**Add constraints**

1) Table Name: ZIPCODE\_INFO

| Field Name | Type | Length | Constraint Name |
| --- | --- | --- | --- |
| ZIP\_CODE | VARCHAR2 | 5 | PRIMARY KEY – ZIP\_PK |
| CITY | VARCHAR2 | 25 | NOT NULL – ZIP\_CITY\_NN |
| STATE | VARCHAR2 | 2 | NOT NULL – ZIP\_STATE\_NN |

**ALTER TABLE** ZIPCODE\_INFO   
 **ADD CONSTRAINT** ZIP\_PK   
 **PRIMARY KEY** (ZIP\_CODE);  
  
**ALTER TABLE** ZIPCODE\_INFO   
 **MODIFY** (CITY **CONSTRAINT** ZIP\_CITY\_NN **NOT NULL**);  
  
**ALTER TABLE** ZIPCODE\_INFO   
 **MODIFY** (**STATE CONSTRAINT** ZIP\_STATE\_NN **NOT NULL**);

2) Table Name: INSTRUCTOR\_INFO

| Field Name | Type | Length | CONSTRAINT NAME |
| --- | --- | --- | --- |
| INSTRUCTOR\_ID | NUMBER | 8,0 | PRIMARY KEY – INSTRUCTOR\_ID\_PK |
| INSTRUCTOR**\_**FIRST\_NAME | VARCHAR2 | 25 | NOT NULL – INSTRUCTOR\_FN\_NN |
| INSTRUCTOR**\_**LAST\_NAME | VARCHAR2 | 25 | NOT NULL – INSTRUCTOR\_LN\_NN |
| STREET\_ADDRESS | VARCHAR2 | 50 |  |
| ZIP\_CODE | VARCHAR2 | 5 | FOREIGN KEY – ZIP\_INSTRUCTOR\_FK |

**ALTER TABLE** INSTRUCTOR\_INFO   
 **ADD CONSTRAINT** INSTRUCTOR\_ID\_PK   
 **PRIMARY KEY** (INSTRUCTOR\_ID);  
  
**ALTER TABLE** INSTRUCTOR\_INFO   
 **MODIFY** (INSTRUCTOR\_FIRST\_NAME **CONSTRAINT** INSTRUCTOR\_FN\_NN **NOT NULL**);  
  
**ALTER TABLE** INSTRUCTOR\_INFO   
 **MODIFY** (INSTRUCTOR\_LAST\_NAME **CONSTRAINT** INSTRUCTOR\_LN\_NN **NOT NULL**);  
  
**ALTER TABLE** INSTRUCTOR\_INFO   
 **ADD CONSTRAINT** ZIP\_INSTRUCTOR\_FK   
 **FOREIGN KEY** (ZIP\_CODE)   
 **REFERENCES** ZIPCODE\_INFO (ZIP\_CODE);

3) Table Name: COURSE\_INFO

| Field Name | Type | Length | CONSTRAINT NAME |
| --- | --- | --- | --- |
| COURSE\_NO | NUMBER | 8,0 | PRIMARY KEY – COURSE\_NO\_PK |
| COURSE\_NAME | VARCHAR2 | 50 | NOT NULL – COURSE\_NAME\_NN |
| COURSE\_PREREQUISITE | NUMBER | 8,0 |  |
| COST | NUMBER | 9,2 | NOT NULL – COST\_NN |

**ALTER TABLE** COURSE\_INFO   
 **ADD CONSTRAINT** COURSE\_NO\_PK   
 **PRIMARY KEY** (COURSE\_NO);  
  
**ALTER TABLE** COURSE\_INFO   
 **MODIFY**(COURSE\_NAME **CONSTRAINT** COURSE\_NAME\_NN **NOT NULL** );  
  
**ALTER TABLE** COURSE\_INFO   
 **MODIFY**(COST **CONSTRAINT** COST\_NN **NOT NULL** );

4) Table Name: STUDENT\_INFO

| Field Name | Type | Length | CONSTRAINT NAME |
| --- | --- | --- | --- |
| STUDENT\_ID | NUMBER | 8,0 | PRIMARY KEY – STUDENT\_ID\_PK |
| STUDENT**\_**FIRST\_NAME | VARCHAR2 | 25 | NOT NULL –STUDENT\_FN\_NN |
| STUDENT**\_**LAST\_NAME | VARCHAR2 | 25 | NOT NULL – STUDENT\_LN\_NN |
| STREET\_ADDRESS | VARCHAR2 | 50 |  |
| ZIP\_CODE | VARCHAR2 | 5 | FOREIGN KEY – ZIP\_STUDENT\_FK |

