ANSWERS:

create table clients(

client\_id int primary key,

cname varchar(40) not null,

Address varchar(30),

email varchar(30) unique,

phone varchar(10) check(phone not like '%[^0-9]%'),

business varchar(20)

)

insert into clients values

(1001,'ACME Utilities','Noida','contact@acmeutil.com','9567880032','Manufacturing'),

(1002,'Trackon Consultants','Mumbai','consult@trackon.com','8734210090','Consultant'),

(1003,'MoneySaver Distributors','Kolkata','save@moneysaver.com','7799886655','Reseller'),

(1004,'Lawful Corp','Chennai','justice@lawful.com','9210342219','Professional')

--create department table

create table department(

deptno int primary key,

dname varchar(15) not null,

location varchar(20)

)

-- department table

insert into department values

(10,'Design','Pune'),

(20,'Development','Pune'),

(30,'Testing','Mumbai'),

(40,'Document','Mumbai')

-- create employee table

create table employee(

empno int,

ename varchar(20) not null,

job varchar(15),

salary int constraint CK\_employee\_salary check(salary>0),

deptno int,

primary key(empno),

foreign key(deptno) references department(deptno)

)

--employee table

insert into employee values

(7001,'Sandeep','Analyst',25000,10),

(7002,'Rajesh','Designer',30000,10),

(7003,'Madhav','Developer',40000,20),

(7004,'Manoj','Developer',40000,20),

(7005,'Abhay','Designer',35000,10),

(7006,'Uma','Tester',30000,30),

(7007,'Gita','Tech. Writer',30000,40),

(7008,'Priya','Tester',35000,30),

(7009,'Nutan','Developer',45000,20),

(7010,'Smita','Analyst',20000,10),

(7011,'Anand','Project Mgr',65000,10)

-- create projects table

create table projects(

project\_id int primary key,

descr varchar(30) not null,

start\_date date,

planned\_end\_date date,

actual\_end\_date date, check(actual\_end\_date > planned\_end\_date),

budget int check(budget > 0),

client\_id int,

foreign key(client\_id) references clients(client\_id),

)

--project table

insert into projects values

(401,'Inventory','01-Apr-11','01-Oct-11','31-Oct-11',150000,1001)

insert into projects(project\_id,descr,start\_date,planned\_end\_date,budget,client\_id) values

(402,'Accounting','01-Aug-11','01-Jan-12',500000,1002),

(403,'Payroll','01-Oct-11','31-Dec-11',75000,1003),

(404,'Contact Mgmt','01-Nov-11','31-Dec-11',50000,1004)

--create emp\_project\_task table

create table Emp\_Project\_Tasks(

project\_id int,

empno int,

start\_date date,

end\_date date,

task varchar(25) not null,

status varchar(15) check(status='in progress' or status='complete' or status='cancelled') not null,

primary key(project\_id, empno),

foreign key(project\_id) references projects(project\_id),

foreign key(empno) references employee(empno)

)

insert into Emp\_Project\_Tasks values

(401,7001,'01-Apr-11','20-Apr-11','System Analysis','complete'),

(401,7002,'21-Apr-11','30-May-11','System Design','complete'),

(401,7003,'01-Jun-11','15-Jul-11','Coding','complete'),

(401,7004,'18-Jul-11','01-Sep-11','Coding','complete'),

(401,7006,'03-Sep-11','15-Sep-11','Testing','complete'),

(401,7009,'18-Sep-11','05-Oct-11','Code Change','complete'),

(401,7008,'06-Oct-11','16-Oct-11','Testing','complete'),

(401,7007,'06-Oct-11','22-Oct-11','Documentation','complete'),

(401,7011,'22-Oct-11','31-Oct-11','Sign off','complete'),

(402,7010,'01-Aug-11','20-Aug-11','System Analysis','complete'),

(402,7002,'22-Aug-11','30-Sep-11','System Design','complete'),

(402,7004,'01-Oct-11',null,'Coding','in progress')

**A small IT firm designing business software for its clients wants to store and manage its data.**

**It has identified following entities for which, it will maintain data.**

**Clients**

**Employees**

**Departments**

**Projects**

**EmpProjectTasks \***

**\* This will hold data of employees working on projects.**

**You are required to create the tables using the information provided below. Once tables are ready, fill in the given data in each table.**

**NOTE: Submit the CREATE TABLE, INSERT and SELECT commands as answer to this assignment.**

**The tables below describe attributes for each entity.**

**Clients**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Attribute Type** | **Constraint** | **Remarks** |
| **Client\_ID** | **NUMBER(4)** | **Primary Key** |  |
| **Cname** | **VARCHAR2(40)** | **Not Null** |  |
| **Address** | **VARCHAR2(30)** |  |  |
| **Email** | **VARCHAR2(30)** | **Unique** |  |
| **Phone** | **NUMBER(10)** |  |  |
| **Business** | **VARCHAR2(20)** | **Not Null** | **Business type of client like Manufacturer, Reseller, Consultant, Professional etc.** |

**Employees**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Attribute Type** | **Constraint** | **Remarks** |
| **Empno** | **NUMBER(4)** | **Primary Key** |  |
| **Ename** | **VARCHAR2(20)** | **Not Null** |  |
| **Job** | **VARCHAR2(15)** |  |  |
| **Salary** | **NUMBER(7)** | **Must be positive** | **Use CHECK constraint to ensure salary is > 0** |
| **Deptno** | **NUMBER(2)** | **Foreign Key** | **Deptno as per Departments table** |

**Departments**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Attribute Type** | **Constraint** | **Remarks** |
| **Deptno** | **NUMBER(2)** | **Primary Key** |  |
| **Dname** | **VARCHAR2(15)** | **Not Null** |  |
| **Loc** | **VARCHAR2(20)** |  |  |

