

# Human Resource Management System

Software Development Practices (SQL)

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**Submitted To**

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## **1. Introduction:**

Human resource management system (HRMS) is software where an organization can track both internal and external people. Internal tracking means to maintain existing employees, consultants and contractors while external people will be the applicants. Through this system organization will be able to create and understand the link between employee and organization as well to each other. The system maintain all the basic information related to employees like name, address, educational background, work experience, salary, bonus, project details etc. the system will also help organization to track an employee's leaves information, vacations, shifting details, attendance as well as performance management. In back time HRMS was not that important and organizations maintain every information manually, but now trend has been changed and technology take over everything, organizations adapting new technologies and making their departments more digitalized and smart. HRMS is becoming one of the most important parts of each organization, because this department is basically responsible for current employees' management and to recruit the best possible talent for the organization which helps organization to achieve their desired goals.

### **1.1 Aim of the Project:**

The aim of the study is to provide the organization a HRMS database so that organization can keep its employees activities and information in a systematic way.

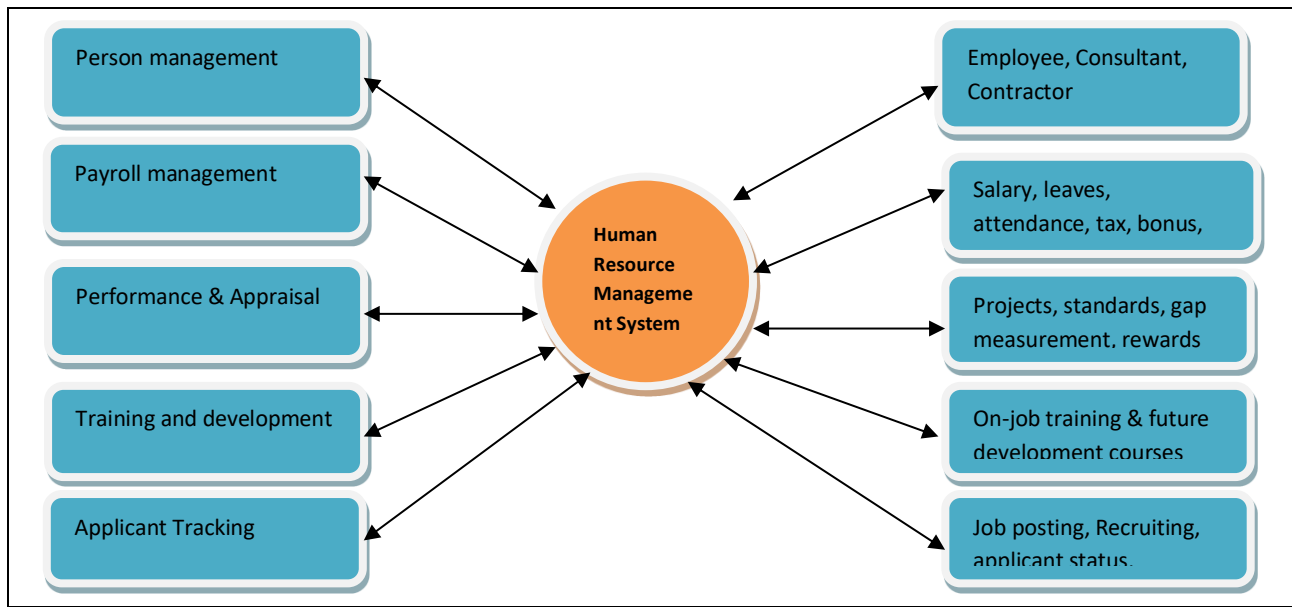
### **1.2 Objectives of the project:**

The main objective of the project is to provide a systematic setup to the administration so that they can easily maintain their current employees' data as well the new hire. By using HRMS administration can reduce the time of daily activities such as, employee detail, attendance, performance etc. this project is consist of five important modules which are as following,

- Person management (Employee, Consultant, Contractor)
- Payroll management (Salary, leaves, bonus, shifts )
- Performance & Appraisal (Projects, standards, gap measurement, rewards)
- Training and development (On-job and future development courses)
- Applicant search and tracking (job posting, tracking, applicant status)

### **1.3 Overview of HRMS:**

In this project HR manager is basically responsible for maintenance of all HRMS activities as we can see in the following diagram. Where each module is linked with HRMS and performing some activities and then return back to the HRM system and update daily activities and this is a continuous process. HR manager and admin keep check and balance to maintain the system.