**ALTER TABLE** STUDENT\_INFO   
 **ADD CONSTRAINT** STUDENT\_ID\_PK   
 **PRIMARY KEY** (STUDENT\_ID);  
  
**ALTER TABLE** STUDENT\_INFO   
 **MODIFY**(STUDENT\_FIRST\_NAME **CONSTRAINT** STUDENT\_FN\_NN **NOT NULL**);  
  
**ALTER TABLE** STUDENT\_INFO   
 **MODIFY**(STUDENT\_LAST\_NAME **CONSTRAINT** STUDENT\_LN\_NN **NOT NULL**);  
  
**ALTER TABLE** STUDENT\_INFO   
 **ADD CONSTRAINT** ZIP\_STUDENT\_FK   
 **FOREIGN KEY** (ZIP\_CODE)   
 **REFERENCES** ZIPCODE\_INFO (ZIP\_CODE);

5) Table Name: SECTION\_INFO

| Field Name | Type | Length | CONSTRAINT NAME |
| --- | --- | --- | --- |
| SECTION\_ID | NUMBER | 8,0 | PRIMARY KEY – SECTION\_ID\_PK |
| COURSE\_NO | NUMBER | 8,0 | FOREIGN KEY – COURSE\_SECTION\_FK |
| SECTION\_NO | NUMBER | 3,0 | NOT NULL -SECTION\_NO\_NN |
| INSTRUCTOR\_ID | NUMBER | 8,0 | FOREIGN KEY – INSTRUCTOR\_SECTION\_FK |
| LOCATION | VARCHAR2 | 50 |  |
| CAPACITY | NUMBER | 3,0 |  |

**ALTER TABLE** SECTION\_INFO   
 **ADD CONSTRAINT** SECTION\_ID\_PK   
 **PRIMARY KEY** (SECTION\_ID);  
  
**ALTER TABLE** SECTION\_INFO   
 **ADD CONSTRAINT** COURSE\_SECTION\_FK   
 **FOREIGN KEY** (COURSE\_NO)   
 **REFERENCES** COURSE\_INFO (COURSE\_NO);  
  
**ALTER TABLE** SECTION\_INFO   
 **MODIFY** (SECTION\_NO **CONSTRAINT** SECTION\_NO\_NN **NOT NULL**);  
  
**ALTER TABLE** SECTION\_INFO   
 **ADD CONSTRAINT** INSTRUCTOR\_SECTION\_FK   
 **FOREIGN KEY** (INSTRUCTOR\_ID)   
 **REFERENCES** INSTRUCTOR\_INFO (INSTRUCTOR\_ID);

6) Table Name: ENROLLMENT\_INFO

| Field Name | Type | Length | CONSTRAINT NAME |
| --- | --- | --- | --- |
| STUDENT\_ID | NUMBER | 8,0 | PRIMARY KEY – (STUDENT\_ID,SECTION\_ID)  ENROLLMENT\_STUD\_SECT\_PK  FOREIGN KEY-ENROLLMENT\_STUDENT\_ID\_FK  FOREIGN KEY-ENROLLMENT\_SECTION\_ID\_FK |
| SECTION\_ID | NUMBER | 8,0 |
| ENROLLMENT\_DATE | DATE |  |  |

**ALTER TABLE** ENROLLMENT\_INFO   
 **ADD CONSTRAINT** ENROLLMENT\_STUD\_SECT\_PK   
 **PRIMARY KEY** (STUDENT\_ID,SECTION\_ID);  
  
