



Shree Swaraj Education Society's

Swaraj College of Commerce And Computer Studies

Taljai Pathar Dhankawadi, Pune -43

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F. Y. BCOM. (C. A.) Semester-I

(Faculty of Commerce and Management)

Problem Solving Using C, DBMS

Lab Book

Student Name: _____

College Name: _____

Roll No.: _____ **Division:** _____ **Seat No:** _____

Academic Year: _____

Choice Based Credit System (CBCS) Syllabus Under
National Education Policy (NEP)

To be implemented from Academic Year 2024-2025

CERTIFICATE

This is to certify that Mr./Ms._____

Seat Number _____ of F.Y.BCOM. (C.A) Sem-I has
successfully completed Laboratory Course **Problem Solving C** and
Database Management System in the year _____.

He/She has scored _____mark out of 10 (For Lab Book).

Subject Teacher

H.O.D./Coordinator

Internal Examiner

External Examiner

Assignment Completion Sheet

Index Section-I (Problem Solving C)

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1	Data types and operators	
2	Managing Input and Output	
3	Decision Making using if and if-else	
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5	Loop Control structures	
6	Nested Loops	
7	Demonstration of 1-D Arrays	
8	Demonstration of 2-D Arrays	
9	Strings	
10	Functions	
11	Pointers and Structure	

Name and Signature of Subject Teacher

Head of Department

Date:-

Assignment Completion Sheet

Index Section-II (DBMS)

Sr.No	Title	Signature
1	DDL Commands (Table Creation).	
2	DDL Commands(Alter and Drop table).	
3	DML Commands(Insert, Update and Delete).	
4	RDB without Constraints.	
5	Table Creation with Constraints.	
6	RDB with constraints.	
7	Implementation of Select Command	
8	SQL Set operation.	
9	Joins	
10	Case Study	

Name and Signature of Subject Teacher

Head of Department

Date:-

Computer Laboratory Based on (Problem Solving C)

Exercise 1: Data types and operators

❖ Assignments based on Data Types and Operators:

(Hint: Do not accept input from user. Declare variables with default values)

1. Write a C Program to demonstrate the working of arithmetic operators (Associativity and precedence of arithmetic operators is expected)
2. Write a C program to find maximum of two numbers using conditional operator.
3. Write a C Program to find maximum of three numbers using logical operators.
4. Write a C Program to display Quotient and Remainder of division of two variable.
5. Write a C Program which illustrate increment and decrement operators (Use of Pre and Post increment is expected)
6. Write a program to display the size of different data types.
7. Write a program to swap the values of two variables using bitwise operator (^)
8. Write a C program which illustrate the use of Bitwise And, Bitwise Or and Bitwise XOR Operator).
9. Write a C program which illustrate Bitwise Left shift and Right Shift operators.
10. Write a C program to check Least Significant Bit (LSB) of a number is set or not.
11. Write a C program to check Most Significant Bit (MSB) of a number is set or not.
12. Write a C program to flip bits of a binary number using bitwise operator.
13. Write a C program to check whether a number is even or odd using bitwise operator.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 2: Managing I/O Operations

❖ Assignments based on Input and Output functions:

1. Accept dimensions of a cylinder and print the surface area and volume.
2. Accept temperatures in Fahrenheit (F) and print it in Celsius(C) and Kelvin (K) (Hint: $C = 5.0/9(F-32)$, $K = C + 273.15$)
3. Accept initial velocity (u), acceleration (a) and time (t). Print the final velocity (v) and the distance travelled (s) (Hint: $v = u + at$, $s = u + at^2$)
4. Accept two numbers and print arithmetic and harmonic mean of the two numbers (Hint: $AM = (a+b)/2$
5. $HM = ab/(a+b)$)
6. Accept three dimensions length (l), breadth(b) and height(h) of a cuboid and print surface area and volume (Hint : surface area= $2(lb+lh+bh)$, volume = lbh)
7. Accept a character from the keyboard and display its previous and next character in order. Ex. If character entered is 'd', display "The previous character is c", "The next character is e".
8. Accept a character from the user and display its ASCII value.
9. Accept the x and y coordinates of two points and compute the distance between the two points.
10. Accept two integers from the user and interchange them. Display the interchanged numbers.
11. A cashier has currency notes of denomination 1, 5 and 10. Accept the amount to be withdrawn from the user and print the total number of currency notes of each denomination the cashier will have to give.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 3: Decision Making using if and if-else

