**1)**

a) PK = Student ID

b) STUDENT\_ID STUDENT\_NAME, STUDENT\_ADDRESS, STUDENT\_MAJOR, Stu\_Crse\_Grade

COURSE\_ID COURSE\_TITLE, INSTRUCTOR\_ID, INSTRUCTOR\_NAME, INSTRUCTOR\_OFFICE, Stu\_Crse\_Grade

c)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| STUDENT\_  ID | STUDENT\_  NAME | STUDENT\_  ADDRESS | STUDENT\_  MAJOR | COURSE\_  ID | COURSE\_  TITLE | INSTRUCTOR\_  ID | INSTRUCTOR\_  NAME | INSTRUCTOR\_OFFICE | STU\_CRSE\_GRADE |

1 NF (STUDENT\_ID, STUDENT\_NAME, STUDENT\_ADDRESS, STUDENT\_MAJOR, COURSE\_ID COURSE\_TITLE, INSTRUCTOR\_ID, INSTRUCTOR\_NAME, INSTRUCTOR\_OFFICE, Stu\_Crse\_Grade)

**PARTIAL DEPENDENCIES:**

(STUDENT\_ID STUDENT\_NAME, STUDENT\_ADDRESS, STUDENT\_MAJOR, Stu\_Crse\_Grade)

(COURSE\_ID COURSE\_TITLE, INSTRUCTOR\_ID, INSTRUCTOR\_NAME, INSTRUCTOR\_OFFICE, Stu\_Crse\_Grade)

**2)**

a)

STUDENT INSTRUCTOR COURSE ENROLL

PK STUDENT\_ID PK INSTRUCTOR\_ID PK COURSE\_ID PK, FK STUDENT\_ID

STUDENT\_NAME INSTRUCTOR\_NAME COURSE\_TITLE PK, FK COURSE\_ID

STUDENT\_ADDRES INSTRUCTOR\_OFFICE FK INSTRUCTOR\_ID STU\_COURSE\_GRADE

STUDENT\_MAJOR

b) TABLE NAME: STUDENT

|  |  |  |  |
| --- | --- | --- | --- |
| STUDENT\_ID | STUDENT\_NAME | STUDENT\_ADDRESS | STUDENT\_MAJOR |

STUDENT (STUDENT\_ID,STUDENT\_NAME,STUDENT\_ADDRESS, STUDENT\_MAJOR)

TABLE NAME: INSTRUCTOR

|  |  |  |
| --- | --- | --- |
| INSTRUCTOR\_ID | INSTRUCTOR\_NAME | INSTRUCTOR\_OFFICE |

INSTRUCTOR (INSTRUCTOR\_ID, INSTRUCTOR\_NAME, INSTRUCTOR\_OFFICE)

TABLE NAME: COURSE

|  |  |  |
| --- | --- | --- |
| COURSE\_ID | COURSE\_TITLE | INSTRUCTOR\_ID |

COURSE (COURSE\_ID, COURSE\_TITLE, INSTRUCTOR\_ID)

TABLE NAME: ENROLL

|  |  |  |
| --- | --- | --- |
| STUDENT\_ID | COURSE\_ID | STU\_COURSE\_GRADE |

ENROLL ( STUDENT\_ID, COURSE\_ID,STU\_COURSE\_GRADE)

c)



|  |
| --- |
| STUDENT |
| PK STUDENT\_ID  STUDENT\_NAME  STUDENT\_ADDRESS  STUDENT\_MAJOR |

|  |
| --- |
| ENROLL |
| PK, FK STUDENT\_ID  PK, FK COURSE\_ID  STU\_COURSE\_GRADE |



|  |
| --- |
| INSTRUCTOR |
| PK INSTRUCTOR\_ID  INSTRUCTOR\_NAME  INSTRUCTOR\_OFFICE |



|  |
| --- |
| COURSE |
| PK COURSE\_ID  COURSE\_TITLE  INSTRUCTOR\_ID |



INSTRUCT

**3)**

SQL> connect

Enter user-name: ARON\_GHEBREKIDAN

Connected.

SQL> SET PAGESIZE 100

SQL> SET LINESIZE 200

SQL> CREATE TABLE student(

2 student\_id number(9) CONSTRAINT STUDENT\_ID\_PK PRIMARY KEY,

3 student\_name VARCHAR2(30) CONSTRAINT STUDENT\_NAME\_NN NOT NULL,

4 student\_address VARCHAR2(30),

5 student\_major VARCHAR2(30)

6 );

Table created.

SQL> DESCRIBE student;

Name Null? Type

---------------------------------- -------- ----------------------------------------------------------------------------

STUDENT\_ID NOT NULL NUMBER(9)

STUDENT\_NAME NOT NULL VARCHAR2(30)

STUDENT\_ADDRESS VARCHAR2(30)

STUDENT\_MAJOR VARCHAR2(30)

SQL> CREATE TABLE instructor(

2 instructor\_id NUMBER(3) CONSTRAINT INSTRUCTOR\_ID\_PK PRIMARY KEY,

3 instructor\_name VARCHAR2(30) CONSTRAINT INSTRUCTOR\_NAME\_NN NOT NULL,

4 instructor\_office VARCHAR2(7)

5 );

Table created.

