**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.** |

Create table Clients(

Client\_id int primary key,

Cname VARCHAR(40) not null,

Address VARCHAR(30),

Email VARCHAR(30) unique,

Phone Number,

Business VARCHAR(20)

)

**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** |

Create table Employee(

Empno int primary key,

Ename VARCHAR(20) not null,

Job VARCHAR(15),

Salary int constraint Chk\_Emp\_Salary check(Salary>0),

Deptno int references Departments(Deptno),

)

**Departments**

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

Create table Departments(

Deptno int primary key,

Dname VARCHAR(15) not null,

Loc VARCHAR(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** |

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 references Clients(Client\_ID),

)

**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’** |

Create table EmpProjectTasks(

Project\_id int primary key references Projects(Project\_id),

Empno int primary key references Employees(Empno),

Start\_Date date,

End\_Date date,

Task varchar(25) not null,

Status varchar(15) not null

)

**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** |

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')

Select \* from Clients

**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** |

Insert into Employees 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)

Select \* from Employees

**Departments**

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

Insert into Departments values

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

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

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

(40, 'Document', 'Mumbai')

Select \* from Departments

**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** |

Insert into Projects values

(401,' Inventory', '2011/04/01', '2011/10/01', '2011/10/31', 150000, 1001)

(402, 'Accounting', '2011/08/01', '2012/01/01', NULL, 500000, 1002),

(403, 'Payroll', '2011/10/01', '2011/12/31', NULL, 75000, 1003),

(404, 'Contact Mgmt', '2011/11/01', '2011/12/31', NULL, 50000, 1004)

Select \* from Projects

**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 |

Insert into EmpProjectTasks values

(401, 7001, '2011/04/01', '2011/04/20', 'System Analysis', 'Completed'),

(401, 7002, '2011/04/21', '2011/05/30', 'System Design', 'Completed'),

(401, 7003, '2011/06/01', '2011/07/15', 'Coding', 'Completed'),

(401, 7004, '2011/07/18', '2011/09/01', 'Coding', 'Completed'),

(401, 7006, '2011/09/03', '2011/09/15', 'Testing', 'Completed'),

(401, 7009, '2011/09/18', '2011/10/05', 'Code Change', 'Completed'),

(401, 7008, '2011/10/06', '2011/10/16', 'Testing', 'Completed'),

(401, 7007, '2011/10/06', '2011/10/22', 'Documentation', 'Completed'),

(401, 7011, '2011/10/22', '2011/10/31', 'Sign off', 'Completed'),

(402, 7010, '2011/08/01', '2011/08/20', 'System Analysis', 'Completed'),

(402, 7002, '2011/08/22', '2011/09/30', 'System Design', 'Completed'),

(402, 7004, '2011/10/01', NULL, 'Coding', 'In Progress')

Select \* from EmpProjectTasks

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