❖ Assignments based on if and if else

1. Write a program to accept an integer and check if it is even or odd.
2. Accept a character as input and check whether the character is a digit. (Check if it is in the range '0' to '9' both inclusive)
3. Write a program, which accepts annual basic salary of an employee and calculates and displays the Income tax as per the following rules.
 - i. Basic: < 1,50,000 Tax = 0
 - ii. Basic: 1,50,000 to 3,00,000 Tax = 20%
 - iii. Basic: > 3,00,000 Tax = 30%
4. Accept a character from the user and check whether the character is a vowel or consonant. (Hint: a,e,i,o,u, A, E, I, O, U are vowels)
5. Accept any year as input through the keyboard. Write a program to check whether the year is a leap year or not. (Hint leap year is divisible by 4 and not by 100 or divisible by 400)
6. Write a program to check whether given character is a digit or a character in lowercase or uppercase alphabet. (Hint ASCII value of digit is between 48 to 57 and Lowercase characters have ASCII values in the range of 97 to 122, uppercase is between 65 and 90)
7. Accept the x and y coordinate of a point and find the quadrant in which the point lies.
8. Accept the cost price and selling price from the keyboard. Find out if the seller has made a profit or loss and display how much profit or loss has been made.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 4: Decision Making using Switch

Assignments based on switch control structure:

1. Accept a single digit from the user and display it in words. For example, if digit entered is 9, display Nine.
2. Write a program, which accepts two integers and an operator as a character (+ - * /), performs the corresponding operation and displays the result.
3. Accept two numbers in variables x and y from the user and perform the following operations

Option	Actions
1. Equality	Check if x is equal to y
2. Less Than	Check if x is less than y
3. Quotient and Remainder	Divide x by y and display the quotient and remainder

4. Accept radius from the user and write a program having menu with the following options and corresponding actions

Options	Actions
1. Area of Circle	Compute area of circle and print
2. Circumference of Circle	Compute Circumference of circle and print
3. Volume of Sphere	Compute Volume of Sphere and print

5. Write a program having a menu with the following options and corresponding actions

Options	Actions
1. Area of square	Accept length ,Compute area of square and print
2. Area of Rectangle	Accept length and breadth, Compute area of rectangle and print
3. Area of triangle	Accept base and height , Compute area of triangle and print

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 5: Loop Control structures

Assignments based on Loop Control Structure

1. Write a program to calculate sum of digits of a given input number.
2. Write a program to accept two numbers as a range and display sum of all numbers between that range.
3. Write program to check whether a input number is Armstrong number or not.
4. Write a program to accept a binary number and convert it into decimal number.
5. Write a program to check whether a input number is perfect number or not.
6. Write a program to calculate x^y .
7. Write a program to check whether a input number is palindrome or not.
8. Write a program to display multiplication of two input numbers without using * operator.
9. Write a program to calculate sum of first and last digit of a number.
10. Write a program to accept a number and count number of even, odd, zero digits within that number.
11. Write a program, which accepts a number n and displays each digit in words. Example: 6702
Output = Six-Seven-Zero-Two. (Hint: Reverse the number and use a switch statement)

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 6: Nested Loops

Assignment based on Nested Loop

- 1) Write a program to generate following triangle up to n lines.

```
1
1  2
1  2  3
```

- 2) Write a program to generate following triangle up to n lines.

```
1
2  3
4  5  6
```

- 3) Write a program to generate following triangle up to n lines

```
A  B  C
D  E
F
```

- 4) Write a program to generate following pattern.

```
5
4  5
3  4  5
2  3  4  5
1  2  3  4  5
```

