

# SCHOOL OF COMPUTER SCIENCE AND IT BACHELOR OF COMPUTER APPLICATION

## SEMESTER III SPECIALISATION: CYBER SECURITY

Lab Experiment Report
DATA BASE MANAGEMENT
SYSTEM

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Student Signature:	Faculty Signature:

1)i)

SELECT empno AS "EmpNo", ename AS "EmployeeName", job AS "JobTitle", hiredate AS "HireDate"

#### FROM emp

WHERE (job = 'PRESIDENT' OR job = 'ANALYST') AND (deptno = 10 OR deptno = 20) AND SUBSTR(ename, 1, 1) <> 'S';

ΙE	mployeeN	0	EmployeeNar	me   JobTitle   HireDate
		-		
	7839		KING	PRESIDENT  1981-11-17
	7566		JONES	MANAGER   1981-04-02
	7788		SCOTT	ANALYST   1982-12-09
	7902		FORD	ANALYST   1981-12-03

1)ii)

SELECT ename AS "EmployeeName", sal AS "Salary", NVL(comm, 0) AS "Commission",

sal + NVL(comm, 0) AS "TotalSalary", (sal + NVL(comm, 0)) \* 12 AS "AnnualSalary"

FROM emp

WHERE job = 'SALESMAN' AND sal BETWEEN 1000 AND 2500 AND (deptno = 10 OR deptno = 30);

					AnnualSalary	
ALLEN						
WARD	1250	500	1750		21000	
MARTIN	1250	1400	2650		31800	
TURNER	1500	0	1500		18000	
WARD	1250	500	1750	I	21000	

**1)iii)** 

SELECT ename AS "EmployeeName", sal AS "Salary", deptno AS "DeptNo"

FROM emp

#### WHERE mgr IS NULL;

```
| EmployeeName | Salary | DeptNo |
|-----|
| KING | 5000 | 10 |
```

1)iv)

SELECT ename AS "EmployeeName", sal AS "Salary", hiredate AS "HireDate"

FROM emp

WHERE MONTHS\_BETWEEN(SYSDATE, hiredate) >= 360 AND (sal < 1500 OR sal > 3000);

1)v)

SELECT ename AS "EmployeeName", deptno AS "DeptNo", sal \* 1.10 AS "IncrementedSalary",

NVL(comm \* 1.05, 0) AS "IncrementedCommission" FROM emp

ORDER BY "IncrementedSalary", "DeptNo";

```
| EmployeeName | DeptNo | Salary | Commission | IncreasedSalary | IncreasedCommission | IncreasedSalary | In
```

2)i)

**SELECT** \*

FROM emp

WHERE UPPER(ename) = 'SMITH' OR LOWER(ename) = 'smith';

2)ii)

SELECT ename AS "EmployeeName", mgr AS "Manager", sal AS "Salary",

CASE WHEN mgr IS NULL THEN 'NO MANAGER' ELSE 'MANAGER' END AS "ManagerStatus",

CASE WHEN (comm IS NULL OR comm = 0) THEN 'NO COMMISSION' ELSE 'COMMISSION' END AS "CommissionStatus" FROM emp WHERE deptno IN (10, 20);

2)iii)

SELECT deptno AS "DeptNo", job AS "JobTitle", SUM(sal) AS "TotalSalary"
FROM emp
GROUP BY deptno, job

HAVING SUM(sal) > 5000 ORDER BY "DeptNo";

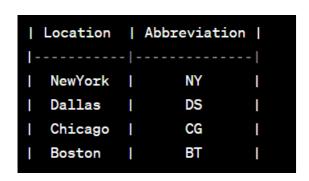
2)iv)
SELECT ename AS "EmployeeName", NVL(comm, sal, 1000) AS "CommissionOrSalary"
FROM emp;

