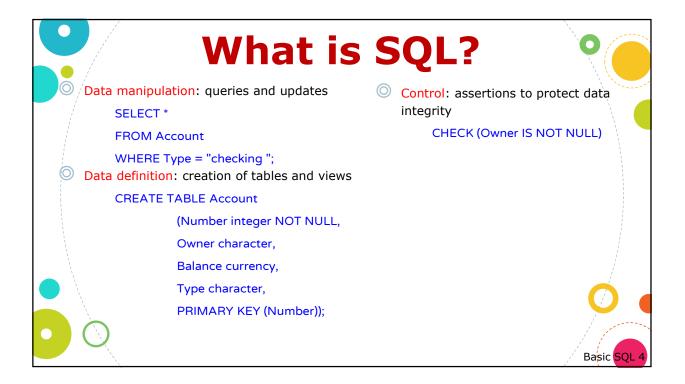
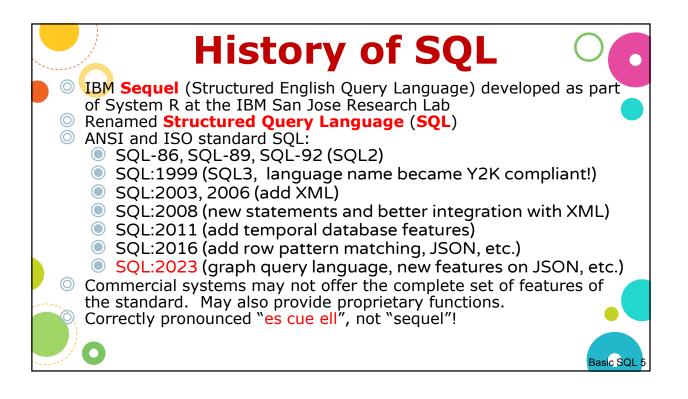
Lecture 05: Basic SQL

