Table creation code

CREATE TABLE Departments (

Code INTEGER PRIMARY KEY,

Name varchar(255) NOT NULL ,

Budget decimal NOT NULL

);

CREATE TABLE Employees (

SSN INTEGER PRIMARY KEY,

Name varchar(255) NOT NULL ,

LastName varchar(255) NOT NULL ,

Department INTEGER NOT NULL ,

foreign key (department) references Departments(Code)

) ENGINE=INNODB;

## Sample dataset

**INSERT** **INTO** Departments(Code,Name,Budget) **VALUES**(14,'IT',65000);

**INSERT** **INTO** Departments(Code,Name,Budget) **VALUES**(37,'Accounting',15000);

**INSERT** **INTO** Departments(Code,Name,Budget) **VALUES**(59,'Human Resources',240000);

**INSERT** **INTO** Departments(Code,Name,Budget) **VALUES**(77,'Research',55000);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('123234877','Michael','Rogers',14);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('152934485','Anand','Manikutty',14);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('222364883','Carol','Smith',37);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('326587417','Joe','Stevens',37);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('332154719','Mary-Anne','Foster',14);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('332569843','George','O''Donnell',77);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('546523478','John','Doe',59);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('631231482','David','Smith',77);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('654873219','Zacary','Efron',59);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('745685214','Eric','Goldsmith',59);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('845657245','Elizabeth','Doe',14);

**INSERT** **INTO** Employees(SSN,Name,LastName,Department) **VALUES**('845657246','Kumar','Swamy',14);

Exercises

1. Select the last name of all employees.

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SELECT LastName FROM Employees;

2. Select the last name of all employees, without duplicates.

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SELECT DISTINCT LastName FROM Employees;

3. Select all the data of employees whose last name is "Smith".

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SELECT \* FROM Employees WHERE LastName = 'Smith';

4. Select all the data of employees whose last name is "Smith" or "Doe".

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/\* With OR \*/

SELECT \* FROM Employees

WHERE LastName = 'Smith' OR LastName = 'Doe';

/\* With IN \*/

SELECT \* FROM Employees

WHERE LastName IN ('Smith' , 'Doe');

5. Select all the data of employees that work in department 14.

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SELECT \* FROM Employees WHERE Department = 14;

6. Select all the data of employees that work in department 37 or department 77.

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/\* With OR \*/

SELECT \* FROM Employees

WHERE Department = 37 OR Department = 77;

/\* With IN \*/

SELECT \* FROM Employees

WHERE Department IN (37,77);

7. Select all the data of employees whose last name begins with an "S".

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SELECT \* FROM Employees

WHERE LastName LIKE 'S%';

8. Select the sum of all the departments' budgets.

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SELECT SUM(Budget) FROM Departments;

9. Select the number of employees in each department (you only need to show the department code and the number of employees).

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SELECT Department, COUNT(\*)

FROM Employees

GROUP BY Department;

10. Select all the data of employees, including each employee's department's data.

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SELECT \*

FROM Employees E INNER JOIN Departments D

ON E.Department = D.Code;

11. Select the name and last name of each employee, along with the name and budget of the employee's department.

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/\* Without labels \*/

SELECT Employees.Name, LastName, Departments.Name AS DepartmentsName, Budget

FROM Employees INNER JOIN Departments

ON Employees.Department = Departments.Code;

/\* With labels \*/

SELECT E.Name, LastName, D.Name AS DepartmentsName, Budget

FROM Employees E INNER JOIN Departments D

ON E.Department = D.Code;

12. Select the name and last name of employees working for departments with a budget greater than $60,000.

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/\* Without subquery \*/

SELECT Employees.Name, LastName

FROM Employees INNER JOIN Departments

ON Employees.Department = Departments.Code

AND Departments.Budget > 60000;

/\* With subquery \*/

SELECT Name, LastName FROM Employees

WHERE Department IN

(SELECT Code FROM Departments WHERE Budget > 60000);

13. Select the departments with a budget larger than the average budget of all the departments.

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SELECT \*

FROM Departments

WHERE Budget >

(

SELECT AVG(Budget)

FROM Departments

);

14. Select the names of departments with more than two employees.

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/\*With subquery\*/

SELECT D.Name FROM Departments D

WHERE 2 <

(

SELECT COUNT(\*)

FROM Employees

WHERE Department = D.Code

);

/\* With IN and subquery \*/

SELECT Name FROM Departments

WHERE Code IN

(

SELECT Department

FROM Employees

GROUP BY Department

HAVING COUNT(\*) > 2

);

/\* With UNION. This assumes that no two departments have

the same name \*/

SELECT Departments.Name

FROM Employees INNER JOIN Departments

ON Department = Code

GROUP BY Departments.Name

HAVING COUNT(\*) > 2;

15. Select the name and last name of employees working for departments with second lowest budget.

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/\* With subquery \*/

SELECT e.Name, e.LastName

FROM Employees e

WHERE e.Department = (

SELECT sub.Code

FROM (SELECT \* FROM Departments d ORDER BY d.budget LIMIT 2) sub

ORDER BY budget DESC LIMIT 1);

/\* With subquery \*/

SELECT Name, LastName

FROM Employees

WHERE Department IN (

SELECT Code

FROM Departments

WHERE Budget = (

SELECT TOP 1 Budget

FROM Departments

WHERE Budget IN (

SELECT DISTINCT TOP 2 Budget

FROM Departments

ORDER BY Budget ASC

)

ORDER BY Budget DESC

)

);

16. Add a new department called "Quality Assurance", with a budget of $40,000 and departmental code 11. Add an employee called "Mary Moore" in that department, with SSN 847-21-9811.

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INSERT INTO Departments

VALUES ( 11 , 'Quality Assurance' , 40000);

INSERT INTO Employees

VALUES ( '847219811' , 'Mary' , 'Moore' , 11);

/\*Note: Quoting numbers in SQL works but is bad practice. SSN should not be quoted it is an integer.\*/

17. Reduce the budget of all departments by 10%.

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UPDATE Departments SET Budget = Budget \* 0.9;

18. Reassign all employees from the Research department (code 77) to the IT department (code 14).

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UPDATE Employees SET Department = 14 WHERE Department = 77;

19. Delete from the table all employees in the IT department (code 14).

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DELETE FROM Employees

WHERE Department = 14;

20. Delete from the table all employees who work in departments with a budget greater than or equal to $60,000.

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DELETE FROM Employees

WHERE Department IN

(

SELECT Code FROM Departments

WHERE Budget >= 60000

);

21. Delete from the table all employees.

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DELETE FROM Employees;