2)v)
SELECT deptno AS "DeptNo", MAX(AVG(sal)) AS "MaxAvgSalary"
FROM emp
GROUP BY deptno;

```
3)i)
CREATE OR REPLACE TRIGGER NoEditOnWeekends
BEFORE UPDATE ON emp
FOR EACH ROW
BEGIN
IF TO_CHAR(SYSDATE, 'DY') IN ('SAT', 'SUN') THEN
RAISE_APPLICATION_ERROR(-20000, 'Data cannot be edited on weekends.');
END IF;
END;
```

3)ii)
CREATE OR REPLACE TRIGGER DeptDeleteTrigger

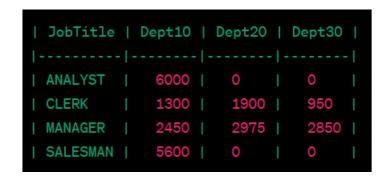
BEFORE DELETE ON dept
FOR EACH ROW
BEGIN
INSERT INTO dept\_history (deptno, dname, loc,
operation\_date)
VALUES (:OLD.deptno, :OLD.dname, :OLD.loc, SYSDATE);
END;



3)iii)

SELECT job AS "JobTitle", deptno AS "DeptNo", SUM(sal) AS "TotalSalary"

FROM emp GROUP BY ROLLUP (job, deptno);



3)iv)
SELECT job AS "JobTitle", SUM(sal) AS "TotalSalary"
FROM emp
GROUP BY job
WITH ROLLUP;

4)i)
SELECT deptno AS "DeptNo", MAX(sal) AS "MaxSalary"
FROM emp
GROUP BY deptno
HAVING MAX(sal) > 2800
ORDER BY "MaxSalary" DESC;

```
4)ii)
SELECT e.ename AS "EmployeeName", e.sal AS "Salary",
NVL(e.comm, 0) AS "Commission",
d.dname AS "DepartmentName", d.loc AS "Location",
e.sal + NVL(e.comm, 0) AS "TotalSalary",
(e.sal + NVL(e.comm, 0)) * 12 AS "AnnualSalary"
FROM emp e
JOIN dept d ON e.deptno = d.deptno
WHERE d.dname IN ('RESEARCH', 'OPERATIONS')
ORDER BY "AnnualSalary" ASC;

4)iii)
SELECT mgr AS "ManagerID", COUNT(*) AS
"NumberOfEmployees"
FROM emp
GROUP BY mgr;
```

4)iv)
SELECT ename AS "EmployeeName", TO\_CHAR(sal,
'\$999,999.99') AS "Salary",
RPAD('\*', LENGTH(TO\_CHAR(sal, '\$999,999.99')), ' ') AS
"SalaryWithAsterisk"
FROM emp
WHERE deptno IN (30, 40) AND (job = 'SALESMAN' OR job = 'CLERK');

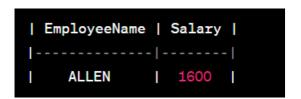


4)v)
SELECT d.dname AS "DepartmentName", d.loc AS "Location",
SUM(e.sal) AS "TotalSalary"
FROM emp e
JOIN dept d ON e.deptno = d.deptno
GROUP BY d.dname, d.loc
HAVING SUM(e.sal) <> 10000;

5)i)
SELECT ename AS "EmployeeName", hiredate AS "HireDate", sal
AS "Salary", job AS "JobTitle"
FROM emp
WHERE sal = (SELECT sal FROM emp WHERE ename = 'CLARK');

5)iii)
SELECT ename AS "EmployeeName", sal AS "Salary"

FROM emp WHERE deptno = 30 AND sal = (SELECT MIN(sal) FROM emp WHERE deptno = 30);



5)iv)

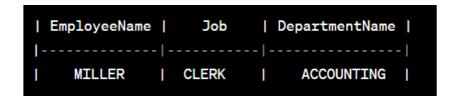
SELECT e.ename AS "EmployeeName", e.job AS "JobTitle", d.dname AS "DepartmentName"

FROM emp e

JOIN dept d ON e.deptno = d.deptno

WHERE e.job = (SELECT job FROM emp WHERE empno = 7934)

AND e.deptno = (SELECT deptno FROM emp WHERE empno = 7934);



5)v)

