



## Section 2: ER Diagram

### Employee\_Payroll\_Service

#### UC8



UC 8



Ability to extend employee\_payroll data to store employee information like employee phone, address and department

- Ensure employee department is non nullable fields.
- Add Default Value for address field.

```
mysql> ALTER TABLE employee_payroll ADD phoe_Number VARCHAR(250) AFTER name;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right
syntax to use near 'VARCHAR(250) AFTER name' at line 1
mysql> ALTER TABLE employee_payroll ADD phoe_Number VARCHAR(250) AFTER name;
Query OK, 0 rows affected (4.71 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE employee_payroll ADD address VARCHAR(250) AFTER phone_Number;
ERROR 1054 (42S22): Unknown column 'phone_Number' in 'employee_payroll'
mysql> ALTER TABLE employee_payroll ADD address VARCHAR(250) AFTER phoe_Number;
Query OK, 0 rows affected (1.86 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE employee_payroll ADD department VARCHAR(250) not null AFTER address;
Query OK, 0 rows affected (1.59 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE employee_payroll ALTER address SET DEFAULT 'TBD';
Query OK, 0 rows affected (0.26 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

## Continue- UC8

```
mysql> describe employee_payroll;
```

Field	Type	Null	Key	Default	Extra
id	int unsigned	NO	PRI	NULL	auto_increment
name	varchar(150)	NO		NULL	
phoe_Number	varchar(250)	YES		NULL	
address	varchar(250)	YES		TBD	
department	varchar(250)	NO		NULL	
gendder	char(1)	YES		NULL	
salary	double	NO		NULL	
start	date	NO		NULL	

```
8 rows in set (0.20 sec)

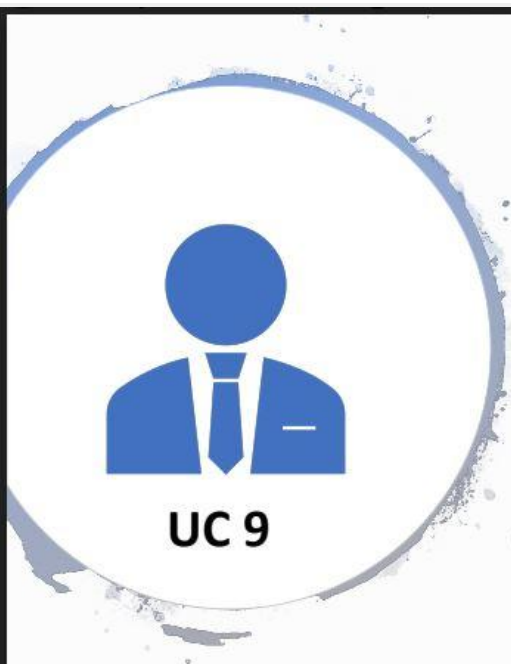
mysql> select * from employee_payroll;
```

id	name	phoe_Number	address	department	gendder	salary	start
1	Bill	NULL	NULL		M	1000000	2018-01-03
2	Terisa	NULL	NULL		F	3000000	2019-11-13
3	Charlie	NULL	NULL		M	3000000	2020-05-21

```
3 rows in set (0.02 sec)

mysql> INSERT INTO employee_payroll(name, salary, start) VALUES ('Mark', 1000000.00, '2018-81-83')
-> ;
ERROR 1292 (22007): Incorrect date value: '2018-81-83' for column 'start' at row 1
mysql> INSERT INTO employee_payroll(name, salary, start) VALUES ('Mark', 1000000.00, '2018-01-03');
ERROR 1364 (HY000): Field 'department' doesn't have a default value
mysql>
```

## UC9



Ability to extend  
employee\_payroll table  
to have Basic Pay,  
Deductions, Taxable Pay,  
Income Tax, Net Pay

## Continue- UC9

```
mysql> ALTER TABLE employee_payroll RENAME COLUMN salary TO basic_pay;
Query OK, 0 rows affected (1.69 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE employee_payroll ADD deduction Double NOT NULL AFTER basic_pay;
Query OK, 0 rows affected (1.74 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE employee_payroll ADD taxable_pay Double NOT NULL AFTER deduction;
Query OK, 0 rows affected (1.75 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE employee_payroll ADD tax Double NOT NULL AFTER taxable_pay;
Query OK, 0 rows affected (2.62 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> ALTER TABLE employee_payroll ADD tax Double NOT NULL AFTER taxable_pay;
Query OK, 0 rows affected (2.62 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> describe employee_payroll;
```

Field	Type	Null	Key	Default	Extra
id	int unsigned	NO	PRI	NULL	auto_increment
name	varchar(150)	NO		NULL	
phoe_Number	varchar(250)	YES		NULL	
address	varchar(250)	YES		TBD	
department	varchar(250)	NO		NULL	
gendder	char(1)	YES		NULL	
basic_pay	double	NO		NULL	
deduction	double	NO		NULL	
taxable_pay	double	NO		NULL	
tax	double	NO		NULL	
start	date	NO		NULL	

