

# Relational Databases with MySQL Week 2 Coding Assignment

**Points possible:** 70

Category	Criteria	% of Grade
<b>Functionality</b>	Does the code work?	25
<b>Organization</b>	Is the code clean and organized? Proper use of white space, syntax, and consistency are utilized. Names and comments are concise and clear.	25
<b>Creativity</b>	Student solved the problems presented in the assignment using creativity and out of the box thinking.	25
<b>Completeness</b>	All requirements of the assignment are complete.	25

**Instructions:** Using a text editor of your choice, write the queries that accomplishes the objectives listed below. Take screenshots of the queries and results and paste them in this document where instructed below. Create a new repository on GitHub for this week's assignments and push this document, with your Java project code, to the repository. Add the URL for this week's repository to this document where instructed and submit this document to your instructor when complete.

## Coding Steps:

Write queries to address the following business needs.

1. I want to know how many employees with each title were born after 1965-01-01.
2. I want to know the average salary per title.
3. How much money was spent on salary for the marketing department between the years 1990 and 1992?

## Screenshots of Queries:

```
-- MySQL week 2 Coding Assignment
-- Backend Coding Bootcamp
-- Promineo Tech
--

SELECT * FROM employees LIMIT 10;
SELECT count(*) FROM employees;

-- Requirement #1
-- I want to know how many employees with each title were born after 1965-01-01.

DESC employees;

SELECT COUNT(*) AS "Number of Employees Born After January 1, 1965", t.title AS "Title"
FROM employees e
INNER JOIN titles t ON e.emp_no = t.emp_no AND e.birth_date > '1965-01-01'
GROUP BY title;

-- DIFFERENT WAY TO SOLVE Requirement #1 -- 1
-- -----
-- Same Query, Done with a WHERE clause
--

SELECT COUNT(e.emp_no) AS "Number of Employees Born After January 1, 1965", t.title AS "Title"
FROM titles t
INNER JOIN employees e ON e.emp_no = t.emp_no
WHERE e.birth_date > '1965-01-01'
GROUP BY t.title;

-- DIFFERENT WAY TO SOLVE Requirement #1 -- 2
-- -----
-- Same Query -- NO INNER JOIN clause
--

SELECT COUNT(e.emp_no) AS "Number of Employees Born After January 1, 1965", t.title AS "Title"
FROM titles t, employees e
WHERE e.emp_no = t.emp_no AND e.birth_date > '1965-01-01'
GROUP BY t.title;

-- Requirement #2
-- I want to know the average salary per title.

DESC titles;
DESC salaries;

SELECT FORMAT(AVG(s.salary),2) AS "Average Salary", t.title AS "Title"
FROM salaries s
INNER JOIN titles t ON t.emp_no = s.emp_no
GROUP BY t.title ORDER BY t.title;

-- DIFFERENT WAY TO SOLVE Requirement #2 -- 1
-- -----
-- Same Query -- NO INNER JOIN clause
--

SELECT FORMAT(AVG(s.salary),2) AS "Average Salary", t.title AS "Title"
FROM salaries s, titles t
WHERE t.emp_no = s.emp_no
GROUP BY t.title ORDER BY t.title;

-- Requirement #3
-- How much money was spent on salary for the 'Marketing' department
-- between the years 1990 and 1992?
DESC departments;
DESC dept_emp;
DESC salaries;

SELECT FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries 1990-1992", d.dept_name AS "Department Name"
FROM departments d
INNER JOIN dept_emp de ON de.dept_no = d.dept_no
INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.to_date BETWEEN de.from_date AND de.to_date)
GROUP BY d.dept_name HAVING d.dept_name = "Marketing";
--
```

```

-- Query to check results -- and use other functions -- ONLY "Marketing"
-- SELECT d.dept_name AS "Department",
--        FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries 1990-1992",
--        FORMAT(MIN(s.salary),0) AS "Min. Salary",
--        FORMAT(MAX(s.salary),0) AS "Max. Salary",
--        FORMAT(AVG(s.salary),2) AS "Avg. Salary",
--        COUNT(s.salary) AS "# Salaries Recorded"
FROM departments d
INNER JOIN dept_emp de ON de.dept_no = d.dept_no AND de.from_date < '1993-01-01'
INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.from_date BETWEEN de.from_date AND de.to_date)
GROUP BY d.dept_name HAVING d.dept_name = "Marketing" ORDER BY d.dept_name;

-- Query to check results -- and use other functions -- ALL DEPARTMENTS
-- SELECT d.dept_name AS "Department",
--        FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries 1990-1992",
--        FORMAT(MIN(s.salary),0) AS "Min. Salary",
--        FORMAT(MAX(s.salary),0) AS "Max. Salary",
--        FORMAT(AVG(s.salary),2) AS "Avg. Salary",
--        COUNT(s.salary) AS "# Salaries Recorded"
FROM departments d
INNER JOIN dept_emp de ON de.dept_no = d.dept_no AND de.from_date < '1993-01-01'
INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.from_date BETWEEN de.from_date AND de.to_date)
GROUP BY d.dept_name ORDER BY d.dept_name;

-- DIFFERENT WAY TO SOLVE Requirement #3 -- 1
-- SELECT d.dept_name AS "Department", FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries-Marketing Dept 1990-1992 (MD90-92)"
-- FROM departments d
-- INNER JOIN dept_emp de ON de.dept_no = d.dept_no AND d.dept_name = 'Marketing' AND de.from_date < '1993-01-01'
-- INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.from_date BETWEEN de.from_date AND de.to_date);

-- Query to check results -- and use other functions -- ONLY MARKETING!
-- SELECT d.dept_name AS "Department", FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries-Marketing Dept 1990-1992 (MD90-92)",
--        FORMAT(MIN(s.salary),0) AS "Min Salary (MD90-92)",
--        FORMAT(MAX(s.salary),0) AS "Max Salary (MD90-92)",
--        FORMAT(AVG(s.salary),2) AS "Avg Salary (MD90-92)",
--        COUNT(s.salary) AS "# Salaries Recorded (MD90-92)"
FROM departments d
INNER JOIN dept_emp de ON de.dept_no = d.dept_no AND d.dept_name = 'Marketing' AND de.from_date < '1993-01-01'
INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.from_date BETWEEN de.from_date AND de.to_date);

