C

Hall Ticket Number:

CE/CH/EC/EE124 (R20)

B.TECH. DEGREE EXAMINATION, SEPTEMBER-2024

Semester II [First Year] (Supplementary)

PROGRAMMING FOR PROBLEM SOLVING

Time: Three hours | Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) How many bytes are required to store integer and character data type? CO1
   (b) What is unary operator? Give the syntax. CO1
   (c) What is meant by structured programming? CO1
   (d) What is the advantage of function prototype declaration? CO2
   (e) How to initialize 2 – D character array? CO2
   (f) Differentiate syntax error and logical error. CO2
   (g) Give any formatted input output functions in C. CO3
   (h) What is dynamic memory allocation? CO3
   (i) What do you mean by call by value? CO3
   (j) What is command line argument? CO4
   (k) What is disadvantages of conditional 'goto' statement? CO4
   (l) What is the nested for loop? CO4
   (m) What is self-referential structure? CO4
   (n) What is the use of fseek ( )? CO4

UNIT – I

2. (a) Describe different steps in software development life cycle. (7M) CO1
   (b) What is the difference between a variable and a constant? What are the rules to declare identifiers and also specify types of constants? (7M) CO1

(OR)

3. (a) Explain bitwise, relational and logical operators with example. (7M) CO1
   (b) Describe about standard input and standard output functions used in with syntax. (7M) CO1

UNIT – II

4. (a) What is character array? Explain about initialization, accessing, and printing the character array elements. (7M) CO2
   (b) Write a C program to find the biggest of given three numbers using nested if statement. (7M) CO2

(OR)

5. (a) Compare and contrast between the statements for, while and do-while loops. (7M) CO2
   (b) If a 5-digit number is input through the keyboard, write a C program to print the sum of its individual digits. (7M) CO2

UNIT – III

6. (a) What is mean by function argument, function call and return value? (7M) CO3
   (b) Write C program to find the factorial of given number using recursion. (7M) CO3

(OR)

7. (a) What is a pointer variable? How is a pointer variable different from an ordinary Variable and also specify pointer arithmetic. (7M) CO3
   (b) Write a program using pointers to compute the sum of all elements stored in an array. (7M) CO3

UNIT – IV

8. (a) What is structure? Explain array of structures with example. (7M) CO4
   (b) Write a program to store and print name, address, department and marks using structure. (7M) CO4

(OR)

9. (a) Describe different modes of file and also specify various file operations. (7M) CO4
   (b) Write a C program to copy the contents of one file to another file. (7M) CO4

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Hall Ticket Number:

CE/CH/EC/EE124 (R20)

B.TECH. DEGREE EXAMINATION, JULY-2024

Semester II [First Year] (Regular)

PROGRAMMING FOR PROBLEM SOLVING

Time: Three hours | Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:

(a)	Define Hardware.	CO1
(b)	Write program development steps.	CO1
(c)	List any four data types in C.	CO1
(d)	Draw the flow chart for while loop.	CO2
(e)	Write the syntax of nested if statement in C.	CO2
(f)	What is a string?	CO2
(g)	Write the syntax and example for strlen() function in C.	CO3
(h)	What is a user defined function?	CO3
(i)	Write a C program to convert degrees Centigrade to degrees Fahrenheit.	CO3
(j)	How can we represent a 3 x 3 matrix using an array?	CO4
(k)	What is the difference between '&' and '*' w.r.t. pointer?	CO4
(l)	What is free() function?	CO4
(m)	What is union in C?	CO4
(n)	What are the modes of operations on a file?	CO4

UNIT – I

2. (a) Explain about software development life cycle in detail. (7M) CO1
   (b) Write a C program using basic input/output functions. (7M) CO1

(OR)

3. (a) What are the relational and logical operators in C? Explain with examples. (7M) CO1
   (b) Implement a C program to demonstrate about the basic data types used in C. (7M) CO1