```
11 rows in set (0.04 sec)
```

```
mysql>
```

# UC10



UC 10

## Ability to make Terissa as part of Sales and Marketing Department

- Note: The Complete employee payroll roll need to be Inserted
- If a Salary is now going to be updated multiple rows has to be updated creating unnecessary redundancy
- Further There is 2 Employee ID so according to Database there is two different Terissa

```
mysql> select * from employee_payroll where name = 'Terisa';
```

id	name	phoe_Number	address	department	gendder	basic_pay	deduction	taxable_pay	tax	start
2	Terisa	NULL	NULL	sale	F	3000000	0	0	0	2019-11-13

1 row in set (0.00 sec)

```
mysql> INSERT INTO employee_payroll (name, salary, department, gendder, start) VALUES ('Terisa', 6000000.00, 'Marketing', '2021-02-14');
ERROR 1054 (42S22): Unknown column 'salary' in 'field list'
mysql> INSERT INTO employee_payroll (name, basic_pay, department, gendder, start) VALUES ('Terisa', 6000000.00, 'Marketing', '2021-02-14');
ERROR 1136 (21S01): Column count doesn't match value count at row 1
mysql> INSERT INTO employee_payroll (name, basic_pay, department, gendder, start) VALUES ('Terisa', 6000000.00, 'Marketing', 'F', '2021-02-14');
ERROR 1364 (HY000): Field 'deduction' doesn't have a default value
mysql> INSERT INTO employee_payroll (name, basic_pay, department, gendder, start, deduction) VALUES ('Terisa', 6000000.00, 'Marketing', 'F', '2021-02-14', '0');
ERROR 1364 (HY000): Field 'taxable_pay' doesn't have a default value
mysql> INSERT INTO employee_payroll (name, basic_pay, department, gendder, start, deduction, texable_pay) VALUES ('Terisa', 6000000.00, 'Marketing', 'F', '2021-02-14', '0', '0');
ERROR 1054 (42S22): Unknown column 'texable_pay' in 'field list'
mysql> INSERT INTO employee_payroll (name, basic_pay, department, gendder, start, deduction, texable_pay, tax) VALUES ('Terisa', 3000000.00, 'Marketing', 'F', '2021-02-14', '1000000', '2000000', '500000');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'tax') VALUES ('Terisa', 3000000.00, 'Marketing', 'F', '2021-02-14', '1000000', '2000000', '500000') at line 1
mysql> INSERT INTO employee_payroll (name, basic_pay, department, gendder, start, deduction, texable_pay, tax) VALUES ('Terisa', 3000000.00, 'Marketing', 'F', '2021-02-14', '1000000', '2000000', '500000');
ERROR 1054 (42S22): Unknown column 'texable_pay' in 'field list'
mysql> INSERT INTO employee_payroll (name, basic_pay, department, gendder, start, deduction, taxable_pay, tax) VALUES ('Terisa', 3000000.00, 'Marketing', 'F', '2021-02-14', '1000000', '2000000', '500000');
Query OK, 1 row affected (0.07 sec)
```

```
mysql> select * from employee_payroll where name = 'Terisa';
```

id	name	phoe_Number	address	department	gendder	basic_pay	deduction	taxable_pay	tax	start
2	Terisa	NULL	NULL	sale	F	3000000	0	0	0	2019-11-13
4	Terisa	NULL	TBD	Marketing	F	3000000	1000000	2000000	500000	2021-02-14

2 rows in set (0.10 sec)

