

DIGITAL LAB-1

1. Design a full-subtractor using a suitable MUX.
2. Design a 2x4 decoder using NAND gates only.
3. Design proper logic circuits to prove that a NOR gate is a universal gate.
4. Design a logic circuit to convert a 2-bit binary number to excess 3 code.
5. Design a circuit to check whether two 4-bit binary numbers are equal or not.
6. Design an XOR gate using NAND gates only.
7. Design an 4x1 MUX using basic logic gates.
8. Design a 4-bit adder-subtractor using IC-7483 and other suitable logic gate(s).
9. Design a 3 bit binary code to gray code converter.
10. Design a full-adder using suitable MUX.
11. Design proper logic circuits to prove that a NAND gate is a universal gate.
12. Realize the following Boolean function using suitable MUX:-
$$f(A,B,C)=\Pi(0,1,3)$$
13. Design a 1-bit magnitude comparator using NAND gates only.
14. Design a 3-bit gray code to binary code converter.
15. Design a half-adder and a half-subtractor using basic logic gates.
16. Design a 2x4 decoder using NAND gate only.
17. Design proper logic circuits to prove that NOR gate is an universal gate.
18. Design a half-adder using NAND gates.
19. Design a full-adder using suitable MUX.
20. Design a logic circuit to convert a 3-bit binary to excess 3 code.
21. Design a circuit to check whether two 4-bit binary numbers are equal or not.
22. Design a 2x4 decoder using NAND gate only.
23. Design a full-subtractor using suitable MUX.
24. Design a circuit for a 2-line to 4 line demultiplexer using NAND gate.
25. Design a BCD to excess-3 code converter.
26. Obtain the NAND logic diagram of a full-adder from the Boolean function.
27. Design and implement a 4-bit 2's complement adder/subtractor.
28. Design a full-subtractor using NAND gates.
29. Design a circuit with four inputs and one output, such that the output goes to '1' whenever two or more of inputs are '1'. For other cases the output remains at '0'.

C PROGRAMMING

1. Calculate $Tan(x) = Sin(x) / Cos(x)$ where $x=0$ to 360 in step of 5. You have to convert x to radian.

$$Sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \frac{x^9}{9!} - \dots$$

$$Cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \frac{x^8}{8!} - \dots$$

$$n! = 1 \times 2 \times 3 \times \dots \times n$$

2. Write a program to input in 2-arbitrary arrays such as $a[4]=\{2,4,5,6\}$ and $b[6]=\{3,4,5,7,10,2\}$. Create an array $c[7]=\{2,4,5,6,3,7,10\}$ which is the union of array- a and array- b . Keep a provision to vary the size of the array a and b . Use proper function to implement the above.
3. Write a menu driven program to do the following:
 1. SORT NUMBERS USING BUBBLE SORT.
 2. SORT NUMBERS USING INSERTION SORT.
 3. TO EXIT FROM THE PROGRAM.
4. Write a menu driven program to do the following:
 1. SORT NUMBERS USING SELECTION SORT
 2. SORT NUMBERS USING 2-WAY MERGE SORT
 3. TO EXIT FROM THE PROGRAM
5. Write a program to search a pattern $p[]$ in a string $s[]$ using a function $int strcmp(int n, char s[], char p[])$: It will search a pattern p in s from n -th character of s and will return the first occurrence of s in p , if p not found then it will return zero(0). Use this function to calculate how many times a pattern ' p ' occurs in a string ' s '.
6. Write a program to extract all words from a sentence $s[]$ using a function $int strword(char s[], char w[][])$: It will return how many words are there in a sentence $s[]$. The words to be stored in $w[][]$. Print all words, numbers of words.
7. Write a program to compress a data file using bit field method. Write another program to decompress the above file.
8. Write a program to replace a pattern by a new pattern in any file.