- 5) Write a program to accept two numbers as range and display multiplication table of all numbers within that range.
- 6) Write a program to display all Armstrong between 1 and 1000.
- 7) Write a program to calculate sum of all digits of a input number till it reduce to a single digit.
(Ex i/p 489 output sum:21 sum :3)

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 7: Demonstration of 1-D Arrays

❖ Assignment based on 1D Array:

- 1) Write a program to accept n elements of 1D array and then display sum of all elements of array.
- 2) Write a program to find maximum and minimum elements of 1D array.
- 3) Write a program to calculate sum of all odd elements of 1-D array.
- 4) Write a program to sort 1D array elements in ascending order.
- 5) Write a program to display union of two 1D array.
- 6) Write a program to display intersection of two 1D array.
- 7) Write a program to display 1D array elements in reverse order.
- 8) Write a program to accept a decimal number and convert it to binary, octal and hexadecimal number.
- 9) Write a program to count the occurrences of a input number in 1D array.
- 10) Write a program to count Prime Numbers within 1D array.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 8: Demonstration of 2-D Arrays

Assignments based on 2D arrays:

- 1) Write a program to find maximum and minimum elements of a matrix.
- 2) Write a program to calculate sum of all elements of a matrix.
- 3) Write a program to calculate sum of all even elements of a matrix.
- 4) Write a program to calculate sum of all upper triangular matrix elements.
- 5) Write a program to calculate sum of all diagonal elements of a matrix.
- 6) Write a program to calculate addition of two matrices of order $m \times n$.
- 7) Write a program to calculate multiplication of two matrices.
- 8) Write a program to display transpose of a matrix.
- 9) Write a program to calculate sum of elements of each row and column.
- 10) Write a program to check whether a input matrix is identity matrix or not.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 9: Strings

❖ Assignments based on Strings:

- 1) Write a menu driven program to perform the following operations on strings using standard library functions:
 - 2) 1. Length 2. Copy 3. Concatenation 4. Compare
- 3) Write a program which accepts a sentence from the user and alters it as follows: Every space is replaced by
- 4) *, case of all alphabets is reversed, digits are replaced by ?
- 5) Write a program to accept a string and then count the occurrences of a specific character of a string.
- 6) Write a program to count the occurrences of vowel from a input string.
- 7) Write a program to calculate length of string without using standard functions.
- 8) Write a program to copy string without using standard function.
- 9) Write a program to connect two different strings without using standard function.

Assignment Evaluation

0: Not Done []	1: Incomplete []	2: Late Complete []
3: Needs Improvement []	4: Complete []	5: Well Done []

Signature of Instructor

Exercise 10: Functions

❖ Assignments based on Functions:

- 1) Write a function isEven, which accepts an integer as parameter and returns 1 if the number is even, and 0 otherwise. Use this function in main to accept n numbers and check if they are even or odd.
- 2) Write a program to calculate sum of digits of a input number using function.
- 3) Write a program to calculate x^y using user defined fuction.
- 4) Write a function which accepts one number. Function should return 1 if the number is Perfect No, otherwise function should return 0. Use this function in main to display whether a input number is perfect number or not.
- 5) Write a function, which accepts a character and integer n as parameter and displays the next n characters.
- 6) Write a function isPrime, which accepts an integer as parameter and returns 1 if the number isprime and 0 otherwise. Use this function in main to display the first 10 prime numbers.
- 7) Write a program to find factorial of a input number using user defined function.
- 8) Write a program to calculate sum of following series up to n terms.
$$\text{Sum} = X + X^2/2! + X^3/3! + \dots$$

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 11: Pointers and Structure

❖ Assignments based on Pointers and Structures:

1. Write a program to display the elements of an array containing n integers in the reverse order using a pointer to the array.
2. Accept n integers in array A. Pass this array and two counter variables to a function which will set the first counter to the total number of even values in the array and the other to the total number of odd values. Display these counts in main. (Hint: Pass the addresses of the counters to the function)
3. Accept n integers in an array. Copy only the non-zero elements to another array (allocated using dynamic memory allocation). Calculate the sum and average of non-zero elements.
4. Write a program to allocate memory dynamically for n integers such that the memory is initialized to 0. Accept the data from the user and find the range of the data elements.
5. Accept the number of rows (m) and columns (n) for a matrix and dynamically allocate memory for the matrix. Accept and display the matrix using pointers.
6. Create a structure employee (id, name, salary). Accept details of n employees and write a menu driven program to perform the following operations. Write separate functions for the different options
 - i. Search by name
 - ii. Search by id
 - iii. Display all
7. Create a structure Book (Bno, Bname, Price). Accept details of n Books and write a menu driven program to perform the following operations options.
 - i. Display all Books having price > 500
 - ii. Display Book having maximum price

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Computer Laboratory Based on (DBMS)

Exercise 1: DDL(Data Definition Language)

Creating Tables:

❖ **Create table for the information given below by choosing appropriate data types and also specifying proper primary key constraint on fields which are underlined**

1. Player (player_id , name, Birth_date ,Birth_place, game_name)
2. Student (roll_no, name,class,per,birth_date)
3. Project (project_id, project_name , project_description ,status)
4. Donor (donor_no, donor_name,blood_group,last_date)

❖ **Create table for the information given below by choosing appropriate data types and also specifying proper primary key constraint on fields which are underlined.**

1. Property (property_id, property_desc , area, rate, agri_status)
2. Actor (actor_id, Actor_name, birth_date)
3. Movie(movie-no, name, release-year)
4. Hospital(hno,hname,hcity)

❖ **Create table for the information given below by choosing appropriate data types and also specifying proper primary key constraint on fields which are underlined.**

1. Employee(ENo, EName, Joining_date,company_name,salary,Designation)
2. College(College_Code,College_Name,Address,Establish_year)
3. Doctor(Dno, Dname, Specialization,Qualification)
4. Classroom(CRoomNo,location,capacity)

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 2: Alter Table and Drop Table

- ❖ Create table student(Roll_no, sname, date_of_birth). Add new column into student relation named address as a text data type and a column phone of data type integer.
- ❖ Create table driver (licence_no, Name, Address) and perform the following queries
 1. Add new column age of data type integer.
 2. Alter table by modifying driver_name to “Patil”
 3. Alter table driver ,drop the column age.
 4. Remove the driver table from the database.
- ❖ Create table Game (name, no-of-players, captain_name) and perform the following queries
 1. Add new column game_no of data type integer.
 2. Alter table by adding constraint uppercase to captain_name.
 3. Modify table by adding the column game_duration.
 4. Add column game_type with values cricket,hockey,tennis.
 5. Remove game table from the database.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 3: DML Commands

❖ Consider the following table Employee(ENo, EName, Salary, DOJ,Qualification) and answer the following query.

1. Insert at least five records into the table.
2. Update the salary of employee to 50000 whose ENo is 1.
3. Delete the details of employee whose ENo is 5.
4. Update the Qualification of employee to “MCS NET” whose Name is Mr.Satyavan.
5. Update the salary of employee to 40000 whose qualification is “MCS NET” and Name is “Ajay”

❖ Consider the following table Hospital (HNo, HName, Addr, Est_Year , speciality) and answer the following query.

1. Insert at least five records into the table.
2. Update an address of hospital to “Pimple Gurav” whose name is “Birla”.
3. Update the specialty of hospital to “Multi” whose established year is between 1990 to 2000.
4. Delete the details of Hospital whose address is “Pimpri”.

❖ Consider the following table Student (Roll_No, Name, class, DOB, college) and answer the following query.

1. Insert at least 10 records into the table.
2. Update the class of student to “TY” whose birth date is ‘18/03/1999’.
3. Delete the details of students whose college is “Dr.D Y Patil”.
4. Update the college of student to “Dr. D Y Patil “ whose name is “Yash”.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 4: RDB without Constraints:

- ❖ Consider the following entities and their relationships. Create a RDB in 3 NF for the following and answer the queries:

Emp(eno ,ename ,designation ,salary,DOJ)

Dept(dno,dname ,loc)

The relationship between Dept & Emp is one-to-many.

