CP I LAB MANUAL	
Expt No:	1
Aim	To find roots of quadratic equation
Pre-requisite	if-else statement
Algorithm	1) start 2) declare the required variables 3) read the coefficients a,b,c of quadratic equation 4) calculate $d=b^2- 4ac$ 5) if d<0,display" roots are imaginary" & goto step 6 else calculate x=(-b+ sqrt(d))/2a y=(-b-sqrt(d))/2a 6) display real roots x,y 7) stop.
Sample Output	Enter the coefficients 1 -4 4 The roots are 2 & 2
Postlab A	

Expt No	2
Aim	To Check Whether A Year Is A Leap Year Using if-else-if.
Prerequisite	if-else

Algorithm	1)start
	2)take year as an input.
	3)check
	if year%4=0 and year % 100 != 0 or year%400=0 then
	print"It is a Leap year"
	else
	print" Not a Leap year"
	4)stop

Sample Output	Enter Year 2004 It is leap year
Post Lab Assignments	1)explain if-else control structure. 2)write short note about operators ,their precedence and associativity

Expt No:	3
Aim	To Implement Calculator Using Multiple If Statements.
Pre-requisite	Switch statement
Algorithm	1)start. 2)declare no1,no2 for two numbers,ch for choice of operation 3)using a do while loop read the nos and choice. if ch=1,add no1,no2. if ch=2,subtract no1,no2. if ch=3 ,multiply no1,no2. if ch=4,divide no1,no2. 4)display the result of operation 5)stop.
Sample Output	Enter two nos: 10 20 Ente ur choice: 2 Subtraction: -10
Postlab Assignment	

Expt No	4
Aim	Calculate Area and Perimeter Of Figures Using Nested Switch Case
Prerequisite	Nested Switch Syntax

Algorithm	1)start
	2)declare variables for radius ,length,breath,side,area,perimeter.
	3)Input the figure of your choice
	4) a)if figure=circle
	i)read radius.
	ii)Enter the operation i.e area or perimeter
	if area then
	area=pi*radius*radius
	else
	perimeter=2*pi*radius
	b)if figure=square
	i)read side of a square
	ii)enter the opn area or perimeter
	if area then
	area=side*side
	else
	perimeter=4*side
	c)if figure=rectangle
	i)read length and breath.
	ii)read the operation to be performed i.e area or perimeter
	if area then

	area=length*breath else perimeter=2*(length+breath) 5)display result 6)stop

Expt No:	5
Aim	Calculate Sine Of An Angle Up to A Particular Precision.
Pre-requisite	Loop statements
Algorithm	1)Start 2)declare the required no of variables.'sum' to print sum of the series,'angle' to read value of angle,'term' for generating next term 3)read the angle in degrees 4)convert angle to radians using formula angle=(angle*3.142)/180 5)initialise sum=term=angle and sign=-1,i=1 6)calculate sum=sum+sign*term*angle/(2*i)*(2*i+1) 7)perform sign=sign*-1 8)term=term*angle^2/(2*i)*(2*i+1) 9)check whether term>0.000001,if true goto step 10 else goto 6 10)print the sine value of an angle 11)stop
Sample Output	Enter Angle 90 Enter No of Elements 5 Sine 90=1
Postlab Assignment	

Expt No	6
Aim	Calculate Cosine Of An Angle Upto a Particular Precision.
Prerequisite	Convertion formulaes
Algorithm	1)Start 2)Declare the required no of variables.'sum' to print sum of the series,'angle' to read value of angle,'term' for generating next term 3)read the angle in degrees 4)convert angle to radians using formula angle=(angle*3.142)/180 5)initialise sum=0,term=1 and sign=1,i=1 6)calculate sum=sum+sign*term 7)perform sign=sign*-1 and increment i 8)term=term*angle^2/(2*i)*(2*i-1) 9)check whether term>0.000001,if true goto step 6 else continue 10)print the cosine value of an angle

	11)stop
Sample Output	Enter angle in degress :30 Enter upto which term to calculate the series 8 Sin of the angle entered is 0.49967
Post lab assignments	