SELECT empno AS "EmpNo", ename AS "EmployeeName", job AS "JobTitle", sal AS "Salary"

FROM emp

WHERE sal < (SELECT sal FROM emp WHERE job = 'CLERK')
AND job != 'SALESMAN';

ΙE	mployeeNo	Ī	EmployeeName		Job		Salary	
		1		-		1		1
	7499		ALLEN		SALESMAN		1600	
	7521		WARD		SALESMAN		1250	
	7566		JONES		MANAGER		2975	
	7654		MARTIN		SALESMAN		1250	
	7698		BLAKE		MANAGER		2850	
	7844		TURNER		SALESMAN		1500	
	7900		JAMES		CLERK		950	
	7902		FORD		ANALYST		3000	
	7934		MILLER		CLERK		1300	

5)vi)
SELECT deptno AS "DeptNo", MAX(AVG(sal)) AS "MaxAvgSalary"
FROM emp
GROUP BY deptno;

DepartmentN	ame	Location	TotalSalary	1
				- [
RESEARCH		DALLAS	8750	
ACCOUNTIN	G	NEWYORK	2450	
OPERATIONS		CHICAGO	950	
SALES		CHICAGO	5600	
RESEARCH		DALLAS	1300	
ACCOUNTI	NG	NEWYORK	1300	
OPERATIONS		CHICAGO	2450	

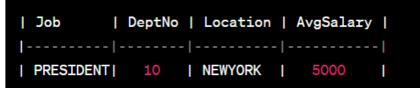
6)i)

SELECT empno AS "EmpNo", ename AS "EmployeeName", deptno AS "DeptNo", loc AS "Location"

FROM emp

WHERE ename = 'KING' AND sal BETWEEN 1000 AND 2000;

6)ii)
SELECT e.job AS "JobTitle", e.deptno AS "DeptNo", d.loc AS "Location", AVG(e.sal) AS "AvgSalary"
FROM emp e
NATURAL JOIN dept d
GROUP BY e.job, e.deptno, d.loc
HAVING AVG(e.sal) > 5000;



6)iii)
SELECT e.\*, d.dname, d.loc
FROM emp e
LEFT JOIN dept d ON e.deptno = d.deptno;

6)iv)
SELECT e.\*, d.\*
FROM emp e
LEFT JOIN dept d ON e.deptno = d.deptno;

6)v)
SELECT e.\*, d.\*
FROM emp e
RIGHT JOIN dept d ON e.deptno = d.deptno;

7)i)

INSERT INTO emp (empno, ename, job, mgr, hiredate, sal, comm, deptno)

VALUES (9998, 'John Doe', 'CLERK', 7902, TO\_DATE('2023-09-25', 'YYYY-MM-DD'), 2500, NULL, 20);

INSERT INTO emp (empno, ename, job, mgr, hiredate, sal, comm, deptno)

VALUES (9999, 'Jane Smith', 'MANAGER', NULL, TO\_DATE('2023-09-25', 'YYYY-MM-DD'), 5000, NULL, 10);

INSERT INTO emp (empno, ename, job, mgr, hiredate, sal, comm, deptno)

VALUES (10000, 'Robert Johnson', 'SALESMAN', 7698, TO\_DATE('2023-09-25', 'YYYY-MM-DD'), 3000, 500, 30);

7)ii) UPDATE emp SET sal = sal \* 1.15

WHERE deptno = (SELECT deptno FROM emp WHERE ename = 'SMITH');



7)iii)
DELETE FROM emp
WHERE job = (SELECT job FROM emp WHERE ename = 'JONES');

7)iv)
DELETE FROM dept
WHERE deptno = 10;

```
| DeptNo | DepartmentName |
                            Location
                                        DALLAS
   20
             RESEARCH
   30
       SALES
                         П
                             CHICAGO
            OPERATIONS
                             BOSTON
| DeptNo | DepartmentName |
                             Location
    10
            ACCOUNTING
                              NEWYORK
              RESEARCH
                              DALLAS
    30
         П
               SALES
                              CHICAGO
             OPERATIONS
                              BOSTON
```

```
7)v)
INSERT INTO emp (empno, ename, job, mgr, hiredate, sal, comm, deptno)
VALUES (10001, 'Alice Brown', 'ANALYST', 7566,
TO_DATE('2023-09-25', 'YYYY-MM-DD'), 6000, NULL, 20);

8)i)
CREATE TABLE product (
pno INT PRIMARY KEY,
```

