

Week 10 group assignment.

Student

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Week 10 Assignment DDO First Semester

In this assignment we will be looking at the content studied during the DDO course. We will focus especially on the meaning of certain queries. Some questions require only a SQL code, others will ask you to explain in plain English how the code works. The same explanation will go for the database relations.

Being able to explain a set of code in simple wording is a good skill for IT engineers, regardless of their field of work. In your professional career, you will have to explain to a layman how a certain code is working. In most cases, this will be your manager or CEO, who has no IT experience. Commands like SELECT, WHERE and GROUP BY will not be understood and need additional explanation.

you are allowed to work in groups, making this workbook also ensures that you have all libraries for the individual test in week 12. (HINT make sure each member of the group can make the assignments.) Good Luck. . .

Reading a DataBase

Looking at the ERD, shown in figure 1, we can see 6 different relations, describe all six in plain english going from 1 to many.

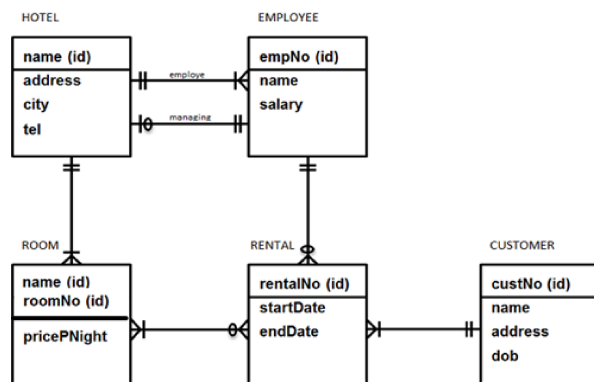


Figure 1: The Hotel ERD.

Relation 1 *Customer - Rental*:

Relation 2 *Rental - Employee*:

Relation 3 *Rental - Room*:

Relation 4 *Hotel - Room*:

Relation 5 *Hotel - Employee (Employee)*:

Relation 6 *Hotel - Employee (Managing)*:

SQL statements

Make an SQL query for the following questions. The desired result is printed below each question. Additionally in some question you need to provide an explanation of the code in plain English. Assume you have to discuss your result with a layman and he wants to understand what you have done.

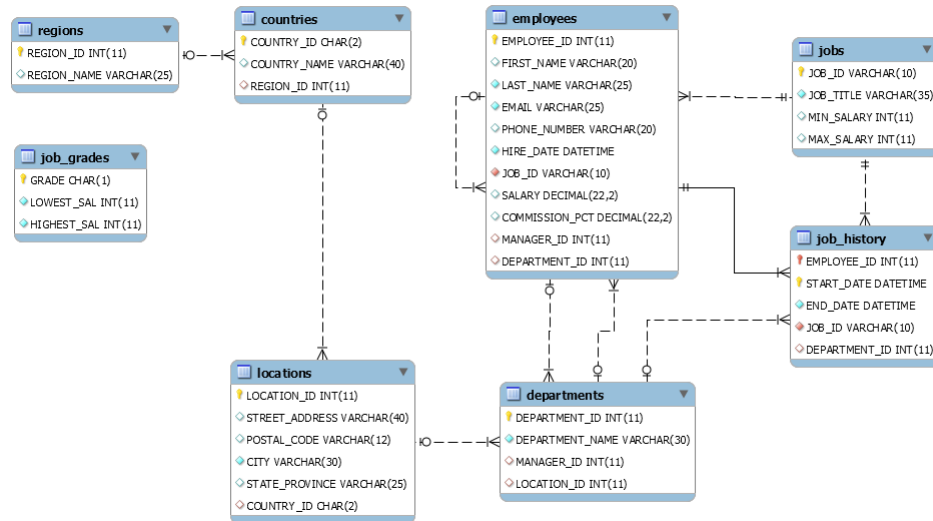


Figure 2: The Human Resources database.

Make an SQL query for the following questions. The desired result is printed below each question.

- A. The HR department needs a report to display the employee number, last name, salary, and salary increased by 15.5% for each employee with an employee ID below 110. Label the column New Salary.

employee_id	last_name	salary	New salary
100	King	24000	27720
101	Kochhar	17000	19635
102	De Haan	17000	19635
103	Hunold	9000	10395
104	Ernst	6000	6930
105	Austin	4800	5544
106	Pataballa	4800	5544
107	Lorentz	4200	4851
108	Greenberg	12000	13860
109	Faviet	9000	10395

- B. Find the highest, lowest, sum, and average salary of all employees. Label the columns Maximum, Minimum, Sum, and Average, respectively. Round your results to the nearest whole number.