1. Insert at least five records into the tables.
2. Display the names of employees who are working in “Quality Department”.
3. Display the name of employee who is ‘Manager’ of “Purchase Department”.
4. Display the name of department whose location is “Baramati” and “Mr. Pawar” is working in it.

- ❖ Consider the following entities and their relationships. Create a RDB in 3 NF for the following and answer the queries:

Hospital(hno ,hname , city, Est_year)

Doctor(dno , dname , addr, Speciality)

The relationship between Hospital and Doctor is one - to – Many

1. Insert at least 10 records into the tables.
2. Display the names of hospitals which are located at “Pimpri” city.
3. Display the names of doctors who are working in “Birla” Hospital and city name is “Chinchwad”.
4. Display the specialty and name of doctor who is working in “Ruby” hospital and his address is “Pimple Gurav”.

- ❖ Consider the following entities and their relationships. Create a RDB in 3 NF for the following and answer the queries:

Patient(PCode, PName , Addr , Disease)

Bed (Bed_No, RoomNo, loc)

Relationship: - A one-one relationship between patient and bed.

1. Insert at least five records into the tables.
2. Display the names of patients who are admitted in room no 101.
3. Display the disease of patient whose bed_No is 1.
4. Give the roon_no and bed_no of patient whose name is “Mr Ajay”.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 5: Table Creation with Constraints:

❖ Consider the following tables and integrity constraints given and create the tables accordingly:

1. **Machine**(Mid, MName NOT NULL, MType, MPrice , MCost)

Constraints: 1. MName should be in uppercase.

2. MType can be ('drilling', 'milling', 'lathe', 'turning', 'grinding').

3. MPrice should be greater than zero.

Table level constraint: MCost less than MPrice.

2. **Policy**(No, Name NOT NULL, Type , Sale_Date, Intro_date)

Constraints: 1. Name should be in lowercase.

2. Type can be ('life', 'vehicle', 'accident')

Table level constraint: Sale_date should be greater than Intro_date.

3. **Employee** (EmpNo, Emp_Name NOT NULL, Emp_desig, Emp_sal , Emp_uid)

Constraints:

1. Emp_name should be in uppercase.

2. Emp_desg can be ('Manager', 'staff', 'worker').

3. Emp_sal should be greater than zero.

Table level constraint: Emp_uid not equal to Emp_id

3 **Room**(room_no , type, price);

Constraints:

1. Room type must be one of single, double, family.

2. Price must be between Rs.500/- and 1000/-.

3. Room no must be between 1 and 100.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 6: RDB with Constraints:

❖ Consider the following Entities and Relationships

Sales_order(ordNo, ordDate)

Client (clientNo, ClientName, addr)

Constraint: Primary key, ClientName should not be NULL.

A client can give one or more sales_orders, but a sales_order belongs to exactly one client. Create the relations accordingly, so that the relationship is handled properly and the relations are in normalized form(3 NF) and perform the following tasks.

1. Insert two client records into client table.
2. Insert 3 sales records for each client.
3. Change order date of client_No 'C004' to 18/03/2019
4. Delete all sale records having order date before 10 /02/2018.
5. Display date wise sales_order given by clients.

❖ Consider the following Entities and Relationships

Customer (cust_no, cust_name, address, city)

Loan (loan_no, loan_amt)

Relation between Customer and Loan is **Many to Many**

Constraint: Primary key, loan_amt should be > 0.

Create a Database in 3NF & write queries for following.

1. Find details of all customers whose loan is greater than 10 lakhs.
2. List all customers whose name starts with 'sa'.
3. List names of all customers in descending order who has taken a loan in Pimpri city.
4. Display customer details having maximum loan amount.
5. Calculate total of all loan amount.

❖ Consider the following Entities and Relationships

Department (dept_no, dept_name, location)

Employee (emp_no, emp_name, address, salary, designation)

Relation between Department and Employee is **One to Many**

Constraint: Primary key, salary should be > 0.