UNIT – II

4. (a) Demonstrate the use of if-else statement with a suitable example. (7M) CO2
   (b) Develop C programs for Fibonacci series. (7M) CO2

(OR)

5. (a) Distinguish between while loop and do-while loop in C. (7M) CO2
   (b) Demonstrate how Bubble sort is implemented using a C program. (7M) CO2

UNIT – III

6. (a) Explain the different categories of functions with examples. (4M) CO3
   (b) Implement recursive functions for the following tasks: (10M) CO3
   (i) Factorial of a number
   (ii) GCD of two numbers

(OR)

7. (a) What are the operators used for pointers? Consider the following statements, let m and n are declared as integers and p1 and p2 as pointers to integers, then find out the errors if any in each of the following statements and explain the reasons also. (7M) CO3

```
p1 = &m;
p2 = n;
m = p2 - p1;
*p1 = &n;
```

(b) Illustrate call by value and call by reference with an example C program. (7M) CO3

UNIT – IV

8. (a) Differentiate structure and union with an example. (7M) CO4
   (b) Write a C program to copy contents of one file to another file. (7M) CO4

(OR)

9. (a) Write a program to read employee details of an organization such as employee number, experience, salary using structures and display the employee details on console. (7M) CO4
   (b) What are different file handlings functions available? Explain in detail. (7M) CO4

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Hall Ticket Number:

CE/CH/EC/EE124 (R20)

B.TECH. DEGREE EXAMINATION, MAY-2024

Semester II [First Year] (Supplementary)

PROGRAMMING FOR PROBLEM SOLVING

Time: Three hours Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) Define Software. CO1
   (b) What is a Token? CO1
   (c) List any four keywords in C. CO1
   (d) Draw the flow chart for for loop. CO2
   (e) Write the syntax for switch statement in C. CO2
   (f) What is an array? CO2
   (g) Write the syntax and example for strcpy () function in C. CO3
   (h) What is a predefined function? CO3
   (i) Write a C program to convert given centimetres to meters. CO3
   (j) How can we represent a two-dimensional matrix using array? CO4
   (k) Define a pointer in C. CO4
   (l) What is malloc() function? CO4
   (m) Write student 'Name, Roll.No., Department' details using structure. CO4
   (n) What if fopen() function? CO4

UNIT – I

2. (a) Draw the Block Diagram of Computer and list the characteristics. (7M) CO1
   (b) Write a C Program to find the size of each data type using sizeof() function. (7M) CO1

(OR)

3.	(a)	What are the arithmetic operators used in C? Explain with example.	(7M)	CO1
	(b)	Explain the structure of C programming.	(7M)	CO1

UNIT – II

4.	(a)	Write about nested if-else statement using a flow chart and example.	(7M)	CO2
	(b)	Implement a C program to find the greatest of three numbers using ternary operator.	(7M)	CO2

(OR)

5.	(a)	What are the different looping statements used in C? Explain with suitable example.	(7M)	CO2
	(b)	Write a C program to add two matrices using arrays.	(7M)	CO2

UNIT – III

6.	(a)	What is the difference between call by value and call by reference?	(7M)	CO3
	(b)	Explain the concept of storage classes in C.	(7M)	CO3

(OR)

7.	(a)	Mention the importance of pointers used in C programming with a suitable example.	(7M)	CO3
	(b)	Write a C program to demonstrate the function malloc ().	(7M)	CO3

UNIT – IV

8.	(a)	What you meant by structure definition?	(4M)	CO4
	(b)	Define a structure type personal that would contain person name, date of joining and salary. Write a program to initialize one person data and display the same.	(10M)	CO4

(OR)

9.	(a)	Illustrate about C preprocessor directives.	(4M)	CO4
	(b)	Write a C program to create a file and write contents, save and close the file.	(10M)	CO4

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Hall Ticket Number:

F-2

CE/CH/EC/EE124 (R20)

B.TECH. DEGREE EXAMINATION, NOVEMBER-2023

Semester II [First Year] (Supplementary)