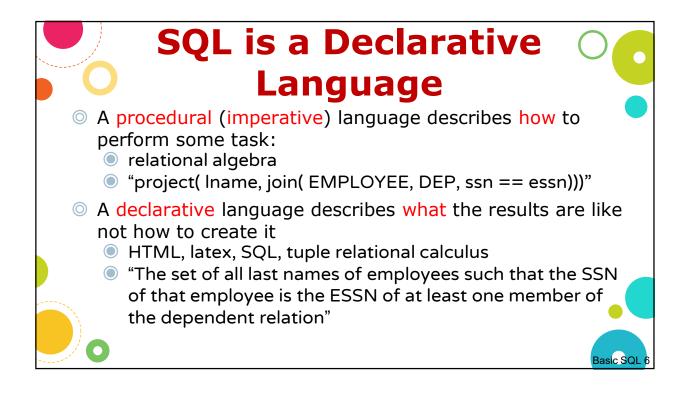


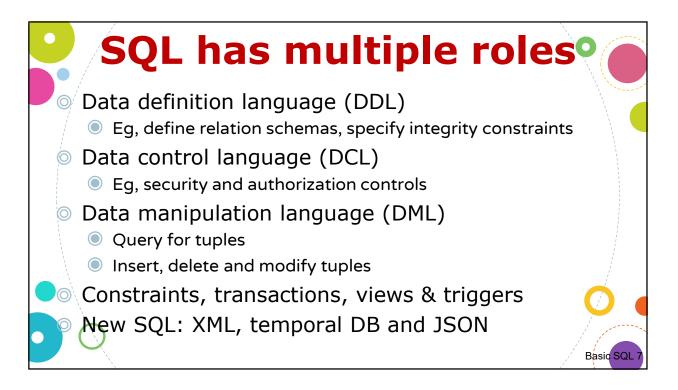


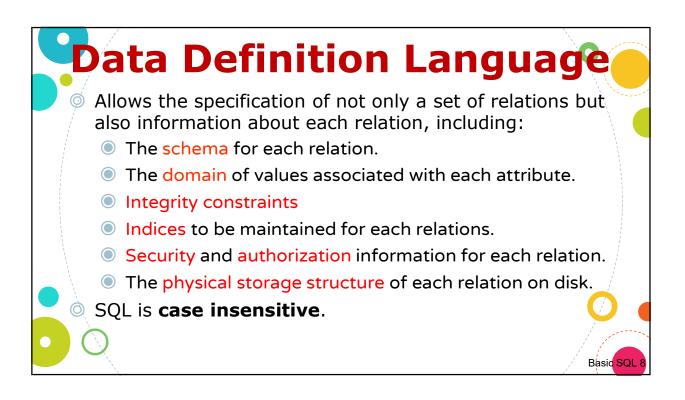


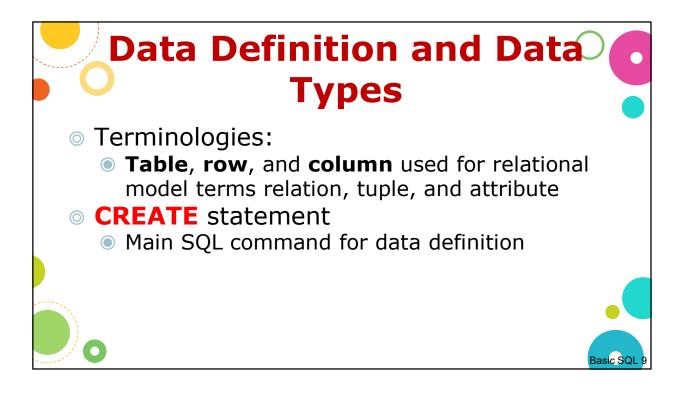


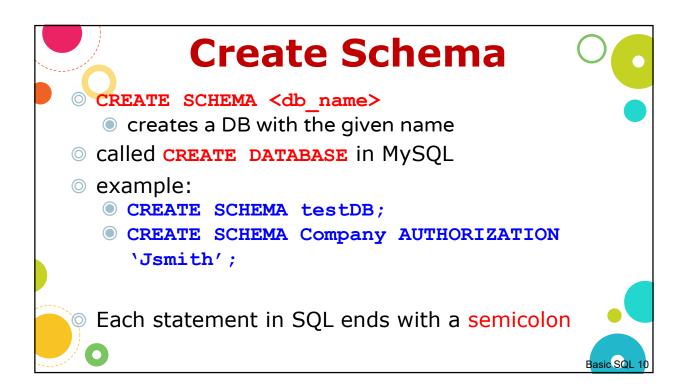


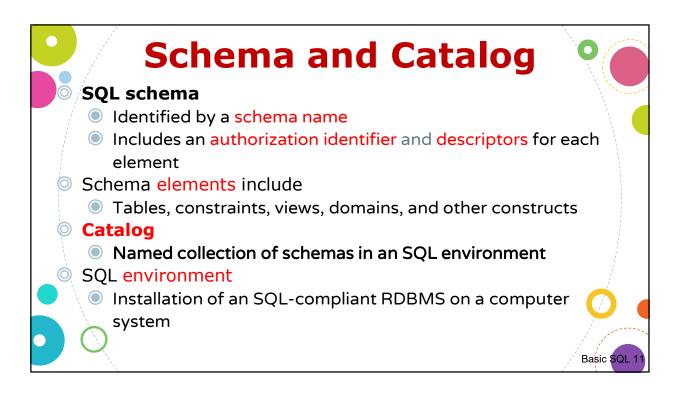


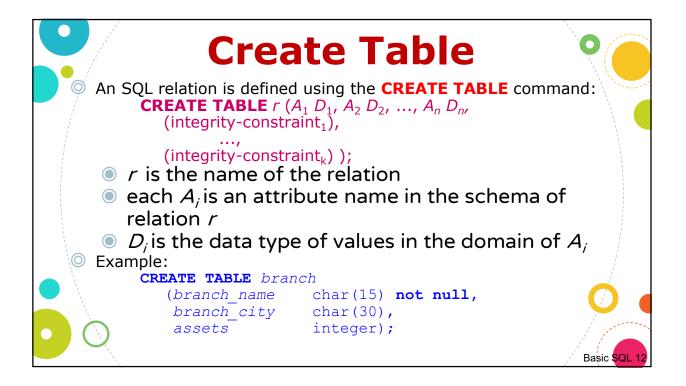


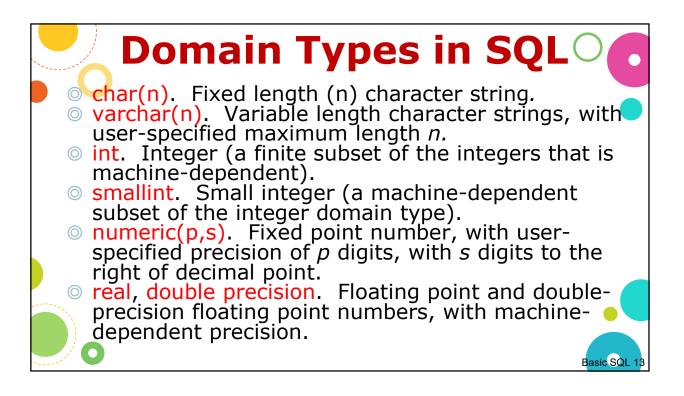


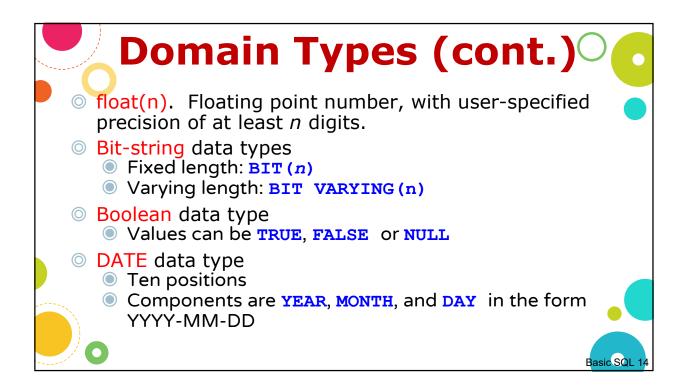


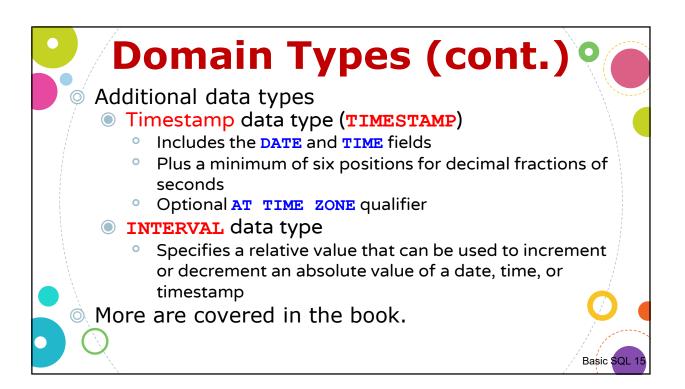


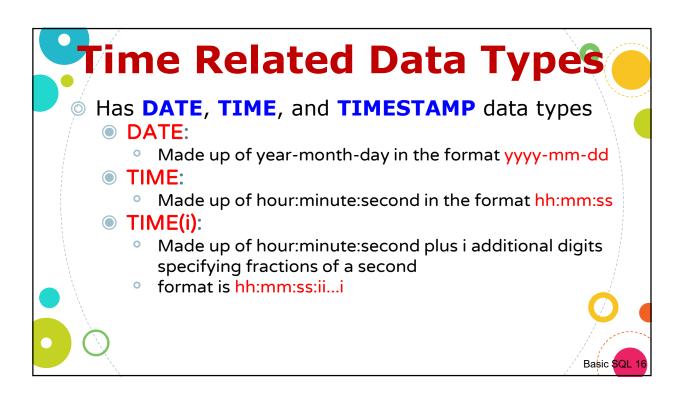




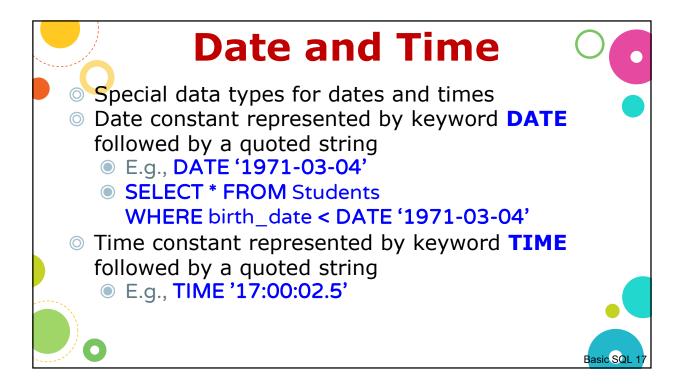


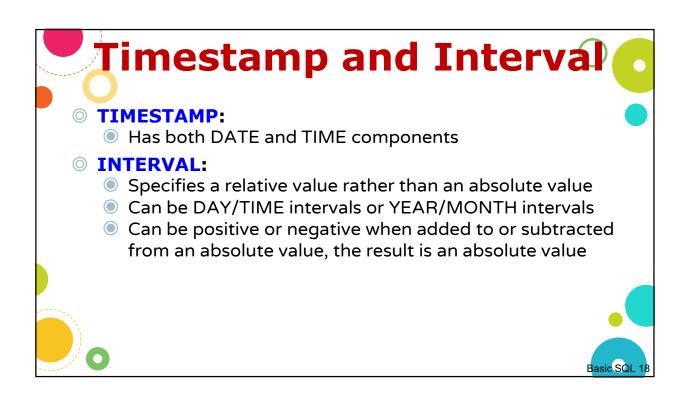




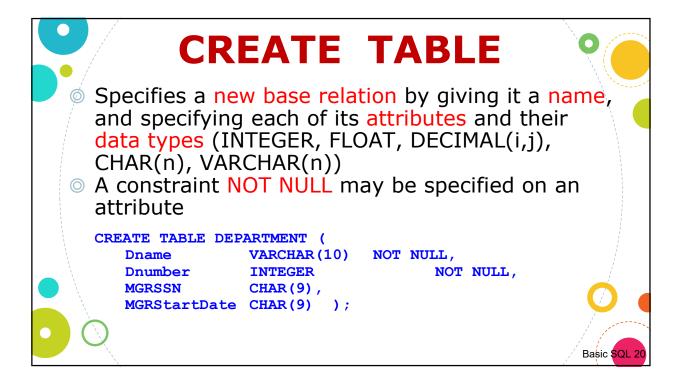


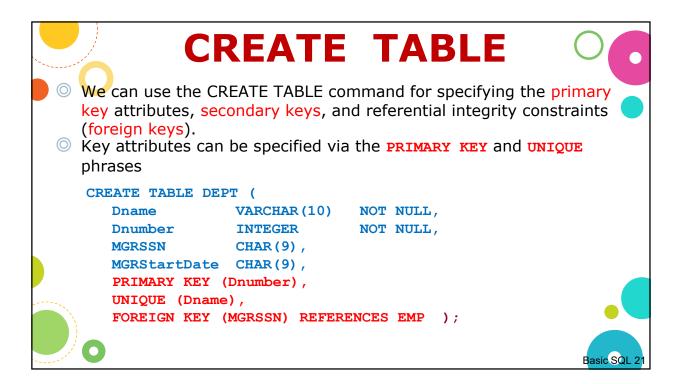
Lecture 05: Basic SQL





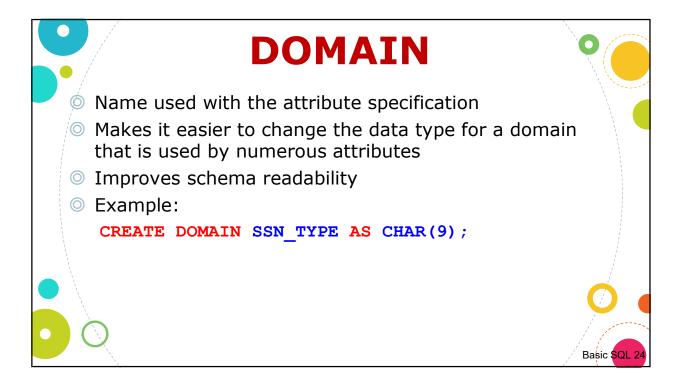
| Туре | Stores | Literal |
|---------------------------|---|---|
| DATE | year, month, day | DATE 'YYYY-MM-DD' |
| ГІМЕ | hour, minute, and second | TIME 'HH:MM:SS' |
| TIMESTAMP | year, month, day, hour, minute, and second | TIMESTAMP 'YYYY-MM-DD HH:MM:SS |
| | Example Literal | Description |
| Туре | Laumpie Literui | |
| Type Year–Month | INTERVAL '5' YEAR | 5 years |
| | | |
| | INTERVAL '5' YEAR | 5 years |
| | INTERVAL '5' YEAR INTERVAL '2' MONTH | 5 years 2 months 3 years and 1 month |
| 'ear-Month | INTERVAL '5' YEAR INTERVAL '2' MONTH INTERVAL '3-1' YEAR TO MONTH | 5 years 2 months 3 years and 1 month COND 5 days, 10 hours, 30 minutes, an |

