ITCS 241 Database Management Systems
SQL Class Assignment 2 (**Extra**)
(<mark>No submission required</mark>)

Preparation before the SQL Class Assignment Exercise
We will use an untouched `tinycollege` database for this exercise. Hence, before you do the exercise, please drop (delete) the current version of `tinycollege` database you used in the class, and create a brand new `tinycollege` database from the sql script. Otherwise**,** you can create a copy of the `tinycollege` database, i.e., `tinycollege2`, for these practices :).

Write the DQL (`SELECT`) commands for the following queries.

41. Create an email list of all `"ACCT"` professors from their first names, followed by ".", and the first three letters of their last names along with their employee number as shown in the following output table.
    Expected 2 attributes, 3 rows as shown in the following output table

emp_num	email
105	arnelle.hef@tinycollege.edu
114	gerald.gra@tinycollege.edu
301	ismael.osa@tinycollege.edu

42. List all students who were born in November. Sort the result by department code
    Expected 8 attributes, 6 rows as shown in the following output table

STU_NUM	STU_FNAME	STU_LNAME	STU_DOB	STU_CLASS	STU_GPA	DEPT_CODE	EMP_NUM
324299	John	Smith	1975-11-30	1	1.75	ACCT	301
341101	Ronald	Richter	1960-11-30	1	NULL	ART	435
345783	LaRue	Boisseaux	1979-11-28	2	3.02	ART	435
311198	Anne	Robertson	1970-11-15	3	3.04	CIS	162
324257	Anne	Smithson	1973-11-18	3	2.02	CIS	209
328934	Carlos	Innugado	1976-11-30	3	2.38	CIS	228

43. List all students who were born on Thursday. Sort the result by department code.
    Hint: Use `DAYOFWEEK()` to return the weekday index for a date (Sunday=1, Monday=2, ... , Saturday=7)
    Expected 8 attributes, 3 rows as shown in the following output table

STU_NUM	STU_FNAME	STU_LNAME	STU_DOB	STU_CLASS	STU_GPA	DEPT_CODE	EMP_NUM
324567	Samuel	Willow	1979-07-12	1	NULL	BIOL	387
341108	Darren	Smith	1988-08-18	1	2.45	ENG	160
319989	Heinz	Schloss	1960-02-25	4	3.45	MKT/MGT	106

44. List all professor names (first name and last name) who are older than 75 (compute their age at today). Sort the result by the highest age to the lowest one.
Expected 3 attributes, 6 rows as shown in the following output table

emp_fname	emp_lname	age
Ross	Washington	80
Gerald	Graztevski	82
Peter	Rob	81
Ronald	Okomoto	77
Robert	Smith	84
James	Blalock	76

45. Find the highest age of students in class 1. **Expected 1 attribute, 1 row**

age
72

46. Find the average GPA (shown in two decimal places) of students in class 2
Expected 1 attribute, 1 row

AvgGPA
2.62

47. Find the average GPA (shown in two decimal places) of students each class (sorted by class). **Expected 2 attributes, 4 rows as shown in the following output table**

stu_class	avgGPA
1	2.57
2	2.62
3	2.76
4	3.11

48. Find the average GPA (shown in two decimal places) of students in each department (sorted by department code). **Expected 2 attributes, 11 rows as shown in the following output table**

dept_code	avgGPA
ACCT	2.89
ART	3.02
BIOL	2.53
CIS	2.56
ECON/FIN	3.01
ENG	2.92
HIST	2.74
MATH	3.32
MKT/MGT	2.72
PSYCH	2.51
SOC	3.72

49. Find the number of students in each class. **Expected 2 attributes, 4 rows as shown in the following output table**

stu_class	num_stu
1	6
2	11
3	11
4	10

50. Find the range of GPA (i.e., [Min, Max]) of students in each class, sorted by student class. **Expected 2 attributes, 4 rows as shown in the following output table**

stu_class	gpa_range
1	[1.75, 3.21]
2	[1.53, 3.91]
3	[2.02, 3.72]
4	[2.45, 3.92]

51. Find the number of students in each department, sorted by department code alphabetically. **Expected 2 attributes, 4 rows as shown in the following output table**

dept_code	num_stu
ACCT	7
ART	2
BIOL	5
CIS	7
ECON/FIN	1
ENG	3
HIST	3
MATH	2
MKT/MGT	6
PSYCH	1
SOC	1

52. Find the list of departments (department codes) and the total numbers of professors with at least 2 professors. Sort the result by the total number of professors ascendingly. **Expected 2 attributes, 8 rows as shown in the following table**

dept_code	num_prof
HIST	2
MKT/MGT	2
BIOL	2
MATH	2
ECON/FIN	2
ENG	3
ACCT	3
CIS	3

53. Find the list of departments (department codes) that have more than one student with the GPA at least 3.00. **Expected 2 attributes, 3 rows as shown in the following table**

dept_code	num_stu
CIS	3
MKT/MGT	2
ACCT	2

54. List the courses (course code) that provide more than 2 classes. **Expected 2 attributes, 5 rows as shown in the following table**

course_code	num_class
ACCT-211	4
BIOL-120	3
CIS-220	3
ENG-210	3
HIST-210	3

55. List the departments (department code) that offer only 1 course. **Expected 2 attributes, 2 rows as shown in the following table**

dept_code	num_course
PSYCH	1
SOC	1

56. List the top 8 professors and their departments information (professor first name, last name, department code, department name, and department address) **Expected 5 attributes, 8 rows as shown in the following table**

emp_fname	emp_lname	dept_code	dept_name	dept_address
Ronald	Donelly	HIST	History	DRE 156, Box 284
Preston	Yukon	ENG	English	DRE 102, Box 223
Arnelle	Heffington	ACCT	Accounting	KLR 211, Box 52
Ross	Washington	MKT/MGT	Marketing/Management	KLR 126, Box 55
Van	Thieu	BIOL	Biology	AAK 230, Box 415
Gerald	Graztevski	ACCT	Accounting	KLR 211, Box 52
Annelise	Ritula	MATH	Mathematics	AAK 194, Box 422
Robert	Smith	ENG	English	DRE 102, Box 223