```
mysql>
```



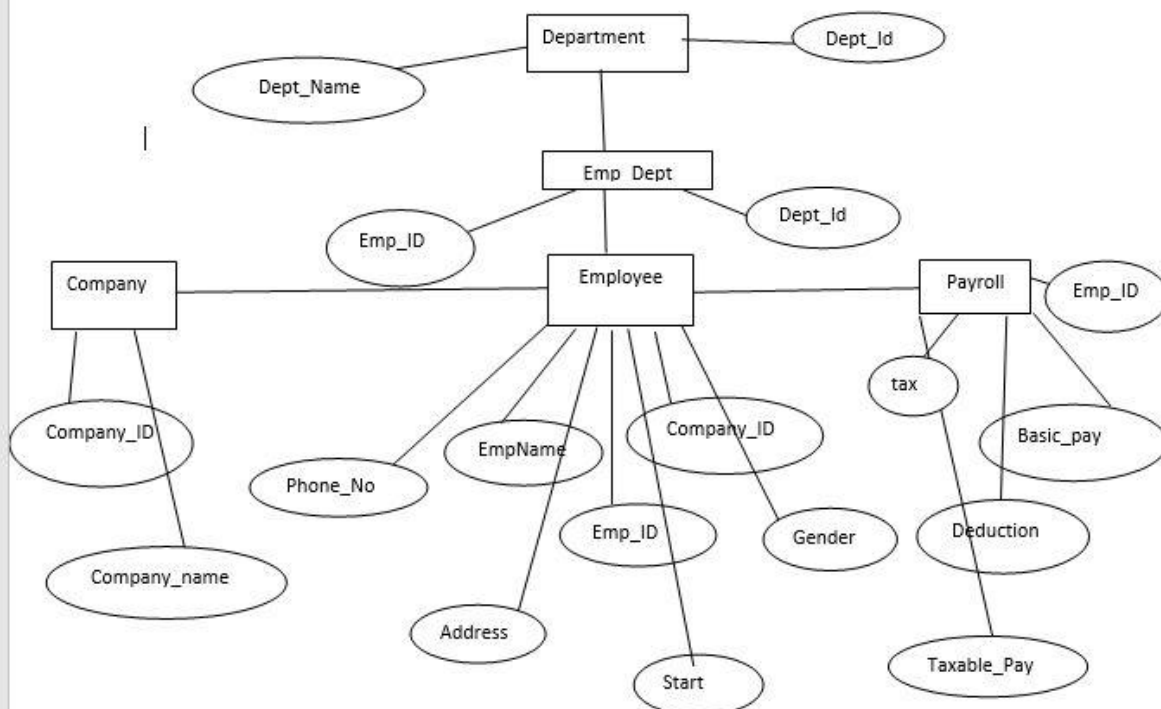
## UC10




**UC 10**


### Draw the ER Diagram for Payroll Service DB

- Identifies the Entities – Entities can be Identified using Normalization Technique
- Check each attribute and see if they are Composite or Multi-Valued



## UC11

  
BridgeLabz  
Employability Delivered

  
**UC 11**

### Implement the ER Diagram into Payroll Service DB

- Create the corresponding tables as identified in the ER Diagram along with attributes
- For Many to Many relationship, create new Table called Employee Department having Employee Id and Department ID and redo the UC 7

```
mysql> CREATE TABLE Company
-> (
-> Company_ID int PRIMARY KEY,
-> Company_Name VARCHAR(250)
-> );
Query OK, 0 rows affected (2.35 sec)
```

```
mysql> DESCRIBE Company;
```

Field	Type	Null	Key	Default	Extra
Company_ID	int	NO	PRI	NULL	
Company_Name	varchar(250)	YES		NULL	

2 rows in set (0.18 sec)

```
mysql> CREATE TABLE Dept
-> (
-> dept_id int PRIMARY KEY,
-> dept_name VARCHAR(250)
-> );
Query OK, 0 rows affected (1.50 sec)
```

```
mysql> DESCRIBE Dept;
```

Field	Type	Null	Key	Default	Extra
dept_id	int	NO	PRI	NULL	
dept_name	varchar(250)	YES		NULL	

2 rows in set (0.20 sec)

```
mysql> CREATE TABLE Employee
-> (
-> emp_id int PRIMARY KEY,
-> emp_name VARCHAR(250),
-> phone_no bigint,
-> start date,
-> gender VARCHAR(250),
-> Company_ID int,
-> address VARCHAR(250),
-> FOREIGN KEY (Company_ID) REFERENCES Company(Company_ID)
-> );
Query OK, 0 rows affected (2.28 sec)
```

```
mysql> DESCRIBE Employee;
```

Field	Type	Null	Key	Default	Extra
emp_id	int	NO	PRI	NULL	
emp_name	varchar(250)	YES		NULL	
phone_no	bigint	YES		NULL	
start	date	YES		NULL	
gender	varchar(250)	YES		NULL	
Company_ID	int	YES	MUL	NULL	
address	varchar(250)	YES		NULL	

