

**AMITY SCHOOL OF ENGINEERING TECHNOLOGY  
DATABASE MANAGEMENT SYSTEM  
PRACTICAL FILE**

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**COURSE & SECTION CSE B**

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**AMITY SCHOOL OF ENGINEERING AND TECHNOLOGY**

**AMITY UNIVERSITY, RAJASTHAN**

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* + - 1. **SQL BASICS**

The structure queries language is a language that enable to create and operate on relational database ,which are sets of related information stored in tables .

SQL has clearly established itself as the standard relational database language.

**PROCESSING CAPABILITY OF SQL:**

The various capability of sql are:

1. **DATA DEFINITION LANGUAGE(DDL):**

The sql DDL provides commands for

defining relations schemas ,deleting relations ,creating index and modifying relations schemas.

1. **INTERACTIVE DATA MANIPULATION LANGUAGE(DML):**

The sql DML

includes the queries language based on both the relational algebra and the tuples relational calculas. It includes also command to insert ,delete and modifying in the database.

1. **EMBEDDED DATA MANIPULATION LANGUAGE:**

The embedded form of sql is

designed for use within general purpose programming language such as pl/1,cobol

,fortran,pascal and c.

1. **VIEW DEFINITION :**

The sql DDL also includes commands for defining views

1. **AUTHORIZATION :**

relation and viEWS

1. **INTEGRITY:**

The sql DDL includes command for specifying access rights to

The sql provides forms of integrity checking. Future products and standard of sql are likely to include enhanced features for integrity checking .

1. **TRANSACTION CONTROL:**

Sql includes command for specifying the beginning and

ending of transaction along with commands to have a control over transaction processing.

THE BASIC STRUCTURE OF AN SQL EXPRESSIONS CONSISTS OF THREE CLAUSES:

* + SELECT
  + FROM
  + WHERE

A typical sql query has the form Select a,b,c,d………

From a1,b1,c1……… Where p;

1. **SELECT CLAUSE:**

select branch-name from loan;

it will select all branch-name from the loan table

1. **WHERE CLAUSE:**

select loan-number from loan

where amount between 8000 and 9000

it will select all loan-number from loan where amount is between the 8000 and 9000

1. **FROM CLAUSE:**

number,amount

select customer-name,borrower.loan- from borrower,loan

where borrower.loan-no=loan.loan-no

**2.TO CREATE DATABASE**

**SQL> create table ARPIT**

* 1. **( rollno int,**
  2. **name char(20),**
  3. **branch char(20),**
  4. **sem int ); Table created.**

**3. CREATION OF TABLE WITH CONSTRAINTS:**

**SQL> create table ARPIT**

1. **( empid int constraint v1 primary key ,**
2. **epmnm char(20) constraint v2 unique,**
3. **desig char(20) default 'clerk',**
4. **dept char(20) constraint v3**
5. **check(dept in('edp','fin')),**
6. **salary int constraint v4 not null); Table created.**

**Description of the above table: SQL> desc ARPIT;**

**Name** **Null?** **Type**

**------------------------------- -------- ----**

**EMPID** **NOT NULL NUMBER(38) EPMNM** **CHAR(20)**

**DESIG** **CHAR(20)**

**DEPT** **CHAR(20)**

**SALARY** **NOT NULL NUMBER(38)**

**4.**

**ALTER TABLE :**

* 1. **Adding column : (ADD clause) SQL> alter table ARPIT**

**2 add (marks int); Table altered.**

* 1. **Adding multiple columns clause) : SQL> alter table ARPIT**

**2 add (fav\_sub char(20),stdid int); Table altered.**

* 1. **Changing column width** :**(MODIFY clause) SQL> alter table ARPIT**

**2 modify branch char(10); Table altered.**

* 1. **Dropping column :(DROP clause) SQL> alter table ARPIT**

**2** **drop column stdid;**

**Table altered**

* 1. **Adding NOT NULL : (MODIFY clause) SQL> alter table ARPIT**

**2 modify (rollno int not null); Table altered.**

* 1. **Dropping NOT NULL : (DROP clause) SQL> alter table ARPIT**

**2 modify (rollno int not null);**

**Table altered**

* 1. **Adding check constraint : (ADD clause) SQL> alter table ARPIT**

**2 add constraint v11 check(branch in('it','csc')); Table altered.**

* 1. **Dropping check constraint : (DROP clause) SQL> alter table ARPIT**

**2 drop constraint v11; Table altered.**

1. **Adding Primary key : SQL> alter table ARPIT**

**2 add constraint v11 primary key(name); Table altered**

**.**

1. **Removing Primary Key : SQL> alter table ARPIT**

**2 drop constraint v11; Table altered.**

1. **Dropping a primary key that have a dependent table: SQL> alter table ARPIT**