**ALTER TABLE** ENROLLMENT\_INFO   
 **ADD CONSTRAINT** ENROLLMENT\_STUDENT\_ID\_FK   
 **FOREIGN KEY** (STUDENT\_ID)   
 **REFERENCES** STUDENT\_INFO (STUDENT\_ID);  
  
**ALTER TABLE** ENROLLMENT\_INFO   
 **ADD CONSTRAINT** ENROLLMENT\_SECTION\_ID\_FK   
 **FOREIGN KEY** (SECTION\_ID)   
 **REFERENCES** SECTION\_INFO (SECTION\_ID);

7) Table Name: GRADE\_INFO

| Field Name | Type | Length | **CONSTRAINT NAME** |
| --- | --- | --- | --- |
| STUDENT\_ID | NUMBER | 8,0 | PRIMARY KEY –  (STUDENTID,SECTIONID,GRADE\_TYPE\_CODE,GRADE\_CODE\_OCCURANCE)  GRADE\_STUD\_SECT\_TYPE\_CODE\_PK  FOREIGN KEY-GRADE\_STUDENT\_ID\_FK  FOREIGN KEY-GRADE\_SECTION\_ID\_FK  CHECK - CHK\_GRADE\_TYPE\_CODE CHECK  VALID VALUES FOR GRADE TYPE CODE - FI,HM, MT,PA,PJ,QZ |
| SECTION\_ID | NUMBER | 8,0 |
| GRADE\_TYPE\_CODE | CHAR | 2 |
| GRADE\_CODE\_OCCURANCE | NUMBER | 38,0 |
| NUMERIC\_GRADE | NUMBER | 3,0 | NUMERIC\_GRADE\_NN  DEFAULT 0 |

**ALTER TABLE** GRADE\_INFO   
 **ADD CONSTRAINT** GRADE\_STUD\_SECT\_TYPE\_CODE\_PK   
 **PRIMARY KEY** (STUDENT\_ID,SECTION\_ID,GRADE\_TYPE\_CODE,GRADE\_CODE\_OCCURANCE);  
  
**ALTER TABLE** GRADE\_INFO   
 **ADD CONSTRAINT** GRADE\_STUDENT\_ID\_FK   
 **FOREIGN KEY** (STUDENT\_ID)   
 **REFERENCES** STUDENT\_INFO (STUDENT\_ID);  
  
**ALTER TABLE** GRADE\_INFO   
 **ADD CONSTRAINT** GRADE\_SECTION\_ID\_FK   
 **FOREIGN KEY** (SECTION\_ID)   
 **REFERENCES** SECTION\_INFO (SECTION\_ID);  
  
**ALTER TABLE** GRADE\_INFO   
 **ADD CONSTRAINT** CHK\_GRADE\_TYPE\_CODE   
 **CHECK** (GRADE\_TYPE\_CODE **IN** ('FI','HM', 'MT','PA','PJ','QZ'));  
  
**ALTER TABLE** GRADE\_INFO   
 **MODIFY** (NUMERIC\_GRADE **DEFAULT** 0);

## Inserting Records

1. Insert the following records to the table ZIPCODE\_INFO.

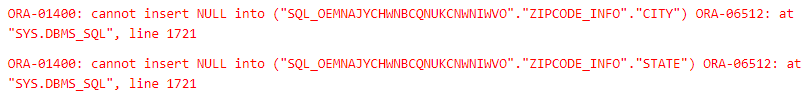
| ZIP\_CODE | CITY | STATE |
| --- | --- | --- |
| 11432 | Jamaica | NY |
| 11433 | Jamaica | NY |
| 11434 | Jamaica | NY |
| 11435 | Jamaica | NY |
| 11510 | Baldwin | NY |

1. **INSERT INTO** ZIPCODE\_INFO (ZIP\_CODE, CITY, **STATE**) **VALUES** (11432, 'Jamaica', 'NY');  
   **INSERT INTO** ZIPCODE\_INFO (ZIP\_CODE, CITY, **STATE**) **VALUES** (11433, 'Jamaica', 'NY');  
   **INSERT INTO** ZIPCODE\_INFO (ZIP\_CODE, CITY, **STATE**) **VALUES** (11434, 'Jamaica', 'NY');  
   **INSERT INTO** ZIPCODE\_INFO (ZIP\_CODE, CITY, **STATE**) **VALUES** (11435, 'Jamaica', 'NY');  
   **INSERT INTO** ZIPCODE\_INFO (ZIP\_CODE, CITY, **STATE**) **VALUES** (11510, 'Baldwin', 'NY');
2. Insert the following records to the ZIPCODE\_INFO table with NULL value.