Expt No:	7
Aim	a) To print an inverted number pyramid for the number of rows entered by he user b) to print an alpha triangle
Pre-requisite	Loop statements
Algorithm	1)Start 2)declare the required no of variables. 'rows' for the no of required rows in the pyramid,'cols' for the no of columns required for the pyramid. 3)read the value for rows from user. 4)initialize the for loop according to the no of rows required. 5)write one for loop nested in the previous for loop to print spacing between nos 6)write second for loop to print the left hand part of the pyramid 7)write third for loop to print the right hand part of the pyramid 8)stop.
Sample Output	required patterns are: 12345654321 ABCDDCBA 123454321 ABC CBA 1234321 AB BA 12321 A A 121 1
Postlab Assignment	

Expt No	8
Aim	To write a program to print the following star pattern
Prerequisite	Basic Control Structures
Algorithm	1)Start 2)declare the required no of variables. 'rows' for the no of required rows in the pyramid,'cols' for the no of columns required for the pyramid. 3)read the value for rows from user. 4)initialize the for loop according to the no of rows required. 5)write one for loop nested in the previous for loop to print spacing between stars

	6)write second for loop to print the upper part of the pyramid 7)end the loops. 8) similarly write next set of for loops to print lower part of the star pattern . 9) End
Sample Output	1) * *** ***** *** * 2) * * * * * * * * *
Post Lab Assignment	

Expt No:	9
Aim	Write a program to find maximum of three nos using Inline function
Pre-requisite	Inline functions
Algorithm	1)Start 2)declare the required no of variables. 3)read the values for three nos from user 4)write an inline function which accepts two parameters and return the max between them. 5)to compute max between three nos first find the maximum of two nos entered by the user by calling inline function. 6)call inline function second time by passing the result of first comparison and the third data value taken from user 7)print the maximum value 8)End.
Sample Output	Enter two nos: 7 9 max is 9
Postlab Assignment	

Expt No	10
Aim	Write a program to find Armstrong nos within any range .
Prerequisite	if-else
Algorithm	1)Start 2)declare the required no of variables. 3)read the two range values from user 4)within that range for every no check whether no is Armstrong or not using foll

	steps a)extract every digit of the no using mod operator b)cube it and add it to sum variable which is initialized to 0. c)continue step a & b till no is not equal to 0. d)then check whether sum variable value is same as original no e) if yes print the no otherwise continue with next no. 5)End
Sample Output	Enter No 153 Given No is an armstrong No
Post Lab Assignment	

Expt No:	11
Aim	Write a program to find all prime nos within a range
Pre-requisite	Nested for loop, break
Algorithm	1)Start 2)Declare the required no. of variables. 3)read the two range values from user 4)Within that range for every no. check whether no is prime or not using foll steps 5)Write a for loop starting at 2 & ending at sqrt(no) 6)Within a for loop if no. modulo for loop counter is equal to zero ,make flag variable 0 else continue . 7)After the end of for loop if flag variable is 1 then display the number as a prime no. 8)End.
Sample Output	Enter the range: 2 to 15 2 3 5 7 11 13
Postlab Assignment	

Expt No	12
Aim	Write a program to compute GCD of two numbers using Dijkstra's algorithm using recursive function
Prerequisite	Recursion
Algorithm	1) Start 2) Declare the required no. of variables. 3) Read the two nos from the user whose GCD is to be computed. 4) Pass the two values to a function which first finds the maximum between the two and then subtracts smaller form the larger. 5) Call the function again with new values.

	6) Repeat step 4 & 5 until the two numbers becomes equal. 7) Print a number as GCD. 8) Stop.
Sample Output	Enter 3 nos 84 18 66 GCD is 6
Post Lab Assignment	

Expt No:	13
Aim	Write a program to overload swap function to interchange two integers values,two float values,two character values
Pre-requisite	Function Overloading
Algorithm	1) Start 2) Declare the required no. of variables. Write three different functions one to swap integer values,one to swap float values and third to swap character values 4) Read the two inputs from the user 5) Call the swap function by passing two inputs as parameter. 6) Print the result 7) End.
Sample Output	Enter two characters: x = 'A' & y = 'B' after swapping: x = 'B' & y = 'A'
Postlab Assignment	

Expt No	14
Aim	Write a program to find saddle point of a matrix
Prerequisite	2D array
Algorithm	1) Start 2) Declare the required no. of variables. 3) Read the data for the no of elements of 2D array 4) Read the elements to be inserted into a matrix. 5) saddle points are of two types a) maximum in the row ,minimum in the column. b) minimum in the row ,maximum in the column. 6) In a) for every row of the matrix ,find the maximum element & check whether that element is minimum in its column .if true then its a saddle point of the matrix. 7) In b) for every row of the matrix ,find the minimum element & check whether that element is maximum in its column. if true, then it's a saddle point of matrix.

