# Term Project – University Database

Implementation Account: cs332d9

Implementation Password: azi2ceeC

Members:

Nathan Eduvala,  Last 4 CWID: 5944
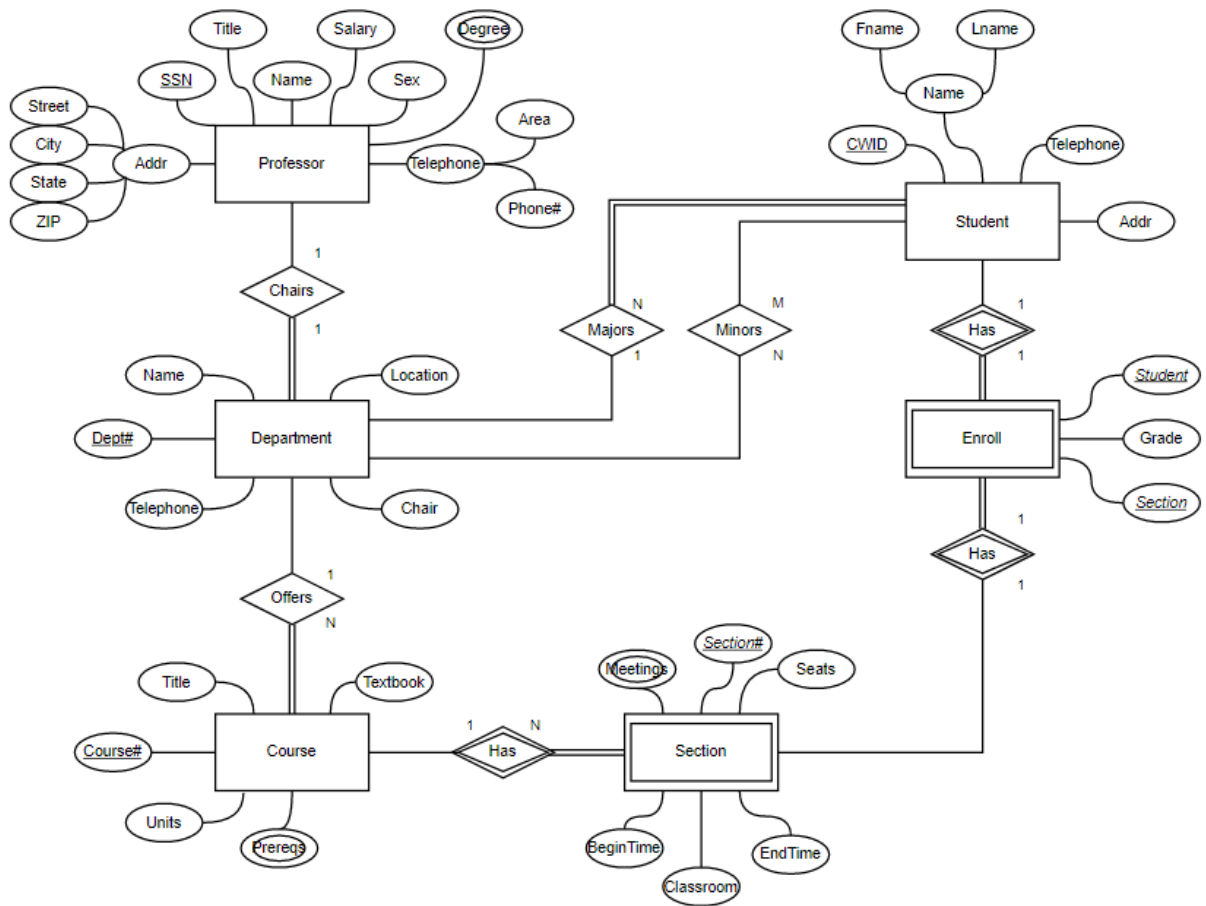
Stefan Parrish,    Last 4 CWID: 6392
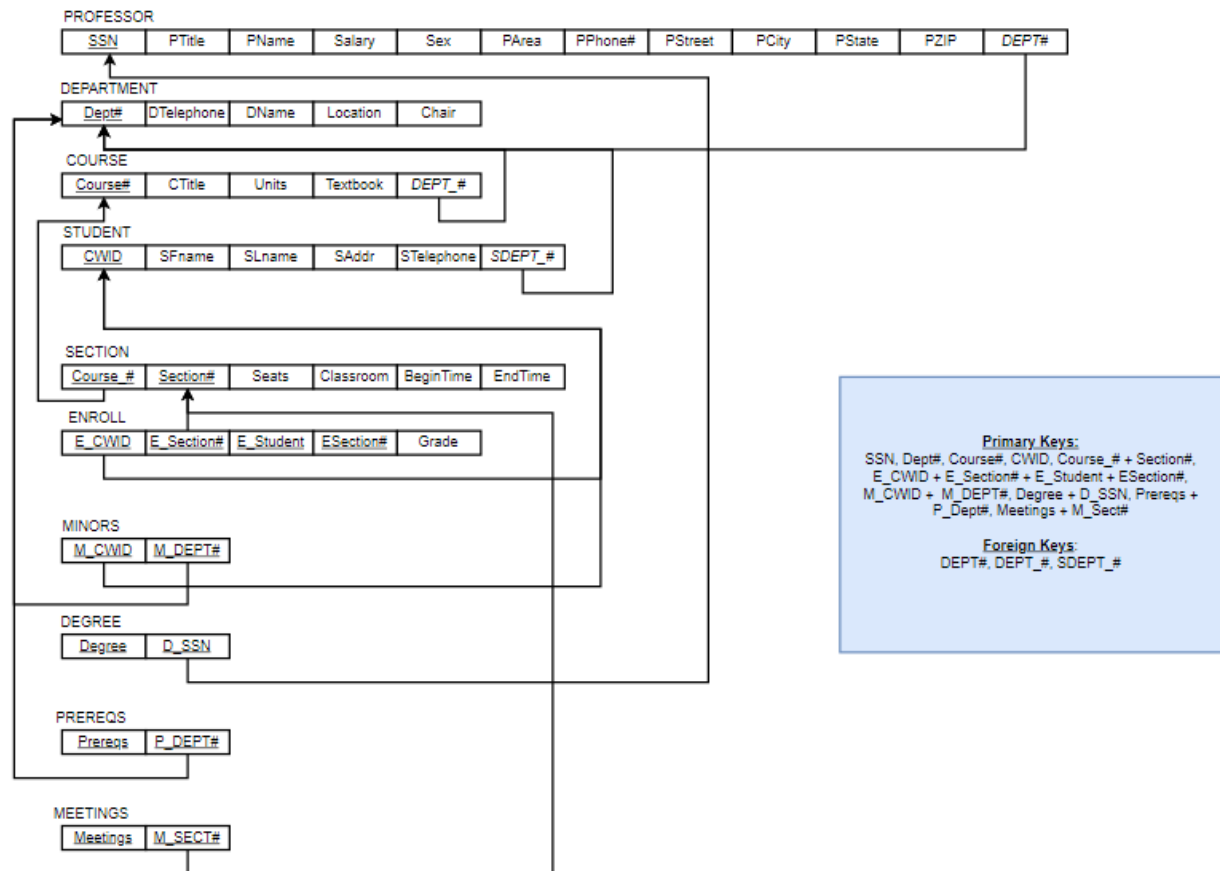
Ryan Mauricio,   Last 4 CWID: 3777