**2 drop primary key cascade; Table altered.**

1. **Adding Foreign Key : SQL> alter table ARPIT**
2. **add constraint v11 foreign key(rollno)**
3. **references employee; Table altered.**
4. **Dropping Foreign Key : SQL> alter table ARPIT**

**2 drop constraint v11; Table altered.**

**The description of above altered table: SQL> desc ARPIT ;**

**Name** **Null?** **Type**

**------------------------------- -------- ----**

**ROLLNO** **NOT NULL NUMBER(38) NAME** **CHAR(20)**

**BRANCH** **CHAR(10) SEM** **NUMBER(38)**

**MARKS** **NUMBER(38)**

**FAV\_SUB** **CHAR(20) STDID** **NUMBER(38)**

**5. ADD A RECORD TO DATABASE:**

1. **Simple insertion:**

SQL> insert into ARPIT

2 values(8031,ARPIT ,'CSE',4,760,'OOPS',1);

1 row created.

1. **Accepting values from users:**

SQL> insert into ARPIT

2 values(&rollno,&name,&branch,&sem,&marks,&fav\_sub,&stdid); Enter value for rollno: 6302

Enter value for name: ‘Sourabh’ Enter value for branch: 'IT' Enter value for sem: 4

Enter value for marks: 833 Enter value for fav\_sub: 'PL'

Enter value for stdid: 1

old 2: values(&rollno,&name,&branch,&sem,&marks,&fav\_sub,&stdid)

new 2: values(6302,'Sourabh','IT',4,833,'PL',1)

1 row created. SQL> /

Enter value for rollno: 6058 Enter value for name: 'Sudhir' Enter value for branch: 'CSE' Enter value for sem: 4

Enter value for marks: 730 Enter value for fav\_sub: 'DBMS'

Enter value for stdid: 2

old 2: values(&rollno,&name,&branch,&sem,&marks,&fav\_sub,&stdid)

new 2: values(6058,'Sudhir','CSE',4,730,'DBMS',2)

1 row created.

1. **Inserting values into specific columns:**

**SQL> insert into ARPIT**

**2 (rollno,name,branch,sem) 3 values(7006,'Amit','cse',2); 1 row created.**

**The above inserted table is shown below: SQL> select \*from ARPIT ;**

**ROLLNO NAME** **BRANCH** **SEM** **MARKS FAV\_SUB** **STDID**

|  |  |  |  |  |  |  |
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| **--------- --------------------** | | **----------** | **---------** | **--------- -------------------- ---------** | | |
| **6070** | **Vikas** | **CSE** | **4** | **760** | **OOPS** | **1** |
| **6302** | **Sourabh** | **IT** | **4** | **833** | **PL** | **1** |
| **6058** | **Sudhir** | **CSE** | **4** | **730** | **DBMS** | **2** |
| **7006** | **Amit** | **cse** | **2** |  |  |  |

**6.**

**UPDATING TABLES:**

1. **Updating without where clause: SQL> update ARPIT**

**2 set name='Goru'; 4 rows updated.**

**SQL> select \*from ARPIT ;**

**ROLLNO NAME** **BRANCH** **SEM** **MARKS FAV\_SUB STDID**

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **6070** | **Goru** | **CSE** | **4** | **760 OOPS** | **1** |
| **6302** | **Goru** | **IT** | **4** | **833 PL** | **1** |
| **6058** | **Goru** | **CSE** | **4** | **730 DBMS** | **2** |
| **7006** | **Goru** | **cse** | **2** |  |  |

1. **Updating with where clause: SQL> update ARPIT**

**2 set name='dada' where rollno=6302; 1 row updated.**

**SQL> select \*from Vikas\_kapoor;**

**ROLLNO NAME** **BRANCH** **SEM** **MARKS FAV\_SUB STDID**

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| --- | --- | --- | --- | --- | --- | --- |
| **6070** | **Goru** | **CSE** | **4** | **760** | **OOPS** | **1** |
| **6302** | **dada** | **IT** | **4** | **833** | **PL** | **1** |
| **6058** | **ARPIT** | **CSE** | **4** | **730** | **DBMS** | **2** |
| **7006** | **ARPIT** | **CSE** | **2** |  |  |  |

**SQL> update ARPIT**

**7.**

**Generating sub query:**

1. **set name=(select name from ARPIT where rollno=6302)**
2. **where rollno=6058**

**1 row updated.**

**SQL> select \*from ARPIT ;**

**ROLLNO NAME** **BRANCH SEM** **MARKS FAV\_SUB** **STDID**

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| --- | --- | --- | --- | --- | --- | --- |
| **6070** | **Goru** | **CSE** | **4** | **760** | **OOPS** | **1** |
| **6302** | **Sourabh** | **IT** | **4** | **833** | **PL** | **1** |
| **6058** | **Sourabh** | **CSE** | **4** | **730** | **DBMS** | **2** |
| **7006** | **Amit** | **cse** | **2** |  |  |  |

