Relational Databases with MySQL Week 2 Coding Assignment

Points possible: 70

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

```sql
--
--  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 t.emp_no = e.emp_no AND e.birth_date > '1965-01-01'
GROUP BY title;


-- 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;


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

DESC titles;
DESC salaries;

SELECT avg(s.salary) 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;


-- 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;

--
-- To select records which were relevant to this range of dates, I used the following steps:
-- 1.  Find all employees who work for the Marketing Dept (JOIN departments with dept_emp)
--          Filter by dept_name = 'Marketing' and if they were hired before 1993
-- 2.  Use that emp_no to find all salaries of those employees (JOIN dept_emp with salaries)
--          Filter result by checking if from_date of the salary is in the correct range
--          AND if the s.from_date is in the time when that employee worked for Marketing
--

SELECT sum(s.salary) 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
--
SELECT sum(s.salary) AS "Money Spent On Salaries-Marketing Dept 1990-1992 (MD90-92)",
       min(s.salary) AS "Min Salary (MD90-92)",
       max(s.salary) AS "Max Salary (MD90-92)",
       avg(s.salary) 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> -- 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 (0.07 sec)

mysql>
mysql> SELECT count(*) 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 (0.32 sec)

mysql>
mysql>
mysql> -- Same Query, Done with a WHERE clause
mysql> 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;
+-----------------------------------------------+--------------------+
| 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 (0.07 sec)

mysql>
mysql>
```

```
mysql>
mysql> -- Requirement #2
mysql> --  I want to know the average salary per title.
mysql>
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 (0.00 sec)

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

mysql>
mysql> SELECT avg(s.salary) 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              |
+----------------+--------------------+
|     59304.9863 | Assistant Engineer |
|     59508.0751 | Engineer           |
|     66924.2706 | Manager            |
|     60543.2191 | Senior Engineer    |
|     70470.5013 | Senior Staff       |
|     69308.7124 | Staff              |
|     59294.3742 | Technique Leader   |
+----------------+--------------------+
7 rows in set (5.98 sec)

mysql>
mysql>
```

```
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 (0.01 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   |     | NULL    |       |
| from_date | date | NO   | PRI | NULL    |       |
| to_date   | date | NO   |     | NULL    |       |
+-----------+------+------+-----+---------+-------+
4 rows in set (0.01 sec)
```

```
mysql>
mysql> SELECT sum(s.salary) 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);
+-----------------------------------------------------------+
| Money Spent On Salaries-Marketing Dept 1990-1992 (MD90-92) |
+-----------------------------------------------------------+
|                                                1489466233 |
+-----------------------------------------------------------+
1 row in set (0.24 sec)

mysql>
```

```
mysql> --
mysql> SELECT sum(s.salary) AS "Money Spent On Salaries-Marketing Dept 1990-1992 (MD90-92)",
    ->        min(s.salary) AS "Min Salary (MD90-92)",
    ->        max(s.salary) AS "Max Salary (MD90-92)",
    ->        avg(s.salary) 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);
+-----------------------------------------------------------+---------------------+---------------------+---------------------+-----------------------------+
| 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) |
+-----------------------------------------------------------+---------------------+---------------------+---------------------+-----------------------------+
|                                                1489466233 |               39217 |               129158 |           66666.6473 |                       22342 |
+-----------------------------------------------------------+---------------------+---------------------+---------------------+-----------------------------+
1 row in set (0.38 sec)

mysql>
mysql>
```

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