```

## Screenshots of Query Results (only include the last 20 rows):

```
mysql> -- MySQL week 2 Coding Assignment
mysql> -- Backend Coding Bootcamp
mysql> -- Promineo Tech
mysql>
mysql>
mysql> SELECT * FROM employees LIMIT 10;
+-----+-----+-----+-----+-----+
| emp_no | birth_date | first_name | last_name | gender |
+-----+-----+-----+-----+-----+
| 10001 | 1953-09-02 | Georgi | Facello | M |
| 10002 | 1964-06-02 | Bezelel | Simmel | F |
| 10003 | 1959-12-03 | Parto | Bamford | M |
| 10004 | 1954-05-01 | Chirstian | Koblick | M |
| 10005 | 1955-01-21 | Kyoichi | Meliniak | M |
| 10006 | 1953-04-28 | Anneke | Preusig | F |
| 10007 | 1957-05-23 | Tzvetan | Zielinski | F |
| 10008 | 1958-02-19 | Saniya | Kalloufi | M |
| 10009 | 1952-04-19 | Sumant | Peac | F |
| 10010 | 1963-06-01 | Duangkaew | Piveteau | F |
+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)

mysql> SELECT count(*) FROM employees;
+-----+
| count(*) |
+-----+
| 300024 |
+-----+
1 row in set (0.03 sec)

mysql> =
mysql> Requirement #1
mysql> I want to know how many employees with each title were born after 1965-01-01.
mysql>
mysql> DESC employees;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| emp_no | int | NO | PRI | NULL |
| birth_date | date | NO | | NULL |
| first_name | varchar(14) | NO | | NULL |
| last_name | varchar(16) | NO | | NULL |
| gender | enum('M','F') | NO | | NULL |
| hire_date | date | NO | | NULL |
+-----+-----+-----+-----+-----+
6 rows in set (0.03 sec)

mysql>
mysql> SELECT COUNT(e.emp_no) AS "Number of Employees Born After January 1, 1965", t.title AS "Title"
    > FROM employees e
    > INNER JOIN titles t ON t.emp_no = e.emp_no AND e.birth_date > '1965-01-01'
    > GROUP BY title;
+-----+-----+
| Number of Employees Born After January 1, 1965 | Title |
+-----+-----+
| 612 | Senior Staff |
| 703 | Staff |
| 95 | Technique Leader |
| 589 | Senior Engineer |
| 657 | Engineer |
| 97 | Assistant Engineer |
+-----+-----+
6 rows in set, 1 warning (0.10 sec)

mysql>
mysql> DIFFERENT WAY TO SOLVE Requirement #1 -- 1
mysql> ---
mysql> Same Query, Done with a WHERE clause
mysql>
mysql> SELECT COUNT(e.emp_no) AS "Number of Employees Born After January 1, 1965", t.title AS "Ti
    > FROM titles t
    > INNER JOIN employees e ON e.emp_no = t.emp_no
    > WHERE e.birth_date > '1965-01-01'
    > GROUP BY t.title;
+-----+-----+
| Number of Employees Born After January 1, 1965 | Title |
+-----+-----+
| 612 | Senior Staff |
| 703 | Staff |
| 95 | Technique Leader |
| 589 | Senior Engineer |
| 657 | Engineer |
| 97 | Assistant Engineer |
+-----+-----+
6 rows in set (0.06 sec)

mysql>
mysql> ||
mysql>
mysql> DIFFERENT WAY TO SOLVE Requirement #1 -- 2
mysql> ---
mysql> Same Query -- NO INNER JOIN clause
mysql>
mysql> SELECT COUNT(e.emp_no) AS "Number of Employees Born After January 1, 1965", t.title AS "Tj
    > FROM titles t, employees e
    > WHERE e.emp_no = t.emp_no AND e.birth_date > '1965-01-01'
    > GROUP BY t.title;
+-----+-----+
| Number of Employees Born After January 1, 1965 | Title |
+-----+-----+
| 612 | Senior Staff |
| 703 | Staff |
| 95 | Technique Leader |
| 589 | Senior Engineer |
| 657 | Engineer |
| 97 | Assistant Engineer |
+-----+-----+
6 rows in set (0.09 sec)

mysql>
mysql> ||
mysql>
```

```

mysql>
mysql>
mysql> -- Requirement #2
mysql> -- I want to know the average salary per title.
mysql> DESC titles;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| emp_no | int  | NO   | PRI | NULL   |       |