**Projects**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Attribute Type** | **Constraint** | **Remarks** |
| **Project\_ID** | **NUMBER(3)** | **Primary Key** |  |
| **Descr** | **VARCHAR2(30)** | **Not Null** | **Description of project like ‘Accounting’ , ‘Inventory’, ‘Payroll’ etc.** |
| **Start\_Date** | **DATE** |  | **Start date of project** |
| **Planned\_End\_Date** | **DATE** |  | **Planned End date of project** |
| **Actual\_End\_date** | **DATE** | **Must be later than Planned\_End\_Date** | **Actual End date of project (Use CHECK constraint)** |
| **Budget** | **NUMBER(10)** | **Must be positive** | **Use CHECK constraint to ensure budget is > 0** |
| **Client\_ID** | **NUMBER(4)** | **Foreign Key** | **Client ID from Clients table** |

**EmpProjectTasks**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Attribute Type** | **Constraint** | **Remarks** |
| **Project\_ID** | **NUMBER(3)** | **Primary Key, Foreign Key** | **Composite primary key and foreign keys referring Projects and Employees table** |
| **Empno** | **NUMBER(4)** | **Primary Key, Foreign Key** |
| **Start\_Date** | **DATE** |  | **Start date when employee begins task on this project** |
| **End\_Date** | **DATE** |  | **End date when employee finishes task on this project** |
| **Task** | **VARCHAR2(25)** | **Not Null** | **Task performed by employee like designing, coding, review, testing etc.** |
| **Status** | **VARCHAR2(15)** | **Not Null** | **Status of task like ‘in progress’, ‘complete’,’cancelled’** |

**Clients**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Client ID** | **Cname** | **Address** | **Email** | **Phone** | **Business** |
| **1001** | **ACME Utilities** | **Noida** | [**contact@acmeutil.com**](mailto:contact@acmeutil.com) | **9567880032** | **Manufacturing** |
| **1002** | **Trackon Consultants** | **Mumbai** | [**consult@trackon.com**](mailto:consult@trackon.com) | **8734210090** | **Consultant** |
| **1003** | **MoneySaver Distributors** | **Kolkata** | [**save@moneysaver.com**](mailto:save@moneysaver.com) | **7799886655** | **Reseller** |
| **1004** | **Lawful Corp** | **Chennai** | [**justice@lawful.com**](mailto:justice@lawful.com) | **9210342219** | **Professional** |

**Employees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Empno** | **Ename** | **Job** | **Salary** | **Deptno** |
| **7001** | **Sandeep** | **Analyst** | **25000** | **10** |
| **7002** | **Rajesh** | **Designer** | **30000** | **10** |
| **7003** | **Madhav** | **Developer** | **40000** | **20** |
| **7004** | **Manoj** | **Developer** | **40000** | **20** |
| **7005** | **Abhay** | **Designer** | **35000** | **10** |
| **7006** | **Uma** | **Tester** | **30000** | **30** |
| **7007** | **Gita** | **Tech. Writer** | **30000** | **40** |
| **7008** | **Priya** | **Tester** | **35000** | **30** |
| **7009** | **Nutan** | **Developer** | **45000** | **20** |
| **7010** | **Smita** | **Analyst** | **20000** | **10** |
| **7011** | **Anand** | **Project Mgr** | **65000** | **10** |

**Departments**

|  |  |  |
| --- | --- | --- |
| **Deptno** | **Dname** | **Loc** |
| **10** | **Design** | **Pune** |
| **20** | **Development** | **Pune** |
| **30** | **Testing** | **Mumbai** |
| **40** | **Document** | **Mumbai** |

**Projects**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project\_ID** | **Descr** | **Start\_Date** | **Planned\_End\_Date** | **Actual\_End\_date** | **Budget** | **Client\_ID** |
| **401** | **Inventory** | **01-Apr-11** | **01-Oct-11** | **31-Oct-11** | **150000** | **1001** |
| **402** | **Accounting** | **01-Aug-11** | **01-Jan-12** |  | **500000** | **1002** |
| **403** | **Payroll** | **01-Oct-11** | **31-Dec-11** |  | **75000** | **1003** |
| **404** | **Contact Mgmt** | **01-Nov-11** | **31-Dec-11** |  | **50000** | **1004** |

**EmpProjectTasks**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Project\_ID** | **Empno** | **Start\_Date** | **End\_Date** | **Task** | **Status** |
| 401 | 7001 | 01-Apr-11 | 20-Apr-11 | System Analysis | Completed |
| 401 | 7002 | 21-Apr-11 | 30-May-11 | System Design | Completed |
| 401 | 7003 | 01-Jun-11 | 15-Jul-11 | Coding | Completed |
| 401 | 7004 | 18-Jul-11 | 01-Sep-11 | Coding | Completed |
| 401 | 7006 | 03-Sep-11 | 15-Sep-11 | Testing | Completed |
| 401 | 7009 | 18-Sep-11 | 05-Oct-11 | Code Change | Completed |
| 401 | 7008 | 06-Oct-11 | 16-Oct-11 | Testing | Completed |
| 401 | 7007 | 06-Oct-11 | 22-Oct-11 | Documentation | Completed |
| 401 | 7011 | 22-Oct-11 | 31-Oct-11 | Sign off | Completed |
| 402 | 7010 | 01-Aug-11 | 20-Aug-11 | System Analysis | Completed |
| 402 | 7002 | 22-Aug-11 | 30-Sep-11 | System Design | Completed |
| 402 | 7004 | 01-Oct-11 |  | Coding | In Progress |