```
7 rows in set (0.04 sec)
```

```
mysql>
```

```
mysql> CREATE TABLE Payroll
-> (
-> basic_pay VARCHAR(250),
-> Deduction VARCHAR(250),
-> Taxable_pay VARCHAR(250),
-> Tax VARCHAR(250),
-> emp_id int,
-> FOREIGN KEY (emp_id) REFERENCES Employee(emp_id)
-> );
Query OK, 0 rows affected (0.74 sec)
```

```
mysql> DESCRIBE Payroll;
```

Field	Type	Null	Key	Default	Extra
basic_pay	varchar(250)	YES		NULL	
Deduction	varchar(250)	YES		NULL	
Taxable_pay	varchar(250)	YES		NULL	
Tax	varchar(250)	YES		NULL	
emp_id	int	YES	MUL	NULL	

```
5 rows in set (0.58 sec)
```

```
mysql> CREATE TABLE EMP_DEPT
-> (
-> emp_id int,
-> FOREIGN KEY (emp_id) REFERENCES Employee(emp_id),
-> dept_id int,
-> FOREIGN KEY (dept_id) REFERENCES Dept(dept_id)
-> );
Query OK, 0 rows affected (1.74 sec)

mysql> DESCRIBE EMP_DEPT;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| emp_id | int | YES | MUL | NULL | |
| dept_id | int | YES | MUL | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.10 sec)

mysql>
```

```
mysql> INSERT INTO Company VALUES (101,'Bridgelabz');
Query OK, 1 row affected (1.75 sec)

mysql> update company set comapny_name="Dell inc" where company_id=102;
ERROR 1054 (42S22): Unknown column 'comapny_name' in 'field list'
mysql> update company set company_name="Dell inc" where company_id=101;
Query OK, 1 row affected (0.32 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> INSERT INTO Company VALUES (102,'Rdison');
Query OK, 1 row affected (0.17 sec)

mysql> INSERT INTO Company VALUES (103,'HCL');
Query OK, 1 row affected (0.08 sec)

mysql> select * from Company;
+-----+-----+
| Company_ID | Company_Name |
+-----+-----+
| 100 | Bridgelabz |
| 101 | Dell inc |
| 102 | Rdison |
| 103 | HCL |
+-----+-----+
4 rows in set (0.00 sec)
```



```
mysql> INSERT INTO Employee VALUES (1,'Prajakta',8149240833,'2018-02-09','F',100,'Ashtyavinayk colony');
Query OK, 1 row affected (0.20 sec)
```

```
mysql> select * from Employee;
```

emp_id	emp_name	phone_no	start	gender	Company_ID	address
1	Prajakta	8149240833	2018-02-09	F	100	Ashtyavinayk colony

1 row in set (0.00 sec)

```
mysql> INSERT INTO Employee VALUES (2,'Payal',8149240933,'2018-02-09','F',101,'Ram Nagar');
Query OK, 1 row affected (0.20 sec)
```

```
mysql> INSERT INTO Employee VALUES (3,'Pallavi',9149240933,'2020-02-10','F',102,'Krishna Nagar');
Query OK, 1 row affected (0.18 sec)
```

```
mysql> INSERT INTO Employee VALUES (4,'Ankush',9149250933,'2021-02-10','M',103,'Lakshmi Nagar');
Query OK, 1 row affected (0.17 sec)
```

```
mysql> select * from Employee;
```

emp_id	emp_name	phone_no	start	gender	Company_ID	address
1	Prajakta	8149240833	2018-02-09	F	100	Ashtyavinayk colony
2	Payal	8149240933	2018-02-09	F	101	Ram Nagar
3	Pallavi	9149240933	2020-02-10	F	102	Krishna Nagar
4	Ankush	9149250933	2021-02-10	M	103	Lakshmi Nagar

4 rows in set (0.00 sec)

```
mysql> INSERT INTO Employee VALUES (5,'Terisa',8149240844,'2017-02-09','F',100,'Gopal colony');
Query OK, 1 row affected (0.18 sec)
```

```
mysql> select * from Employee;
```

emp_id	emp_name	phone_no	start	gender	Company_ID	address
1	Prajakta	8149240833	2018-02-09	F	100	Ashtyavinayk colony
2	Payal	8149240933	2018-02-09	F	101	Ram Nagar
3	Pallavi	9149240933	2020-02-10	F	102	Krishna Nagar
4	Ankush	9149250933	2021-02-10	M	103	Lakshmi Nagar
5	Terisa	8149240844	2017-02-09	F	100	Gopal colony

5 rows in set (0.00 sec)