| title  | varchar(50)| NO  | PRI | NULL   |       |
| from_date | date | NO   | PRI | NULL   |       |
| to_date | date | YES  |      | NULL   |       |
+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql> DESC salaries;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| emp_no | int  | NO   | PRI | NULL   |       |
| salary | int  | NO   | PRI | NULL   |       |
| from_date | date | NO   | PRI | NULL   |       |
| to_date | date | NO   |      | NULL   |       |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT FORMAT(AVG(s.salary),2) AS "Average Salary", t.title AS "Title"
    -> FROM salaries s
    -> INNER JOIN titles t ON t.emp_no = s.emp_no
    -> GROUP BY t.title ORDER BY t.title;
+-----+-----+
| Average Salary | Title      |
+-----+-----+
| 59,304.99    | Assistant Engineer |
| 59,508.08    | Engineer          |
| 66,924.27    | Manager           |
| 68,543.22    | Senior Engineer   |
| 70,470.50    | Senior Staff      |
| 69,308.71    | Staff              |
| 59,294.37    | Technique Leader  |
+-----+-----+
7 rows in set (4.45 sec)

mysql>

mysql>
mysql> -- DIFFERENT WAY TO SOLVE Requirement #2 -- 1
mysql> --
mysql> -- Same Query -- NO INNER JOIN clause
mysql> --
mysql> SELECT FORMAT(AVG(s.salary),2) AS "Average Salary", t.title AS "Title"
    -> FROM salaries s, titles t
    -> WHERE t.emp_no = s.emp_no
    -> GROUP BY t.title ORDER BY t.title;
+-----+-----+
| Average Salary | Title      |
+-----+-----+
| 59,304.99    | Assistant Engineer |
| 59,508.08    | Engineer          |
| 66,924.27    | Manager           |
| 68,543.22    | Senior Engineer   |
| 70,470.50    | Senior Staff      |
| 69,308.71    | Staff              |
| 59,294.37    | Technique Leader  |
+-----+-----+
7 rows in set (4.31 sec)

mysql>

mysql>
mysql> -- Requirement #3
mysql> -- How much money was spent on salary for the 'Marketing' department
mysql> -- between the years 1990 and 1992?
mysql> DESC departments;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| dept_no | char(4) | NO   | PRI | NULL   |       |
| dept_name | varchar(40) | NO  | UNI | NULL   |       |
+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> DESC dept_emp;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| emp_no | int  | NO   | PRI | NULL   |       |
| dept_no | char(4) | NO   | PRI | NULL   |       |
| from_date | date | NO   |      | NULL   |       |
| to_date | date | NO   |      | NULL   |       |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> DESC salaries;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| emp_no | int  | NO   | PRI | NULL   |       |
| salary | int  | NO   | PRI | NULL   |       |
| from_date | date | NO   | PRI | NULL   |       |
| to_date | date | NO   |      | NULL   |       |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> 
mysql>

mysql> SELECT FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries 1990-1992", d.dept_name AS "Department Name"
    -> FROM departments d
    -> INNER JOIN dept_emp de ON de.dept_no = d.dept_no
    -> INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.from_date BETWEEN de.from_date AND de.to_date)
    -> GROUP BY d.dept_name HAVING d.dept_name = "Marketing";
+-----+-----+
| Money Spent On Salaries 1990-1992 | Department Name |
+-----+-----+
| 1,489,466,233.00                  | Marketing        |
+-----+-----+
1 row in set (2.35 sec)

mysql> 