57. List all "CIS" students (student first name and last name) who got grade "A" in any classes. Show the student first name, last name, and class code, sorted by their first names. **Hint**: you can look for the grade result from "Enrollment" table
Expected 3 attributes, 11 rows as shown in the following table

stu_fname	stu_lname	class_code
Anne	Robertson	10012
Anne	Robertson	20030
Antoinette	Johnson	10016
Antoinette	Johnson	20025
Carlos	Innugado	23121
Carlos	Innugado	50024
John	Brewton	20017
John	Brewton	50022
Walter	Oblonski	20040
Walter	Oblonski	23111
Walter	Oblonski	40101

58. List all "CIS" students (student first name and last name) and the number of times they received grade "A". Show the student first name, last name, and the total number of "A" grade, sorted by their first names.
    Expected 3 attributes, 5 rows as shown in the following table

stu_fname	stu_lname	num_gradeA
Anne	Robertson	2
Antoinette	Johnson	2
Carlos	Innugado	2
John	Brewton	2
Walter	Oblonski	3

59. Show all advisors (professor first names, last names, and their total numbers of advisees), who have the total number of advisees at least 3 students.
    Hint: Advisors are the professors who give advice to their advisees (students) and `emp_num` in the `Student` table indicates the student's advisor.
    Expected 3 attributes, 4 rows as shown in the following table

emp_fname	emp_lname	num_advisee
George	Smithson	5
Ismael	Osaki	4
Melanie	Smith	4
Ross	Washington	5

60. List all professors (professor first names and last names) who teach more than 3 classes of the 3-credit courses. For example, Professor "Carlos Coronel" teaches 5 classes (including class code 20017, 20019, 20025, 50021, 50022) that are 3 credit courses (including course code CIS-220, CIS-320, QM-261)
    Expected 3 attributes, 2 rows as shown in the following table

emp_fname	emp_lname	num_class
Carlos	Coronel	5
Preston	Yukon	4

61. Show all "Intro" class schedule for Section 1 (class code, course code, course name and class time) offered by "CIS" department.
    Expected 4 attributes, 3 rows as shown in the following table

class_code	course_code	course_name	class_time
20017	CIS-220	Intro. to Microcomputing	MWF 9:00-9:50 a.m.
20030	CIS-370	Intro. to Systems Analysis	MWF 11:00-11:50 a.m.
50021	QM-261	Intro. to Statistics	MWF 8:00-8:50 a.m.

62. List all departments (department code and department name), their total number of students, their total number of professors, and the ratio of students per professor (displayed in 2 decimal places). Sort the result by department code. **Hint**: use `DISTINCT` to count only unique students or professors.
   Expected 5 attributes, 11 rows as shown in the following table

dept_code	dept_name	num_prof	num_stu	stuprof_ratio
ACCT	Accounting	3	7	2.33
ART	Fine Arts	1	2	2.00
BIOL	Biology	2	5	2.50
CIS	Computer Info. Systems	3	7	2.33
ECON/FIN	Economics/Finance	2	1	0.50
ENG	English	3	3	1.00
HIST	History	2	3	1.50
MATH	Mathematics	2	2	1.00
MKT/MGT	Marketing/Management	2	6	3.00
PSYCH	Psychology	1	1	1.00
SOC	Sociology	1	1	1.00

63. List all departments and their name of the professor who is the Head of the Department. The result must include department code, department name, and the full name of the Head of the Department, sorted by the department code
   Hint: `emp_num` in the `Department` table indicates the professor number who is the Head of the department.
   Expected 3 attributes, 11 rows as shown in the following table

dept_code	dept_name	head_dept
ACCT	Accounting	Gerald Graztevski
ART	Fine Arts	Anne Doornberg
BIOL	Biology	George Smithson
CIS	Computer Info. Systems	Melanie Smith
ECON/FIN	Economics/Finance	Doreen Stoddard
ENG	English	Robert Smith
HIST	History	Ronald Donelly
MATH	Mathematics	Hermine Jones
MKT/MGT	Marketing/Management	Ross Washington
PSYCH	Psychology	Herman Williams
SOC	Sociology	Robert Smith

64. List all students who enrolled at least 6 classes or at least 18 credits. The result should include student number, first name, last name, the total numbers of enrolled classes, and the total numbers of credits, sorted by the student numbers
   Expected 5 attributes, 8 rows as shown in the following table

stu_num	stu_fname	stu_lname	total_class	total_credit
311198	Anne	Robertson	6	18
311357	Jan	Huizinga	6	19
322345	Sidney	Wesson	6	19
324258	Juliette	Brewer	6	18
324274	Raphael	Katinga	6	20
342721	Robert	Rutan	7	21
343749	John	Brewton	6	18
345783	LaRue	Boisseaux	6	19