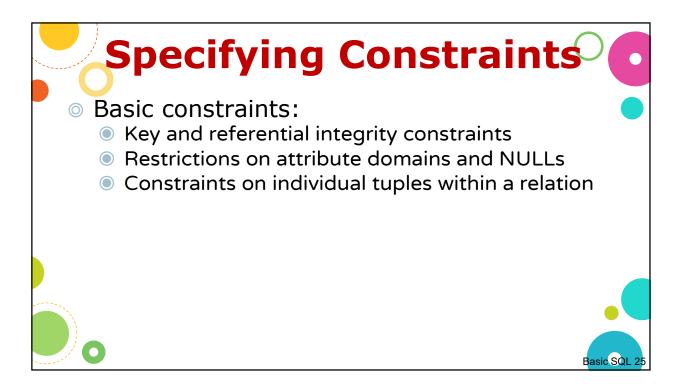


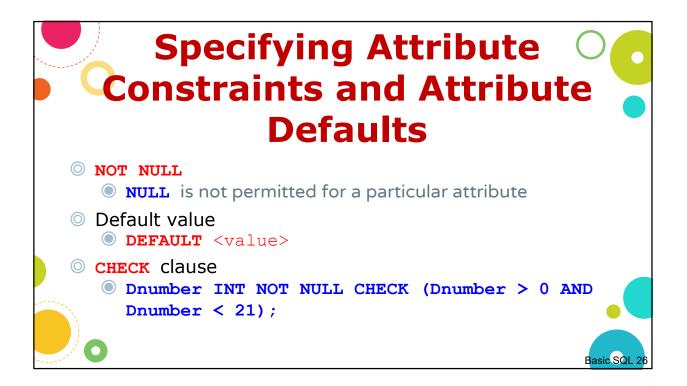


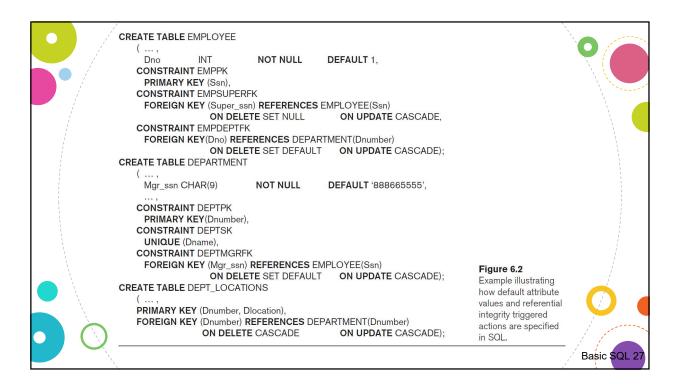
| CREATE TABLE EMPLOYEE | | | Figure 6.1 |
|----------------------------|--------------------------|-----------|-----------------------|
| (Fname | VARCHAR(15) | NOT NULL, | SQL CREATE |
| Minit | CHAR, | | TABLE data |
| Lname | VARCHAR(15) | NOT NULL, | definition statements |
| Ssn | CHAR(9) | NOT NULL, | for defining the |
| Bdate | DATE, | | COMPANY schema |
| Address | VARCHAR(30), | | from Figure 5.7. |
| Sex | CHAR, | | |
| Salary | DECIMAL(10,2), | | |
| Super_ssn | CHAR(9), | | |
| Dno | INT | NOT NULL, | |
| PRIMARY KEY (Ssn), | | | |
| CREATE TABLE DEPARTMENT | | | |
| (Dname | VARCHAR(15) | NOT NULL, | |
| Dnumber | INT | NOT NULL, | |
| Mgr_ssn | CHAR(9) | NOT NULL, | |
| Mgr_start_date | DATE, | | |
| PRIMARY KEY (Dnumber) | | | |
| UNIQUE (Dname), | | | |
| | REFERENCES EMPLOYEE(Ssn) |); | |
| CREATE TABLE DEPT_LOCATION | S | | |
| (Dnumber | INT | NOT NULL, | |
| Dlocation | VARCHAR(15) | NOT NULL. | |

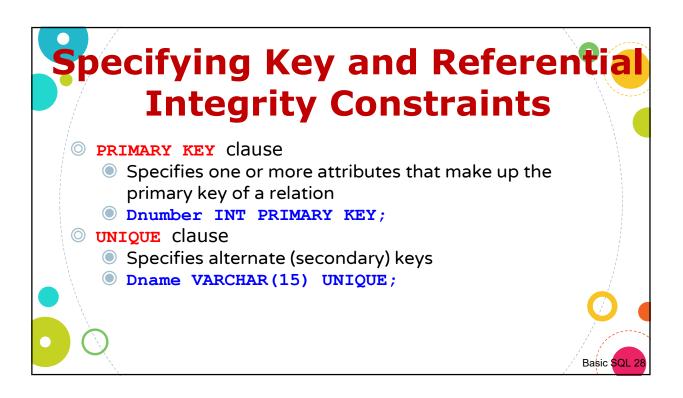
| | CREATE TABLE PROJECT | | | | | | | |
|-----|---------------------------|---|-----------|----------------|--|--|--|--|
| | (Pname | VARCHAR(15) | NOT NULL. | | | | | |
| | Pnumber | INT | NOT NULL. | | | | | |
| | Plocation | VARCHAR(15), | | | | | | |
| | Dnum | INT | NOT NULL. | | | | | |
| | PRIMARY KEY (Pnumber), | | , | | | | | |
| / | UNIQUE (Pname), | | | | | | | |
| / | | NCES DEPARTMENT(Dnumber)): | | | | | | |
| į. | CREATE TABLE WORKS ON | | | | | | | |
| | (Essn | CHAR(9) | NOT NULL, | | | | | |
| | Pno | INT | NOT NULL, | | | | | |
| | Hours | DECIMAL(3,1) | NOT NULL, | | | | | |
| | PRIMARY KEY (Essn, Pno), | | | | | | | |
| | FOREIGN KEY (Essn) REFERE | FOREIGN KEY (Essn) REFERENCES EMPLOYEE(Ssn), | | | | | | |
| | FOREIGN KEY (Pno) REFEREN | FOREIGN KEY (Pno) REFERENCES PROJECT (Pnumber)); | | | | | | |
| | CREATE TABLE DEPENDENT | | | İ | | | | |
| N N | (Essn | CHAR(9) | NOT NULL, | 1 | | | | |
| | Dependent_name | VARCHAR(15) | NOT NULL, | / | | | | |
| | Sex | CHAR, | | | | | | |
| | Bdate | DATE, | | | | | | |
| | Relationship | VARCHAR(8), | | | | | | |
| | | PRIMARY KEY (Essn, Dependent_name), | | | | | | |
| | FOREIGN KEY (Essn) REFERE | NCES EMPLOYEE(Ssn)); | | | | | | |
| | × | | | / Basic SQL 23 | | | | |