| ZIP\_CODE | CITY | STATE |
| --- | --- | --- |
| 11511 |  |  |
| 11530 | Garden City |  |

1. **INSERT INTO** ZIPCODE\_INFO (ZIP\_CODE) **VALUES** (11510);  
   **INSERT INTO** ZIPCODE\_INFO (ZIP\_CODE, CITY) **VALUES** (11510, 'Baldwin');

**Note:** Capture the errors and discuss the same with the class



1. Insert the following records to the table INSTRUCTOR\_INFO.

| INSTRUCTOR\_ID | INSTRUCTOR\_FIRST\_NAME | INSTRUCTOR\_LAST\_NAME | STREET\_ADDRESS | ZIP\_CODE |
| --- | --- | --- | --- | --- |
| 110 | Ilena | Wong | 415 West 101st Marleton Street | 11432 |
| 109 | Lei | Chow | 55 10th Avenue Jerry Street | 11433 |

1. **INSERT INTO** INSTRUCTOR\_INFO   
    (INSTRUCTOR\_ID, INSTRUCTOR\_FIRST\_NAME,   
    INSTRUCTOR\_LAST\_NAME,STREET\_ADDRESS, ZIP\_CODE)   
    **VALUES** (110, 'Ilena', 'Wong', '415 West 101st Marleton Street', 11432);  
     
   **INSERT INTO** INSTRUCTOR\_INFO   
    (INSTRUCTOR\_ID, INSTRUCTOR\_FIRST\_NAME,   
    INSTRUCTOR\_LAST\_NAME,STREET\_ADDRESS, ZIP\_CODE)   
    **VALUES** (109, 'Lei', 'Chow', '55 10th Avenue Jerry Street', 11433);

**Note:** INSTRUCTOR\_INFO is a transaction table and ZIPCODE\_INFO is the master table.

The ZIP\_CODE of ZIPCODE\_INFO is mapped to ZIP\_CODE of INSTRUCTOR\_INFO table.

1. Change the CITY “Jamaica” to “West Hempstead” for the ZIP\_CODE with the value 11432.
2. **UPDATE** ZIPCODE\_INFO   
    **SET** CITY = 'West Hempstead'   
    **WHERE** ZIP\_CODE = 11432;
3. Change the CITY “Jamaica” to “Atlanta” and STATE “NY” to “GA” for the ZIP\_CODE with the value 11435.
4. **UPDATE** ZIPCODE\_INFO   
    **SET** CITY = 'Atlanta', **STATE** = 'GA'   
    **WHERE** ZIP\_CODE = 11435;
5. Modify the column values for where the ZIP\_CODE is 11510 to ZIP\_CODE 2151024.
6. **UPDATE** ZIPCODE\_INFO   
    **SET** ZIP\_CODE = 2151024   
    **WHERE** ZIP\_CODE = 11510;

**Note:** Capture the errors and discuss the same with the class.

****

1. Remove the record with 11433 as ZIP\_CODE from table ZIPCODE\_INFO
2. **DELETE FROM** ZIPCODE\_INFO **WHERE** ZIP\_CODE = 11433;

**Note:** Capture the errors and discuss the same with the class.

****

1. Remove the record from INSTRUCTOR\_INFO table with the value “Ilena” of INSTRUCTOR**\_**FIRST\_NAME field.
2. **DELETE FROM** INSTRUCTOR\_INFO   
   **WHERE** INSTRUCTOR\_FIRST\_NAME = 'Ilena';
3. Remove all the records from INSTRUCTOR\_INFO table.
4. **DELETE FROM** INSTRUCTOR\_INFO;
5. Remove all the records from ZIPCODE\_INFO table.
6. **DELETE FROM** ZIPCODE\_INFO;