ACHARYA NAGARJUNA UNIVERSITY - UG SYLLABUS

Group: B.Sc Subject: Computer Science Year: I Sem: I

Paper Title: Problem solving in C

UNIT-I

General Fundamentals: lntroduction to computers: Block diagram of a computer, characteristics and timitations of computers, apPtications of comPuters, types of computers, computer generations.

lntroduction to Algorithms and Programming Languages: Algorithm - Key features of Atgorithms, Flow Charts, and Programming Languages - Generations of Programming Languages

UNIT-II

lntroduction to C: lntroduction - Structure of C Program - Compiting and Executing C Programs – Using Comments -Keywords - ldentifiers - Basic Data Types in C - Variabtes - Constants - l/O Statements in COperators in C

Decision Control and Looping Statements: lntroduction to Decision Control Statements- Conditional Branching Statements - lterative Statements - Nested Loops - Break and Continue Statement Goto Statement.

UNIT-III

Arrays: lntroduction Different types of arrays (1D, 2D, and 3D)Operations on Arrays one dimensional, two dimensional and multi dimensional arrays, character handling and

Strings: String operations, string character functions.

UNIT-IV

Functions: lntroduction - User defined and pre-defined functions, passing parameters, Scope of variables Storage Ctasses - Recursive functions.

Structure, union, and Enumerated Data TyPes: lntroduction, Nested Structures, Arrays of structures - Structures and Functions, Structures and pointers- enumerated data types

UNIT-V

Pointers: understanding computer Memory - lntroduction to Pointers - Pointer Expressions and Pointer Arithmetic - Null Pointers -Pointer and Arrays - Dynamic Memory Allocation, Drawbacks of Pointers

Files: lntroduction to files using Files in C -Reading Data from files writing Data to files- Detecting the end of file -Error handling during file operations

Problem solving in C LAB

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate refection of parameters in swapping of two integer values using Call by Value & Call by Address
6. Write a program that uses functions to add two matrices.
7. Write a program to calculate factorial of given integer value using recursive functions
8. Write a program for multiplication of two N X N matrices.
9. Write a program to perform various string operations.
10. Write a program to search an element in a given list of values.
11. Write a program to sort a given list of integers in ascending order.

12. Write a program to calculate the salaries of all employees using ***Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary)*** structure.

a. DA is 30 %of Basic Pay

b. HRA is 15% of Basic Pay

c. Deduction is 10% of (Basic Pay + DA)

d. Gross Salary = Basic Pay + DA+ HRA

e. Net Salary = Gross Salary - Deduction

13. Write a program to illustrate pointer arithmetic.
14. Write a program to read the data character by character from a file.
15. Write a program to create ***Book (ISBN, Title, Author, Price, Pages, Publisher)*** structure and store book details in a file and perform the following operations

a. Add book details

b. Search a book details for a given ISBN and display book details, if available

c. Update a book details using ISBN

d. Delete book details for a given ISBN and display list of remaining Books