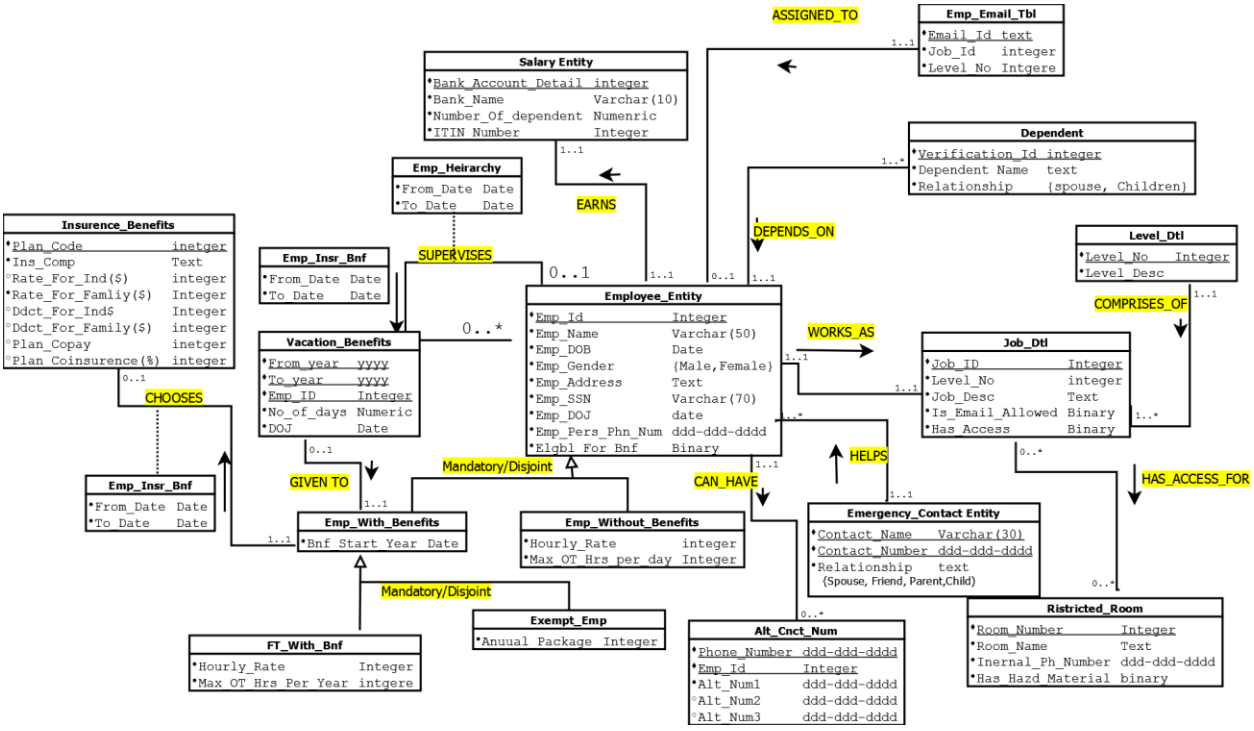
Database ER Diagram



Relational Database Schema

- **Level_Dtl_Tbl**(Level_No : integer, Level_Desc: text)
- **Primary Key Columns: <Level_No>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: <>**
- **Other Constraint <>**
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  - This Relational schema is in1NF as
  a. It has Primary Key (Level_No)
  b. All the attributes have atomic values
  c. All the non-key attributes (Level_Desc) depends on primary key(Level_No)
  - This Relational Schema is in 2NF as there is no partial dependency
  - This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Job_Dtl_Tbl** (Job_Id: Integer, Level_No : Integer, Job_Desc : Text, Is_Email_Provided : Binary, Has_Access : Binary, Elgbl_For_Bnf : Binary, IS_OT_ELEGIBLE : Binary)
- **Primary Key Columns: <Job_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: <Job_Dtl_Tbl_FK1 FOREIGN KEY(Level_No) REFERENCES Level_Dtl_Tbl(Level_No) >**
- **Other Constraint <>**

