Payroll Management System

Group B

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Course Code: MGSC 5106

Course Name: Database Concepts

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Background

Problem Statement: Zen Tech IT services has an old Payroll Management System where Employees make manual attendance and get hard-copies of Pay-slips and Tax-slips from the Accounts Department and thus Employees didn't receive benefits in taxes through different modes of Allowances instantly.

Solution: To maintain the prestige and reputation in the Technology market, the company has planned to upgrade its Payroll Management System, this will enable efficiently accurate recording and hassle-free for their payroll department. The new Payroll Management System will include - Paid Leaves, Taxes, Medical expenses, working and non-working dates, bonuses irrespective of different Departments in just one click. All the Employees will get default credentials to access the new Payroll system to get hassle-free Salary slips anytime and everywhere.

Description

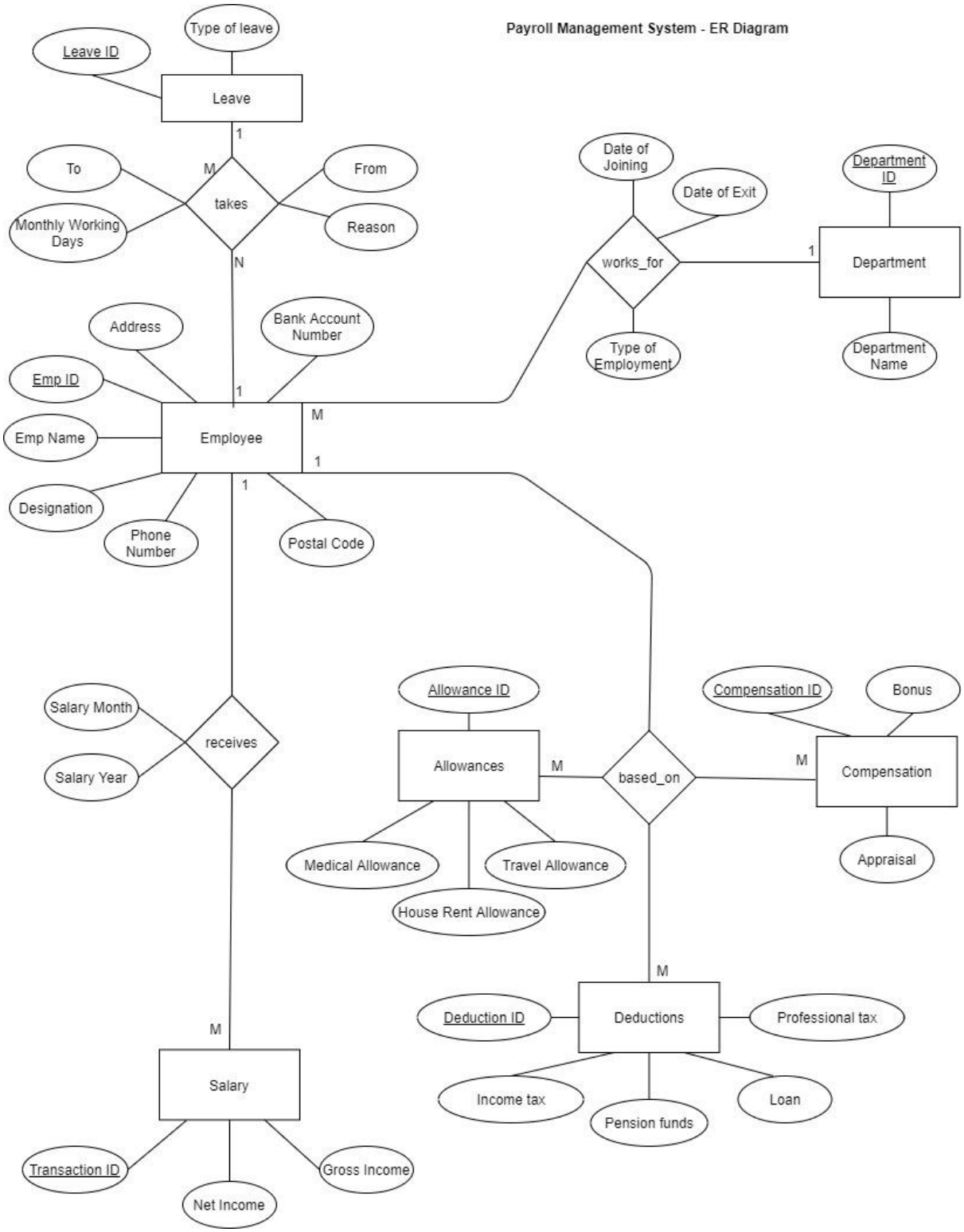
Red: Entity

Blue: Attribute

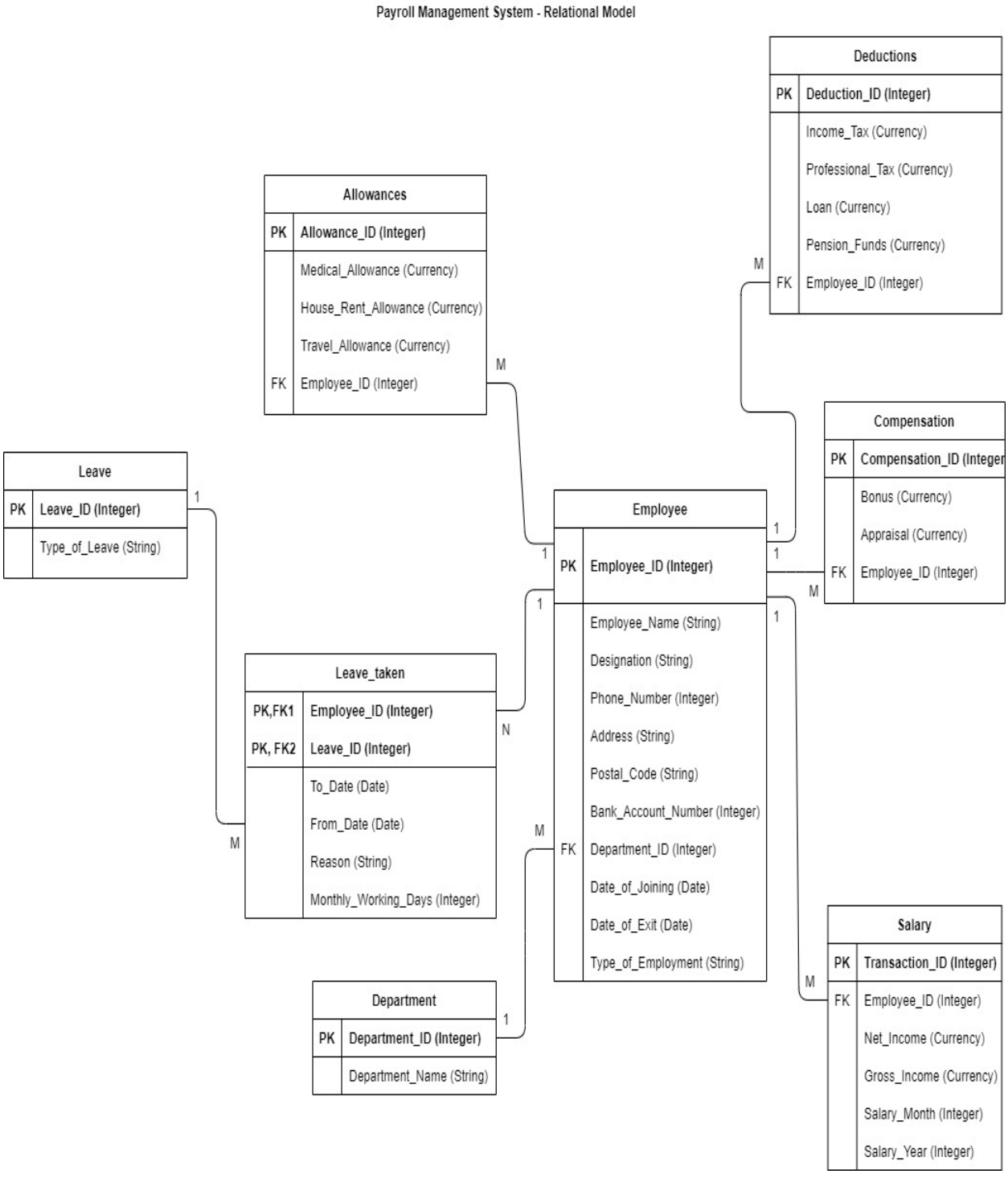
Green: Relationship

- Employees are having an Employee ID, Employee Name, Designation, Phone number, Address (considered atomic), Postal Code, and Bank Account number which works for Department, which is having Department ID and Department Name. Each Employee who works for a Department includes Date of Joining, Date of termination, and Type of Employment (Fulltime/Part-time).
- Employees can take multiple leaves with a timestamp to, and from. Employee's monthly working days are calculated based on the number of leaves and its reason. Specific leaves (ex. sick leave) can be taken by many employees. Leaves contain Leave ID and Type of leave.
- Every month of the year an employee receives a Salary that includes – Transaction ID, Net Income, and Gross Income. Employees will get a salary once a month.
- Deductions, Allowances and Compensation will be based on each employee's designation. The calculation of salary per Transaction ID is programmed in the front-end.
- Deductions in Salary have Deduction ID, Income Tax, Professional Tax, Loan, and Pension funds.
- Allowances have Allowance ID, Medical Allowance, House Rent Allowance, and Travel Allowance. Employees will get credentials on their email addresses to get the benefit of Allowances to manage taxes.
- Compensation has Compensation ID, Bonus, and yearly Appraisal.