9. Write a Program in C to find the square root of a given input integer using your own function.

DIGITAL LAB-2

1. Design a JK Master slave flip-flop using IC 7473 and other necessary logic gates.
2. Design & implement a clocked JK flip-flop using NAND gates and other basic gates. Then convert the flip-flop into a T flip-flop and verify its truth table.
3. Design a synchronous counter which will count the sequence: 3 1 2 0 3.....
4. Verify IC 74194 for serial-in-serial-out operation using clock.
5. Design a debouncing switch using 555 timer. Sign a clocked D flip-flop using this.
- 6 (a) Design a 2-bit right shift-register using D flip-flops.
(b) Design a 2-bit parallel load register using D flip-flops.
7. Design a 3-bit Down counter using J-K flip-flops.
8. Design a 3-bit left shift register using J-K flip flops.
9. Design a clocked D flip-flop using NAND gates.
10. Design a synchronous counter to count the following sequence:
11 10 00 01 11 ...
- 11 Design a MOD-8 synchronous counter using necessary gate(s).
12. Design a clocked master-slave flip-flop using J-K flip flops.
13. Design a 2-bit right shift register with parallel load.
14. Design a counter to count the following sequence: 2,1,0,3,2,...
15. Design an asynchronous 3-bit up counter.
- 16 Design a 2-bit UP-DOWN counter (asynchronous).
- 17 Design the necessary sequential logic circuits to generate the following sequence:
0,2,1,3,...
- 18 Design a J-K flip-flop using NAND gates.
- 19 Design a MOD-8 asynchronous counter using J-K flip-flops.
- 20 Design a 4-bit right shift register.

Data Structures

- 1 Write a menu driven program to perform the following operations in a binary search tree –
(i) Search and insert a node. (ii) Delete a node.
2. Write a program to convert an infix expression into its postfix form and evaluate it. Use any suitable delimiter in the expression.
3. Write a menu driven program to perform the following operations in a linked list:
(i) Reversal of the list.
(ii) Insertion of a node in the list.
(ii) Concatenate two lists.
(iii)
4. Write a program to sort a list of numbers using quicksort algorithm and search for a key value in the list using binary search.

5. (i) Write a program to implement a circular queue using array / linked list.
- (ii) Write a program to implement a double ended queue (dequeue).

Linux and Shell Programming

1 Write a program in Shell script/awk to extract all the words containing at least one vowel from any given text file. Store these words and line numbers in another file. Sort this file in reverse alphabetical order. Input a word and search the word file. If it is found, print the word line number.

2. (i) Write a program in Shell script to find out whether a given number is prime or not.
- (ii) Write a program in Awk to print the first and third word in each line in a text file.

3. Write a Shell program which will accept two file names from the command line argument and compare whether the files are same or not. Delete the second file if the two files are same else concatenate the contents of both the files in a third file.

4. (i) Write a program in Shell script to concatenate a number of files.
- (ii) Write a program in Shell script to count the number of arguments provided by the user in command line. Determine the readability writability and characterability of the files. Assume that the names provided in command line are existing filenames.

5. Write a shell program to print all the three digit triad numbers where the second number is double the first and the third number is three times the first number.

6. Write a shell program to accept a variable number of inputs and store them in an array. Calculate mean, median, mode and standard deviation of the stored numbers.

Advanced Data Structures

- 1 Write a program which creates an Adjacency matrix for directed and undirected graph.
2. Write a program which performs DFS search for a graph.
3. Write a program which finds the Adjacency nodes for a particular node in a graph.
4. Write a program which calculates the degree of a node in an undirected graph and also calculate the indegree & outdegree of a node in the directed graph.
5. Write a program which implements Prim's algorithm for MCST.
6. Write a program which implements Kruskal's algorithm for MCST.
7. Write a program which implements Dijkstra's algorithm for shortest path.

Microprocessor Lab

- 1 Write a program to multiply two 8-bit binary numbers. Result should be stored in consecutive location(s).
2. Write a program to convert a 16-bit Hexa-Decimal number into a 4-digit Binary Coded Decimal number.
3. Write a program to Add two 16-bit numbers, sum along with carry, if any, should be stored in consecutive memory locations.
4. Write a program to arrange a list of numbers in descending order. Length of the list is available in a memory location.
5. Store a 16 bit number into two consecutive locations and find out its 1's & 2's complements and store the result in consecutive locations.
- 6 Write a program to arrange a list of numbers in ascending order. Length of a list is available in a memory location.
- 7 Write a program to divide a 8-bit number by another 8-bit number. Quotient and remainder should be stored in separate memory locations.
8. Store two 16-bit numbers in consecutive locations. Subtract the smaller from the larger and store the difference in other consecutive locations.
9. 16-bytes of data are stored in memory locations at XX50H to XX5FH. Transfer the entire block of data to new memory locations starting at XX70H.
10. Write a program to generate the square of an 8-bit number.
- 11 Write a program to convert a 2-digit BCD number to its binary equivalent.
12. Write a program to add two unsigned BCD numbers.
13. Write a program to check whether an 8-bit number is palindrome or not. If yes, store 01H into a memory location; otherwise store 10H into that location.
14. Write a program to subtract two 2-digit BCD numbers.
15. Write a program to find the 2nd largest number from a given list of numbers.
- 16 Write a program to count the number of 1's in a 16-bit number. Store this count in a memory location.
17. Write a program to sum all the odd numbers in a given list of numbers and store the result in consecutive locations.
18. Write a program to generate sum of the first 10 natural numbers and store the result in a memory location.
19. Write a program to generate and store the first 10 numbers in the Fibonacci sequence.
20. Write a program to find the number of occurrences of the pattern "10" in a given 8-bit number.

