Code explanation

I used sql queries in the DB Browser to retrieve the necessary information from the tables. I used the aliasing concept to read data from different tables and used 'JOIN' to join the tables and 'WHERE' to filter the contents for the majority of the questions. The 'GROUP BY' function is used to group columns depending on the 'by' condition in each query. The second question has a brief code explanation, and the same principle has been utilized for all remaining questions except the first, which is straight forward from a single table. Using the data collected from the DB Browser, various charts were created, which are presented in the analysis report.

1. What is the total head count of all current employees at Epoch systems? (sql query used is given below)

```
SELECT COUNT(*) as Current_Employees

FROM dept_emp

WHERE to_date = '9999-01-01';
```

2. What is the distribution of head count for current employees across the various departments? (sql query used is given below)

```
SELECT d.dept_name, COUNT(*) as Headcount

FROM departments d

JOIN dept_emp de ON d.dept_no = de.dept_no

WHERE de.to_date = '9999-01-01'

GROUP BY d.dept_name;
```

The query is explained below

This SQL code selects the department name and headcount (number of employees) for each department in the database.

It does this by joining the departments table (alias "d") with the dept_emp table (alias "de") on their department numbers (dept_no). The dept_emp table contains information about employees and the departments they work in, including the start and end dates of their employment in each department.

The WHERE clause filters the result set to only include current employees (i.e., those with a "to_date" value of '9999-01-01', which indicates an ongoing employment).

Finally, the GROUP BY clause groups the result set by department name and applies the COUNT function to count the number of employees in each department.

3. What is the average salary of all current employees by department? (sql query used is given below)

```
SELECT dep.dept_name, AVG(s.salary) as Average_Salary

FROM departments dep
```

```
JOIN dept_Emp de ON dep.dept_no = de.dept_no

JOIN salaries s ON de.emp_no = s.emp_no

WHERE s.to_date = '9999-01-01' AND de.to_date='9999-01-01'

GROUP BY dep.dept_name;
```

4. What is the max salary of all current employees by department? (sql query used is given below)

```
SELECT dep.dept_name, MAX(sal.salary) as Max_Salary

FROM departments dep

JOIN dept_emp de ON dep.dept_no = de.dept_no

JOIN salaries sal ON de.emp_no = sal.emp_no

WHERE sal.to_date = '9999-01-01' AND de.to_date='9999-01-01'

GROUP BY dep.dept_name;
```

5. What is the count of current employees who are aged 70 and above distributed by departments? (sql query used is given below)

```
SELECT dep.dept_name, COUNT(*) as Headcount

FROM departments dep

JOIN dept_emp de ON dep.dept_no = de.dept_no

JOIN employees emp ON de.emp_no = emp.emp_no

WHERE emp.birth_date <= '1953-03-03' and de.to_date='9999-01-01'--- Used today's date

GROUP BY dep.dept_name;
```

6. What is the average salary for employees grouped by titles? (sql query used is given below)

```
SELECT tit.title, AVG(sal.salary) as Average_Salary

FROM titles tit

JOIN salaries sal ON tit.emp_no = sal.emp_no

WHERE tit.to_date = '9999-01-01' AND sal.to_date='9999-01-01'

GROUP BY tit.title;
```

7. What is the head count of current employees grouped first by department and then by titles? (sql query used is given below)

```
SELECT d.dept_name, g.title, COUNT(*) as Employee_Count
```

```
FROM departments d
JOIN dept_emp de ON d.dept_no = de.dept_no
JOIN employees e ON de.emp_no = e.emp_no
JOIN titles g ON e.emp_no = g.emp_no
WHERE g.to_date = '9999-01-01' AND de.to_date = '9999-01-01'
GROUP BY d.dept_name, g.title
```