Maximum	Minimum	SUM	Average
24000	2100	691400	6462

C. Explain in plain english the following code.

```
SELECT job_id, MAX(salary) AS MaxSalary, MIN(salary) AS MinSalary,  
SUM(salary) AS SumSalary, avg(salary) AS AvgSalary  
FROM employees  
GROUP BY job_id;
```

job_id	MaxSalary	MinSalary	SumSalary	AvgSalary
AC_ACCOUNT	8300	8300	8300	8300
AC_MGR	12000	12000	12000	12000
AD_ASST	4400	4400	4400	4400
AD_PRES	24000	24000	24000	24000
AD_VP	17000	17000	34000	17000
FI_ACCOUNT	9000	6900	39600	7920
FI_MGR	12000	12000	12000	12000
HR_REP	6500	6500	6500	6500
IT_PROG	9000	4200	28800	5760
MK_MAN	13000	13000	13000	13000
MK_REP	6000	6000	6000	6000
PR_REP	10000	10000	10000	10000
PU_CLERK	3100	2500	13900	2780
PU_MAN	11000	11000	11000	11000
SA_MAN	14000	10500	61000	12200
SA_REP	11500	6100	250500	8350
SH_CLERK	4200	2500	64300	3215
ST_CLERK	3600	2100	55700	2785
ST_MAN	8200	5800	36400	7280

D. Write a query to display the number of employees with the same job.

job_id	total_number
AC_ACCOUNT	1
AC_MGR	1
AD_ASST	1
AD_PRES	1
AD_VP	2
FI_ACCOUNT	5
FI_MGR	1
HR_REP	1
IT_PROG	5
MK_MAN	1
MK_REP	1
PR_REP	1
PU_CLERK	5
PU_MAN	1
SA_MAN	5
SA_REP	30
SH_CLERK	20
ST_CLERK	20
ST_MAN	5

E. Determine the number of managers without listing them. Label the column Number of Managers. Hint: Use the MANAGER_ID column to determine the number of managers.

Number of Managers
19

F. Write a query to display the names (first_name, last_name, Hire_date, Job_id) using alias name “First Name”, “Last Name”, “Hired”, “Job” for all employees who’s first name starts with an “A”

First Name	Last Name	Hired	Job
Alexander	Hunold	1987-06-20	IT_PROG
Alexander	Khoo	1987-07-02	PU_CLERK
Adam	Fripp	1987-07-08	ST_MAN
Alberto	Errazuriz	1987-08-03	SA_MAN
Allan	McEwen	1987-08-14	SA_REP
Amit	Banda	1987-08-23	SA_REP
Alyssa	Hutton	1987-08-31	SA_REP
Alexis	Bull	1987-09-10	SH_CLERK
Anthony	Cabrio	1987-09-12	SH_CLERK
Alana	Walsh	1987-09-21	SH_CLERK

G. Explain the following code in plain English

```
SELECT manager_id, MIN(salary) AS MinSalary
FROM employees
GROUP BY manager_id
HAVING MIN(salary) > 6000
ORDER BY MinSalary DESC
```

manager_id	MinSalary
0	24000
102	9000
205	8300
145	7000
146	7000
108	6900
147	6200
149	6200
148	6100

H. Explain the following code in plain English, how could this chunk be improved using INNER JOIN?

```
SELECT e.last_name, e.job_id, e.department_id, d.depart_name
FROM employees e, departments d, locations l
WHERE e.department_id = d.department_id
AND d.location_id = l.location_id
AND LOWER(l.city) = 'toronto';
```

last_name	job_id	department_id	depart_name
Hartstein	MK_MAN	20	Marketing
Fay	MK_REP	20	Marketing

I. The HR department needs to find the names, salary and hire dates for all employees who have a higher salary than their managers, along with their managers' names and hire dates and salary.

employee	Hired_Em	Salary_Em	Manager	Hired_Ma	Salary_Ma
Ozer	1987-08-24	11500	Cambrault	1987-08-04	11000
Abel	1987-08-30	11000	Zlotkey	1987-08-05	10500

J. Explain the following code in plain English

```
SELECT last_name, department_id, job_id
FROM employees
WHERE department_id IN (
    SELECT department_id
    FROM departments
    WHERE location_id = 1700
);
```

last_name	department_id	job_id
King	90	AD_PRES
Kochhar	90	AD_VP
De Haan	90	AD_VP
Greenberg	100	FI_MGR
Faviet	100	FI_ACCOUNT
Chen	100	FI_ACCOUNT
Sciarra	100	FI_ACCOUNT
Urman	100	FI_ACCOUNT
Popp	100	FI_ACCOUNT
Raphaely	30	PU_MAN
Khoo	30	PU_CLERK
Baida	30	PU_CLERK
Tobias	30	PU_CLERK
Himuro	30	PU_CLERK
Colmenares	30	PU_CLERK
Whalen	10	AD_ASST
Higgins	110	AC_MGR
Gietz	110	AC_ACCOUNT

K. Create a report for HR that displays the last name and salary of every employee who reports to King.

last_name	salary
Kochhar	17000
De Haan	17000
Raphaely	11000
Weiss	8000
Fripp	8200
Kaufling	7900
Vollman	6500
Mourgos	5800
Russell	14000
Partners	13500
Errazuriz	12000
Cambrault	11000
Zlotkey	10500
Hartstein	13000

##BONUS

As with every bonus, this is a more complex challenge allowing to show more skills. It is still part of the whole assignment and as such taken into account with the formative indication.

L. Make the following graph. (Hint, make sure to check the data set carefully, there are some hidden tricks)