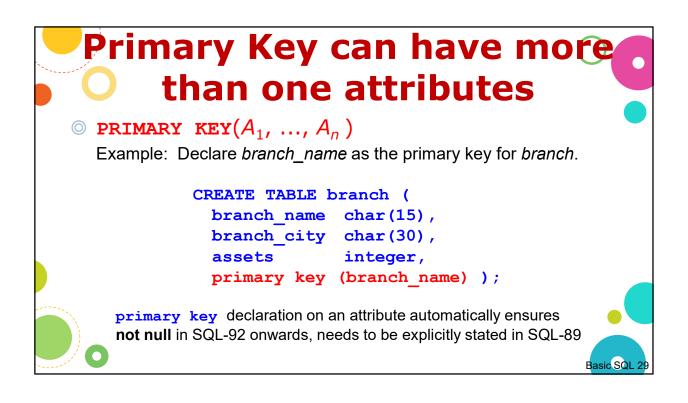


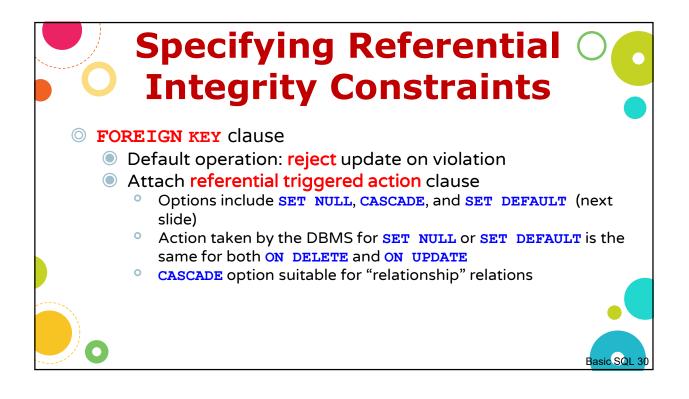


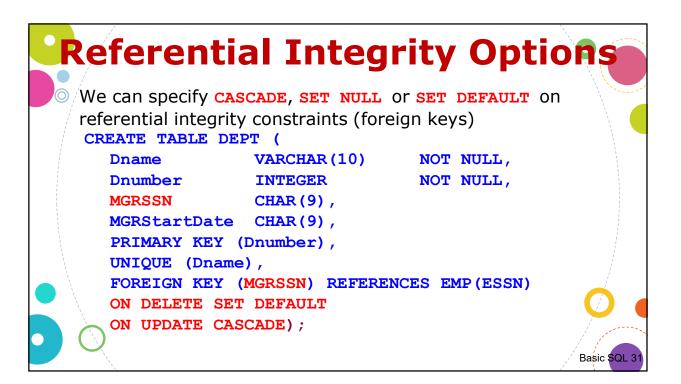


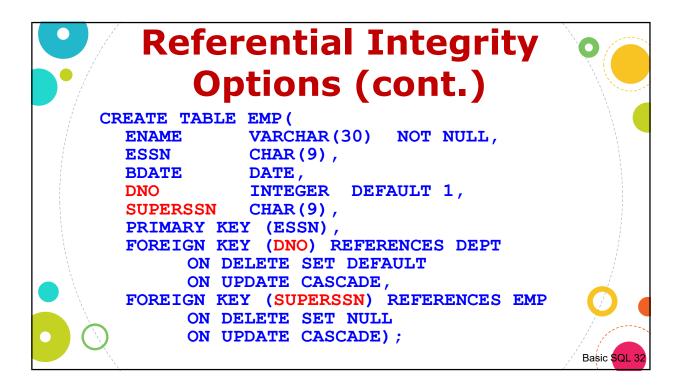


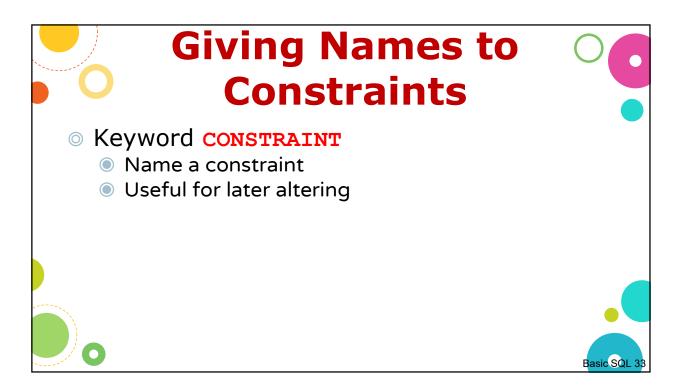


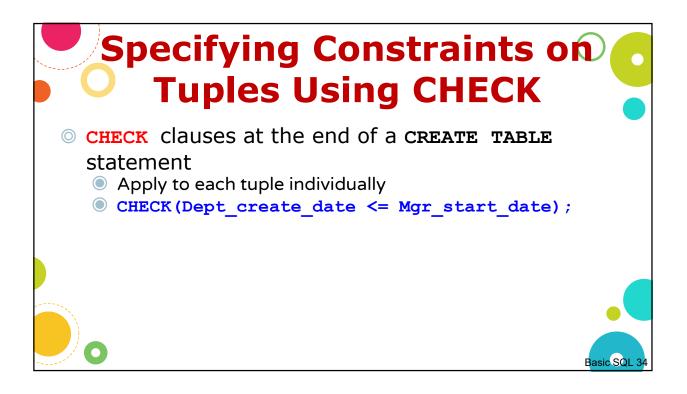




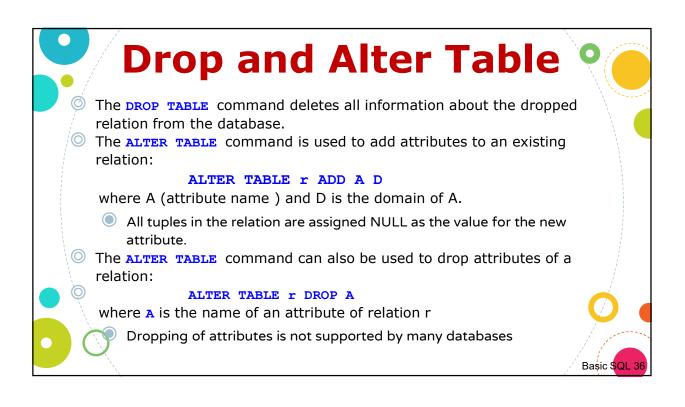


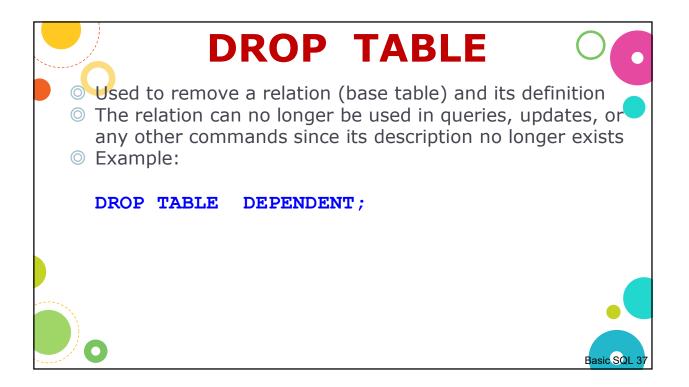


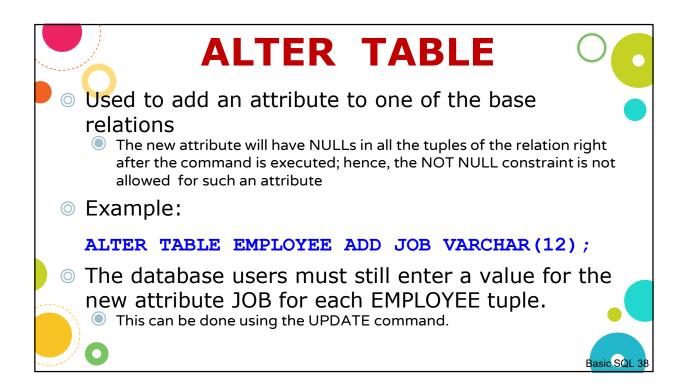


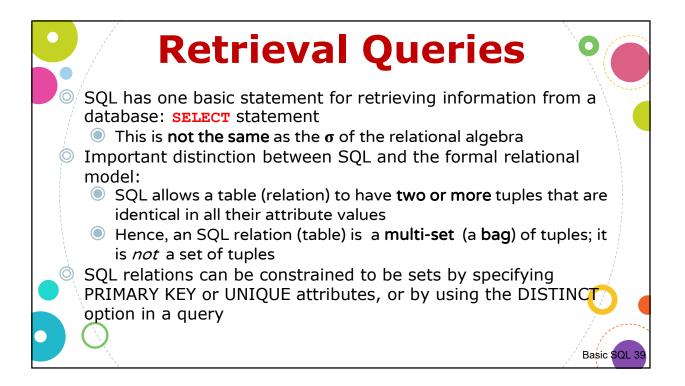


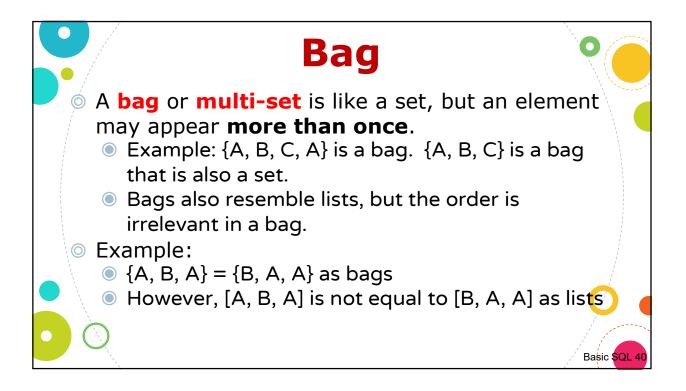
| • | СН | ECK | |
|---|--|---|--------------|
| | CHECK (P), where P is a p P must be satisfied by Example: Declare branch branch and ensure that t nonnegative. | all tuples n-name as the primary key | for |
| | CREATE TABLE branch | | |
| | branch-name ch | nar(15), | |
| | branch-city ch | nar(30) | |
| | assets ir | iteger, | / |
| | PRIMARY KEY (branc | h-name), | i |
| | CHECK (assets >= 0 |)); | |
| | | | Basic SQL 35 |

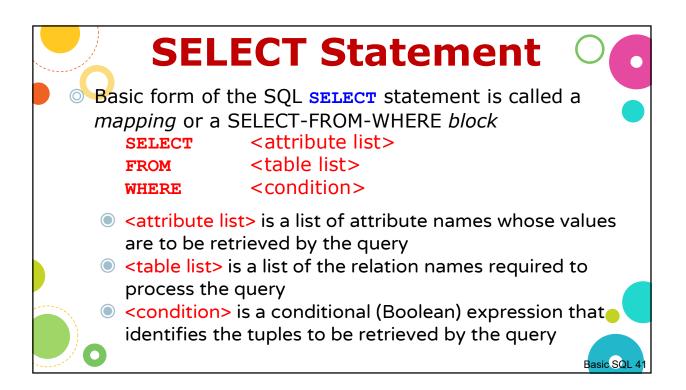


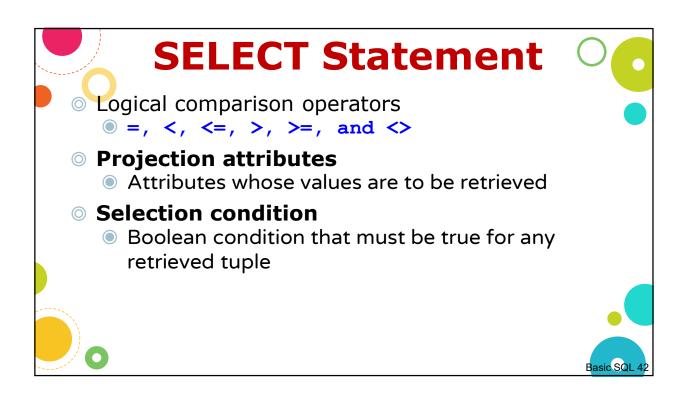


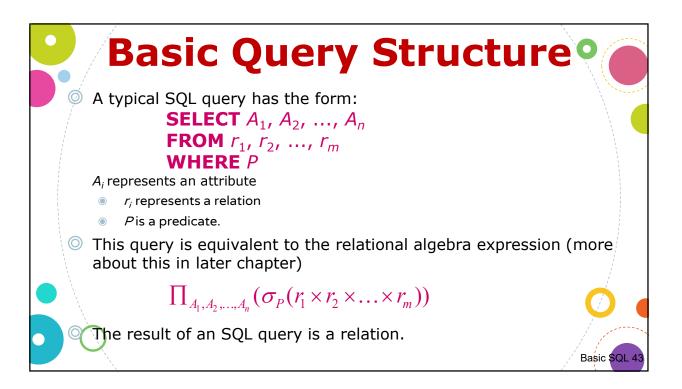




