GUJARAT TECHNOLOGICAL UNIVERSITY

MASTERS IN COMPUTER APPLICATION (Integrated MCA)

Year – I (Semester – I) (W.E.F. JULY 2013)

Subject Name: Fundamentals of Programming – I (Practical)

Set 1

1.	Write an algorithm to find factorial of a given number.	[15]
2	Draw a flowchart for "finding the factorial of a given number".	[15]
3	Write a program to print the digit pyramid(reverse) of n lines as shown below. Example is for n=5. 123454321 1234321 12321 121 1 . .	[50]

OR

1.	Write an algorithm to find sum of first N odd numbers.	[15]
2	Draw a flowchart for "finding sum of first N odd numbers".	[15]
3	Write a program In mathematics, an automorphic number (sometimes referred to as a circular number) is a number whose square ends in the same digits as number itself. For example, $5^2 = 25$, $76^2 = 5776$, and $890625^2 = 793212890625$, so 5, 76 and 890625 are all automorphic numbers. Write a program to print first 5 automorphic numbers.	[50]

Set 2

1.	Write an algorithm to find first N Fibonacci numbers.	[15]
2	Draw a flowchart for "finding first N Fibonacci numbers".	[15]
3	Write a C program to convert octal to binary number.	[50]

OR

1.	Write an algorithm to find first N prime numbers.	[15]
2	Draw a flowchart for "finding first N prime numbers".	[15]
3	Write a C program which prints the following triangle. 1 2 3 4 5 2 3 4 5 3 4 5 4 5 5	[50]

Set 3

1.	Write an algorithm to check whether entered year is a leap year or not.	[15]
2	Draw a flowchart to check whether entered year is a leap year or not.	[15]
3	Write a C program to find out summation of diagonal element of a 3 X 3 matrix.	[50]

OR

1.	Write an algorithm to find maximum number from user entered 3 numbers.	[15]
2	Draw a flowchart for "finding maximum number from user entered 3 numbers".	[15]
3	Write a c program to update and delete an element at desired position in an array.	[50]

Set 4

1.	Write an algorithm to convert from Fahrenheit to centigrade. (The formula for conversion: C = (5/9) * (F - 32))	[15]
2	Draw a flowchart for "converting from Fahrenheit to centigrade. (The formula for conversion: C = (5/9) * (F - 32))".	[15]
3	Write a C program to read in a three digit number, and produce following output (assuming that the input is 347). 　　　　3 hundreds 　　　　4 tens 　　　　7 units	[50]

OR

1.	Write an algorithm to find sum of digit of 3 digit number.	[15]
2	Draw a flowchart for "finding sum of digit of 3 digit number".	[15]
3	Write a c program to print the following triangle. 　　　5 4 3 2 1 　　　4 3 2 1 　　　3 2 1 　　　2 1 　　　1	[50]

Set 5

1.	Write an algorithm to find sum of first N odd and even numbers.	[15]
2	Draw a flowchart for "finding sum of first N odd and even numbers".	[15]

3	Write a program that outputs a triangle of height n. Example: for n = 6, output is as shown below.
	
	``
	     *
	    ***
	   *****
	  *******
	 *********
	***********
	``
		[50]

OR

1.	Write an algorithm to find average of N numbers.	[15]
2	Draw a flowchart for "finding average of N numbers "	[15]
3	Write a program to print all digits of an integer number into words. Use an array of 10 strings to store 10 digits in words. Ex. For i/p 1985, o/p should be One Nine Eight Five.	[50]

Set 6

1.	Write an algorithm to display table for number N (e.g. input if 5 then output should be 5 x 1 = 5, 5 x 2 = 10 and so on.)	[15]
2	Draw a flowchart for "displaying table for number N (e.g. input if 5 then output should be 5 x 1 = 5, 5 x 2 = 10 and so on.)". ".	[15]
3	Write a program to compute first n terms of the Fibonacci sequence. Consider first and second Fibonacci numbers as 0 and 1 respectively. In Fibonacci sequence, next number is sum of two previous numbers.	[50]

OR

1.	Write an algorithm to find numbers having first and last digit same from first N numbers.	[15]
2	Draw a flowchart for "finding numbers having first and last digit same from first N numbers."	[15]
3	Write a program to print first n positive integers whose squares are palindromes. (Palindrome is one that reads the same backwards as well as forwards. e.g. 11 ^ 2 = 121, 26 ^ 2 = 676) Read n from terminal. (Do not use an array variable).	[50]

Set 7

1.	Write an algorithm to accept string and count number of vowels in it.	[15]
2	Draw a flowchart for "finding count of vowels from user entered string".	[15]
3	Write a program to read an integer n and convert it to an integer with its digits in reverse order. For example, for n = 4532, resulting integer number is 2354. Do not use string operations to reverse number.	[50]