	8) Stop.
Sample Output	Enter th dimension of the Matrix 3 3 Enter value at [0] [0] 9 Enter value at[0][1] 5 Enter value at[0][2] 6 Enter value at[1][0] 7 Enter value at[1][1] 8 Enter value at[1][2] 1 Enter value at [2][0] 2 Enter value at [2][1] 0 Enter value at [2][2] 1 Saddle Point _>2 Point is located at row position 2 column position 0
Post Lab Assignment	

Expt No:	15
Aim:	Write a program to print pascal triangle
Pre-requisite:	Two dimensional array
Algorithm:	1) Start 2) Read the no of lines 3) fix a two dimensional array with its column elements always less than its no of row element and no of rows according to user input. 4) For the first column assign 1. Also assign 1 where row no = column no 5) The rest pf the places of the matrix are filled as the sum of the previous row elements. 6) Display array 7) Stop
Sample Output:	1 1 1 1 2 1 1 3 3 1
Postlab Assignment	

Expt No	16
Aim	Write a program to reverse the words of a String.
Prerequisite	
Algorithm	1)Start 2)Read any string from user. 3)Search for a space within a string by checking it's individual character , whenever space is Encountered ,reverse all the characters before it. 4)Repeat step 3 till the end of the string is not Encountered 5)Print the string after reversal. 6)Stop
Sample output	Enter string Madam Reverse :Madam Enter string Kats Reverse:stak
Post Lab Assignments	

Expt No:	17
Aim:	Write a program to find the number of words,characters & lines in any entered string
Pre-requisite:	String
Algorithm:	1)Start 2)Read any string from user. 3)Search for a space within a string by checking it's individual character , whenever space is Encountered ,increase word count by 1.if fulls top is encountered increment line count by1,else increment character count by 1. 4)Repeat step 3 until the string end is encountered. 5)Stop.
Sample Output:	C++ programming words: 2 line: 1 characters: 14
Postlab Assignment:	

Expt No	18
Aim	Write a program to print merit list of students using structures.
Prerequisite	Structures
Algorithm	1)Start 2)Create a structure student having a 1-D array for name & marks and float variable

	for percentage. 3)Read the data from the user for the student's name, marks and compute percentage. 4)Sort the student records using any sorting method for ex. bubble sort according to their percentages 5)Display the result in tabular form having student's name marks of various subjects & percentage. 6)Stop.
Sample Output	
Post Lab Assignments	1.Structure Syntax? 2.Difference between array and structure?

Expt No	19
Aim	Write a program to simulate saving account processing in a bank using constructors and destructor
Prerequisite	Object oriented concept

Class defination	Class Account
	{
	PRIVATE int acno;
	float balance;
	PUBLIC: account();
	void getdata();
	void display();
	void deposit(float amount);
	this function is used to deposit an amount into account
	
	void withdraw(float amount);
	this function is used to withdraw money from account

Sample Output	How many customers :1 Enter details for customer:1 Enter new accno:12 Enter opening Bal:1234 Menu 1.Deposit 2.Withdraw 3.Exit Enter your choice(1-3):1 Please enter the customer no:12 Enter amount:3000

Post lab assignment	

Expt No	20
Aim	Write a program to enter the information about student and display it using single inheritance concept
Prerequisite	Inheritance

Algorithm	Class student
	{
	Private:
	int rollno;
	char name[20];
	char sex;
	Public:
	void getdata();
	void putdata();
	};
	class physical:public student
	{
	private:
	float height;
	float weight;
	};
	class academic:public student
	{
	private:
	char trade[20];
	int semes;
	};

Sample Output	Enter data Students name:cdf Rollno:10 Sex:m Height:5.7 Weight:55 Academic info... Student name:cdf Rollno:10 trade:computers Sem 6 The entered data is

	Physcial Fitness Student Name cdf Rollno:10 Sex:m Height:5.7 Weight:55 Academic fitness Students name:css Rollno:10 Sex:m Trade Computers Semester 6
Post Lab assignment	