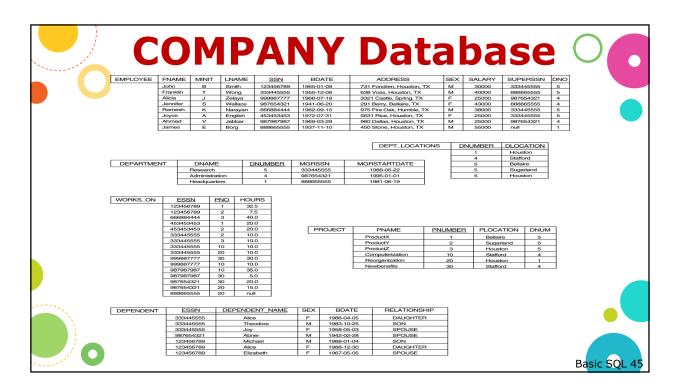


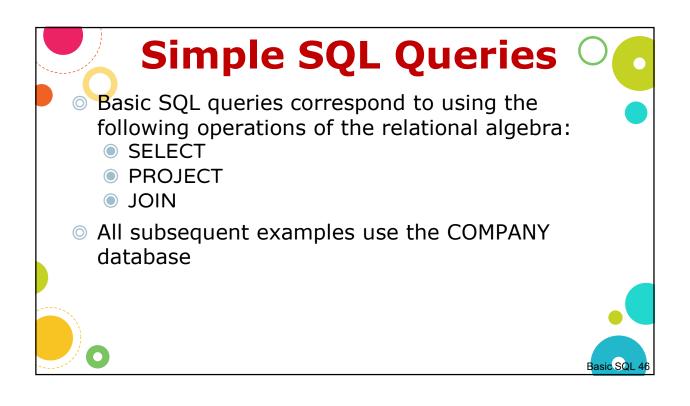




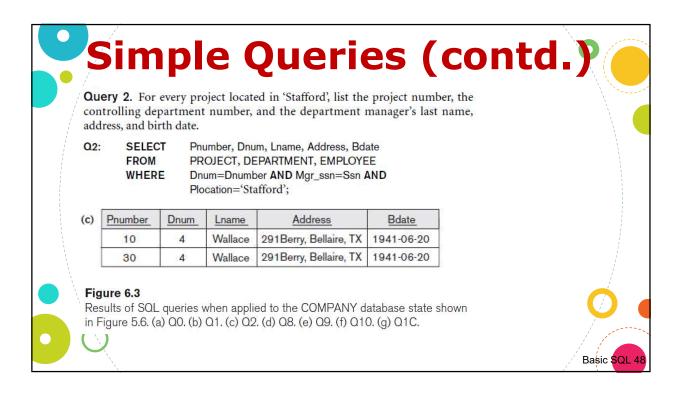


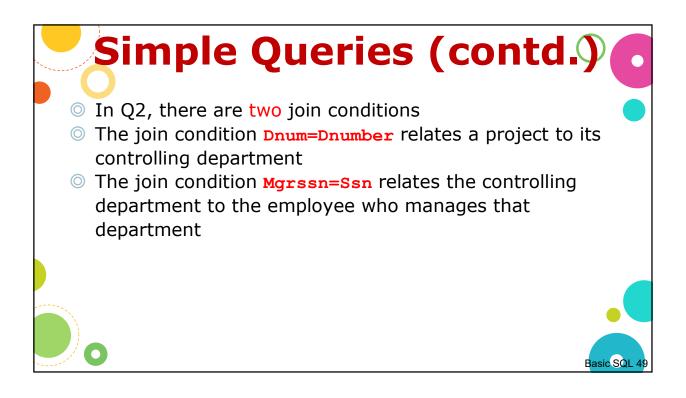
| | | | | S | ch | en | na | | | | • |
|---|----------------|--------|---------|--------|---------|----------|--------|-----------|----------|-----|--------------|
| | EMI | PLOYEE | | | | | | | | | |
| | FNAME | MINIT | LNAME | SSN | BDATE | ADDRESS | SEX | SALARY | SUPERSSN | DNO | |
| / | | | DEP | ARTMEN | п | | | | | | |
| | | | DNAME | | UMBER | MGRSSN | MGRST | ARTDATE | | | |
| | DEPT_LOCATIONS | | | | | | | | | | |
| | | | | Γ | DNUMBER | | ION | | | | |
| | | | | PROJEC | т | | | | | | |
| | | | | NAME | PNUMBE | R PLOCAT | ON DN | IUM | | | |
| | | | | | w | DRKS_ON | | | | | / |
| | | | | [| | PNO HOU | RS | | | | |
| | | | | l | | | | | | | |
| | | _ | DEPENDE | INT | | | | | | | 1 |
| | | | ESSN DE | PENDE | NT_NAME | SEX BI | DATE R | ELATIONSH | IP | | |
| | | | | | | 1 | | | | | Basic SQL 44 |