SQL> DESCRIBE instructor;

Name Null? Type

----------------------------------------------------------------------------------------------------------------- -------- ---------------

INSTRUCTOR\_ID NOT NULL NUMBER(3)

INSTRUCTOR\_NAME NOT NULL VARCHAR2(30)

INSTRUCTOR\_OFFICE VARCHAR2(7)

SQL> CREATE TABLE course(

2 course\_id VARCHAR2(7) CONSTRAINT COURSE\_ID\_PK PRIMARY KEY,

3 course\_title VARCHAR2(30),

4 instructor\_id number(3),

5 FOREIGN KEY (instructor\_id)

6 REFERENCES instructor (instructor\_id)

7 );

Table created.

SQL> DESCRIBE course;

Name Null? Type

----------------------------------------------------------------------------------------------------------------- -------- --------------

COURSE\_ID NOT NULL VARCHAR2(7)

COURSE\_TITLE VARCHAR2(30)

INSTRUCTOR\_ID NUMBER(3)

SQL> CREATE TABLE enroll(

2 student\_id NUMBER(9),

3 course\_id VARCHAR2(7),

4 stu\_course\_grade CHAR(1) CHECK (stu\_course\_grade IN('A', 'B', 'C', 'D', 'F')),

5 PRIMARY KEY( student\_id, course\_id)

6 );

Table created.

SQL> DESCRIBE enroll;

Name Null? Type

----------------------------------------------------------------------------------------------------------------- -------- -

STUDENT\_ID NOT NULL NUMBER(9)

COURSE\_ID NOT NULL VARCHAR2(7)

STU\_COURSE\_GRADE CHAR(1)

SQL> INSERT INTO student

2 VALUES(238300458,'Williams', '208 Brooks', 'CSI' );

1 row created.

SQL> INSERT INTO student

2 VALUES(543291073,'Bakker', '104 Philips', 'Acct' );

1 row created.

SQL> INSERT INTO student

2 VALUES(695381127,'White', '208 Brooks', 'Math' );

1 row created.

SQL> SELECT \* FROM student;

STUDENT\_ID STUDENT\_NAME STUDENT\_ADDRESS STUDENT\_MAJOR

---------- ------------------------------ ------------------------------ ------------------------------

238300458 Williams 208 Brooks CSI

543291073 Bakker 104 Philips Acct

695381127 White 208 Brooks Math

SQL> INSERT INTO instructor

2 VALUES(301, 'Codds', 'B104');

1 row created.

SQL> INSERT INTO instructor

2 VALUES(451, 'Parsons', 'B317');

1 row created.

SQL> INSERT INTO instructor

2 VALUES(255, 'Mills', 'H310');

1 row created.

SQL> INSERT INTO instructor

2 VALUES(518, 'Bennette', 'B212');

1 row created.

SQL> INSERT INTO instructor

2 VALUES(622, 'Hilbert', 'M301');

1 row created.

SQL> SELECT \* FROM instructor;

INSTRUCTOR\_ID INSTRUCTOR\_NAME INSTRUC

------------- ------------------------------ -------

301 Codds B104

451 Parsons B317

255 Mills H310

518 Bennette B212

622 Hilbert M301

SQL> INSERT INTO course

2 VALUES('CIS 350', 'Database', 301);

1 row created.

SQL> INSERT INTO course

2 VALUES('CIS 465', 'Systems Anal', 451);

1 row created.

SQL> INSERT INTO course

2 VALUES('Acc 201', 'Fund of Acctg', 255);

1 row created.

SQL> INSERT INTO course

2 VALUES('Mkt 300', 'Into to Mktg', 518);

1 row created.

SQL> INSERT INTO course

2 VALUES('Mth 202','College algebra', 622);

1 row created.

SQL> SELECT \* FROM course;

COURSE\_ COURSE\_TITLE INSTRUCTOR\_ID

------- ------------------------------ ------------- ---------------------

CIS 350 Database 301

CIS 465 Systems Anal 451

Acc 201 Fund of Acctg 255

Mkt 300 Into to Mktg 518

Mth 202 College algebra 622

SQL> INSERT INTO enroll

2 VALUES(268300458,'CIS 350');

INSERT INTO enroll

\*

ERROR at line 1:

ORA-00947: not enough values

SQL> INSERT INTO enroll

2 VALUES(268300458,'CIS 465','B');

1 row created.

SQL> INSERT INTO enroll

2 VALUES(543291073,'CIS 350','C');

1 row created.

SQL> INSERT INTO enroll

2 VALUES(543291073,'Acc 201','B');

1 row created.

SQL> INSERT INTO enroll

2 VALUES(543291073,'Mkt 300','A');

1 row created.

SQL> INSERT INTO enroll

2 VALUES(695381127,'Mth 202','B' );

1 row created.

SQL> INSERT INTO enroll

2 VALUES(695381127,'Acc 201','A');

1 row created.

SQL> SELECT \* FROM enroll;

STUDENT\_ID COURSE\_ S

---------- ------- - ---------------------------------

268300458 CIS 465 B

543291073 CIS 350 C

543291073 Acc 201 B

543291073 Mkt 300 A

695381127 Mth 202 B

695381127 Acc 201 A

6 rows selected.

SQL> spool off