**8.**

**DELETING RECORDS:**

1. **Delete (SINGLE record) SQL> delete from ARPIT**

**2 where rollno=7006; 1 row deleted.**

**SQL> select \*from Vikas\_kapoor;**

**ROLLNO NAME** **BRANCH SEM** **MARKS FAV\_SUB** **STDID**

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **6070** | **Goru** | **CSE** | **4** | **760 OOPS** | **1** |
| **6302** | **Sourabh** | **IT** | **4** | **833 PL** | **1** |
| **6058** | **Sourabh** | **CSE** | **4** | **730 DBMS** | **2** |

1. **Delete (MULTIPLE record) SQL> delete from AMAN**

**2 where branch='CSE';**

**2 rows deleted.**

**SQL> select \*from ARPIT ;**

**ROLLNO NAME** **BRANCH SEM MARKS FAV\_SUB** **STDID**

**--------- -------------------- ---------- --------- --------- -------------------- --------- 6302 Sourabh** **IT** **4** **833** **PL** **1**

1. **Delete (ALL records)**

à **USING TRUNCATE**

**SQL> truncate table ARPIT ; Table truncated.**

**SQL> select \*from ARPIT ; no rows selected**

1. **Delete (ALL records)**

à **USING DELETE**

**SQL> delete from ARPIT ; 1 rows deleted.**

**SQL> select \*from ARPIT ; no rows selected**

1. **Deleting using sub query SQL> delete from ARPIT**

**2 where rollno=(select rollno from ARPIT where name='Sudhir');**

**1 row deleted.**

**SQL> select \*from ARPIT ;**

**ROLLNO NAME** **BRANCH SEM MARKS FAV\_SUB** **STDID**

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| --- | --- | --- | --- | --- | --- | --- |
| **6070** | **Goru** | **CSE** | **4** | **760** | **OOPS** | **1** |
| **6302** | **Sourabh** | **IT** | **4** | **833** | **PL** | **1** |

**DROPPING TABLE:**

1. **Dropping a table that has a primary key: SQL> drop table s;**

**Table dropped.**

1. **Dropping a table that has a foreign key: SQL> drop table sp;**

**Table dropped.**

**RETRIEVING DATA :**

1. **Retrieving all records: SQL> select \*from ARPIT ;**

**ROLLNO NAME** **BRANCH SEM** **MARKS FAV\_SUB** **STDID**

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| --- | --- | --- | --- | --- | --- |
| **6070 Goru** | **CSE** | **4** | **760** | **OOPS** | **1** |
| **6302 Sourabh** | **IT** | **4** | **833** | **PL** | **1** |
| **7006 Amit** | **CSE** | **2** | **729** | **FCP** | **1** |
| **6058 Sudhir** | **CSE** | **4** | **729** | **DBMS** | **2** |
| **6047 Richa** | **CSE** | **4** | **782** | **CAO** | **2** |

1. **Retrieving specific columns:**

**SQL> select rollno,branch,name from ARPIT ;**

**ROLLNO BRANCH** **NAME**

**---------** **---------- --------------------**

|  |  |  |
| --- | --- | --- |
| **6070** | **CSE** | **Goru** |
| **6302** | **IT** | **Sourabh** |
| **7006** | **CSE** | **Amit** |
| **6058** | **CSE** | **Sudhir** |
| **6047** | **CSE** | **Richa** |

1. **Printing with user defined headings:**

**SQL> select rollno as rno, branch as stream, name as stdname from Vikas\_kapoor;**

**RNO STREAM** **STDNAME**

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| --- | --- | --- |
| **6070** | **CSE** | **Goru** |
| **6302** | **IT** | **Sourabh** |
| **7006** | **CSE** | **Amit** |
| **6058** | **CSE** | **Sudhir** |
| **6047** | **CSE** | **Richa** |

1. **Using Logical operators(AND, OR, NOT):**

**SQL> select \* from ARPIT**

**2 where(branch='CSE' AND marks=729);**

**ROLLNO NAME** **BRANCH SEM MARKS FAV\_SUB** **STDID**

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| --- | --- | --- | --- | --- |
| **7006 Amit** | **CSE** | **2** **729** | **FCP** | **1** |
| **6058 Sudhir** | **CSE** | **4** **729** | **DBMS** | **2** |