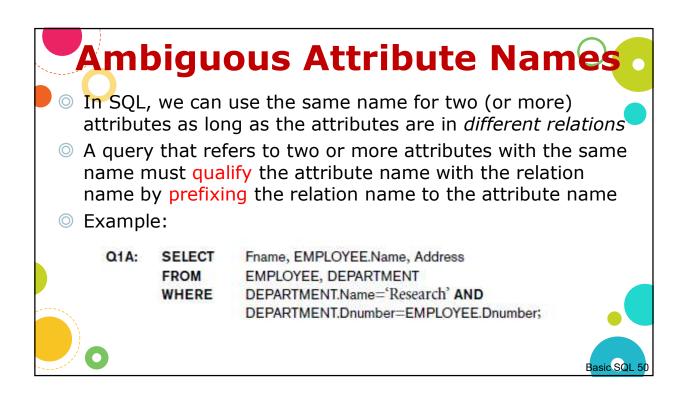


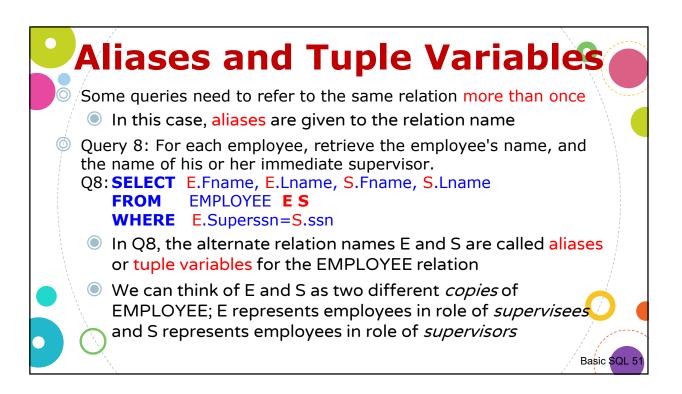


| | Si | mp | ole Qu | e 1 | rie | es | (cor | ntd | -) |
|---|---|-------------------------|---|------------|--------------------|-----------------|---|-----|--------------|
| Ø | Example of a simple query on one relation | | | | | | | | |
| | Query 0 . Retrieve the birth date and address of the employee(s) whose name is 'John B. Smith'. | | | | | | | | |
| | Q0: | SELECT FROM WHERE | Bdate, Address EMPLOYEE Fname='John' AND Minit='B' | AND | Lname=' | Smith'; | | | |
| | Query 1. Retrieve the name and address of all employees who work for the 'Research' department. | | | | | | | | |
| | Q1: SELECT Fname, Lname, Address FROM EMPLOYEE, DEPARTMENT WHERE Dname='Research' AND Dnumber=Dno; | | | | | | | | |
| | Figure 6.3 Results of SQL queries when applied to the COMPANY database state shown in Figure 5.6. (a) 00. (b) Q1. (c) Q2. (d) Q8. (e) Q9. (f) Q10. (g) Q1C. | | | | | | | | |
| | (a) | <u>Bdate</u> | Address | (b) | Fname | Lname | Address | | |
| | | 1965-01-09 | 731Fondren, Houston, TX | | John | Smith | 731 Fondren, Houston, TX | | 1 |
| | | | | | Franklin Ramesh | Wong Narayan | 638 Voss, Houston, TX 975 Fire Oak, Humble, TX | | 1.1. |
| | • | | | | Joyce | English | 5631 Rice, Houston, TX | | Basic SQL 47 |

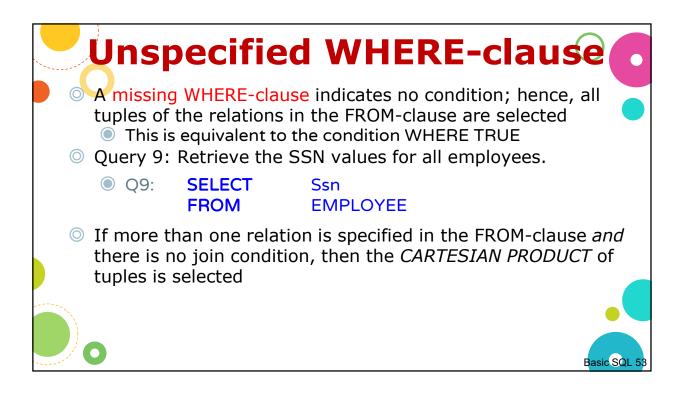


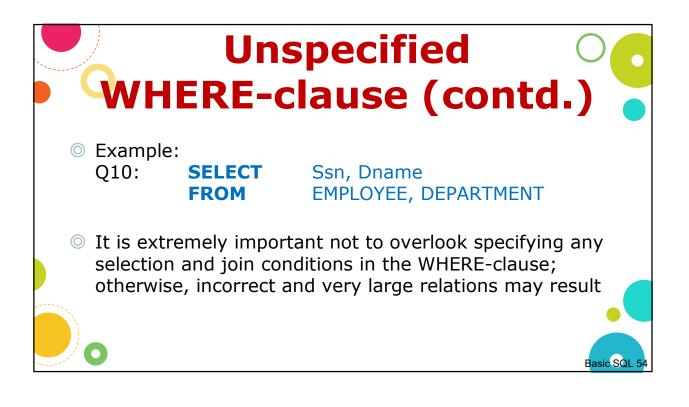




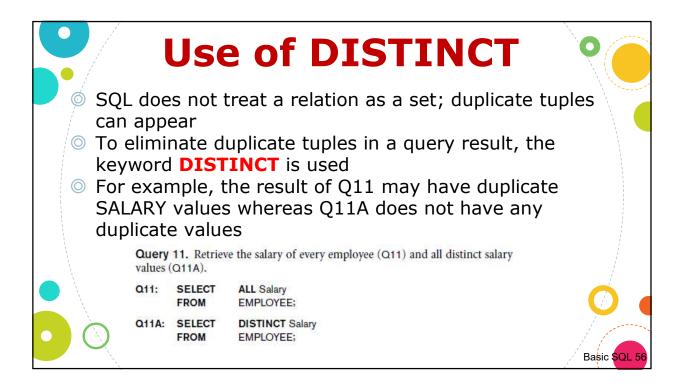


| Alia | ases a | and Tuple Variables |
|----------------|-------------|--|
| ⊘∕ Aliasir | ng can also | be used in any SQL query for convenience |
| 🄘 Can a | lso use the | AS keyword to specify aliases (rename |
| opera | tion) | |
| Q8: | SELECT | E.Fname, E.Lname, |
| | | S.Fname, S.Lname |
| | FROM | EMPLOYEE <mark>AS</mark> E, |
| | | EMPLOYEE AS S |
| | WHERE | E.Superssn=S.Ssn |
| | | |
| | | |
| | | Basic SQL 52 |