CPSC332

Dr. Wang

16 May 2021

# ER DIAGRAM

# RELATIONAL MODEL

**PROFESSOR**

| SSN | PTitle | PName | Salary | Sex | PArea | PPhone# | PStreet | PCity | PState | PZIP | DEPT# |
|-----|--------|-------|--------|-----|-------|---------|---------|-------|--------|------|-------|

**DEPARTMENT**

| Dept# | DTelephone | DName | Location | Chair |
|-------|------------|-------|----------|-------|

**COURSE**

| Course# | CTitle | Units | Textbook | DEPT_# |
|---------|--------|-------|----------|--------|

**STUDENT**

| CWID | SFname | SLname | SAddr | STelephone | SDEPT_# |
|------|--------|--------|-------|------------|---------|

**SECTION**

| Course_# | Section# | Seats | Classroom | BeginTime | EndTime |
|----------|----------|-------|-----------|-----------|---------|

**ENROLL**

| E_CWID | E_Section# | E_Student | ESection# | Grade |
|--------|------------|-----------|-----------|-------|

**MINORS**

| M_CWID | M_DEPT# |
|--------|---------|

**DEGREE**

| Degree | D_SSN |
|--------|-------|

**PREREQS**

| Prereqs | P_DEPT# |
|---------|---------|

**MEETINGS**

| Meetings | M_SECT# |
|----------|---------|

**Primary Keys:**
SSN, Dept#, Course#, CWID, Course_# + Section#,
E_CWID + E_Section# + E_Student + ESection#,
M_CWID + M_DEPT#, Degree + D_SSN, Prereqs +
P_Dept#, Meetings + M_Sect#

**Foreign Keys:**
DEPT#, DEPT_#, SDEPT_#

# CPSC 332 Term Project

User: [ Student ▼ ]
Select one
**Student**
Professor

# Student Menu

**Class Schedule**
Course Number:

[                    ]

[ Submit ] [ Clear ]

**Course Grade**
CWID:

[                    ]

[ Submit ] [ Clear ]

[ Back ]

# Professor Menu

**Class Schedule**
SSN:

[                    ]

[ Submit ] [ Clear ]

**Course Grades**
Course Number:

[                    ]

Section Number:

[                    ]

[ Submit ] [ Clear ]

[ Back ]

# Student Menu

### Class Schedule
Course Number:

58398

Submit  Clear

### Course Grade
CWID:

248046156

Submit  Clear

Back

**Course Number: 58398**

| Section | Classroom | Meet Days | Start Time | End Time | # Enrolled |
|---------|-----------|-----------|------------|----------|------------|
| 1 | CS408 | MWTh | 10:00:00 | 11:15:00 | 3 |
| 2 | CS408 | MTW | 13:00:00 | 14:15:00 | 3 |

**CWID: 248046156**

| Course ID | Course Name | Grade |
|-----------|-------------|-------|
| 54897 - 1 | Microcontrollers | A- |
| 54897 - 2 | Microcontrollers | A- |
| 73912 - 1 | Designing with VHDL | B- |
| 73912 - 2 | Designing with VHDL | B- |

# Professor Menu

### Class Schedule
SSN:

217027589

Submit  Clear

### Course Grades
Course Number:

58398

Section Number:

02

Submit  Clear

Back

# Dr. Keith E Obrien

**Professor SSN: 217027589**

| Course Title | Classroom | Meeting Days | Start Time | End Time |
|--------------|-----------|--------------|------------|----------|
| Microcontrollers | E200 | MW | 13:00:00 | 14:15:00 |
| Introduction to Programming | CS408 | MWTh | 10:00:00 | 11:15:00 |
| Object-Oriented Programming | CS406 | MW | 08:15:00 | 09:30:00 |

**Course: 58398 - 02**

| Grade | Count |
|-------|-------|
| A+ | 2 |
| A- | 1 |
| C | 1 |
| C- | 1 |
| W | 1 |

# SOURCE CODE

## countStud.php

```php
<?php
    $servername = "mariadb";
    $username = "cs332d9";
    $password = "azi2ceeC";
    $dbname = "cs332d9";

    $db = new mysqli($servername, $username, $password, $dbname);

    $course_number = $_POST["CourseNum2"];
    $section_number = $_POST["SectionNum"];

    if($db->connect_error) {
        die("Connection failed: " . $db->connect_error);
    }

    $sql = "SELECT E.GRADE, COUNT(*) AS NUM_OF_STUDENT ";
    $sql .= "FROM COURSE C, COURSE_SECTION CS, ENROLLMENT E ";
    $sql .= "WHERE C.COURSE_NUM = $course_number AND C.COURSE_NUM = CS.SECTION_NUM ";
    $sql .= " AND CS.COURSE_NO = $section_number AND C.COURSE_NUM = E.SEC_NUM ";
    $sql .= "GROUP BY E.GRADE";

    $result = $db->query($sql);

    echo "<h4>Course: " . $course_number . " - " . $section_number . "<br>";

    echo "<table border='1'>
    <tr>
    <th>Grade</th>
    <th>Count</th>
    </tr>";

    if($result->num_rows > 0) {
        while($row = $result->fetch_assoc()) {
            echo "<tr>";
            echo "<td>" . $row["GRADE"] . "</td>";
            echo "<td>" . $row["NUM_OF_STUDENT"] . "</td>";
            echo "</tr>";
        }
    }

    echo "</table>";
?>
```