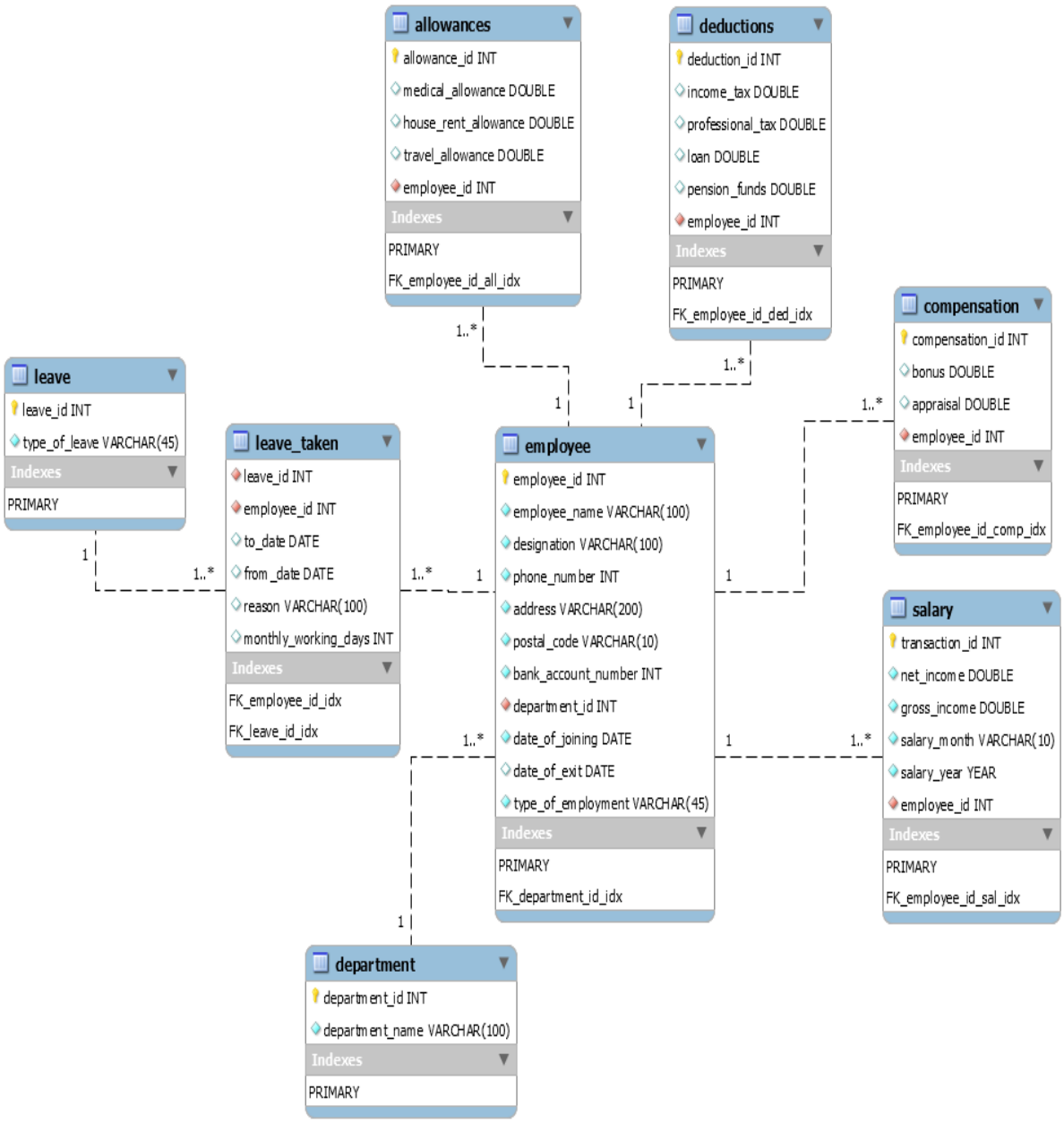
Entity-Relationship Diagram



Relational Model



MySQL EER Diagram



Questions

1. The address and Type of employment of Software Engineers who have earned a bonus of more than Rs. 100?

Query:

```
SELECT
    e.address Address,
    e.postal_code PostalCode,
    e.type_of_employment TypeOfEmployment
FROM
    employee e,
    compensation c
WHERE
    e.employee_id = c.employee_id
        AND e.designation = 'Software Engineer'
        AND c.bonus >= 100;
```

Result:

	Address	PostalCode	TypeOfEmployment
▶	104, Kings St, Sydney, NS	1B4 89J	Full-time

2. How many employees taken medical leaves in 2020?

Query:

```
SELECT
    COUNT(employee_id) EmployeesOnMedicalLeaves
FROM
    leave_taken
WHERE
    leave_id = 1 AND YEAR(to_date) = '2020'
        AND YEAR(from_date) = '2020';
```

Result:

	EmployeesOnMedicalLeaves
▶	2

3. Details of the employees works in the HR department?

Query:

```
SELECT
    e.*, d.department_name
FROM
    employee e,
    department d
WHERE
    e.department_id = d.department_id
        AND d.department_name = 'Human Resource';
```

Result:

	employee_id	employee_name	designation	phone_number	address	postal_code	bank_account_number	department_id	date_of_joining	date_of_exit	type_of_employment	department_name
▶	4003	Aston Kutcher	HR	78452121	10, Charles St, Sydney, NS	54N K78	784512252	3	2015-09-22	NULL	Full-time	Human Resource

4. Name the employee/s who pay income tax and do not apply for travel allowances?

Query:

```
SELECT
    e.employee_name EmployeeName
FROM
    employee e
WHERE
    employee_id = (SELECT
            e.employee_id
        FROM
            pms.deductions d,