```
mysql>
```

```
mysql> ALTER TABLE table_name
-> AC
```

```
mysql> ALTER TABLE Payroll MODIFY COLUMN basic_pay int;
```

```
Query OK, 0 rows affected (4.07 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> desc Payroll;
```

Field	Type	Null	Key	Default	Extra
basic_pay	int	YES		NULL	
Deduction	varchar(250)	YES		NULL	
Taxable_pay	varchar(250)	YES		NULL	
Tax	varchar(250)	YES		NULL	
emp_id	int	YES	MUL	NULL	

5 rows in set (0.12 sec)

```
mysql> INSERT INTO Payroll VALUES (1000000,'200000','10000','5000',1);
Query OK, 1 row affected (0.08 sec)
```

```
mysql> select * from Payroll;
```

basic_pay	Deduction	Taxable_pay	Tax	emp_id
1000000	200000	10000	5000	1

1 row in set (0.00 sec)

```
mysql> INSERT INTO Payroll VALUES (8000000,'400000','20000','4000',2);
Query OK, 1 row affected (0.26 sec)

mysql> INSERT INTO Payroll VALUES (10000000,'600000','30000','1000',3);
Query OK, 1 row affected (0.18 sec)

mysql> select * from Payroll;
+-----+-----+-----+-----+-----+
| basic_pay | Deduction | Taxable_pay | Tax | emp_id |
+-----+-----+-----+-----+-----+
| 10000000 | 200000    | 10000       | 5000 | 1      |
| 8000000  | 400000    | 20000       | 4000 | 2      |
| 10000000 | 600000    | 30000       | 1000 | 3      |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> INSERT INTO Dept VALUES (001,'IT');
Query OK, 1 row affected (0.29 sec)

mysql> INSERT INTO Dept VALUES (002,'Mechanical');
Query OK, 1 row affected (0.20 sec)

mysql> INSERT INTO Dept VALUES (003,'Electrical');
Query OK, 1 row affected (0.17 sec)

mysql> select * from Dept;
+-----+-----+
| dept_id | dept_name |
+-----+-----+
| 1       | IT        |
| 2       | Mechanical |
| 3       | Electrical |
+-----+-----+
3 rows in set (0.00 sec)
```

```
mysql> DELETE from Dept;
Query OK, 3 rows affected (0.23 sec)

mysql> INSERT INTO Dept VALUES (10,'Electrical');
Query OK, 1 row affected (0.20 sec)

mysql> INSERT INTO Dept VALUES (20,'Mechanical');
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO Dept VALUES (30,'IT');
Query OK, 1 row affected (0.10 sec)

mysql> select * from Dept;
+-----+-----+
| dept_id | dept_name |
+-----+-----+
| 10      | Electrical |
| 20      | Mechanical |
| 30      | IT        |
+-----+-----+
3 rows in set (0.00 sec)
```

```
mysql> INSERT INTO EMP_DEPT VALUES (1,10);
Query OK, 1 row affected (0.22 sec)
```

```
mysql> INSERT INTO EMP_DEPT VALUES (1,20);
Query OK, 1 row affected (0.18 sec)
```

```
mysql> INSERT INTO EMP_DEPT VALUES (2,30);
Query OK, 1 row affected (0.17 sec)
```

```
mysql> select * from EMP_DEPT;
```

```
+-----+-----+
| emp_id | dept_id |
+-----+-----+
|      1 |      10 |
|      1 |      20 |
|      2 |      30 |
+-----+-----+
3 rows in set (0.00 sec)
```

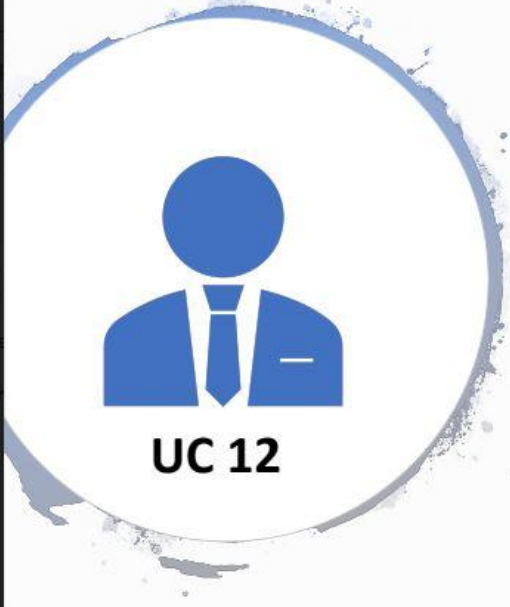