# SOURCE CODE

## courses.php

```php
<?php
    $servername="mariadb";
    $username="cs332d9";
    $password="azi2ceeC";
    $dbname="cs332d9";

    $db = new mysqli($servername, $username, $password, $dbname);
    if ($db->connection_error) {
        die("Connection failed: " . $db->connect_error);
    }

    $course_num = $_POST['CourseNum'] ?? '';

    $query = "SELECT C.COURSE_NUM, CS.COURSE_NO, CS.CLASSROOM, CS.MEETING_DAYS,
CS.START_TIME, CS.END_TIME, COUNT(*) AS NUM_OF_STUDENT ";
    $query .= "FROM COURSE C, COURSE_SECTION CS, ENROLLMENT E ";
    $query .= "WHERE C.COURSE_NUM = $course_num AND C.COURSE_NUM = CS.SECTION_NUM AND
C.COURSE_NUM = E.SEC_NUM AND CS.COURSE_NO = E.C_NUM ";
    $query .= "GROUP BY E.C_NUM, E.SEC_NUM";

    $data = $db->query($query);

    echo "<h4>Course Number: " . $course_num . "</h4>";


    echo "<table border='1'>
    <tr>
    <th>Section</th>
    <th>Classroom</th>
    <th>Meet Days</th>
    <th>Start Time</th>
    <th>End Time</th>
    <th># Enrolled</th>
    </tr>";
    echo "<tr>";

    if ($data->num_rows > 0) {
        while($row = $data->fetch_assoc()) {
            echo "<tr>";
            echo "<td>" . $row["COURSE_NO"] . "</td>";
            echo "<td>" . $row["CLASSROOM"] . "</td>";
            echo "<td>" . $row["MEETING_DAYS"] . "</td>";
            echo "<td>" .$row["START_TIME"] . "</td>";
            echo "<td>" .$row["END_TIME"] . "</td>";
            echo "<td>" . $row["NUM_OF_STUDENT"] . "</td>";
            echo "</tr>";
        }
    }
    echo "</table>";

    $db->close();
?>
```

# SOURCE CODE

## gradeCount.php

```php
<?php
      $servername = "mariadb";
      $username = "cs332d9";
      $password = "azi2ceeC";
      $dbname = "cs332d9";

      $db = new mysqli($servername, $username, $password, $dbname);

      if ($db->connect_error) {
            die("Connection failed: " . $db->connect_error);
      }

      $teacher_ssn = $_POST["SocialNum"];

      $teacher = "SELECT TITLE, FNAME, LNAME FROM PROFESSOR";
      $teacher_result = $db->query($teacher);
      $name = $teacher_result->fetch_assoc();

      $sql = "SELECT C.TITLE, CS.CLASSROOM, CS.MEETING_DAYS, START_TIME, END_TIME ";
      $sql .= "FROM PROFESSOR P, COURSE C, COURSE_SECTION CS ";
      $sql .= "WHERE P.SSN = $teacher_ssn AND PROF_SN = SSN AND SECTION_NUM = COURSE_NUM";

      $result = $db->query($sql);

      echo "<h1>" . $name["TITLE"] . " " . $name["FNAME"] . " " . $name["LNAME"] . "</h1>";
      echo "<h4>Professor SSN: " . $teacher_ssn . "</h4>";

      echo "<table border='1'>
<tr>
<th>Course Title</th>
<th>Classroom</th>
<th>Meeting Days</th>
<th>Start Time</th>
<th>End Time</th>
</tr>";

      if ($result->num_rows > 0) {
            while($row = $result->fetch_assoc()) {
                  echo "<tr>";
                  echo "<td>" . $row["TITLE"] . "</td>";
                  echo "<td>" . $row["CLASSROOM"] . "</td>";
                  echo "<td>" . $row["MEETING_DAYS"] . "</td>";
                  echo "<td>" . $row["START_TIME"] . "</td>";
                  echo "<td>" . $row["END_TIME"] . "</td>";
                  echo "</tr>";
            }
      }

      echo "</table>";

      $db->close();

?>
```