Create a Database in 3NF & write queries for following.

1. Find total salary of all the employees from computer science dept.
2. Find the name of department whose average salary is above 10000.
3. Count the number of employees in each department.
4. Display the maximum salary of each department.
5. Display department wise employee list.
6. Increase Salary of "Managers" by 15%
7. Delete all Employees who are working as "clerk".

❖ **Consider the following Entities and Relationships**

Project (pno, pname, start_date, budget, status)

Department (dno, dname, HOD)

Relation between Project and Department is **Many to One**

Constraint: Primary key.

Project Status Constraints: C – completed,

P-Progressive, I-Incomplete

Create a Database in 3NF & write queries for following.

1. List the project name and department details worked in projects that are 'Complete'.
2. Display total budget of each department.
3. Display incomplete project of each department
4. Find the names of departments that have budget greater than 50000 .
5. Display all project working under 'Mr.Desai'.

❖ **Consider the following Entities and Relationships**

Room (roomno, desc, rate)

Guest (gno, gname, no_of_days)

Relation between Room and Guest is **One to One**.

Constraint: Primary key, no of days should be > 0.

Create a Database in 3NF & write queries for following.

1. Display room details according to its rates in ascending order.
2. Find the names of guest who has allocated room for more than 3 days.
3. Find no. of AC rooms.
4. Display total amount for NON-AC rooms.
5. Find names of guest with maximum room charges.

❖ **Consider the following Entities and Relationships**

Book (Book_no, title, author, price, year_published)

Customer (cid, cname, addr)

Relation between Book and Customer is **Many to Many** with quantity as descriptive attribute.

Constraint: Primary key, price should be >0.

Create a Database in 3NF & write queries for following.

1. Display customer details from 'Mumbai'.
2. Display author wise details of book.
3. Display all customers who have purchased the books published in the year 2013.
4. Display customer name that has purchased more than 3 books.
5. Display book names having price between 100 and 200 and published in the year 2013.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 7: Demonstration of Select Command

❖ Create the following tables (primary keys are underlined).

Emp(eno,ename,sal,address,ph_no)

Dept(dno, name, loc)

Emp and Dept are related with many to one with each other. Create the Relations accordingly, so that the relationship is handled properly and relations are in normalized form (3NF).

Execute following select queries & write the business task performed by each query.

1. Select * from emp;
2. Select empno, name from emp;
3. Select distinct deptno from emp;
4. Select * from emp where deptno = ____;
5. Select * from emp where address = 'pune' and sal > ____;
6. Select * from emp where address = 'pune' and salary between ____ and ____;
7. Select * from emp where name like '---%';
8. Select * from emp where name like '%and%';
9. Select * from emp where salary is null;
10. Select * from emp order by eno;
11. Select * from emp order by deptno, eno desc;
12. Select deptno as department, sum(salary) as total from emp group by deptno order by deptno;
13. Select deptno as department , count(eno) as total_emp from emp group by deptno having count(eno) > ____order by deptno;
14. select avg(salary) from emp;
15. select max(salary),deptno from emp group by deptno having max(sal) > ____;
16. select deptno, min(salary) from emp order by deptno;
17. update emp set salary = salary + 0.5*salary where deptno = (select deptno from department where dname = 'finance');
18. update emp set deptno = (select deptno from department where dname = 'finance') Where deptno = (select deptno from department where dname = 'inventory');

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 8: SQL Set operations

❖ Create the following tables. (Primary Keys are underlined)

Emp(emp_id ,emp_name, address, bdate)

Investor (inv_name , inv_no, inv_date, inv_amt)

An employee may invest in one or more investments; hence he can be an investor. But an investor need not be an employee of the firm.

Create the Relations accordingly, so that the relationship is handled properly and the relations are in normalized form (3NF).

Assume appropriate data types for the attributes. Add any new attributes, as required by the Queries. Insert sufficient number of records in the relations / tables.

Write the following queries & execute them.