```
mysql>
```

```
mysql> select e.emp_id,e.emp_name,e.phone_no,e.address,d.dept_name,e.gender,c.company_name,p.basic_pay,p.deduction,p.taxable_pay,p.tax
from company c inner join employee e on c.company_id=e.company_id inner join payroll p on e.emp_id=p.emp_id inner join emp_dept ep on
e.emp_id=ep.emp_id inner join dept d on d.dept_id=ep.dept_id;
```

```
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| emp_id | emp_name | phone_no | address | dept_name | gender | company_name | basic_pay | deduction | taxable_pay | ta
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | Prajakta | 8149240833 | Ashtyavinayk colony | Mechanical | F | Bridgelabz | 1000000 | 200000 | 10000 | 50
| 1 | Prajakta | 8149240833 | Ashtyavinayk colony | Electrical | F | Bridgelabz | 1000000 | 200000 | 10000 | 50
| 2 | Payal | 8149240933 | Ram Nagar | IT | F | Dell inc | 8000000 | 400000 | 20000 | 40
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

Activate Windows

## UC12



**UC 12**

Ensure all retrieve queries done especially in UC 4, UC 5 and UC 7 are working with new table structure

```
mysql> select e.emp_id,e.emp_name,e.phone_no,e.address,d.dept_name,e.gender,c.company_name,p.basic_pay,p.deduction,p.taxable_pay,p.tax
from company c inner join employee e on c.company_id=e.company_id inner join payroll p on e.emp_id=p.emp_id inner join emp_dept ep on
e.emp_id=ep.emp_id inner join dept d on d.dept_id=ep.dept_id;
```

emp_id	emp_name	phone_no	address	dept_name	gender	company_name	basic_pay	deduction	taxable_pay	tax
1	Prajakta	8149240833	Ashtyavinayk colony	Mechanical	F	BridgeLabz	1000000	200000	100000	50
1	Prajakta	8149240833	Ashtyavinayk colony	Electrical	F	BridgeLabz	1000000	200000	100000	50
2	Payal	8149240933	Ram Nagar	IT	F	Dell inc	8000000	400000	200000	40

3 rows in set (0.00 sec)

```
mysql> SELECT salary FROM employee_payroll
-> AC
mysql> select p.basic_pay from payroll p inner join employee e on p.emp_id=e.emp_id where e.emp_name="Prajakta";
```

basic_pay
1000000

1 row in set (0.02 sec)

```
mysql> select e.emp_name from employee e WHERE start BETWEEN CAST('2018-01-01'
-> AS DATE) AND DATE(NOW());
```

emp_name
Prajakta
Payal
Pallavi
Ankush

4 rows in set (0.10 sec)



```
mysql> select sum(p.basic_pay),min(p.basic_pay),max(p.basic_pay),avg(p.basic_pay) from payroll p inner join employee e on p.emp_id=e.e
mp_id group by e.gender;
```

sum(p.basic_pay)	min(p.basic_pay)	max(p.basic_pay)	avg(p.basic_pay)
19000000	1000000	10000000	6333333.3333

```
1 row in set (0.08 sec)
```

```
mysql> select sum(p.basic_pay),min(p.basic_pay),max(p.basic_pay),avg(p.basic_pay) from payroll p inner join employee e on p.emp_id=e.e
mp_id where e.gender='F' group by e.gender;
```

sum(p.basic_pay)	min(p.basic_pay)	max(p.basic_pay)	avg(p.basic_pay)
19000000	1000000	10000000	6333333.3333

```
1 row in set (0.00 sec)
```

```
mysql> select sum(p.basic_pay),min(p.basic_pay),max(p.basic_pay),avg(p.basic_pay) from payroll p inner join employee e on p.emp_id=e.e
mp_id where e.gender='M' group by e.gender;
```

```
Empty set (0.00 sec)
```

```
mysql> select p.basic_pay from payroll p inner join employee e on p.emp_id=e.emp_id ;
```

basic_pay
1000000
8000000
10000000

```
3 rows in set (0.00 sec)
```

```
mysql>
```

Activate Windows  
Go to Settings to activate Windows.