DATABASES
(420-P42-SU)
AEC networks and telecommunications
AEC Programming, networks and telecommunications
AEC Programming and internet technologies

Final exam (practical)

Time: 3 h 00

Name: _____ Date: _____

Grade:

- All documents are authorized (internet, course grades, course pdf ...).
- Any communication, in any way whatsoever and with anyone, results in a grade of 0.
- Retrieve the 4 files located from Moodle **.**

Answer the questions in the files and drop the completed files into dropbox in the directory ***X:\Zakaria Sahnoune\420-D08-SU-E19-SQL\Final Exam\Answers***.

Exercise 1 - Management of grades in a school (exercice1.sql file).

Question 1: Creation of the School database.
Write the SQL code to create a School database, in which will be the 3 tables below:

Table Students

attribute	type	identity	NULL	description
student_id	INT	X	No	Student's unique identifier
lname	VARCHAR(30)		No	Student's last name
fname	VARCHAR(30)		No	Student's first name
age	INT		Yes	Student's age
phone	CHAR(13)		Yes	Student's phone number

Table Courses

attribut	type	identity	NULL	description
course_id	INT	X	No	Course's unique identifier
title	VARCHAR(50)		Yes	Course's title
nb_hrs	INT		Yes	Course's number of hours

Table Grades

attribut	type	identity	NULL	description
#id_coursee	INT		No	References a course
#id_student	INT		No	References a student
grade	FLOAT		No	Grade of this student in this course

It must be possible to execute the SQL code several times without generating an error.

Respect the following constraints in the tables:
- The age of the student is greater than 18
- The student's phone is in the form (123)456-7890
- A student's note is between 0 and 100.

Question 2: Inserting Data.
Use the script provided in the appendix to insert data into the 3 tables

Question 3: List students who are missing grades.

```
Student_id  lname                          fname                          age         phone
----------- ------------------------------ ------------------------------ ----------- -------------
4           Turcotte                       Cedric                         24          NULL
```

Question 4: In which course does this student miss a grade?

```
Course_id   title                                              nb_hrs
----------- -------------------------------------------------- -----------
20          P42                                                60
```

Question 5: The missing note of Cedric Turcotte is 82 in P42. Add this note to the database.

Question 6: Give the overall average of each student.

Student	Average
Dominguez Silvia	64,5
Herbert Jean-Marc	84,75
Le Bert Antoine	70,25
Legendre Pierre	65,75
Petit-Clair Cyril	68,75
Salard Jean	84
Sullivan Anne	59,25
Tremblay Alfredo	69,75
Turcotte Cedric	64,75
Wright Michelle	75,75

Question 7: In P42, which students have a grade above average in P42?

Student	Grade
Dominguez Silvia	92
Herbert Jean-Marc	96
Legendre Pierre	84
Salard Jean	89
Tremblay Alfredo	85
Turcotte Cedric	82
Wright Michelle	80

Question 8: View each student's marks in each of the four courses and their average.

Student	P41	P42	P60	P61	Average
Dominguez Silvia	56	92	77	33	64.5
Herbert Jean-Marc	97	96	73	73	84.75
Le Bert Antoine	90	50	61	80	70.25
Legendre Pierre	45	84	67	67	65.75
Petit-Clair Cyril	79	18	89	89	68.75
Salard Jean	78	89	84	85	84
Sullivan Anne	38	75	37	87	59.25
Tremblay Alfredo	35	85	79	80	69.75
Turcotte Cedric	67	82	33	77	64.75
Wright Michelle	87	80	80	56	75.75

Exercise 2 Quality of the printing paper (exercise2.sql file)

The publisher **'Algodata Infosystems'** has improved the quality of the paper with which he prints his books, by conceiving this action he increases the cost of production by 2%. To return in his expenses and make a small profit, he decides to sell his publications 3% more expensive.
Give SQL code to account for this increase in the PUB database

Exercise 3 New in Pub (exercise3.sql file).