MATLAB

1. Write a menu driven program to sort a list using the following methods:
Menu for Sorting Methods
(b) Insertion Sort Method (for positive number only).
(c) Selection Sort Method.

2. Write a program to input maximum of 20 numbers and its index in two arrays a(20) and idx(20). Display the following menu to search a number in that list:

Menu for Searching Algorithms

- (a) Linear Search Method.
- (b) Binary Search Method.

3. Input number of disks(1-20). Apply the principle of Towers of Hanoi to transfer those disks from Peg-1 to Peg-2 using Peg-3. You have to assume that all disks are of different sizes and arranged in ascending order in Peg-1. While transferring those disks you cannot change the arrangement of those disks. At the end the program should print how many movements were taken for transferring those disks from Peg-1 to Peg-2.

4. Input any positive integer number (1-3000). Convert the number into roman numerals.

5. Input infix expression such as $(2+3)*7/8$. Convert this expression to postfix expression. Calculate the value of the postfix expression.

6. Write a program to modify an old pattern by a new pattern in any file. Print how many times the old pattern has been modified.

7. Given array $A = \begin{bmatrix} 2 & 4 & 1 \\ 6 & 7 & 2 \\ 3 & 5 & 9 \end{bmatrix}$, do the following:

- (a) Assign the first row of A to a vector called x.
- (b) Assign the last 2 rows of A to an array called y.
- (c) Compute the sum over the columns of A.
- (d) Compute the sum over the rows of A.

Computer Graphics

1. (i) Implement Digital Differential Algorithm (DDA) to draw a rectangle ABCD where lines and objects are as follows : $A=[10,10]$, $B=[100,10]$, $C=[10,70]$.

(ii) Input an image. Convert the image into pixel matrix. Change the color of the image into B/W. Change the size of the image to $\frac{1}{2}$ of the initial size. Change the color of the new image to greenish. Show the image.

2. (i) Implement Circle Draw Algorithm to draw a circle. Input the co-ordinates of the centre and radius and draw Circle. Choose center at (0,0) and radius 100.

(ii) Input any image and take a reflection along vertical axis. i.e. y-axis.

3. (i) Consider a window having co-ordinates $A(0,0)$, $B(1023,0)$, $C(1023,1023)$, $D(0,1023)$. The line L has end points $P1(-307,631)$ and $P2(820,-136)$. Find which portion of this line L is visible by using mid-point subdivision method.

(ii) Input any image and some secret text. Embed the secret text inside that image by inserting the bits in the RGB components of the image. Display the modified image. Extract the secret message from the modified image and display on the screen.

4. (i) Draw a straight line from A(-10,10) to b(20,-20) using generalized Bresenham algorithm.
(ii) Input two sound files (.wav file). Write a program to mix both sounds to obtain a mixed sound effect. Make the speed of the mixed file as half of the original speed.

5. (i) Implement the following 2-dimensional transformations on any given point:

(i) Translation, (ii) Rotation, (iii) Reflection along x-axis.

(ii) Input an image. Make the color of the image to B/W. Select some portion the image and make the size of that portion to $\frac{1}{4}$ th of the original size. Display the modified portion.

HTML

1. (i) Write HTML code and Java Script to do the following:

Divide the entire screen into 2 frames. In the first frame display menu to enter the following: (i) Roll, (ii) Name, (iii) Date of Birth, (iv) Marks in Paper-1, (v) Marks in Paper-2, (vi) Marks in Paper-3. The data must be validated as follows:

Roll ≥ 452 and Roll ≤ 500 . Date of birth to be validated. Use Combo Box to select date, month and year and each item must be validated separately. Marks in Paper-1, Paper-2 and Paper-3 must be validated between 0 and 100. After entering data the user has to press a button to calculate total, percentage and grade where total = sum of best two papers and percentage = total/2.