OR

1. Write an algorithm to display sum of digit of number N.   [15]

2   Draw a flowchart for "Finding sum of digit of number N".   [15]

3   Write a program to add two distances given in miles, yards, feet and inches. Your program should print the result of the addition once again miles, yards, feet and inches. (1760 yards = 1 mile)   [50]

                  Sample input: 5   1500   2   7
                            2   500   2   8
                Sample output: 8 miles 240 yards 5 feet and 3 inches

Set 8

1.	Write an algorithm to display triangle as below if user entered N = 3 "1 1 2 1 2 3"	[15]
2	Draw a flowchart for "displaying triangle as below if user entered N = 3 "1 1 2 1 2 3"	[15]
3	Write a C program to find minimum, maximum, sum and average of the given one dimensional array (provide menu).	[50]

OR

1.	Write an algorithm to check whether entered number is palindrome or not.	[15]
2	Draw a flowchart for "finding whether entered number is palindrome or not".	[15]

3	Write a program that accept Name, Department, basic, HRA, and conveyance from the user and calculate total salary. Print salary slip.
	  DA= 35% of Basic
	  Deductions: Medical : Rs.150 , PF: 10% of Basic+DA, IT : 20%
		[50]

Set 9

1.	Write an algorithm to display numbers whose last digit of square is same as digit from single digit numbers.	[15]
2	Draw a flowchart for "finding numbers whose last digit of square is same as digit from single digit numbers".	[15]
3	Write a program to reverse a given String(one word) and find frequency of characters found in it.	[50]

OR

1.	Write an algorithm to display total number of characters of user entered string. (DONOT USE string function).	[15]
2	Draw a flowchart for "finding total number of characters of user entered string. (DONOT USE string function)".	[15]
3	Write a program to perform addition and subtraction on mXn matrix.	[50]

Set 10

1.	Write an algorithm to display number N is an Armstrong number or not (A number is Armstrong if sum of its digits cube is same as number e.g. 153 = (1*1*1)+(5*5*5)+(3*3*3)=153).	[15]
2	Draw a flowchart for "finding that number N is an Armstrong number or not (A number is Armstrong if sum of its digits cube is same as number e.g. 153 = (1*1*1)+(5*5*5)+(3*3*3)=153)".	[15]
3	Write a program to accept two numbers No1, No2. Print all the numbers between No1 and No2. Also display sum of all the integers that are greater than No1 and less than No2 and are divisible by 5.	[50]

OR

1.	Write an algorithm to display first N odd numbers.	[15]
2	Draw a flowchart for "finding first N odd numbers".	[15]
3	Write a program to read two matrix of dimension 3x3 and print multiplication of it.	[50]

Set 11

1.	Write an algorithm to display square number series up to number N (if input is n= 4, Series : 1,4,9,16).	[15]
2	Draw a flowchart for "finding square number series up to number N (if input is n= 4, Series : 1,4,9,16)".	[15]
3	Write a program to read N numbers and sort them in reverse order.	[50]

OR

1.	Write an algorithm to display minimum and maximum numbers from numbers a,b and c.	[15]
2	Draw a flowchart for "finding minimum and maximum numbers from numbers a,b and c".	[15]
3	Write a program to read two matrix of dimension 3x3 and print sum of it.	[50]

Set 12

1.	Write an algorithm to accept number N and display triangle e.g. input N=5 5 5 4 5 4 3 5 4 3 2 5 4 3 2 1	[15]
2	Draw a flowchart for "displaying triangle for number N as below e.g. input N=5 5 5 4 5 4 3 5 4 3 2 5 4 3 2 1	[15]
3	Write a program to. Write a function that calculates the sum and average of the array sent as an argument.	[50]

OR

1.	Write an algorithm to display sum of first N prime numbers.	[15]
2	Draw a flowchart for "finding sum of first N prime numbers".	[15]
3	Write a program to "Read a number and print the sum of the series 1 + (1+2) + (1+2+3) + (1+2+3+4)+ ...+(1+2+3+...+n)	[50]

Set 13

1.	Write an algorithm to read an integer n and convert it to an integer with its digits in reverse order. For example, for n = 4532, resulting integer number is 2354. Do not use string operations to reverse number.	[15]
2	Draw a flowchart for "finding reverse number of an integer n with its digits.. For example, for n = 4532, resulting integer number is 2354. Do not use string operations to reverse number".	[15]
3	Write a program that sort the array sent as an argument. Provide menu to sort array in ascending and descending.	[50]

OR

1.	Write an algorithm to accept two numbers No1, No2. Print all the numbers between No1 and No2. Also display sum of all the integers that are greater than No1 and less than No2 and are divisible by 5.	[15]
2	Draw a flowchart to accept two numbers No1, No2. Print all the numbers between No1 and No2. Also display sum of all the integers that are greater than No1 and less than No2 and are divisible by 5.	[15]
3	Write a program to calculate nCr = n! / (n! * (n-r)!)	[50]