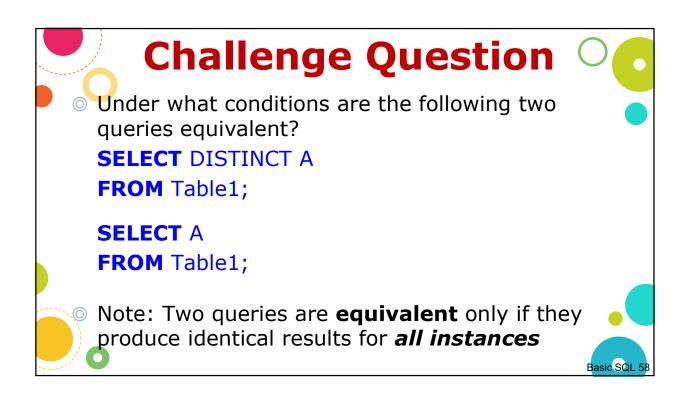


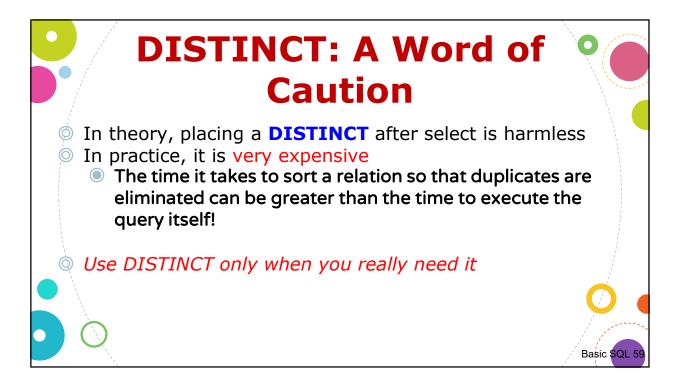


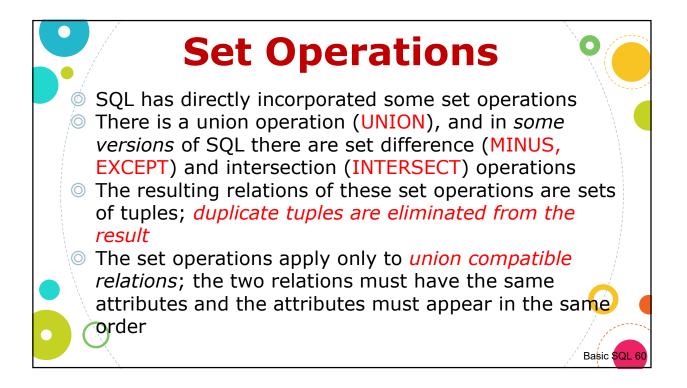
| | Us | se of * |
|-------|-------------------------|--|
| 1 | | ttribute values of the selected which stands for all the |
| Q1C: | SELECT FROM WHERE | * EMPLOYEE Dno=5; |
| Q1D: | SELECT FROM WHERE | * EMPLOYEE, DEPARTMENT Dname='Research' AND Dno=Dnumber; |
| Q10A: | SELECT FROM | * EMPLOYEE, DEPARTMENT; Basic SQL 55 |

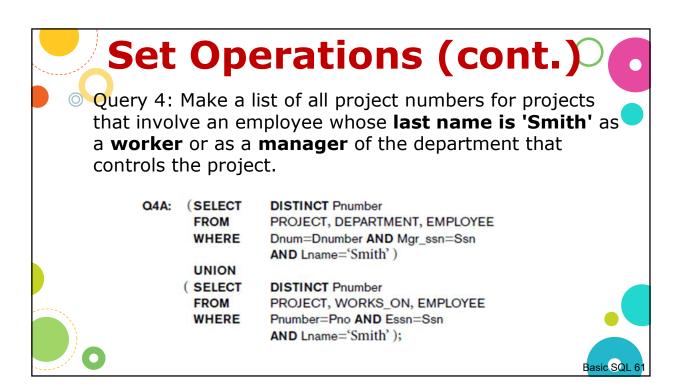


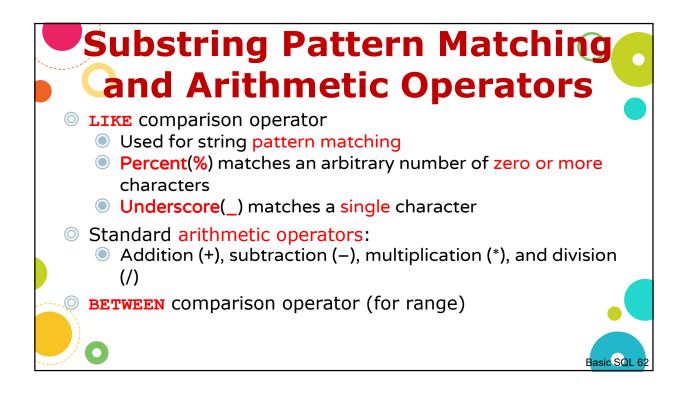
| | Use of | D | IS | TINC | CT | 0 |
|---|--|-----|-----------|------|--------|--------------|
| _ | | (a) | Salary | (b) | Salary | |
| | | | 30000 | | 30000 | |
| | Figure 6.4 | | 40000 | | 40000 | |
| | Results of additional | | 25000 | | 25000 | |
| | SQL queries when applied to the | | 43000 | | 43000 | |
| | COMPANY database | | 38000 | | 38000 | |
| | state shown in | | 25000 | | 55000 | |
| | Figure 5.6. (a) Q11. (b) Q11A. (c) Q16. | | 25000 | | | |
| | (d) Q18. | | 55000 | | | |
| | Recent desides | | | | | Basic SQL 57 |