**SQL> select \* from ARPIT**

**2 where(branch='cse' OR marks>750);**

**ROLLNO NAME** **BRANCH SEM** **MARKS FAV\_SUB** **STDID**

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| **6070 Goru** | **CSE** | **4** | **760** | **OOPS** | **1** |
| **6302 Sourabh** | **IT** | **4** | **833** | **PL** | **1** |
| **6047 Richa** | **CSE** | **4** | **782** | **CAO** | **2** |

1. **Using BETWEEN AND:**

SQL> select \* from ARPIT

2 where marks between 730 and 800;

ROLLNO NAME BRANCH SEM MARKS FAV\_SUB STDID

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 6070 Goru | CSE | 4 | 760 | OOPS | 1 |
| 6047 Richa | CSE | 4 | 782 | CAO | 2 |

1. **Using IN Function:**

SQL> select \* from ARPIT

2 where marks in(729,760,782);

**ROLLNO NAME** **BRANCH SEM MARKS FAV\_SUB** **STDID**

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| --- | --- | --- | --- | --- | --- | --- |
| **6070 Goru** | **CSE** | **4** | **760 OOPS** |  | **1** |  |
| **7006 Amit** | **CSE** | **2** | **729 FCP** |  | **1** |
| **6058 Sudhir** | **CSE** | **4** | **729** | **DBMS** |  | **2** |
| **6047 Richa** | **CSE** | **4** | **782** | **CAO** |  | **2** |

1. **Using LIKE Operator:**
   1. **percent: SQL> select \* from ARPIT**

**2 where name like '%h%';**

**ROLLNO NAME** **BRANCH** **SEM** **MARKS FAV\_SUB** **STDID**

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| --- | --- | --- | --- | --- |
| **6302 Sourabh** | **IT** | **4** **833** | **PL** | **1** |
| **6058 Sudhir** | **CSE** | **4** **729** | **DBMS** | **2** |

**6047 Richa** **CSE** **4** **782** **CAO 2**

* 1. **underscore: SQL> select \* from ARPIT**

**2 where marks like '8 ';**

**ROLLNO NAME** **BRANCH SEM** **MARKS FAV\_SUB** **STDID**

**--------- -------------------- ---------- --------- --------- -------------------- --------- 6302 Sourabh** **IT** **4** **833** **PL** **1**

* 1. **IS NULL:**

**SQL> select \* from ARPIT**

**2 where stdid is null;**

**ROLLNO NAME** **BRANCH** **SEM MARKS FAV\_SUB** **STDID**

**--------- -------------------- ---------- --------- --------- -------------------- --------- 7006 Amit** **CSE** **2** **729** **FCP**

**9.**

**ORDERING RECORDS:**

1. **ascending:**

**SQL> select \* from ARPIT**

**2 order by name asc;**

**ROLLNO NAME** **BRANCH SEM** **MARKS FAV\_SUB** **STDID**

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **7006 Amit** | **CSE** | **2** | **729** | **FCP** | **1** |
| **6047 Richa** | **CSE** | **4** | **782** | **CAO** | **2** |
| **6302 Sourabh** | **IT** | **4** | **833** | **PL** | **1** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **6058 Sudhir** | **CSE** | **4** | **729** | **DBMS** | **2** |  |
| **6070 Goru** | **CSE** | **4** | **760** | **OOPS** |  | **1** |

1. **descending:**

**SQL> select \* from ARPIT**

**2 order by name desc;**

**ROLLNO NAME** **BRANCH** **SEM** **MARKS FAV\_SUB** **STDID**

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| --- | --- | --- | --- | --- | --- |
| **6070 Goru** | **CSE** | **4** | **760** | **OOPS** | **1** |
| **6058 Sudhir** | **CSE** | **4** | **729** | **DBMS** | **2** |
| **6302 Sourabh** | **IT** | **4** | **833** | **PL** | **1** |
| **6047 Richa** | **CSE** | **4** | **782** | **CAO** | **2** |
| **7006 Amit** | **CSE** | **2** | **729** | **FCP** | **1** |

1. **concat:**

**SQL> select name || ',' || branch from ARPIT ;**

**NAME||','||BRANCH**

**-------------------------------**

**Goru** **,CSE Sourabh** **,IT**

**Amit** **,CSE**

**Sudhir** **,CSE**

**Richa** **,CSE**

1. **initcap:**

**SQL> select initcap(name) from ARPIT ;**

**INITCAP(NAME)**

**--------------------**

**Goru Sourabh Amit Sudhir Richa**

1. **lower:**

**SQL> select lower(name) from ARPIT ;**

**LOWER(NAME)**

**--------------------**

**vikas sourabh amit sudhir richa**

1. **upper:**

**SQL> select upper(name) from ARPIT ;**

**UPPER(NAME)**

**-------------------- VIKAS SOURABH AMIT SUDHIR RICHA**