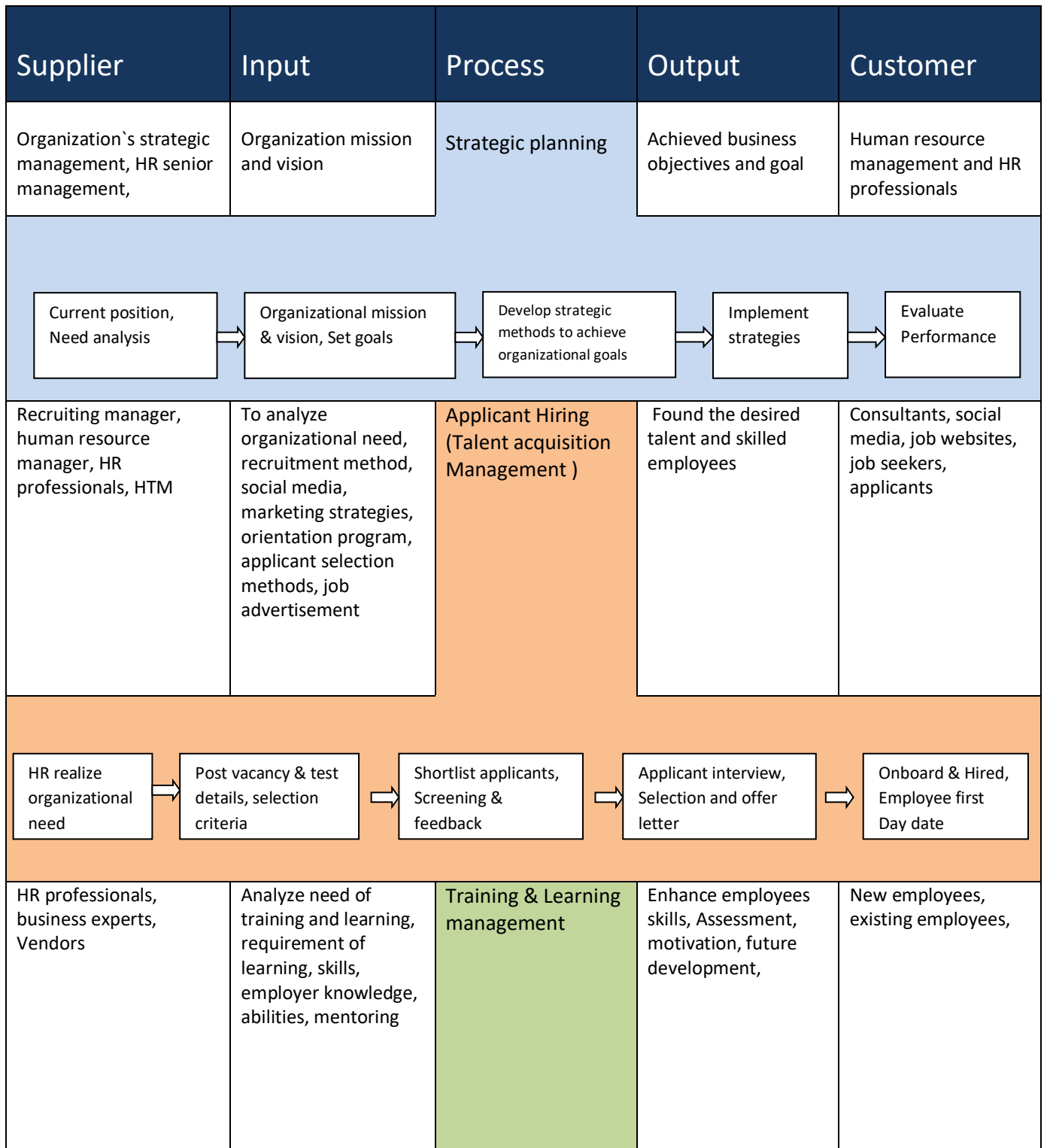
**Figure: 01 Basic Activities of HRMS**

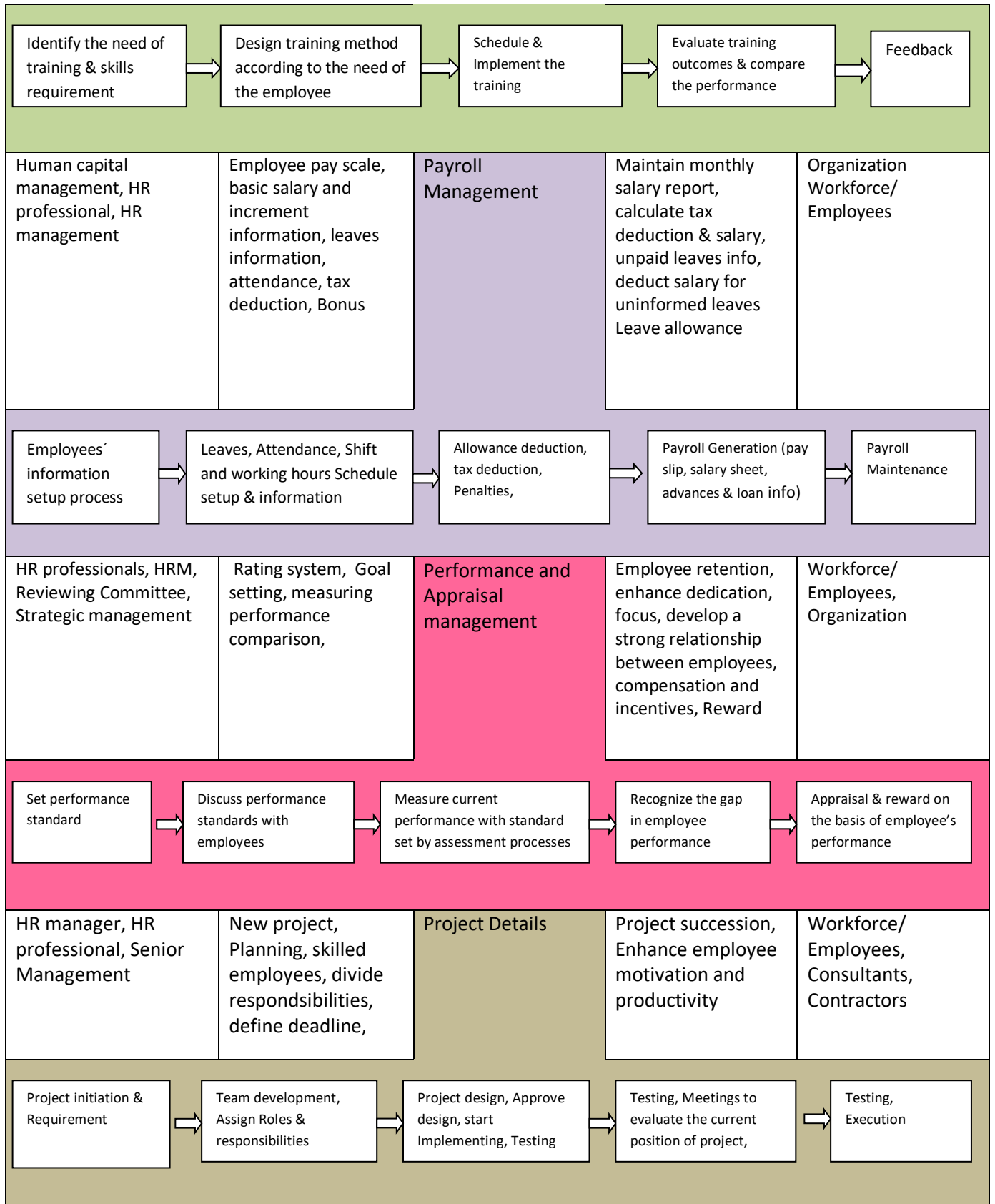
### 1.4 Objectives of the Report:

The report is divided into four parts, where in first part SIPOC (Supplier, input, Process, Output and Customer) method will be discussed, in second ERD (Entity Relationship Diagram) design and flowchart will be discussed, while the third part of the report will provide the database functionality which covers, main database which provide all the basic information about employees, moreover stored procedures, triggers, functions, views and indexes will also be discussed. Finally, the forth part is about front-end of the project.

1. SIPOC Method:
2. ERD Design
3. ERD Flowchart
4. HRM Database Design and Functionality

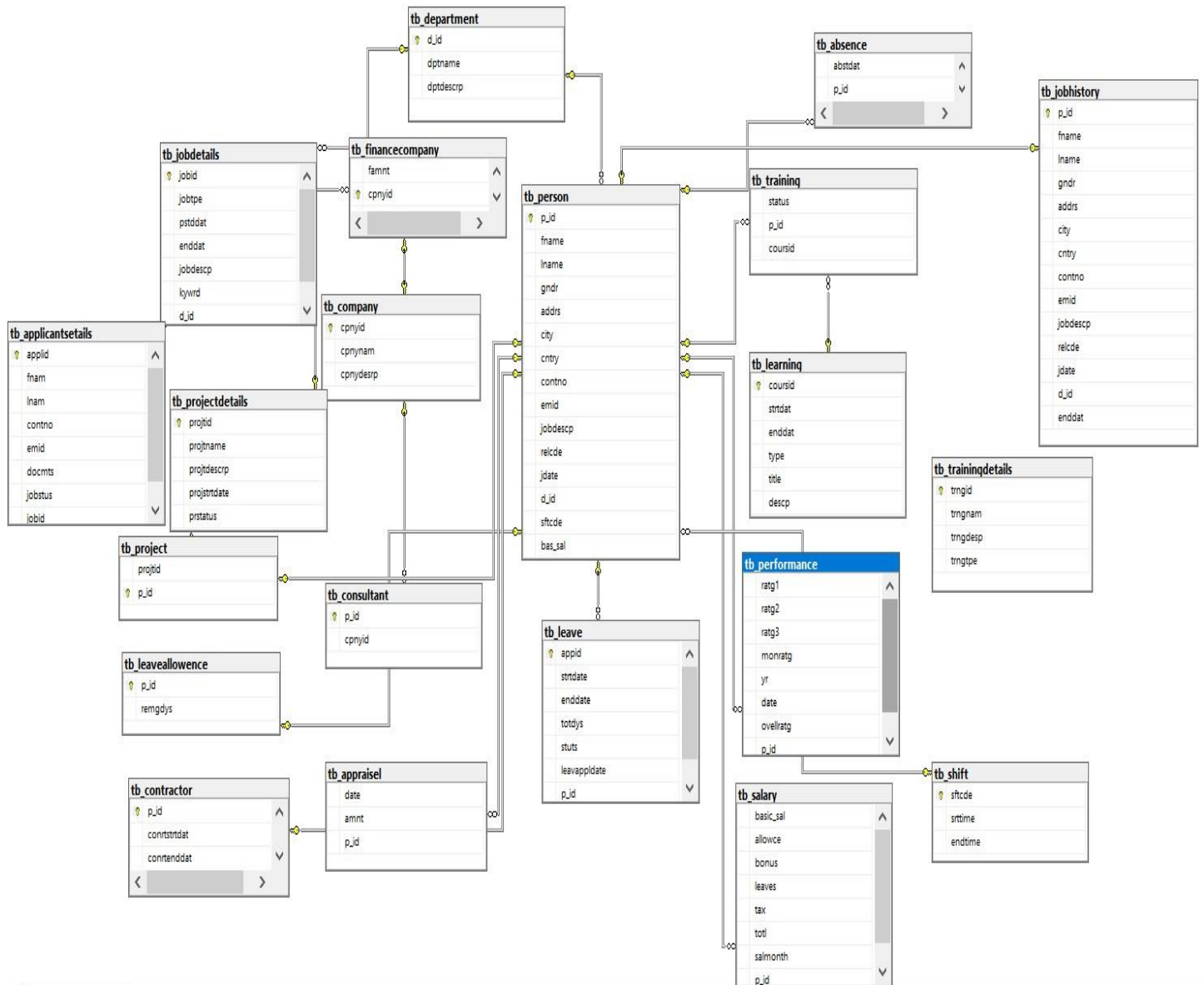
## 2. SIPOC Method:





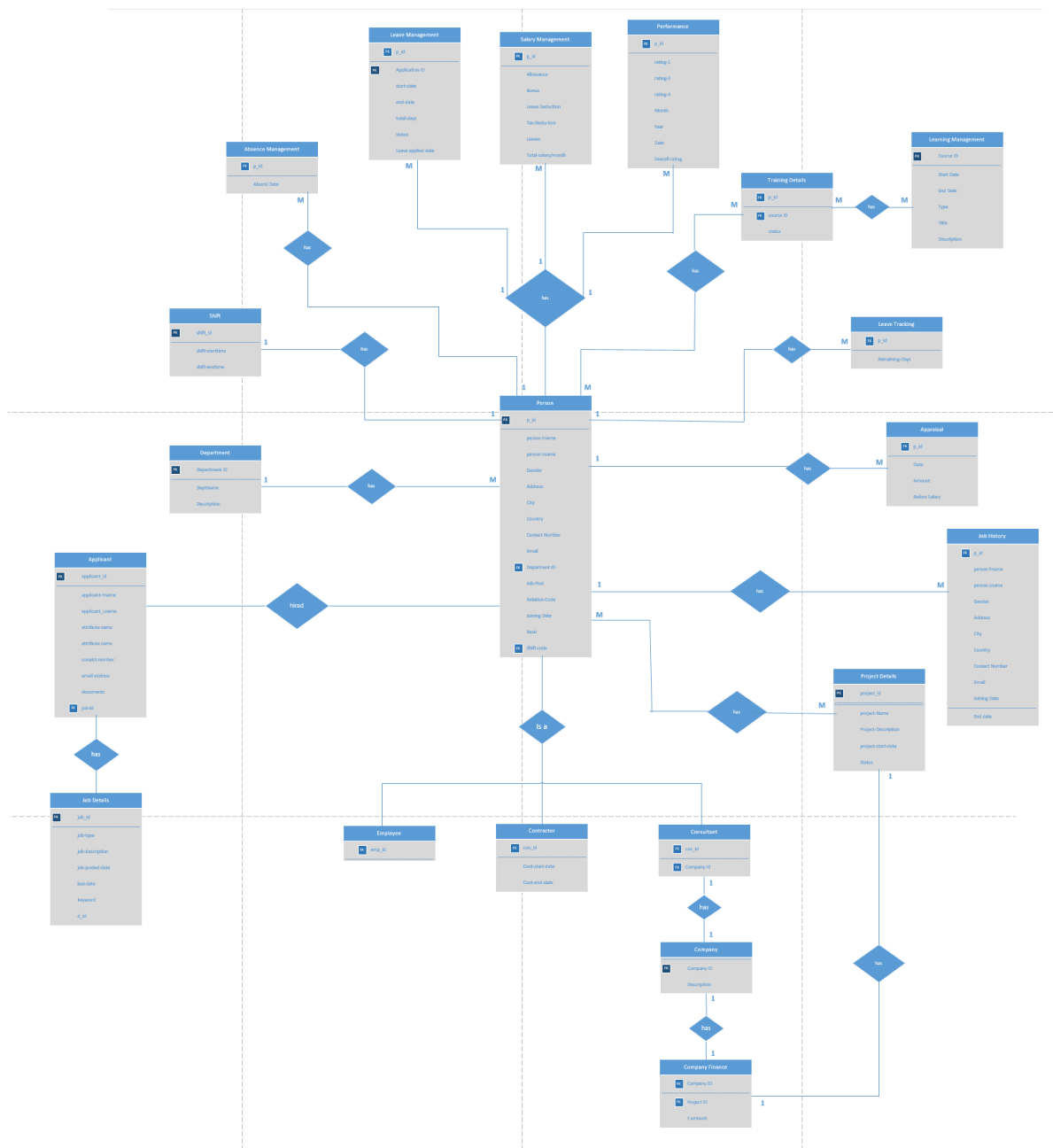


### 3. ERD (Entity Relationship Diagram) Logical Design:



### 3.1 ERD (Entity Relationship Diagram) Flowchart:

ERD is the basic model to represent the relations between the entities with the specification of Primary key and Foreign Key. We have established the relations between the entities – Person, Employee, Contractor, Consultant, Company, Finance Company, Department, Shift details, Leave Management, Salary Management, Performance management, Training details, Leave Tracking, Appraisal, Job History and Project details.