Write a SQL script to make the following changes to the PUB database:
Add the book '**Alice in Wonderland**', classified in the category '**adventure**' written by '**Marc Doucy**' and '**Pierre Guillou**'. The authors' phone numbers are 450 777-1234 (Mr Doucy) and 514 909-6733 (Mr Guillou). Since the beginning of this year, the book has been published by '**Caribou editions**', one of our publishers. An advance of $ 6,500 to the authors and a license fee of 18% were fixed. The authors, who are not contractual, agreed on a 45% share of earnings (Mr Doucy) / 55% (Mr Guillou).

It is requested to provide any additional data needed to update the database.

Exercise 4 Merging Publishers (exercise4.sql file).

Publishers of '**New Moon Books**' and '**Binnet & Hardley**' have decided to merge into one publishing house: '**Associated Editions**'.

Write the SQL code to account for this change in the PUB database respecting the referential integrity constraints.

ANNEXE

```
-- Inserting data
INSERT INTO students(lname, fname, age) VALUES ('Salard', 'Jean', 19)
INSERT INTO students(lname, fname, age) VALUES ('Le Bert', 'Antoine', 24)
INSERT INTO students(lname, fname, age) VALUES ('Legendre', 'Pierre', 23)
INSERT INTO students(lname, fname, age) VALUES ('Turcotte', 'Cedric', 24)
INSERT INTO students(lname, fname, age) VALUES ('Tremblay', 'Alfredo', 22)
INSERT INTO students(lname, fname, age) VALUES ('Dominguez', 'Silvia', 21)
INSERT INTO students(lname, fname, age) VALUES ('Wright', 'Michelle', 30)
INSERT INTO students(lname, fname, age) VALUES ('Sullivan', 'Anne', 20)
INSERT INTO students(lname, fname, age) VALUES ('Petit-Clair', 'Cyril', 21)
INSERT INTO students(lname, fname, age) VALUES ('Herbert', 'Jean-Marc', 32)


INSERT INTO course(title, nb_hrs) VALUES ('P41', 45)
INSERT INTO course(title, nb_hrs) VALUES ('P42', 60)
INSERT INTO course(title, nb_hrs) VALUES ('P60', 60)
INSERT INTO course(title, nb_hrs) VALUES ('P61', 60)


INSERT INTO grades(course_id, student_id, grade) VALUES (10, 1, 78)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 1, 85)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 2, 80)
INSERT INTO grades(course_id, student_id, grade) VALUES (10, 2, 90)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 1, 84)
INSERT INTO grades(course_id, student_id, grade) VALUES (20, 10, 96)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 2, 61)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 9, 89)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 10, 73)
INSERT INTO grades(course_id, student_id, grade) VALUES (10, 3, 45)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 5, 80)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 6, 33)
INSERT INTO grades(course_id, student_id, grade) VALUES (10, 4, 67)
INSERT INTO grades(course_id, student_id, grade) VALUES (20, 3, 84)
INSERT INTO grades(course_id, student_id, grade) VALUES (10, 5, 35)
INSERT INTO grades(course_id, student_id, grade) VALUES (20, 5, 85)
INSERT INTO grades(course_id, student_id, grade) VALUES (20, 7, 80)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 3, 67)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 6, 77)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 7, 80)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 4, 33)
INSERT INTO grades(course_id, student_id, grade) VALUES (10, 6, 56)
INSERT INTO grades(course_id, student_id, grade) VALUES (10, 7, 87)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 9, 89)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 10, 73)
INSERT INTO grades(course_id, student_id, grade) VALUES (20, 1, 89)
INSERT INTO grades(course_id, student_id, grade) VALUES (20, 9, 18)
INSERT INTO grades(course_id, student_id, grade) VALUES (20, 2, 50)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 5, 79)
INSERT INTO grades(course_id, student_id, grade) VALUES (30, 8, 37)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 3, 67)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 4, 77)
INSERT INTO grades(course_id, student_id, grade) VALUES (20, 8, 75)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 7, 56)
INSERT INTO grades(course_id, student_id, grade) VALUES (40, 8, 87)
INSERT INTO grades(course_id, student_id, grade) VALUES (10, 8, 38)
INSERT INTO grades(course_id, student_id, grade) VALUES (20, 6, 92)
INSERT INTO grades(course_id, student_id, grade) VALUES (10, 9, 79)
INSERT INTO grades(course_id, student_id, grade) VALUES (10, 10, 97)
```