index.php

```
<!doctype html>
<html>
     <head>
          <title>Database Project</title>
     </head>
     <body>
          <h1>CPSC 332 Term Project<h1>
          <p><b>User:</b>
          <select onchange="a(this.value)">
               <option disabled selected> Select one </option>
               <option value="stud.php"> Student </option>
               <option value="prof.php"> Professor </option>
          </select>

          <script>
          function a(src)
          {
               window.location=src;
          }
          </script>
          </p>
     </body>
</html>
```

```
<!doctype html>
<html>
    <head>
        <title>Professor</title>
    </head>

    <body>
        <h1>Professor Menu</h1>
        <fieldset style="width: 200px; text-align: left">

        <form action="gradeCount.php" method="post">
            <b>Class Schedule</b><br>
            SSN: <br>
            <input type="text" name="SocialNum" required="" /><br><br>
                <input type="submit" value="Submit" />
                <input type="reset" value="Clear" />
        </form><br><br>

        <form method="post" action="countStud.php">
            <b>Course Grades</b><br>
            Course Number:<br>
            <input type="text" name="CourseNum2" required="" /><br><br>
            Section Number:<br>
            <input type="text" name="SectionNum" required="" /><br><br>
            <input type="submit" value="Submit" />
            <input type="reset" value="Clear" />
        </form><br><br>

        <form action="http://ecs.fullerton.edu/~cs332d9/">
            <input type="submit" value="Back">
        </form>
        </fieldset>
    </body>
</html>
```

## sections.php

```php
<?php
    $servername="mariadb";
    $username="cs332d9";
    $password="azi2ceeC";
    $dbname="cs332d9";

    $db = new mysqli($servername, $username, $password, $dbname);
    $ID = $_POST['ID'] ?? '';

    if ($db->connect_error) {
        die("Connection failed: " . $db->connect_error);
    }

    $sql = "SELECT C.COURSE_NUM, CS.COURSE_NO, C.TITLE, E.GRADE ";
    $sql .= "FROM STUDENT S, COURSE C, COURSE_SECTION CS, ENROLLMENT E ";
    $sql .= "WHERE S.ID = $ID AND E.STUDENT_CWID = S.ID ";
    $sql .= " AND C.COURSE_NUM = E.SEC_NUM AND C.COURSE_NUM = CS.SECTION_NUM";

    $result = $db->query($sql);

    echo "<h4>CWID: " . $ID . "</h4>";

    echo "<table border='1'>
    <tr>
    <th>Course ID</th>
    <th>Course Name</th>
    <th>Grade</th>
    </tr>";

    if ($result->num_rows > 0) {
        while($row = $result->fetch_assoc()) {
            echo "<tr>";
            echo "<td>" . $row["COURSE_NUM"] . " - " . $row["COURSE_NO"] . "</td>";
            echo "<td>" . $row["TITLE"] . "</td>";
            echo "<td>" . $row["GRADE"] . "</td>";
            echo "</tr>";
        }
    }

    echo "</table>";


    $db->close();

?>
```

stud.php

```html
<!doctype html>
<html>

    <head>
        <title>Student</title>
    </head>

    <body>
        <h1>Student Menu</h1>
        <fieldset style="width: 200px; text-align: left">

        <form action="courses.php" method="post">
                <b>Class Schedule</b><br>
                Course Number: <br>
                        <input type="text" name="CourseNum" required=""/>
                        <br>
                        <br>
                                <input type="submit" value="Submit"/>
                                <input type="reset" value="Clear"/>
        </form><br><br>

        <form action="sections.php" method="post">
                <b>Course Grade</b><br>
                CWID: <br>
                  <input type="text" name="ID" required="" />
                  <br>
                  <br>
                  <input type="submit" value="Submit" />
                  <input type="reset" value="Clear" />
        </form><br><br>

        <form action="http://ecs.fullerton.edu/~cs332d9/">
        <input type="submit" value="Back">
        </form>

        </fieldset>
    </body>

</html>
```