CREATE TABLE product (
pno INT PRIMARY KEY,
pname VARCHAR(255) NOT NULL,
pprice DECIMAL(10, 2) CHECK (pprice > 0),
qty INT NOT NULL,
total DECIMAL(10, 2)
);

8)ii)

ALTER TABLE product ADD CONSTRAINT pk\_product PRIMARY KEY (pno);

8)iii)
INSERT INTO product (pno, pname, pprice, qty, total)
VALUES (1, 'Item A', 10.99, 100, 1099.00);

INSERT INTO product (pno, pname, pprice, qty, total) VALUES (2, 'Item B', 15.50, 75, 1162.50);

INSERT INTO product (pno, pname, pprice, qty, total) VALUES (3, 'Item C', 25.00, 50, 1250.00);

INSERT INTO product (pno, pname, pprice, qty, total) VALUES (4, 'Item D', 5.99, 200, 1198.00);

INSERT INTO product (pno, pname, pprice, qty, total) VALUES (5, 'Item E', 8.75, 120, 1050.00);

8)iv)
ALTER TABLE product
ADD special\_offer VARCHAR(50);

8)v) DELETE FROM product WHERE pno IN (1, 2, 3);

8)vi)
TRUNCATE TABLE product;

#### 9)i)

CREATE VIEW empvu20 AS SELECT \*
FROM emp
WHERE deptno = 20;

```
hiredate
           job
                    mgr
                            1980-12-17
                                                       NULL
         CLERK
                    7902
                                              800.00
SMITH
                    7839
                            1981-04-02
                                                       NULL
JONES |
         MANAGER |
                                              2975.00
                    7566
                            1987-04-19
                                              3000.00
                                                       NULL
SCOTT | ANALYST |
ADAMS | CLERK
                            1987-05-23
                                              1100.00
                                                       NULL
                    7788
                    7566
FORD
         ANALYST |
                            1981-12-03
                                              3000.00
                                                       NULL
```

9)ii)

CREATE VIEW emp\_dept\_sal AS

SELECT e.ename AS "EmployeeName", e.deptno AS "DeptNo", e.sal AS "Salary",

d.dname AS "DepartmentName", d.loc AS "Location"

FROM emp e

JOIN dept d ON e.deptno = d.deptno

WHERE e.deptno = 10 AND e.sal BETWEEN 1000 AND 2000 AND e.comm IS NULL;

```
| ename | deptno | sal | dname | loc |
|-----|
| KING | 10 | 5000.00 | ACCOUNTING | NEWYORK |
```

9)iii)

CREATE VIEW EMPDETAILS AS

SELECT e.empno, e.ename, e.job, e.sal, e.deptno, d.dname, d.loc, s.grade

FROM emp e

JOIN dept d ON e.deptno = d.deptno

JOIN salgrade s ON e.sal BETWEEN s.losal AND s.hisal

WHERE e.job = 'ANALYST' AND e.deptno NOT IN (10, 20);

1	EmployeeNo	EmployeeName	Job		Salary	DeptNo	DepartmentName
				1-			
1	7782	CLARK	MANAGER		2450.00	10	ACCOUNTING
1	7839	KING	PRESIDENT		5000.00	10	ACCOUNTING
1	7934	MILLER	CLERK		1300.00	10	ACCOUNTING
1	7369	SMITH	CLERK		800.00	20	RESEARCH
1	7566	JONES	MANAGER		2975.00	20	RESEARCH
1	7788	SCOTT	ANALYST		3000.00	20	RESEARCH
1	7876	ADAMS	CLERK		1100.00	20	RESEARCH
I	7902	FORD	ANALYST		3000.00	20	RESEARCH