PROGRAMMING FOR PROBLEM SOLVING

Time: Three hours | Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) Define software. CO1
   (b) What is the special symbol allowed in a variable name? CO1
   (c) List out types of programming language. CO1
   (d) Define array. CO2
   (e) What is the use of goto statement? CO2
   (f) List the three types of loops in C. CO2
   (g) Define function. CO3
   (h) What is the meaning of using extern before function declaration? CO3
   (i) Define the syntax for pointer declaration with an example. CO3
   (j) Define union with an example. CO4
   (k) Explain the use of a member in the structures with an example. CO4
   (l) List the different modes in files. CO4
   (m) Contract between opening and closing a data file with an example. CO4
   (n) Define unformatted data files. CO4

UNIT – I

2. (a) With a neat sketch of block diagram of computer, explain the function of various unit. (7M) CO1

(b) Develop a C program where a and b are two integer variables whose values are 20 and 23 respectively. Write a program to evaluate the following arithmetic expressions. (i) a + b (ii) a – b (iii) a * b (iv) a / b (v) a % b (7M) CO1

(OR)

3. (a) Discuss various operators available in C. (7M) CO1
   (b) Discuss input/output functions with an example. (7M) CO1

UNIT – II

4. (a) Build a program to find the transpose of a matrix. (7M) CO2
   (b) Contrast between continue and break statement with an example. (7M) CO2

(OR)

5. (a) Develop a C program for the given scenario: A Fibonacci sequence is defined as follows: The first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a program to generate the first N terms of the sequence. (7M) CO2
   (b) Discuss various types of array declarations in C with an example. (7M) CO2

UNIT – III

6. (a) Design a recursive function to compute factorial of a given number. (7M) CO3
   (b) What is Dynamic Memory Allocation and list out its types with an example? (7M) CO3

(OR)

7. (a) Explain the pointer declarations and passing pointers to a function with suitable example. (7M) CO3
   (b) Explain different ways of passing arguments to function with suitable examples. (7M) CO3

UNIT – IV

8. (a) Define a structure to store employee's data with the following specifications: Employee-Number, Employee-Name, Basic pay, Date of Joining. (7M) CO4
   (b) Explain the relation between structures and pointers, structure and functions with suitable examples. (7M) CO4

(OR)

9. (a) Develop a C program which copies one 'text file' to another 'text file' using command line arguments (7M) CO4
   (b) Write a short notes on self referential structure, user defined data types and unions. (7M) CO4

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Hall Ticket Number:

CE/CH/EC/EE124 (R20)

B.TECH. DEGREE EXAMINATION, JULY-2023

Semester II [First Year] (Regular & Supplementary)

PROGRAMMING FOR PROBLEM SOLVING

Time: Three hours | Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) List out the characteristics of a computer. CO1
   (b) Define hardware. CO1
   (c) State the rules for naming a variable. CO1
   (d) Name the Input/Output functions. CO1
   (e) How to use goto statement? CO2
   (f) Write the syntax for do-while loop. CO2
   (g) Show the process of initializing an array. CO2
   (h) Which function is used to compare two strings only to n characters? CO2
   (i) Where do we use recursion? CO3
   (j) What does the return type 'void' indicate? CO3
   (k) How to declare pointer to a pointer? CO3
   (l) Define union in C. CO4
   (m) What is the use of bitfields? CO4
   (n) Show the syntax for opening a file in read mode. CO4

UNIT – I

2. (a) Classify the data types in C language and describe each data type. (8M) CO1
   (b) Show the structure of a C program and explain each component in the structure. (6M) CO1

(OR)

3. (a) Illustrate the implementation of type qualifiers with examples. (6M) CO1
   (b) Name the operators in C and interpret the usage of each operator. (8M) CO1