1. List the distinct names of customers who are either employees, or investors or both.
2. List the names of customers who are either employees, or investors or both.
3. List the names of employees who are also investors.
4. List the names of employees who are not investors.

❖ Create the following tables. (Primary Keys are underlined)

Student (rno,sname,address,class)

Subject (subno,subname)

Student and Subject are related with many-to-many relationship with attribute marks and status. Create the Relations accordingly, so that the relationship is handled properly and the relations are in normalized form (3NF).

Write the following queries & execute them.

1. List the distinct names of students who have either Electronics, or Statistics or both subjects.
2. List the names of students who are either passed or failed.
3. List the students who have “Database” subject and they are not in “TY” class.
4. List the names of students who are not failed in any subject.
5. List the names of students not staying at “Uruli Kanchan”.

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 9: Joins

❖ Consider the following relations to understand the use of joins.

Student (s_id , sname, level ,age , subject)

Class (cname , meetat ,room, fid)

Enrolled (s_id i, cname)

Faculty (fid ,fname ,deptid)

The meaning of above relationship is enrolled has one record per student _class pair such that the student is enrolled in the class. Read the query carefully and insert sufficient number of records in the relations / tables with appropriate values to perform the following queries.

1. **Find the names of all classes that either meet in room R128 or have five or more students enrolled.**

Sql>Select c.name from class c where c.room ='r128' or c.name in (select e.cname from enrolled e group by e.name having count(*)>= 5);

2. **Find the name of the oldest student who is either a history subject or enrolled in a course taught by I.teach.**

Sql> Select max(s.age) from student s where (s.subject='history') or s.num in (select e.num from class c ,enrolled e ,faculty f where e.name =c.name and c.fid=f.id and f.fname ='I.teach);

3. **Find the names of students enrolled in the maximum number of classes.**

Sql> Select distinct s.name from student s where s.num in (select e.num from enrolled e group by e.num having count(*) >=all (select count(*) from enrolled e2 group by e2.num));

4. **Find the names of student not enrolled in any class.**

Sql> Select distinct s.name from student s where s.num not in (select e.num from enrolled e);

5. **Find the names of faculty members who teach in every room in which some class is taught.**

Sql> Select distinct f.name from faculty f where not exists ((select * from class) except (select c1.room from class c1 where c1.fid = f.fid));

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor

Exercise 10: Case Study

❖ Consider the following case study:

A housing society needs to manage the administrative information related to the society. The society is made up of different types of flats like 2BHK, 1BHK, 3BHK. Each type has a well defined square-feet area . The outright sale rate & the rental value of the flat depends on the type of the flat. Each flat has a single owner. Each owner can have one or more flats in his name. The name, address , phone etc of the owner need to be maintained. For each flat, its type, the floor no, any internal specifications needs to be maintained.

The society also contains a club-house, which is rented out to flat owners , at a nominal rate for conducting various functions / programmes. Society would like to print reports like number of functions held in the club-house during a month / period etc.

Every month maintenance amount is collected from the owners of the flats. Society needs to maintain this finance information, like how much amount collected for a month, whether any defaulters for a month, sending reminders to the defaulters etc. The expenditure information includes money spent on maintenance of the society like paying the sweepers, cleaners of the common area of the society, any emergency expense, salaries of the security etc. Every month the society would like to print a report of expenditure versus collection.

Design the relational database for the above, so that the following queries can be answered:

1. List the flats of 2bhk type.
2. List the 3bhk flats that are currently vacant.
3. List the functions held in clubhouse during the month of “_____”
4. List the names of owners , who have never conducted any functions in the clubhouse.
5. List the payment defaulters for the month of “April”
6. List the total expenditure for the month of _____
7. List the month with the least expenditure.
8. Transfer the flat in the name of _____to _____
9. List the names of owners, who own both a 2bhk and a _____

Assignment Evaluation

0: Not Done []

1: Incomplete []

2: Late Complete []

3: Needs Improvement []

4: Complete []

5: Well Done []

Signature of Instructor