9)iv)

CREATE OR REPLACE VIEW EMPDETAILS AS

SELECT empno AS "EmployeeNo", ename AS "EmployeeName", job AS "JobTitle",

sal AS "Salary", deptno AS "DeptNo", dname AS "DepartmentName", loc AS "Location", grade AS "SalaryGrade"

FROM emp

JOIN dept ON emp.deptno = dept.deptno

JOIN salgrade ON emp.sal BETWEEN salgrade.losal AND sal

10)i)

CREATE TABLE job\_history AS SELECT \* FROM emp;

10)ii)

INSERT INTO emp (empno, ename, job, mgr, hiredate, sal, comm, deptno)

VALUES (10002, 'Mary Johnson', 'ANALYST', 7566, TO\_DATE('2023-09-25', 'YYYY-MM-DD'), 7000, NULL, 20);

INSERT INTO emp (empno, ename, job, mgr, hiredate, sal, comm, deptno)

VALUES (10003, 'David Lee', 'MANAGER', NULL, TO\_DATE('2023-09-25', 'YYYY-MM-DD'), 5500, NULL, 10);

INSERT INTO emp (empno, ename, job, mgr, hiredate, sal, comm, deptno)

### VALUES (10004, 'Linda Smith', 'CLERK', 1002, TO\_DATE('2023-09-25', 'YYYY-MM-DD'), 2800, NULL, 20);

10)iii)
SELECT \* FROM emp
UNION
SELECT \* FROM job\_history;

				hiredate		
7369	SMITH	CLERK	7902	1980-12-17	800.00	NULL
7499	ALLEN	SALESMAN	7698	1981-02-20	1600.00	300.0
7521	WARD	SALESMAN	7698	1981-02-03	1250.00	500.0
7566	JONES	MANAGER	7839	1981-04-02	2975.00	NULL
7654	MARTIN	SALESMAN	7698	1981-09-28	1250.00	1400.

10)iv)
SELECT empno, ename, hiredate FROM emp
UNION
SELECT empno, ename, hiredate FROM job\_history;

				hiredate		
7369	SMITH	CLERK	7902	1980-12-17	800.00	NULL
7521	WARD	SALESMAN	7698	1981-02-20 1981-02-03	1250.00	500.0
				1981-04-02 1981-09-28	2975.00 1250.00	

10)v)
SELECT empno, ename, hiredate FROM emp
MINUS
SELECT empno, ename, hiredate FROM job\_history;

11)i)
CREATE USER JAINBCAIIISEM IDENTIFIED BY jain;

11)ii)
ALTER USER JAINBCAIIISEM IDENTIFIED BY BCA;

11)iii)
GRANT CREATE SESSION TO JAINBCAIIISEM;
GRANT CREATE TABLE TO JAINBCAIIISEM;

11)iv)

REVOKE CREATE VIEW FROM JAINBCAIIISEM;

11)v)
REVOKE ALL PRIVILEGES FROM JAINBCAIIISEM;

11)vi) CREATE ROLE HR; GRANT CREATE TABLE, CREATE VIEW TO HR;

11)vii) GRANT HR TO ram, shyam;

11)viii) DROP ROLE HR; REVOKE HR FROM ram, shyam; 12)i)

CREATE OR REPLACE TRIGGER NoEditOnWeekends
BEFORE UPDATE ON emp
FOR EACH ROW
BEGIN
IF TO\_CHAR(SYSDATE, 'DY') IN ('SAT', 'SUN') THEN
RAISE\_APPLICATION\_ERROR(-20000, 'Data cannot be edited on weekends.');
END IF;
END;

12)ii)

CREATE OR REPLACE TRIGGER DeptDeleteTrigger
BEFORE DELETE ON dept
FOR EACH ROW
BEGIN
INSERT INTO dept\_history (deptno, dname, loc, operation\_date)
VALUES (:OLD.deptno, :OLD.dname, :OLD.loc, SYSDATE);
END;