Grade = "A" if percentage ≥ 70

Grade = "B" if percentage ≥ 55 and < 70

Grade = "C" if percentage ≥ 45 and < 55

Grade = "D" if percentage ≥ 30 and < 45

Grade = "F" if percentage < 30

Display the mark sheet of the student in a tabular form in frame-2.

Use style sheet to design fonts, colors for both the frames. To display error messages use alert box.

(ii) Write HTML code and Java Script to input a set of 5 numbers and then sort those numbers in ascending order and display the sorted list in 5 text boxes.

2. Write HTML code and Java Script to do the following:

(i) Input a positive integer number (1 – 9999999) and it convert the number into words and display in a text box.

(ii) Input two large numbers (50 digits each) and it will print the sum of two numbers and display in another text box.

3. (i) Design screen using HTML to input any arithmetic expression such as $y=a^2/3*b$; Write Java Script to display all identifiers, all arithmetic operators, all numbers on screen.
- (ii) Write HTML code and Java Script to input 'x' and display (i) Sin(x), (ii) Cos(x).

4. Define two text boxes named as "number" and "number_to_word" and button named as "Button1". If we type some number in the text box and then press Button1 then the number will be converted to words and it will be displayed in text box number_to_word. Design HTML page and also write the Java Script to do it.

5. Design HTML page and also write the Java Script to split the screen into two frames say frame_1 and frame_2. In frame_1 the user has to enter (i) Roll No. (between 451 to 1505), (ii) Name (name must start with the following letters: A,B,D,G,J,M,N,P,R,S and the length of the name should not exceed 20 characters), (iii) Marks obtained in theory (out of 400), (iv) Marks obtained in practical (out of 400), (v) date of birth containing date(dd), month(mm), year(yy) in a combo box. The script should validate roll number, name, marks obtained in theory and practical and date of birth and if anything is not correct then it will display the error message and will not allow the user to calculate total marks. If all data are correct then the script will calculate the total marks ($t=\text{theory}+\text{practical}$), percentage of total ($p=t/8$), division ($d=1\text{st}$ if $p \geq 60$, $d=2\text{nd}$ if $p \geq 50$, $d=3\text{rd}$ if $p \geq 40$, $d="P"$ if $p \geq 30$, $d="F"$ if theory < 120 or practical < 200). Display the final marksheet in frame_2 along with the roll, name, marks, result in a tabular form. Use a refresh button in frame_1 to reset all values on both frames.

6. Write HTML code and also java script to allow user to input any passage (at least 3/4 lines) in a text box. If the user presses a button then the program will extract all the words from the given passage and display all words on screen and also the frequency of each word.

Write HTML code and java script to design a calculator which will provide us a screen for the calculator comprising of all digits, decimal point, operators such as +, -, *, /, ^. The program will allow the user to type operand-1, operator and operand-2 and then when the user presses = button then it will evaluate the value of the expression and will display the result on display text box.

7. Write HTML code and java script to input an infix expression ($2*3/2+4/2$). If we press a button then it will convert the infix expression to postfix expression and will display on a text box.

8. Design HTML page and write Java script to conduct a multiple choice type exam. Display at least 10 questions and in each question there must be 4 options. The user can answer any one. Finally, for result, when the user presses the click button then it will display the marks obtained in the exam.

JAVA

1. Write a program in Java to input 2 dimensional arrays $a[][]$ and $b[][]$ and calculate product of 2 2-dimensional array.
2. Write a program in Java to implement inheritance to solve the following problem. :
 - a) Define a class SUM which contains 1-dimensional array $int a[20]$ and the size of array 'n'. Use constructor to input data into array $a[2]$.
 - b) Define a class called as AVERAGE which is derived from SUM. Define a method average() to calculate average of 'n' numbers. Derive class AVERAGE from SUM.
 - c) Define a class called as S_DEV and it is to derived from AVERAGE. In this class define 2 methods sd() and maximum(). Method sd() will calculate the standard deviation of 'n' numbers and maximum() will calculate the largest number.
3. Write a program in Java to input 2 sets set-a, set-b and calculate
 - a) union of 2 sets and store in set-c.
 - b) Difference of 2 sets and store in set d. Use constructor to input 2 sets and also size of 2 sets. Use a class called as SET_OPERATION to define to methods to calculate union of 2 sets and difference of 2 sets.
4. Write a program in Java to do the following:

Define a class called as SORT which contains a method bubble(), insertion() to sort numbers using bubble sort method or using insertion sort method. In the main() method display a menu to select either bubble sort method or insertion sort method and then display the sorted list. Use constructor to input 1-dimensional list and the size of the list from the main() method.
5. Write a program in Java to input a set of numbers and its index. Sort those numbers using any sorting method such as
 - a) selection sort method .