Set 14

1.	Write an algorithm to display a triangle of height n. Example: for n = 3, output is as shown below. 　　　　1 　　　212 　　32123	[15]
2	Draw a flowchart for "displaying a triangle of height n. Example: for n = 3, output is as shown below. 　　　　1 　　　212 　　32123	[15]
3	Write a program that reads and merge two sorted arrays to give a single sorted array.	[50]

OR

1.	Write an algorithm to accept 3 digit number and display of square of its digits.	[15]
2	Draw a flowchart for to accept 3 digit number and display of square of its digits.	[15]
3	Write a program for conversion of Hexa number to Decimal and Decimal number to Hexa.	[50]

Set 15

1.	Write an algorithm to sum and average of first N factorial.	[15]
2	Draw a flowchart for "finding sum and average of first N factorial".	[15]
3	Write a program that takes few array elements from user and then display the menu to find smallest, largest, average and summation of all the numbers.	[50]

OR

1.	Write an algorithm to print first N prime numbers series.	[15]
2	Draw a flowchart for "finding first N prime numbers series".	[15]
3	Write a program for conversion of Octal number to Decimal and Decimal number to Octal.	[50]

Set 16

1.	Write an algorithm to display leap years between 1900 and 2000.	[15]
2	Draw a flowchart for "finding leap years between 1900 and 2000".	[15]
3	Write a program for conversion of Binary number to Decimal and Decimal number to Binary.	[50]

OR

1.	Write an algorithm to accept 3 values of triangle sides and classify the triangle as equilateral, isosceles and scalene. (Equilateral triangle means all three sides are equal,. Isosceles triangle means any two side and angles are equal else scalene)	[15]
2	Draw a flowchart for accepting 3 values of triangle sides and classify the triangle as equilateral, isosceles and scalene. (Equilateral triangle means all three sides are equal,. Isosceles triangle means any two side and angles are equal else scalene)	[15]
3	Write a program to read n numbers from user and print the count of negative numbers, positive numbers, zeroes, prime numbers, odd numbers and even numbers.	[50]

Set 17

1.	Write an algorithm to convert given 3 digit number of days to a measure of time given in years, weeks and days. For example 373 days is equal to 1 year 1 week and 3 days (1 year = 365 days).	[15]
2	Draw a flowchart to convert given 3 digit number of days to a measure of time given in years, weeks and days. For example 373 days is equal to 1 year 1 week and 3 days (1 year = 365 days).	[15]
3	Write a program to accept number and display triangle, e.g. 43210 will display triangle as below. 4 43 432 4321 43210	[50]

OR

1.	Write an algorithm to convert 5 digit seconds into time measure hour, minutes and seconds.	[15]
2	Draw a flowchart to convert 5 digit seconds into time measure hour, minutes and seconds.	[15]
3	Write a C program to. Transpose of a matrix.	[50]

Set 18

1.	Write an algorithm to convert given 3 digit number of centimeters in foot, inches, cms. (1foot=12 inches, 1inch=2.5 c.m.).	[15]
2	Draw a flowchart for "converting given 3 digit number of centimeters in foot, inches, cms. (1foot=12 inches, 1inch=2.5 c.m.)".	[15]
3	Write a C program to accept number and display its digits in descending order.	[50]

OR

1.	Write an algorithm to display sum of series 1+1/2+1/3+..........+1/n. (N is user entered number).	[15]
2	Draw a flowchart to display sum of series 1+1/2+1/3+..........+1/n". (N is user entered number).	[15]
3	Write a C program to read value of a, b & c from the user for quadratic equation and print possible roots.	[50]

Set 19

1.	Write an algorithm to accept an integer from user and check whether the entered integer is a Fibonacci number or not".	[15]
2	Draw a flowchart to accept an integer from user and check whether the entered integer is a Fibonacci number or not".	[15]
3	Write a program to print the digit pyramid of n lines as shown below. Example is for n=3.	[50]

OR

1.	Write an algorithm to display frequency of digits found in entered number.	[15]
2	Draw a flowchart to display frequency of digits found in entered number	[15]

3	Write a program to print the digit pyramid of n lines as shown below. Example is for n=3.
	
	    1
	   121
	 12321
	   121
	    1
		[50]

Set 20

1.	Write an algorithm to accept number and display its digits in ascending order.	[15]
2	Draw a flowchart to accept number and display its digits in ascending order.	[15]
3	Write a program to print the digit pyramid of n lines as shown below. Example is for n=5. 1 121 12321 1234321 123454321	[50]

OR

1.	Write an algorithm to accept string (one word) from user and display triangle. e.g. INDIA will display Triangle as below I IN IND INDI INDIA	[15]
2	Draw a flowchart to accept string (one word) from user and display triangle. e.g. INDIA will display Triangle as below I IN IND INDI INDIA	[15]
3	A number is special if it is divisible by 15. A number is big if it is greater than 999. A number is weird if it is divisible by 5 and 6 but not 18. A number is scary if it is big or weird. Write a program to check which of the numbers 450, 540, 600 and 675 are special but not scary.	[50]