            pms.allowances a
        WHERE
            e.employee_id = a.employee_id
                AND e.employee_id = d.employee_id
                AND income_tax != 0
                AND travel_allowance = 0);
```

Result:

	EmployeeName
▶	John Strugis

5. Average net income received by IT department employees?

Query:

```
SELECT
    AVG(net_income) AverageNetIncome
FROM
    employee e,
    salary s
WHERE
    e.employee_id = s.employee_id
        AND department_id = 4;
```

Result:

	AverageNetIncome
▶	42500

6. Total number of employees in each department

Query:

```
SELECT
    d.department_name,
    COUNT(d.department_id) TotalNoOfEmployeeInEachDepartment
FROM
    employee e,
    department d
WHERE
    e.department_id = d.department_id
GROUP BY d.department_id;
```

Result:

	department_name	TotalNoOfEmployeeInEachDepartment
▶	Research & Development	1
	Human Resource	1
	IT	3
	Risk & Strategy	1

Our Contribution

This project was equally contributed by all group members where we had weekly meetings over teams and brainstorm all the aspects of developing a robust Payroll Management system. Ajay contributed to drawing the Entity-Relationship diagram, inserted records in database tables, and prepared the PowerPoint slides. Kristine took the idea of ER diagram and contributed to representing the Relational model. Jinal structured the database tables that include creation and modification along with writing SQL queries and documenting this Word file. We jointly decided on the questions to ask our database. The company presented in this document is just for the representative purpose which could/couldn't have existed in the real world.