OR

 - b) insertion sort method.

Input a number and search the list if the number is found in the list then display the number and where it is found. If the number not found then display the number not found. Use Binary search method to search the number in the list.
6.
 - a) Write a program in Java to display all triads. A triad comprises of 3 numbers ($n1, n2, n3$) where $n2=2*n1$ and $n3=3*n1$ and the 3 numbers should contain all digits 1,2, 3,4,5,6,7,8 and 0 only once.
 - b) Write a program to print all Fibonacci numbers which are prime upto 'n' where the user has to input 'n', The value of $n \geq 2$ and $n \leq 2000$.
7. Write a program in Java which can be used to copy one file or many files to one file.

Numerical Methods

1 Write a program in Java to implement Matrix Minima method to calculate transportation cost in the following matrix:

Origin	Destination					Capacity
	1	2	3	4	5	
1	1	9	13	36	51	50
2	24	12	16	20	1	100
3	14	33	1	23	26	150
Req	100	70	50	40	40	300

2 Write a program in Java to calculate the solutions of the following linear simultaneous equations using

a) Gauss Elimination method

b) Matrix Inversion method :

$$5x_1 + x_2 + x_3 = 7$$

$$x_1 + 5x_2 + x_3 = 7$$

$$x_1 + x_2 + 5x_3 = 7$$

3 Write a program in Java to solve the following nonlinear equation using

a. Bisection Method

b. Newton Raphson method : $x^2 = 2$

4 Write a program to calculate the value of the following integral using

a. Simpson's $1/3^{\text{rd}}$ rule

b. Trapezoidal rule :

$$\int_0^1 dx/(1+x^2)$$

5 Write a program in Java to solve differential equation using modified Euler's method:

$$\frac{dy}{dx} = y \text{ and } y \text{ at } x = 0 \text{ is } 1.$$

Calculate value of y at $x = 1$ and choose interval = 0.1.

DBMS

1. Create the following two tables:

College-info

Faculty-info

College-info consists of fields: college-code, college-name, address

Faculty-info consists of fields: college-code, faculty-code, faculty-name, qualification, experience-in-no-of-years, address.

(a) Fill the tables with at least 5 records.

(b) Generate queries to do the following:

- (i) List all those faculty members whose experience is greater than or equal to 10 years and have M. Tech degree.
- (ii) List all those faculty members, who have at least 10 years of experience but do not have M. Tech degree.

2. Create the following tables:

Student (roll-no, name, date-of-birth, course-id)

Course (Course-id, name, fee, duration)

(a) Fill the tables with at least 5 records.

(b) Generate queries to do the following:

- (i) List all those students who are older than 18 years and have opted for MCA course.
- (ii) List all those courses whose fees are greater than that of MCA course.
- (iii)

3. Create a table to represent SB-account of a bank consisting of account-no, customer-name, balance-amount.

Write a PL/SQL block to implement deposit and withdraw. Withdraws should not be allowed if the balance goes below Rs.1000.

4. Create the following tables:

Student(roll-no, marks, category, district, state)

Student-rank(roll-no, marks, rank)

(a) Fill the tables with at least 5 dataset.

(b) Generate queries to do the following:

- (i) List all those students who have come from Tamilnadu state and secured a rank above 100.
- (ii) List all those students who come from Andhra Pradesh state and belong to a given category who have secured a rank above 100.

5. Create the following table:

Item (item-code, item-name, qty-in-stock, recorder-level)

Supplier (supplier-code, supplier-name, address)

Can-supply (supplier-code, item-code)

- (a) Fill the tables with at least 5 dataset.
- (b) Generate queries to do the following:
 - (i) List of all those suppliers who can supply the given item.

List of those items, which cannot be supplied by the given company

6 Create a relational database with the following relations and insert meaningful data in a Driving

STUDENT (St_Name, Class#, Th_Marks, Dr_marks)

STUDENT_DR_TEACHER (St_Name, Dr_T_Name)

TEACHER_TH_CLASS (Class*, Th_T_Name)

TEACHER_VEHICLE (Dr_T_Name, License#)

VEHICLE (License#, Make, Model, Year)

Perform following queries using SQL statements.

- (a) List all the teachers who teach theory as well as the driving lessons to the students.
- (b) List the teachers who can drive all the vehicles.
- (c) List all the students who are learning the driving from "Raj".
- (d) List all the "License#" of the teachers.