  - This Relational schema is in1NF as
  a. It has Primary Key(Job_Id)
  b. All the attributes have atomic values

c. All the non-key attributes (Level_No, Job_Desc, Is_Email_Provided, Has_Access) depends on the primary key attribute (Job_Id)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key.
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- **Emp_Tbl** (Emp_Id: Integer, Emp_Name: Varchar(30), Emp_DOB :Date, Emp_Gender: {Male, Femle}, Emp_Addr: Text, Contact_Num : {ddd-ddd-dddd}, Emp_Job_ID: Integer, Emp_DOJ : Date)
- **Primary Key Columns: <Emp_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Emp_Tbl_FK1 FOREIGN KEY(Emp_Job_Id) REFERENCES Job_Dtl_Tbl(Job_Id) >**
- **Other Constraint <>**

- This Relational schema is in1NF as

a. It has Primary Key(Emp_Id)
b. All the attributes have atomic values
c. All the non-key attributes (Emp_Name, Emp_DOB, Emp_Gender, Emp_Addr, Emp_SSN, Emp_DOJ, Contact_Num, Emp_Job_ID, Elgbl_For_Bnf) depends on primary key (Emp_Id)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Emp_SSN_Tbl (**Emp_SSN: Varchar (50), Emp_Id: Integer)
- **Primary Key Columns: <Emp_SSN>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Emp_SSN_Tbl_FK1 FOREIGN KEY(Emp_ID) REFERENCES Emp_Tbl(Emp_Id) >**
- **Other Constraint <>**
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  - This Relational schema is in1NF as
  a. It has Primary Key(Emp_SSN)
  b. All the attributes have atomic values
  c. All the non-key attributes(Emp_Id) depends on primary key(Emp_SSN)
  - This Relational Schema is in 2NF as there is no partial dependency
  - This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Emp_Email_Tbl**(Emp_Id: Integer, Email_Id: text)
- **Primary Key Columns: <Emp_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Emp_Email_Tbl_FK1 FOREIGN KEY(Emp_ID) REFERENCES Emp_Tbl(Emp_Id)>**
- **Other Constraint < Emp_Email_Tbl_Chk_Eml CHECK(Email_Id ~ '.*@atlas.com')>**
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  - This Relational schema is in1NF as
  a. It has Primary Key(Email_Id)
  b. All the attributes have atomic values
  c. All the non-key attributes(Emp_Id) depends on primary key(Email_Id)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Depdnt_Dtl_Tbl**(Depndt_Var_Id: integer, Depndt_Name : varchar(50), Emp_Id: Integer, Depndt_relation: {Spouse, Children})
- **Primary Key Columns: <Depndt_Var_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Depdnt_Dtl_Tbl_FK1 FOREIGN KEY(Emp_ID) REFERENCES Emp_Tbl(Emp_Id) >**
- **Other Constraint <>**
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- This Relational schema is in1NF as
a. It has Primary Key (Depndt_Var_Id, Depndt_Name)
b. All the attributes have atomic values
c. All the non-key attributes (Emp_Id, Depndt_relation) depends on primary key (Depndt_Var_Id, Depndt_Name)
- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Salary_Tbl**(Bank_Acc_Num: Integer, Bank_Routing_Num: Integer, Emp_Id: Integer)

- **Primary Key Columns: < Bank_Acc_Num, Bank_Routing_Num>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Salary_Tbl_FK1 FOREIGN KEY(Emp_ID) REFERENCES Emp_Tbl(Emp_Id)>**
- **Other Constraint <>**
-

- This Relational schema is in1NF as

a. It has Primary Key (Bank_Acc_Num, Bank_Name)
b. All the attributes have atomic values
c. All the non-key attributes (Emp_Id) depends on primary key (Bank_Acc_Num, Bank_Name)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Tax_Dtl_Tbl** (From_Year: {2000-2099}, To_Year:{2000-2099, Emp_SSN: Varchar(50), , No._Of_dependent: Numeric)
- **Primary Key Columns: < From_Year, To_Year, Emp_SSN>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Tax_Dtl_Tbl_FK1 FOREIGN KEY(Emp_SSN) REFERENCES Emp_SSN_Tbl(Emp_SSN) >**
- **Other Constraint**
- **<From_Year Tax_Dtl_Tbl_Chk1 CHECK(From_Year >=2000 AND From_Year <= 2099)>**
- **<To_Year Tax_Dtl_Tbl_Chk2 CHECK(To_year >=2000 AND To_Year <= 2099)>**
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We have assumed here that the ITIN can expire for an employee and for specific year employee will have unique ITIN. Also, the assumption is that for a specific financial year an employee can add or reduce the number of dependent