```

```

mysql> --
mysql> -- Query to check results -- and use other functions -- ONLY "Marketing"
mysql> --
mysql> SELECT d.dept_name AS "Department",
-->   FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries 1990-1992",
-->   FORMAT(MIN(s.salary),0) AS "Min. Salary",
-->   FORMAT(MAX(s.salary),0) AS "Max. Salary",
-->   FORMAT(AVG(s.salary),2) AS "Avg. Salary",
-->   COUNT(s.salary) AS "# Salaries Recorded"
--> FROM departments d
--> INNER JOIN dept_emp de ON de.dept_no = d.dept_no AND de.from_date < '1993-01-01'
--> INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.from_date BETWEEN de.from_date AND de.to_date)
--> GROUP BY d.dept_name HAVING d.dept_name = "Marketing" ORDER BY d.dept_name;
+-----+-----+-----+-----+-----+
| Department | Money Spent On Salaries 1990-1992 | Min. Salary | Max. Salary | Avg. Salary | # Salaries Recorded |
+-----+-----+-----+-----+-----+
| Marketing | 1,489,466,233.00 | 39,217 | 129,158 | 66,666.65 | 22342 |
+-----+-----+-----+-----+-----+
1 row in set (1.70 sec)

mysql> --
mysql> --
mysql> -- Query to check results -- and use other functions -- ALL DEPARTMENTS
mysql> --
mysql> SELECT d.dept_name AS "Department",
-->   FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries 1990-1992",
-->   FORMAT(MIN(s.salary),0) AS "Min. Salary",
-->   FORMAT(MAX(s.salary),0) AS "Max. Salary",
-->   FORMAT(AVG(s.salary),2) AS "Avg. Salary",
-->   COUNT(s.salary) AS "# Salaries Recorded"
--> FROM departments d
--> INNER JOIN dept_emp de ON de.dept_no = d.dept_no AND de.from_date < '1993-01-01'
--> INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.from_date BETWEEN de.from_date AND de.to_date)
--> GROUP BY d.dept_name ORDER BY d.dept_name;
+-----+-----+-----+-----+-----+
| Department | Money Spent On Salaries 1990-1992 | Min. Salary | Max. Salary | Avg. Salary | # Salaries Recorded |
+-----+-----+-----+-----+-----+
| Customer Service | 1,212,337,795.00 | 39,072 | 130,434 | 50,983.55 | 23779 |
| Development | 5,985,765,039.00 | 39,020 | 118,563 | 54,599.59 | 108165 |
| Finance | 1,451,250,303.00 | 39,185 | 124,637 | 66,297.41 | 21890 |
| Human Resources | 1,185,873,641.00 | 39,054 | 108,685 | 49,951.38 | 22139 |
| Marketing | 1,489,466,233.00 | 39,217 | 129,158 | 66,666.65 | 22342 |
| Production | 4,837,798,680.00 | 39,046 | 113,569 | 54,773.23 | 88324 |
| Quality Management | 1,177,326,680.00 | 39,124 | 108,866 | 52,045.74 | 22621 |
| Research | 1,263,294,744.00 | 38,851 | 111,575 | 54,797.20 | 23054 |
| Sales | 5,089,958,096.00 | 39,427 | 138,817 | 75,967.16 | 65949 |
+-----+-----+-----+-----+-----+
9 rows in set (1.70 sec)

mysql> 
mysql> ||
```