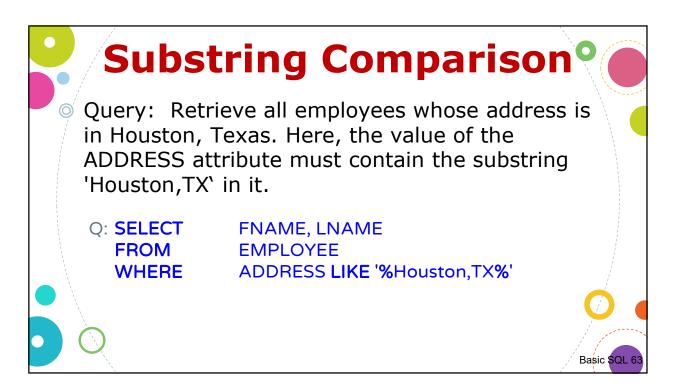


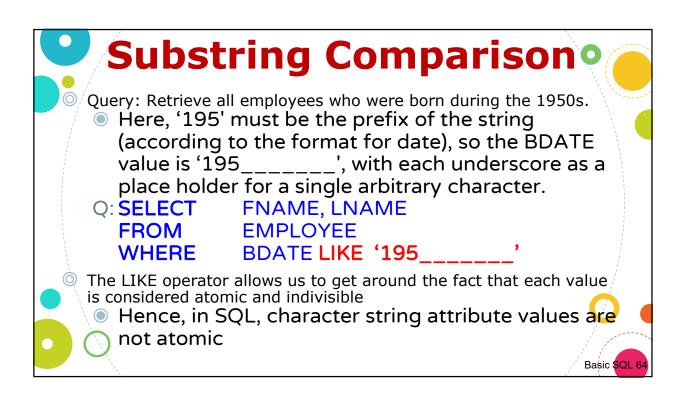


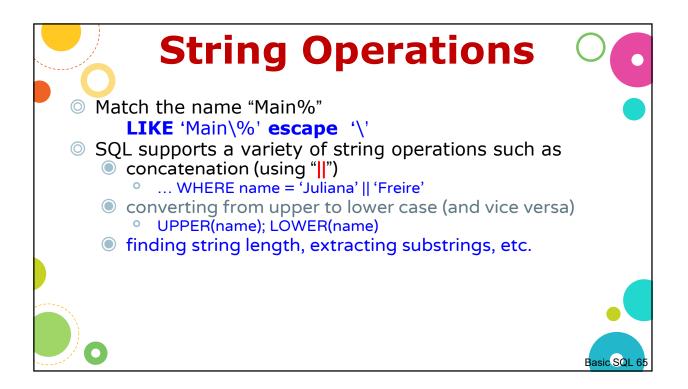


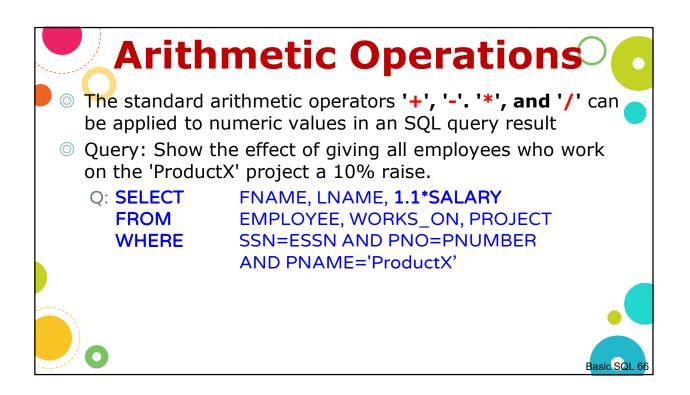


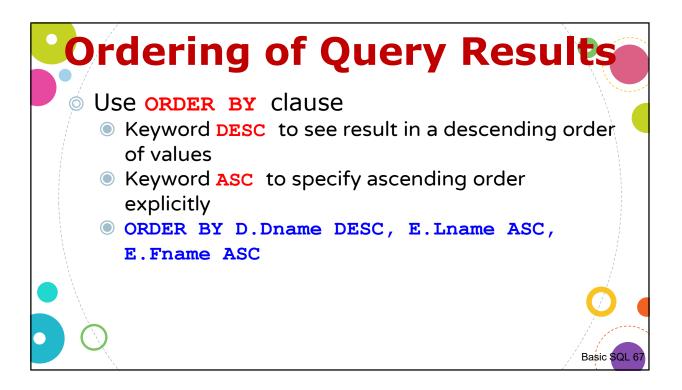


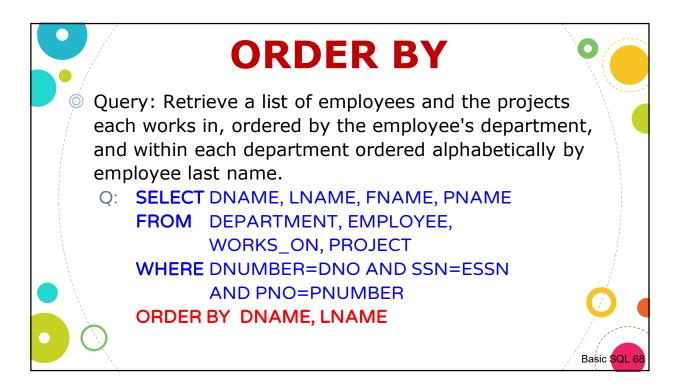


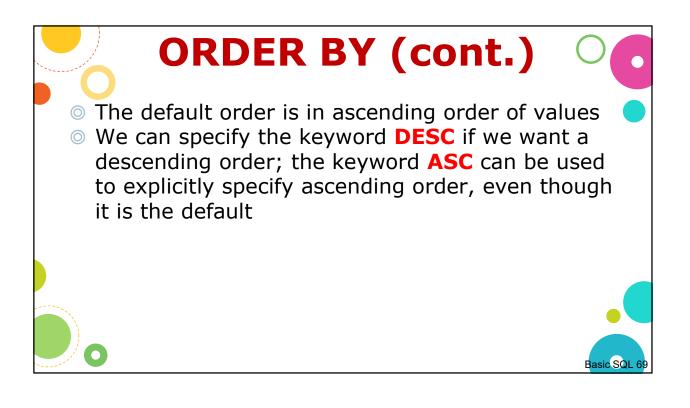


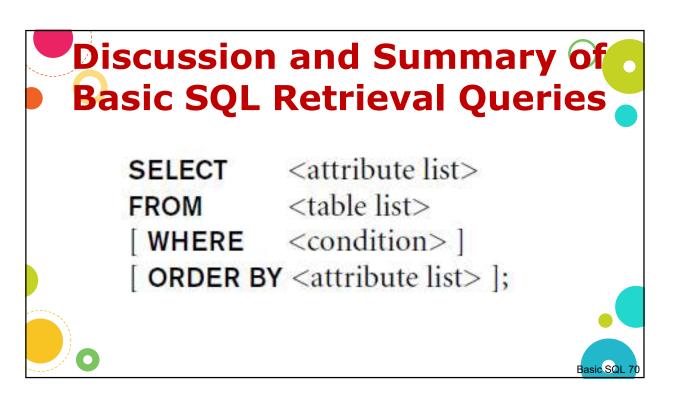


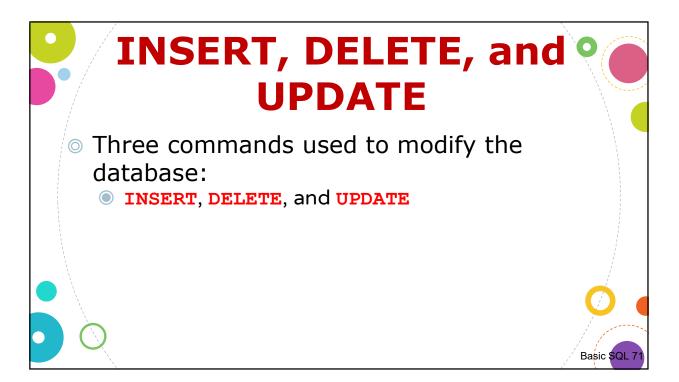




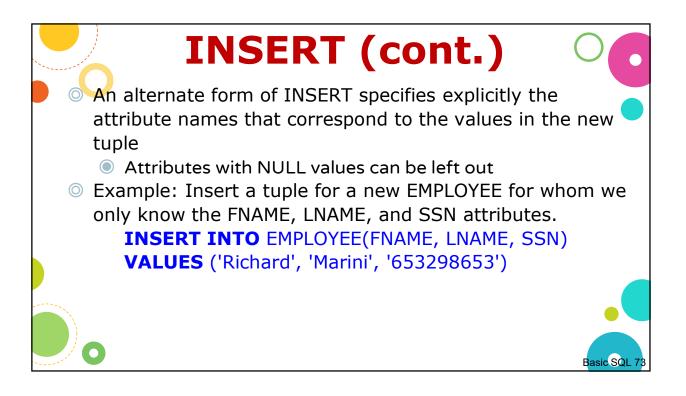


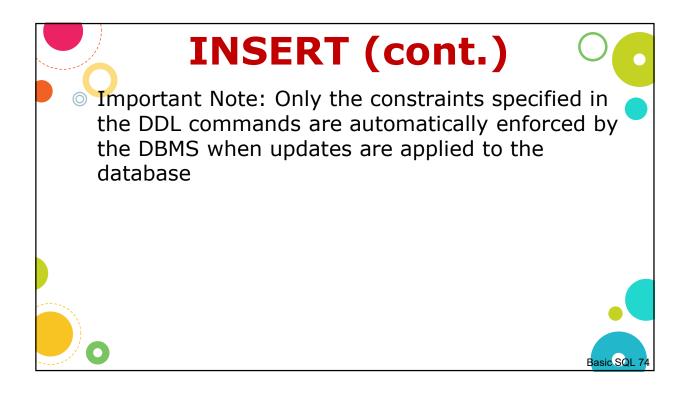






| | ne IN | SERT Command | | | | | |
|--|-----------------------|--|--|--|--|--|--|
| Specify the relation name and a list of values for the tuple | | | | | | | |
| U1: | INSERT INTO VALUES | EMPLOYEE ('Richard', 'K', 'Marini', '653298653', '1962-12-30', '98 Oak Forest, Katy, TX', 'M', 37000, '653298653', 4); | | | | | |
| U3B: | INSERT INTO | WORKS_ON_INFO (Emp_name, Proj_name, Hours_per_week) | | | | | |
| | SELECT | E.Lname, P.Pname, W.Hours | | | | | |
| | FROM | PROJECT P, WORKS_ON W, EMPLOYEE E | | | | | |
| | WHERE | P.Pnumber=W.Pno AND W.Essn=E.Ssn; Basic SQL 72 | | | | | |





| • | | The | DELE | TE Command | | | | | |
|---|--|------|----------------------|------------------------------|--|--|--|--|--|
| | Removes tuples from a relation | | | | | | | | |
| | Includes a WHERE clause to select the tuples to be deleted | | | | | | | | |
| | | U4A: | DELETE FROM | EMPLOYEE Lname='Brown'; | | | | | |
| | | U4B: | DELETE FROM WHERE | EMPLOYEE Ssn='123456789'; | | | | | |
| | | U4C: | DELETE FROM WHERE | EMPLOYEE Dno=5; | | | | | |
| • | Ó | U4D: | DELETE FROM | EMPLOYEE; Basic SQL 75 | | | | | |