## 4. HRMS Database design and Functionality:

### 4.1 Database tables:

#### 4.1.1 Person table:

```
CREATE TABLE [dbo].[tb_person] (  
    [p_id]    NUMERIC (18) NOT NULL,  
    [fname]   VARCHAR (50) NOT NULL,  
    [lname]   VARCHAR (50) NOT NULL,  
    [gndr]    CHAR (10)    NOT NULL,  
    [addrs]   NVARCHAR (50) NOT NULL,  
    [city]    NVARCHAR (50) NOT NULL,  
    [cntry]   NVARCHAR (50) NOT NULL,  
    [contno]  NUMERIC (18) NOT NULL,  
    [emid]    NVARCHAR (50) NOT NULL,  
    [jobdescp] NVARCHAR (50) NOT NULL,  
    [relcde]  CHAR (10)    NOT NULL,  
    [jdate]   DATE          NOT NULL,  
    [d_id]    NUMERIC (18) NOT NULL,  
    [sftcde]  NUMERIC (18) NOT NULL,  
    [bas_sal] NUMERIC (18) NULL,  
    PRIMARY KEY CLUSTERED ([p_id] ASC),  
    CONSTRAINT [FK_tb_person1] FOREIGN KEY ([sftcde]) REFERENCES [dbo].[tb_shift] ([sftcde]),  
    CONSTRAINT [FK_tb_person] FOREIGN KEY ([d_id]) REFERENCES [dbo].[tb_department] ([d_id])  
);
```

#### 4.2.2 Training Details:

```
CREATE TABLE [dbo].[tb_trainingdetails] (  
    [trngid]   NUMERIC (18) NOT NULL,  
    [trngnam]  VARCHAR (50) NOT NULL,  
    [trngdesp] VARCHAR (50) NOT NULL,
```

```
[trngtpe] NCHAR (10) NOT NULL,  
PRIMARY KEY CLUSTERED ([trngid] ASC)  
);
```

#### 4.2.3 Training Assignment

```
CREATE TABLE [dbo].[tb_training] (  
    [status] VARCHAR (50) NOT NULL,  
    [p_id] NUMERIC (18) NOT NULL,  
    [coursid] NUMERIC (18) NOT NULL,  
    CONSTRAINT [FK_tb_training] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id]),  
    CONSTRAINT [FK_tb_training1] FOREIGN KEY ([coursid]) REFERENCES [dbo].[tb_learning] ([coursid])  
);
```

#### 4.2.4 Shift

```
CREATE TABLE [dbo].[tb_shift] (  
    [sftcde] NUMERIC (18) NOT NULL,  
    [srttime] NUMERIC (18) NOT NULL,  
    [endtime] NUMERIC (18) NOT NULL,  
    PRIMARY KEY CLUSTERED ([sftcde] ASC)  
);
```

#### 4.2.5 Salary

```
CREATE TABLE [dbo].[tb_salary] (  
    [basic_sal] NUMERIC (18) NOT NULL,  
    [allowce] NUMERIC (18) NOT NULL,  
    [bonus] NUMERIC (18) NOT NULL,  
    [leaves] NUMERIC (18) NOT NULL,  
    [tax] NUMERIC (18) NOT NULL,  
    [totl] NUMERIC (18) NOT NULL,
```

```

[salmonth] DATE NOT NULL,
[p_id] NUMERIC (18) NOT NULL,
CONSTRAINT [FK_tb_salary] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id])
);

```

#### 4.2.6 Project Details

```

CREATE TABLE [dbo].[tb_projectdetails] (
    [projtid] NUMERIC (18) NOT NULL,
    [projtname] NVARCHAR (50) NOT NULL,
    [projtdescrp] VARCHAR (50) NOT NULL,
    [projstrtdat] DATE NOT NULL,
    [prstatus] NCHAR (10) NULL,
    PRIMARY KEY CLUSTERED ([projtid] ASC)
);

```

#### 4.2.7 Project Assignment

```

CREATE TABLE [dbo].[tb_project] (
    [projtid] NUMERIC (18) NOT NULL,
    [p_id] NUMERIC (18) NOT NULL,
    PRIMARY KEY CLUSTERED ([p_id] ASC),
    CONSTRAINT [FK_tb_project] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id]),
    CONSTRAINT [FK_prjctid] FOREIGN KEY ([projtid]) REFERENCES [dbo].[tb_projectdetails] ([projtid])
);

```

#### 4.2.8 Performance

```

CREATE TABLE [dbo].[tb_performance] (
    [ratg1] NCHAR (10) NOT NULL,
    [ratg2] NCHAR (10) NOT NULL,

```

```

[ratg3]      NCHAR (10)  NOT NULL,
[monratg]    NCHAR (10)  NOT NULL,
[yr]         NCHAR (10)  NOT NULL,
[date]       DATE        NOT NULL,
[ovellratg]  NCHAR (10)  NOT NULL,
[p_id]       NUMERIC (18) NOT NULL,
CONSTRAINT [FK_tb_performance] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id])
);

```

#### 4.2.9 Leave Allowance

```

CREATE TABLE [dbo].[tb_leaveallowence] (
    [p_id]      NUMERIC (18) NOT NULL,
    [remgdys]   NUMERIC (18) NOT NULL,
    PRIMARY KEY CLUSTERED ([p_id] ASC),
    CONSTRAINT [FK_tb_leaveallowence_ToTable] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id])
);

