

## Week-2 & Week-3 Assignment

### SQL Assignment

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.

1. **Clients**
2. **Employees**
3. **Departments**
4. **Projects**
5. **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.

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 'inprogress', 'complete', 'cancelled'

**Data to be entered in the created tables:****Clients**

Client ID	Cname	Address	Email	Phone	Business
1001	ACME Utilities	Noida	<a href="mailto:contact@acmeutil.com">contact@acmeutil.com</a>	9567880032	Manufacturing
1002	Trackon Consultants	Mumbai	<a href="mailto:consult@trackon.com">consult@trackon.com</a>	8734210090	Consultant
1003	MoneySaver Distributors	Kolkata	<a href="mailto:save@moneysaver.com">save@moneysaver.com</a>	7799886655	Reseller
1004	Lawful Corp	Chennai	<a href="mailto:justice@lawful.com">justice@lawful.com</a>	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	ProjectMgr	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

#### Requirements: WEEK-2

1. Display customer details with business as 'Consultant'
2. Display employee details who are not 'Developers'
3. Display project details with budget > 100000
4. Display details of project that are already finished
5. Display employee names beginning with 'M'
6. Display employee names ending with 'a'
7. Display the number of months project 'Inventory' took for completion
8. Display the task that is 'In Progress'
9. Display details of departments located in Pune
10. Display employee name and salary in descending order of salary
11. Display tasks in ascending order of end date
12. Display distinct jobs from Employees table
13. Display employee names in all uppercase
14. Display employee name, salary and bonus calculated as 25% of salary
15. Display concatenated string 'Employee works as Job' (e.g. Manoj works as Developer) for all employees
16. Display day of week (e.g. Friday) for each start date of projects
17. Display position number of '@' symbol in each email id of clients
18. Display first 3 characters of each client name
19. Display project budget values formatted as '\$150,000'
20. Display planned end date and review date as 3 months after planned end date for each project
21. Display count of clients
22. Display count of employees and sum of their salaries
23. Display max salary per department
24. Display min salary per job
25. Display average salary

26. Display sum of budget
27. Display count of 'Coding' task
28. Display department wise count and sum of salary of employees
29. Display client names and their project desc, start date and budget
30. Display department name, employee name and job
31. Display names of employees doing 'System Analysis' along with project name
32. Display job wise count
33. Display employee numbers not present in EmpProjectTasks table using necessary set operator
34. Display employee numbers present in both Employees and EmpProjectTasks table using necessary set operator
35. Display all employee numbers present in both Employees and EmpProjectTasks table using necessary set operator

### **Requirements-WEEK-3**

1. Display the project name with highest budget
2. Display employee names who have same job as 'Madhav'
3. Display employee's name and job who worked on 'Code Change' task of project 401
4. Display client name whose project's 'Coding' task is 'In Progress'
5. Display department number, names and salaries of employees who are earning max salary in their departments
6. Display name of department with highest SUM of salary
7. Create a table named 'CLIENT\_PROJECTS' using CTAS method that includes CLIENT\_ID, CNAME, ADDRESS, BUSINESS, DESCR, BUDGET columns from CLIENTS and PROJECTS tables
8. Increase salary of employees by 15% who have performed task of 'Testing' on projects
9. Create a view named DEPT\_EMP with DEPTNO, DNAME, LOC, ENAME, JOB, and SALARY columns
10. Create synonym EPT for table EmpProjectTasks