# DDL – CREATE TABLES

```sql
CREATE TABLE PROFESSOR(
    SSN NUMERIC(9) NOT NULL,
    FNAME VARCHAR(20),
    LNAME VARCHAR(20),
    STREET_ADDRESS VARCHAR(30),
    CITY VARCHAR(20),
    ST CHAR(2),
    ZIP_CODE NUMERIC(5),
    AREA_CODE NUMERIC(3),
    P_NUM NUMERIC(7),
    SEX CHAR(1),
    TITLE VARCHAR(20),
    SALARY VARCHAR(10),
    PRIMARY KEY(SSN)
);

CREATE TABLE DEPARTMENT(
    DEPT_NUM CHAR(4) NOT NULL,
    DEPT_NAME VARCHAR(30),
    DEPT_PHONE NUMERIC(10),
    DEPT_LOCATION VARCHAR(20),
    CHAIR_SSN NUMERIC(9) NOT NULL,
    PRIMARY KEY(DEPT_NUM),
    FOREIGN KEY(CHAIR_SSN) REFERENCES PROFESSOR(SSN)
);

CREATE TABLE COURSE(
    COURSE_NUM VARCHAR(10) NOT NULL,
    TITLE CHAR(50),
    TEXTBOOK VARCHAR(100),
    UNITS NUMERIC(1),
    D_NUM CHAR(4) NOT NULL,
    PRIMARY KEY(COURSE_NUM),
    FOREIGN KEY(D_NUM) REFERENCES DEPARTMENT(DEPT_NUM)
      --COURSE_NUM = course number
);

CREATE TABLE STUDENT(
    ID NUMERIC(9) NOT NULL,
    ADDR VARCHAR(100),
    F_NAME VARCHAR(20),
    L_NAME VARCHAR(20),
    S_PHONE NUMERIC(10),
    SD_NUM CHAR(4) NOT NULL,
    PRIMARY KEY(ID),
    FOREIGN KEY(SD_NUM) REFERENCES DEPARTMENT(DEPT_NUM)
);
```

```sql
CREATE TABLE COURSE_SECTION(
    SECTION_NUM NUMERIC(10) NOT NULL,
    COURSE_NO VARCHAR(10) NOT NULL,
    CLASSROOM VARCHAR(5),
    MEETING_DAYS VARCHAR(10),
    START_TIME TIME,
    END_TIME TIME,
    SEAT_NUM NUMERIC(2),
    PROF_SN NUMERIC(9) NOT NULL,
    PRIMARY KEY(SECTION_NUM, COURSE_NO),
    FOREIGN KEY(COURSE_NO) REFERENCES COURSE(COURSE_NUM),
    FOREIGN KEY(PROF_SN) REFERENCES PROFESSOR(SSN)
      --SECTION NUM = course number
      --COURSE_NO = section number
);

CREATE TABLE MINOR(
    DEP_NUM CHAR(4) NOT NULL,
    STUD_ID NUMERIC(9) NOT NULL,
    PRIMARY KEY(DEP_NUM, STUD_ID),
    FOREIGN KEY(DEP_NUM) REFERENCES DEPARTMENT(DEPT_NUM),
    FOREIGN KEY(STUD_ID) REFERENCES STUDENT(ID)
);

CREATE TABLE ENROLLMENT(
    STUDENT_CWID NUMERIC(9) NOT NULL,
    SEC_NUM NUMERIC(10) NOT NULL,
    C_NUM VARCHAR(10) NOT NULL,
    GRADE CHAR(2),
    PRIMARY KEY(STUDENT_CWID, SEC_NUM, C_NUM),
    FOREIGN KEY(STUDENT_CWID) REFERENCES STUDENT(ID),
    FOREIGN KEY(SEC_NUM) REFERENCES COURSE_SECTION(SECTION_NUM),
    FOREIGN KEY(C_NUM) REFERENCES COURSE_SECTION(COURSE_NO)
      --COURSE_NUM = course number
      --C_NUM = section number
);

CREATE TABLE PREREQUISITE(
    PREREQ VARCHAR(20) NOT NULL,
    CO_NUM VARCHAR(10) NOT NULL,
    PRIMARY KEY(CO_NUM, PREREQ),
    FOREIGN KEY(CO_NUM) REFERENCES COURSE(COURSE_NUM)
);

CREATE TABLE PROF_DEGREE(
    PROFESSOR_SSN NUMERIC(9) NOT NULL,
    DEGREE CHAR(15) NOT NULL,
    PRIMARY KEY (PROFESSOR_SSN),
    FOREIGN KEY (PROFESSOR_SSN) REFERENCES PROFESSOR(SSN)
);
```