```

#### 4.2.10 Leave record Table

```

CREATE TABLE [dbo].[tb_leave] (
    [appid]     NUMERIC (18) NOT NULL,
    [strtdate]  DATE        NOT NULL,
    [enddate]   DATE        NOT NULL,
    [totdys]    NUMERIC (18) NOT NULL,
    [stuts]     CHAR (10)    NULL,
    [leavapldate] DATE        NOT NULL,
    [p_id]      NUMERIC (18) NOT NULL,
    CONSTRAINT [PK_tb_leave] PRIMARY KEY CLUSTERED ([appid] ASC),
    CONSTRAINT [FK_tb_leave] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id])
);

```

```
);
```

#### 4.2.11 Course

```
CREATE TABLE [dbo].[tb_learning] (  
    [coursid] NUMERIC (18) NOT NULL,  
    [strtat] DATE NOT NULL,  
    [enddat] DATE NOT NULL,  
    [type] VARCHAR (50) NOT NULL,  
    [title] VARCHAR (50) NOT NULL,  
    [descp] VARCHAR (50) NOT NULL,  
    PRIMARY KEY CLUSTERED ([coursid] ASC)  
);
```

#### 4.2.12 Job History

```
CREATE TABLE [dbo].[tb_jobhistory] (  
    [p_id] NUMERIC (18) NOT NULL,  
    [fname] VARCHAR (50) NOT NULL,  
    [lname] VARCHAR (50) NOT NULL,  
    [gndr] CHAR (10) NOT NULL,  
    [addrs] NVARCHAR (50) NOT NULL,  
    [city] NVARCHAR (50) NOT NULL,  
    [cntry] NVARCHAR (50) NOT NULL,  
    [contno] NUMERIC (18) NOT NULL,  
    [emid] NVARCHAR (50) NOT NULL,  
    [jobdescp] NVARCHAR (50) NOT NULL,  
    [relcde] CHAR (10) NOT NULL,  
    [jdate] DATE NOT NULL,  
    [d_id] NUMERIC (18) NOT NULL,
```



```

[enddat]    DATE            NOT NULL,

PRIMARY KEY CLUSTERED ([p_id] ASC),

CONSTRAINT [FK_tb_jobhistory] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id])

);

```

#### 4.2.13 Job Details

```

CREATE TABLE [dbo].[tb_jobdetails] (

[jobid]     NUMERIC (18) NOT NULL,

[jobtpc]    NVARCHAR (50) NOT NULL,

[pstddat]   DATE            NOT NULL,

[enddat]    DATE            NOT NULL,

[jobdescp]  VARCHAR (50) NOT NULL,

[kywr]      NCHAR (10) NOT NULL,

[d_id]      NUMERIC (18) NOT NULL,

PRIMARY KEY CLUSTERED ([jobid] ASC),

CONSTRAINT [FK_tb_jobdetails] FOREIGN KEY ([d_id]) REFERENCES [dbo].[tb_department] ([d_id])

);

```

#### 4.2.14 Finance:

```

CREATE TABLE [dbo].[tb_financecompany] (

[famnt]     NUMERIC (18) NOT NULL,

[cpnyid]    NUMERIC (18) NOT NULL,

[projtid]   NUMERIC (18) NOT NULL,

PRIMARY KEY CLUSTERED ([cpnyid] ASC),

CONSTRAINT [FK_tb_financecompany] FOREIGN KEY ([cpnyid]) REFERENCES [dbo].[tb_company]

([cpnyid]),

CONSTRAINT [FK_tb_financecompany1] FOREIGN KEY ([projtid]) REFERENCES [dbo].[tb_projectdetails]

([projtid])

```

```
);
```

#### 4.2.15 Department

```
CREATE TABLE [dbo].[tb_department] (  
    [d_id]          NUMERIC (18) NOT NULL,  
    [dptname]       VARCHAR (50) NOT NULL,  
    [dptdescrip]    VARCHAR (50) NOT NULL,  
    PRIMARY KEY CLUSTERED ([d_id] ASC)  
);
```

#### 4.2.16 Contractor

```
CREATE TABLE [dbo].[tb_contractor] (  
    [p_id]          NUMERIC (18) NOT NULL,  
    [conrtstrtdat]  DATE          NOT NULL,  
    [conrtenddat]   DATE          NOT NULL,  
    PRIMARY KEY CLUSTERED ([p_id] ASC),  
    CONSTRAINT [FK_tb_contractor] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id])  
);
```

#### 4.2.17 Consultant:

```
CREATE TABLE [dbo].[tb_consultant] (  
    [p_id]          INT           NOT NULL,  
    [cpnyid]        NUMERIC (18) NOT NULL,  
    PRIMARY KEY CLUSTERED ([p_id] ASC),  
    CONSTRAINT [FK_tb_consultant] FOREIGN KEY ([cpnyid]) REFERENCES [dbo].[tb_company] ([cpnyid])  
);
```

#### 4.2.18 Company

```
CREATE TABLE [dbo].[tb_company] (  
    [cpnyid]    NUMERIC (18) NOT NULL,  
    [cpnynam]   VARCHAR (50) NOT NULL,  
    [cpnydesrp] VARCHAR (50) NOT NULL,  
    PRIMARY KEY CLUSTERED ([cpnyid] ASC)  
);
```

