*-- a. Retrieve the list of all core classes.*

**SELECT** c.**dept\_id**, **dept\_name**, **class\_id**, **class\_num**, **class\_name**, **class\_type**

**FROM** department

**JOIN** class c **ON** department.**dept\_id** = c.**dept\_id**

**WHERE class\_type** = **'Core'**

**ORDER BY dept\_name**, **class\_num**;

*-- b. StudentID of students who live in Boise and took CS410, in*

*-- ascending order.*

**SELECT** e.**std\_id**, **std\_name**, **std\_city**, **sec\_num**, **class\_name**

**FROM** student

**JOIN** enrollment e **ON** student.**std\_id** = e.**std\_id**

**JOIN** section s **ON** e.**sec\_id** = s.**sec\_num**

**JOIN** class c **ON** s.**class\_id** = c.**class\_num**

**WHERE std\_city** = **'Boise'**

**AND class\_name** = **'Databases'**

**AND e\_grade IS NOT NULL**

**GROUP BY std\_id**, **class\_name**, **sec\_num**

**ORDER BY std\_name**;

*-- c. Display details of Under-graduate students with cumulative GPA*

*-- grater than 3.8. Compute the cumulative GPA as the average of all*

*-- the grades got by a student.*

**SELECT** e.**std\_id**, **std\_name**, **std\_email**, **std\_address**, **std\_city**, **std\_state**

std\_zip, **std\_status**, *AVG*(**e\_grade**) **AS 'GPA'**

**FROM** student

**JOIN** enrollment e **ON** student.**std\_id** = e.**std\_id**

**WHERE std\_status** = **'Undergraduate'**

**AND e\_grade IS NOT NULL**

**GROUP BY** e.**std\_id**

**HAVING** GPA > 3.8

**ORDER BY** GPA **DESC**;

*-- d. Retrieve StudentID and Name of students who have taken ALL the*

*-- core classes.*

**SELECT** s.**std\_id**, s.**std\_name**, **class\_type**

**FROM** department

**JOIN** student s **ON** department.**dept\_id** = s.**dept\_id**

**JOIN** enrollment r **ON** s.**std\_id** = r.**std\_id**

**LEFT JOIN** section s2 **ON** r.**sec\_id** = s2.**sec\_id**

**JOIN** class c **ON** s2.**class\_id** = c.**class\_id**

**WHERE** s.**std\_id IN** ( **SELECT** r.**e\_grade FROM** department

**JOIN** student s **ON** department.**dept\_id** = s.**dept\_id**

**JOIN** enrollment r **ON** s.**std\_id** = r.**std\_id**

**JOIN** section s2 **ON** r.**sec\_id** = s2.**sec\_id**

**JOIN** class c **ON** s2.**class\_id** = c.**class\_id**

**WHERE** s.**dept\_id** = c.**dept\_id**

**AND** c.**class\_type** = **'Core'**)

**AND** r.**e\_grade IS NOT NULL**

**GROUP BY** s.**std\_id**, **class\_type**;

*-- e. Retrieve details of Instructors who taught more than 3 Core classes.*

**SELECT** s.**inst\_id**, **inst\_name**, **inst\_rank**, **inst\_email**, **inst\_starting\_date**,

c.**dept\_id**, **dept\_name**, *COUNT*(**sec\_id**) **AS** num\_of\_coreclass

**FROM** department

**JOIN** instructor i **ON** department.**dept\_id** = i.**dept\_id**

**JOIN** class c **ON** department.**dept\_id** = c.**dept\_id**

**JOIN** section s **ON** i.**inst\_id** = s.**inst\_id**

**WHERE class\_type** = **'Core'**

**GROUP BY** i.**inst\_id**

**HAVING** num\_of\_coreclass > 3

**ORDER BY dept\_name**, num\_of\_coreclass **DESC**;

*-- f. Provide Names of the Departments with the highest number of*

*-- Under-Graduate Students.*

**SELECT** s2.**dept\_id**, **dept\_name**, **dept\_email**, *COUNT*(**std\_id**) **AS 'num\_under'**

**FROM** department

**JOIN** student s2 **ON** department.**dept\_id** = s2.**dept\_id**

**JOIN** class c **ON** department.**dept\_id** = c.**dept\_id**

**JOIN** section s **ON** c.**class\_id** = s.**class\_id**

**WHERE std\_status** = **'Undergraduate'**

**GROUP BY dept\_id**

**ORDER BY** num\_under **DESC**;

*-- g. Provide Names of the Departments with least number of Graduate*

*-- Students.*

**SELECT** s.**dept\_id**, **dept\_name**, **dept\_email**, *COUNT*(**std\_id**) **As 'num\_grad\_std'**

**FROM** department

**JOIN** student s **ON** department.**dept\_id** = s.**dept\_id**

**WHERE std\_status** = **'Graduate'**

**GROUP BY** s.**dept\_id**

**ORDER BY** num\_grad\_std **ASC**;

*-- h. List of Colleges with more than 10 Departments in descending order.*

**SELECT** d.**col\_id**, **col\_name**, *COUNT*(**dept\_id**) **AS 'num\_of\_dept'**

**FROM** college

**JOIN** department d **ON** college.**col\_id** = d.**col\_id**

**GROUP BY** d.**col\_id**

**HAVING** *COUNT*(**dept\_id**) > 10

**ORDER BY col\_name DESC**;

*-- i. Details of all Instructors who taught more than 100 students total.*

**SELECT** s.**inst\_id**, **inst\_name**, **inst\_email**, **inst\_rank**, **inst\_starting\_date**,

*COUNT*(s2.**std\_id**) **AS 'num\_of\_std'**

**FROM** instructor

**JOIN** section s **ON** instructor.**inst\_id** = s.**inst\_id**

**JOIN** class c **ON** s.**class\_id** = c.**class\_id**

**JOIN** enrollment e **ON** s.**sec\_id** = e.**sec\_id**

**JOIN** student s2 **ON** e.**std\_id** = s2.**std\_id**

**GROUP BY** s.**inst\_id**

**HAVING num\_of\_std** >= 100

**ORDER BY num\_of\_std**;

*-- j. The average number of students per semester who tool CS121.*

*-- Note that there are multiple sections of 121 each semester!*

**SELECT** s.**sec\_term**, s.**sec\_year**, *avg*(x.stunum) **AS** Avg\_num\_students

**FROM** class class

**JOIN** section s **ON** class.**class\_id** = s.**class\_id**

**JOIN** enrollment g **ON** s.**sec\_id** = g.**sec\_id**

**JOIN** student s2 **ON** g.**std\_id** = s2.**std\_id**

**JOIN** (**SELECT** *count*(s2.**std\_id**) **AS** stunum

**FROM** class class

**JOIN** section s **ON** class.**class\_id** = s.**class\_id**

**JOIN** enrollment g **ON** s.**sec\_id** = g.**sec\_id**

**JOIN** student s2 **ON** g.**std\_id** = s2.**std\_id**

**WHERE class\_name** = **'CS121'**

**GROUP BY** class.**class\_id**, s.**sec\_year**, s.**sec\_term**

**HAVING** stunum **IS NOT NULL** ) **AS** x

**WHERE class\_name** = **'CS121'**

**GROUP BY** s.**sec\_year**,s.**sec\_term**

**ORDER BY** s.**sec\_year**, s.**sec\_term**;