# SQL - IMPLEMENT QUERIES

```sql
INSERT INTO STUDENT VALUES
(488975986,'3044 Denver Avenue, Fullerton, CA 93632','John M','Nevers',9512940033,'CPSC'),
(065862395,'3344 Williams Lane, Fullerton, CA 93632','John B','Orzechowski',9492930735,'CPSC'),
(698202167,'3344 Williams Lane, Fullerton, CA 93632','Gail T','Powers',9259277812,'CPSC'),
(248046156,'1563 Brown Street, Anaheim, CA 92805','David J','Davis',9099602134,'EGEE'),
(607579281,'2418 Clarence Court, Placentia, CA 92870','Ernesto M','Lee',3108224223,'EGEE'),
(396138320,'2035 Meadowbrook Road, Playa Del Ray, CA 90291','Amos T','Claybrooks',8508038331,'CPSC'),
(139380363,'2682 Joy Lane, Glendale, CA 91204','Toni T','Yang',8185449094,'EGEE'),
(185435036,'4671 Heritage Road, Visalia, CA 93291','Lucy R','Dehner',5597335345,'EGEE');

INSERT INTO DEPARTMENT VALUES
('CPSC','Computer Science',6572783700,'CS-552',217027589),
('EGEE','Electrical Engineering',6572785987,'E-100G',550522511);

INSERT INTO PROFESSOR VALUES
(217027589,'Keith','E Obrien','4948 Doe Meadow Drive', 'Moss Landing',
'CA',95039,301,5571069,'M','Dr.','$70,000'),
(571118522,'Jacqueline','L Anderson','1874 Frederick
Street','Sacramento','CA',95814,916,2415458,'F','Ms.','$65,000'),
(550522511,'Sarah','G Reed','3710 Jim Rosa Lane','San Francisco','CA',94143,415,7770846,'F','Dr.',
'$100,000');

INSERT INTO COURSE VALUES
(58398,'Introduction to Programming','C++ Programming 5th Edition',3,'CPSC'),
(78123,'Object-Oriented Programming','Data Structure 2nd Edition',3,'CPSC'),
(54897,'Microcontrollers','Introduction to Microcontrollers 2nd Edition',3,'EGEE'),
(73912,'Designing with VHDL','VHDL 12th Edition',3,'EGEE');

INSERT INTO COURSE_SECTION VALUES
(58398,01,'CS408','MWTh','10:00','11:15',30,217027589),
(58398,02,'CS408','MTW','13:00','14:15',30,550522511),
(78123,01,'CS406','MW','8:15','9:30',30,217027589),
(78123,02,'CS406','TTh','14:30','15:45',30,550522511),
(54897,01,'E200','MW','13:00','14:15',30,217027589),
(54897,02,'E200','WTh','10:00','11:00',30,550522511),
(73912,01,'E302','MF','14:30','15:45',30,571118522),
(73912,02,'E302','WF','8:15','9:30',30,571118522);

INSERT INTO ENROLLMENT VALUES
(488975986,58398,02,'A+'),
(488975986,78123,01,'B+'),
(065862395,73912,01,'C'),
(065862395,58398,01,'C'),
(065862395,78123,01,'F'),
(698202167,78123,02,'D'),
(698202167,58398,01,'W'),
(698202167,54897,01,'D+'),
(248046156,54897,01,'A-'),
(248046156,73912,02,'B-'),
(607579281,58398,02,'A-'),
(607579281,54897,01,'B'),
(396138320,78123,01,'C+'),
(396138320,58398,02,'A+'),
(396138320,73912,02,'B'),
(139380363,73912,01,'A'),
(139380363,54897,01,'A'),
(139380363,78123,01,'A'),
(185435036,78123,02,'B'),
(185435036,73912,02,'A-'),
(531300685,54897,01,'A-'),
(531300685,58398,01,'C-'),
(531300685,78123,02,'D'),
(539892591,78123,01,'F'),
(539892591,54897,02,'D');
```