7. Create a relational database with the following tables and insert meaningful data in a college database

Teacher (T#, Tname, Tqual, Tsubject, Tcourse, Prog)

Student (Roll#,Sname,Sage, Saddress, Scourse, Prog, Smarks)

Teaches (T#, Roll#, Scourse, Prog, University)

Perform following queries using SQL statements:

- (i) Find details of Teachers who taught DBMS.
- (ii) Find details of students who did MCA from IGNOU.
- (iii) Find courses taught by T# 5078.
- (iv) Find address of students whose marks are less than 50.

8. Create a relational database with the following tables and insert meaningful data:

Emp1 table:

empno number(3), ename varchar2(30), sal number(4), comm number(3), job varchar2(10), deptno number(2), joindate date, address varchar2(30)

Dept1 table:

deptno number(2), dname varchar2(30), location varchar2(30).

Write a PL/SQL block which will update the commission of an employee satisfying the following conditions:

If deptno=10, the commission will be increased by 5%.

If deptno=20, the commission will be increased by 7%.

For all other departments, the commission will be increased by 9%.

Provide employee number as input from the user.

9. Consider the following relations in the context of a retail shop:

Customer (C_code, C_Name, C_Phone)

Product (P_Code, P_Desc, P_Price)

Call (Ca_id, Ca_Code, P_Code, Ca_Result, Ca_Date)

Write the appropriate SQL commands for the following:

- (i) Find the name of customers to whom a call has been made.
- (ii) Find the total number of calls made to the customer whose name is 'Smith'.
- (iii) List C_Name and P_Desc of the calls made today.
- (iv) Find the product details of those products whose price is above Rs.5000/-.

10. Create a relational database with the following relations with proper integrity constants:

Bus (Bus#, No. of seats, rate)

Customer (C#, cname, caddress)

Booking (B#, C#, date_of_booking)

Perform the following queries using SQL statements:

- (i) Find the details of the customers who have reserved a bus for Sundays.
- (ii) Find the price rate of the bus having maximum capacity for passengers.
- (iii) Delete the records of customers who are residing at 'Babubagan'.
- (iv) Find the total number of bookings made by all the customers.

VB

- 1 Design a form in VB for a simple calculator. The calculator must have the following features:
 - a. To enter any number fraction or whole number.
 - b. To perform any operation such as addition (+), subtraction (-), multiplication (*), division (/), exponentiation (^), modulo operation (%), square root, inverse etc. For any illegal operation it must show error message.
- 2 Write program in VB to implement the following:

Design form to input any file name. Enter the following data into the file.

 - a. Employee Code, (ii) Name, (iii) Basic Pay. The program will check if the Employee Code is already in the file then it will display error message and will not allow the user to enter data into it. The program will calculate the following (i) DA @ 75% of Basic pay, (ii) HRA @ 15% of Basic pay subject to a maximum of 2000, (iii) medical @ 10% of Basic pay subject to a minimum of 500, (v) Gross pay = Basic + DA+ HRA + Medical, (vi) PF = 12.5% of (Basic + DA) and (vii) Net = Gross-PF. Store the input data and calculated data into the file. The form must have the buttons to search a name, to delete a record from a file.

- 3 Design a form in VB to conduct an on-line examination on any subject of Computer Science. It will display one by one multiple choice type questions. The user has to press the radio button and immediately the score must be shown on the screen. For each correct answer 2 marks should be given and for each wrong answer 1 mark must be deducted. The questions must be selected as random.
- 4 Write program in Visual Basic to input a number in the range 1 to 999999999 and convert it into words. Use function in your program.
5. Input coefficients of 3 linear simultaneous equations. Find the solution of the equations using any method like (i) Gauss elimination method or (ii) Matrix Inversion method.
- 6 . Write a program in Visual Basic to design a scientific calculator which can be used to perform addition, subtraction, multiplication, division, exponentiation, modulo operation, square root.
- 7 . Write a program in Visual Basic to input co-ordinates of two end points (x_0, y_0) and (x_1, y_1) of a straight line. Apply Generalised Bresenham principle to find the co-ordinates of the intermediate points.
- 8 . Write a program in Visual Basic to design on-line examination form. There may be approximately 5-10 multiple choice type questions. Each question must have four options and out of that one option is correct. After answering all questions the user has to press click button and then immediately score will be displayed on the screen.
9. Input one line text and apply RSA algorithm to encrypt the text and also to decrypt the cipher text.