- This Relational schema is in1NF as

a. It has Primary Key ((ITIN_Number, From_Year, To_Year, Emp_Id, No._Of_dependent)
b. All the attributes have atomic values

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Insr_Bnf_Tbl** (Plan_Code: Integer, Ven_Name: Text, Rate_Ind($): Smallint, Rate_Fmly($): Smallint, Ddct_Ind($) : Smallint, Ddct_Fmly($) : Smallint, Plan_Copay($): Smallint, Plan_CoInsr_percentage : Smallint)
- **Primary Key Columns: <Plan_Code>**
- **Alternate Key Columns:** <>
- **Foreign Key Description:** <>
- **Other Constraint** <>
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- This Relational schema is in1NF as

a. It has Primary Key (Plan_Code)
b. All the attributes have atomic values
c. All the non-key attributes (Ven_Name,

Rate_Ind($), Rate_Fmly, Ddct_Ind($), Ddct_Fmly($), Plan_Copay($), Plan_CoInsurence(%)) depends on primary key((Plan_Code)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Vac_Bnf_Tbl**(Emp_Id : integer, Days_Provided: NUMERIC, Days_Used: Numeric, Days_Carried: Numeric)
- **Primary Key Columns: <Emp_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Vac_Bnf_Tbl_FK1 FOREIGN KEY(Emp_ID) REFERENCES Emp_Tbl(Emp_Id) >**
- **Other Constraint <>**
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- This Relational schema is in1NF as

a. It has Primary Key (From_Year, To_year, Emp_Id)
b. All the attributes have atomic values
c. All the non-key attributes (No_Of_Days : Numeric) depends on primary key(From_Year, To_year, Emp_Id)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **FTE _W _Bnf_Tbl(**Emp_Id: Intger, Bnf_Start_Year: {2000-2099}, Hourly_Rate($) : Smallint, Max_OT_Per_Year: Smallint)
- **Primary Key Columns: <Emp_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < FTE_W_Bnf_Tbl_FK1 FOREIGN KEY(Emp_ID) REFERENCES Emp_Tbl(Emp_Id)>**
- **Other Constraint**
- **<Bnf_Start_Year FTE_W_Bnf_Tbl_Chk1 CHECK(Bnf_Start_Year >=2000 AND Bnf_Start_Year <= 2099)>**
- **<Max_OT_Per_Year FTE_W_Bnf_Tbl_Chk2 CHECK(Max_OT_Per_Year <= 780)>**
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- This Relational schema is in1NF as

a. It has Primary Key (Emp_Id)
b. All the attributes have atomic values
c. All the non-key attributes (Bnf_Start_Year, Hourly_Rate($), Max_OT_Per_Year) depends on primary key(From_Year, To_year, Emp_Id)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Emp_WO _Bnf(**Emp_Id: Intger, Hourly_Rate($) : Intger, Max_OT_Per_Day: integer)
- **Primary Key Columns: <Emp_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Emp_WO_Bnf_FK1 FOREIGN KEY(Emp_ID) REFERENCES Emp_Tbl(Emp_Id)>**

- **Other Constraint**
- **<Max_OT_Per_Day Emp_WO_Bnf_Chk CHECK(Max_OT_Per_Day <= 4) NOT NULL>**
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- This Relational schema is in1NF as

a. It has Primary Key (Emp_Id)
b. All the attributes have atomic values
c. All the non-key attributes (Hourly_Rate($), Max_OT_Per_Day) depends on primary key(Emp_Id)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Exempt_Emp_Tbl**(Emp_Id : Integer, Bnf_Start_Year: integer, Annual_Package: integer)
- **Primary Key Columns: <Emp_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Exempt_Emp_Tbl_FK1 FOREIGN KEY(Emp_ID) REFERENCES Emp_Tbl(Emp_Id)>**
- **Other Constraint**
- **<Bnf_Start_Year Exempt_Emp_Tbl_Chk1 CHECK(Bnf_Start_Year >=2000 AND Bnf_Start_Year <= 2099) NOT NULL>**
-

- This Relational schema is in1NF as

a. It has Primary Key (Emp_Id)
b. All the attributes have atomic values
c. All the non-key attributes (Bnf_Start_Year, Annual_Package) depends on primary key(Emp_Id)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Emgcy_Cont_Tbl**(Cont_Name: varchar(30), Cont_Num : {ddd-ddd-dddd}, Emp_Id: Integer, Relationship: {Spouse,friend,parent,child})
- **Primary Key Columns: < Cont_Name, Cont_Num, Emp_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Emgcy_Cont_Tbl_FK1 FOREIGN KEY(Emp_ID) REFERENCES Emp_Tbl(Emp_Id)>**
- **Other Constraint <>**
-