#### 4.2.19 Appraisal

```
CREATE TABLE [dbo].[tb_appraisal] (  
    [date] DATE NOT NULL,  
    [amnt] NUMERIC (18) NOT NULL,  
    [p_id] NUMERIC (18) NOT NULL,  
    CONSTRAINT [FK_tb_appraisal] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id])  
);
```

#### 4.2.20 Applicant Details

```
CREATE TABLE [dbo].[tb_applicantsetails] (  
    [applid]    NUMERIC (18) NOT NULL,  
    [fnam]      VARCHAR (50) NOT NULL,  
    [lnam]      VARCHAR (50) NOT NULL,  
    [contno]    NCHAR (10) NOT NULL,  
    [emid]      NVARCHAR (50) NOT NULL,  
    [docmts]    NVARCHAR (50) NOT NULL,  
    [jobstus]   NCHAR (10) NOT NULL,
```

```

[jobid]    NUMERIC (18) NOT NULL,

PRIMARY KEY CLUSTERED ([applid] ASC),

CONSTRAINT [FK_tb_applicantsetails] FOREIGN KEY ([jobid]) REFERENCES [dbo].[tb_jobdetails]
([jobid])
);

```

#### 4.2.21 Absence

```

CREATE TABLE [dbo].[tb_absence] (

[abstdat] DATE NOT NULL,

[p_id]    NUMERIC (18) NOT NULL,

CONSTRAINT [FK_tb_absence] FOREIGN KEY ([p_id]) REFERENCES [dbo].[tb_person] ([p_id])

);

```

### 4.2 Stored Procedures:

#### 4.2.1 SP 01- selecting First name:

// Selecting fname

```
CREATE PROCEDURE SelectAllPerson
```

```
@fname varchar(50)
```

```
AS
```

```
begin
```

```
SELECT* from tb_person where fname=@fname
```

```
End
```

#### 4.2.2 SP 02: Selecting Last name:

// Selecting lname

```
CREATE PROCEDURE SelectAllPerson1
```

```
@lname varchar(50)
```

```
AS  
  
begin  
  
SELECT* from tb_person where lname=@lname  
  
End
```

#### **4.2.3 SP: 03 Selecting Person-ID**

// Selecting person id

```
CREATE PROCEDURE serch_prsn1  
  
    @pid numeric  
  
AS  
  
begin  
  
SELECT * from tb_person where p_id=@pid  
  
End
```

#### **4.2.4 SP: 04 Selecting Country**

// Selecting Country

```
CREATE PROCEDURE serch_prsn1  
    @cntry varchar(50)  
AS  
begin  
    SELECT * from tb_person where cntry=@cntry  
End
```

#### **4.2.5 SP: 05 Selecting City**

// Selecting City

```
CREATE PROCEDURE serch_prsn2  
  
    @city numeric  
  
AS  
  
begin  
  
SELECT * from tb_person where city=@city  
  
End
```

#### 4.2.6 SP: 06 Selecting Contact# & Email Id

Selecting Contact no. and mail ID

```
CREATE PROCEDURE serch_prsn3
```

```
    @cont numeric, @mil nvarchar(50)
```

```
AS
```

```
begin
```

```
    SELECT * from tb_person where contno=@contno and emid=@emid
```

```
End
```

#### 4.2.7 SP: 07 Selecting Gender

// Selecting Gender

```
CREATE PROCEDURE serch_prsn4
```

```
    @gen char(10)
```

```
AS
```

```
begin
```

```
    SELECT * from tb_person where gndr=@gen
```

```
End
```

#### 4.2.8 SP: 08 selecting Shift ST & ET According to person ID

// selecting shift start and end time according to the Person ID

```
CREATE PROCEDURE serch_prsn5
```

```
    @sfcd numeric, @pid numeric
```

```
AS
```

```
begin
```

```
    SELECT tb_shift.srttime, tb_shift.endtime
```

```
from tb_shift, tb_person
where tb_shift.sftcde = tb_person.sftcde and
      tb_person.p_id=@sfcd
End
```

#### **4.2.9 SP: 09 Selecting Contractor SD & ED as/person Id**

```
// Selecting contractor start and end date as per the person ID
CREATE PROCEDURE serch_prsn6
    @contr numeric, @pid numeric
AS
begin
    SELECT tb_contractor.conrtstrtdat, tb_contractor.conrtenddat
    from tb_contractor, tb_person
    where tb_contractor.conid = tb_person.p_id and
          tb_person.p_id=@contr
End
```

#### **4.2.10 SP: 10 Using Inner Joins**

```
// Using inner joins
CREATE PROCEDURE serch_prsn7
    @empID numeric, @departID numeric
AS
begin
    SELECT tb_person.p_id
    from tb_person
    inner join tb_department
```

```
on tb_person.persondeptID=tb_department.d_id
```

```
End
```

#### **4.2.11 SP: 11 select all record from person and contractor by id**

```
/*Select all record from person and contractor by id*/
```

```
CREATE PROCEDURE cntctrbyid
```

```
@id numeric,
```

```
Begin
```

```
select tb_person.* from tb_person,tb_contractor
```

```
where tb\_person.p\_id=@id
```

```
AND tb_person.p_id=tb_contractor.p_id
```

```
End
```