  

```

mysql> --
mysql> -- DIFFERENT WAY TO SOLVE Requirement #3 -- 1
mysql> --
mysql> SELECT d.dept_name AS "Department", FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries-Marketing Dept 1990-1992 (MD90-92)"
--> FROM departments d
--> INNER JOIN dept_emp de ON de.dept_no = d.dept_no AND d.dept_name = 'Marketing' AND de.from_date < '1993-01-01'
--> INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.from_date BETWEEN de.from_date AND de.to_date);
+-----+-----+
| Department | Money Spent On Salaries-Marketing Dept 1990-1992 (MD90-92) |
+-----+-----+
| Marketing | 1,489,466,233.00 |
+-----+-----+
1 row in set (0.18 sec)

mysql> ||
mysql> --
mysql> -- Query to check results -- and use other functions -- ONLY MARKETING!
mysql> --
mysql> SELECT d.dept_name AS "Department", FORMAT(SUM(s.salary),2) AS "Money Spent On Salaries-Marketing Dept 1990-1992 (MD90-92)",
-->   FORMAT(MIN(s.salary),0) AS "Min Salary (MD90-92)",
-->   FORMAT(MAX(s.salary),0) AS "Max Salary (MD90-92)",
-->   FORMAT(AVG(s.salary),2) AS "Avg Salary (MD90-92)",
-->   COUNT(s.salary) AS "# Salaries Recorded (MD90-92)"
--> FROM departments d
--> INNER JOIN dept_emp de ON de.dept_no = d.dept_no AND d.dept_name = 'Marketing' AND de.from_date < '1993-01-01'
--> INNER JOIN salaries s ON de.emp_no = s.emp_no AND (s.from_date BETWEEN '1990-01-01' AND '1992-12-31') AND (s.from_date BETWEEN de.from_date AND de.to_date);
+-----+-----+-----+-----+-----+
| Department | Money Spent On Salaries-Marketing Dept 1990-1992 (MD90-92) | Min Salary (MD90-92) | Max Salary (MD90-92) | Avg Salary (MD90-92) | # Salaries Recorded (MD90-92) |
+-----+-----+-----+-----+-----+
| Marketing | 1,489,466,233.00 | 39,217 | 129,158 | 66,666.65 | 22342 |
+-----+-----+-----+-----+-----+
1 row in set (0.19 sec)

mysql> 
mysql> ||
```

URL to GitHub Repository: <https://github.com/sw-dev-lisa-s-nh/MySQL-week2.git>