This Relational schema is in1NF as

a. It has Primary Key (Cont_Name, Cont_Num,Emp_Id)
b. All the attributes have atomic values
c. All the non-key attributes (Relationship) depends on primary key(Cont_Name, Cont_Num, Emp_Id)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Rstric_Rm_Tbl**(Rm_Number: Integer, Rm_Name: text, Int_Ph_Num: {ddd-ddd-dddd}, Has_Haz_Metrial: Binary)
- **Primary Key Columns: <Rm_Number2>**
- **Alternate Key Columns: <>**

- **Foreign Key Description: <>**
- **Other Constraint <>**
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  - This Relational schema is in1NF as
  a. It has Primary Key (Rm_Number)
  b. All the attributes have atomic values
  c. All the non-key attributes (Rm_Name, Int_Ph_Num, Has_Haz_Metrial) depends on primary key(Rm_Number)

  - This Relational Schema is in 2NF as there is no partial dependency

  - This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Alt_Cnct_Tbl**(Emp_Id: Integer, Alt_Num1: {ddd-ddd-dddd}, Alt_Num2: {ddd-ddd-dddd}, Alt_Num3: {ddd-ddd-dddd})
- **Primary Key Columns: <Emp_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Alt_Cnct_Tbl_FK1 FOREIGN KEY(Emp_Id) REFERENCES Emp_Tbl(Emp_Id)>**
- **Other Constraint <>**
-

  - This Relational schema is in1NF as
  a. It has Primary Key (Emp_Id)
  b. All the attributes have atomic values
  c. All the non-key attributes (Alt_Num1, Alt_Num2, Alt_Num3) depends on primary key(Emp_Id)

  - This Relational Schema is in 2NF as there is no partial dependency

- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Emp_Insr_Bnf_Tbl**(Emp_Id: Integer, Plan_Code: Integer, From_Year: {2000-2099}, To_Year: {2000-2099})
- **Primary Key Columns: < Emp_Id, Plan_Code,From_Year,To_Year>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Emp_Insr_Bnf_Tbl_FK1 FOREIGN KEY(Emp_Id) REFERENCES Emp_Tbl(Emp_Id)>**
- **< Emp_Insr_Bnf_Tbl_FK2 FOREIGN KEY(Plan_Code) REFERENCES Insr_Bnf_Tbl(Plan_Code)>**
- **Other Constraint**
- **<From_Year Emp_Insr_Bnf_Tbl_Chk1 CHECK(From_Year>=2000 AND From_Year <= 2099)>**
- **<To_Year Emp_Insr_Bnf_Tbl_Chk2 CHECK(To_Year >=2000 AND To_Year <= 2099)>**
-

(We are assuming here that employee can change the plan on yearly basis)

- This Relational schema is in1NF as

a. It has Primary Key ((Emp_Id: Integer, Plan_Code: Integer, From_Date: date, To_Date: Date)
b. All the attributes have atomic values

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key

- **Emp_Heirarchy_Tbl**(Emp_Id: Integer, Sup_Emp_Id: Integer, P_Level: Numeric, C_Level: Numeric)
- **Primary Key Columns: < Emp_Id,Sup_Emp_Id>**
- **Alternate Key Columns: <>**
- **Foreign Key Description: < Emp_Heirarchy_Tbl_FK1 FOREIGN KEY (Emp_Id) REFERENCES Emp_Tbl(Emp_Id)>**
- **< Emp_Heirarchy_Tbl_FK2 FOREIGN KEY (Sup_Emp_Id) REFERENCES Emp_Tbl(Emp_Id)>**
- **Other Constraint <>**
-

(We are assuming here that the supervisor of an employee can change after certain time)

- This Relational schema is in1NF as

a. It has Primary Key (Emp_Id, Sup_Emp_Id)
b. All the attributes have atomic values
c. All the non-key attributes (From_Date, To_Date) depends on primary key(Emp_Id, Sup_Emp_Id)

- This Relational Schema is in 2NF as there is no partial dependency
- This Relational Schema is in 3NF as every non-prime key attribute of this relation is non-transitively dependent on every primary key