#### **4.2.12 SP:12 Select Record from Person & Consultant by Id**

```
/*Select all record from person and consultant by id*/
```

```
CREATE PROCEDURE cnsltntbyid
```

```
@id numeric,
```

```
Begin
```

```
AS select tb_person.* from tb_person, tb_consultant
```

```
where tb\_person.p\_id=@id
```

```
AND tb_person.p_id= tb_consultant.cpnid
```

```
End
```

#### **4.2.13 SP: 13 Retrieve Salary from Person table**

```
//RetriveSalary from table person
```

```
AS
```

```
Begin
```



```
Select bas_sal from tb_person  
where p_id="+Convert.ToInt16(textBox1.Text)+"  
End
```

#### **4.2.14 SP: 14 update salary when appraisal given**

```
/* Update salary when appraisal is given */  
  
CREATE PROCEDURE cnsIntntbyid  
  
    @id numeric,  
    @sal numeric  
  
AS  
  
Begin  
  
update tb_person set bas_sal=@sal+(select bas_sal from tb_person  
  
where p_id=@id )  
  
where p_id=@id  
  
End
```

#### **4.2.15 SP: 15 Absence Retrieval**

```
/* To retrieve the total no of absence in a month */  
  
CREATE PROCEDURE clcltabsn  
  
    @mnth INT,  
  
    @id INT  
  
AS  
  
Begin  
  
    SELECT COUNT(*) AS aa FROM dbo.tb_absence  
  
WHERE (SELECT DATEPART(MONTH,tb_absence.abstdat) from tb_absence)= @mnth  
  
AND p_id=@id;  
  
RETURN aa  
  
End
```

#### 4.2.16 SP: 16 Select all list of Employee

```
/* Select All list of employee */  
  
AS  
  
Begin  
  
select * from tb_person  
  
where p_id=" + Convert.ToInt16(txt_eid.Text) + "  
  
AND relcde="" + cde + "";  
  
End
```

### 4.3 Triggers:

#### 4.3.1 Trigger for a employee's record after Updation , Insertion or Deletion

```
Create trigger dbo.tb_person_trigger  
on dbo.tb_person  
after UPDATE, INSERT, DELETE  
as  
declare @p_id numeric (18,0) ,@user varchar(20), @activity  
varchar(20);  
if exists(SELECT * from inserted) and exists (SELECT * from deleted)  
  
Begin  
  
SET @activity = &#39;UPDATE&#39;;  
SET @user = SYSTEM_USER;  
SELECT @p_id = p_id from inserted i;  
INSERT into dbo.tb_person_Audit(p_id,Activity, DoneBy) values  
  
(@p_id,@activity,@user);  
  
End  
  
If exists (Select * from inserted) and not exists(Select * from deleted)  
  
Begin  
  
SET @activity = &#39;INSERT&#39;;
```

```

SET @user = SYSTEM_USER;

SELECT @p_id = p_id from inserted i;
INSERT into dbo.tb_person_Audit(p_id,Activity, DoneBy)
values(@p_id,@activity,@user);

End

If exists(select * from deleted) and not exists(Select * from inserted)

Begin

SET @activity = &#39;DELETE&#39;;

SET @user = SYSTEM_USER;

SELECT @p_id = p_id from deleted i;

INSERT into dbo.tb_person_Audit (p_id,Activity, DoneBy)
values(@p_id,@activity,@user);

End

```

#### 4.3.2 Trigger for a employee's record who left the company

```

CREATE TRIGGER dbo.tb_person_job_history_trigger

ON dbo.tb_person
AFTER DELETE

AS

BEGIN
    SET NOCOUNT ON;

    DECLARE @p_id numeric (18,0)

    SELECT @p_id = dbo.tb_person.p_id

FROM dbo.tb_person

INSERT INTO dbo.tb_jobhistory (p_id,enddat,fname,lname,jdate)

Select p_id,getdate(),fname,lname,jdate from dbo.tb_person a

where a.p_id = @p_id

```

END

#### **4.4 Database Functionality:**

- Insert/update/Delete new Entry of Employ/contractor/Consultant
- Add salary of Employ/contractor at the time of Insertion
- Automatic Allocate Number of Allowed Leaves at the time of Insertion
- Tracking the information of Department
- Keeping record of new job position
- Keeping records of applicant of applied for job
- Assign the courses to the person
- View performance and give appraisal to person
- Automated process to update the salary at the time of Appraisal
- Keep record of Leave application and make a decision whether it approved or not
- Count the person's absence in month and calculate automated deduction for salary
- Automated salary calculation
- Manage finances for company and project
- Keeping record of person even after leaving the job
- And other automation of manual function of HR System

#### **5. Conclusion:**

Overall human resource management system (HRMS) is systematic way to maintain current employees as well as new employees. This project is all about to maintain existing employees personal detail like name, address, contact, job start date, job end date, email id etc. the system is also maintaining employees payroll, leaves, absence, performance, incentives, reward and project details. Furthermore, administration (HR) can easily search, update, insert, and delete person's information. Stored procedures, triggers and all the database functionality has provided in the project. Database tables' creation code and connectivity has mentioned in the project in detail.