UNIT – II

4. (a) Define an array. Examine the procedure for declaring, initializing and accessing the elements in an array. (7M) CO2
   (b) Using switch statement, create a C program to perform arithmetic operations on the variables. The symbol of the operator should be given as input and result after processing the operation should be displayed as the output. (7M) CO2

(OR)

5. (a) Demonstrate the mechanism of looping statements with examples. (7M) CO2
   (b) Develop a program to check and display whether the given string is a palindrome or not without using string handling functions. (7M) CO2

UNIT – III

6. (a) List out the storage classes and discuss the features of each storage class. (6M) CO3
   (b) Construct a C program to show various functions used for dynamic memory allocation. (8M) CO3

(OR)

7. (a) Analyze the functionality of passing arguments to a function. (8M) CO3
   (b) Interpret the operations performed on pointers with examples. (6M) CO3

UNIT – IV

8. (a) Categorize and describe the preprocessor directives with syntax. (7M) CO4
   (b) Examine the task of using pointers in structures with an example. (7M) CO4

(OR)

9. (a) Develop a C program to copy the content of one file into another file. (7M) CO4
   (b) Differentiate the implementation of a structure and a union in C. (7M) CO4

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file-2

Hall Ticket Number:

CE/CH/EC/EE124 (R20)

B.TECH. DEGREE EXAMINATION, JANUARY-2023

Semester II [First Year] (Supplementary)

PROGRAMMING FOR PROBLEM SOLVING

Time: Three hours | Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) Show the block diagram of a computer. CO1
   (b) Define software. CO1
   (c) Name any eight keywords in C. CO1
   (d) How to use conditional operator? CO1
   (e) Why do we need arrays? CO2
   (f) Label the syntax for while statement. CO2
   (g) Where continue statement can be used? CO2
   (h) Which function is used to concatenate n characters of a string to another string? CO2
   (i) Classify the functions. CO3
   (j) List out the storage classes. CO3
   (k) How to declare a pointer for an array? CO3
   (l) Define a structure in C. CO4
   (m) What is a self-referential structure? CO4
   (n) Show the syntax for opening a file in write mode. CO4

UNIT – I

2. (a) How to develop a C program? Show the software development life cycle. (7M) CO1
   (b) Name the data types in C and explain the utilization of each data type. (7M) CO1

(OR)

3. (a) List out the operators used in C and describe each operator with syntax and example. (8M) CO1
   (b) Classify the constants used in C and discuss the usage of each constant. (6M) CO1

UNIT – II

4. (a) Illustrate the functionality of any four string handling functions. (8M) CO2
   (b) Analyze the utilization of break, continue and goto statement. (6M) CO2

(OR)

5. (a) Develop a C program to perform multiplication on the given matrices. (8M) CO2
   (b) Demonstrate the mechanism of branching statements with examples. (6M) CO2

UNIT – III

6. (a) Examine the implementation of call by value and call by reference. (8M) CO3
   (b) Interpret various functions used for dynamic memory allocation. (6M) CO3

(OR)

7. (a) Define recursion. Design a C program to find the factorial of a given number using recursion. (7M) CO3
   (b) Inspect the process of passing pointers to a function and arrays. (7M) CO3

UNIT – IV

8. (a) Write a C program to merge the contents of two files into single file. (7M) CO4
   (b) Outline the differences between a structure and union with an example. (7M) CO4

(OR)

9. (a) Analyze the procedure for passing the structures to functions. (7M) CO4

   (b) Illustrate the implementation of command line arguments with syntax. (7M) CO4

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Hall Ticket Number:

file-2

CE/CH/EC/EE124(R20)

B.TECH. DEGREE EXAMINATION, OCTOBER-2022

Semester II [First Year] (Regular & Supplementary)

PROGRAMMING FOR PROBLEM SOLVING

Time: Three hours | Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) What is a C Token? CO1
   (b) Define Type Qualifiers. CO1
   (c) List the types of Input/Output Function. CO1
   (d) What is the use of Switch statement in the C program? CO2
   (e) Contrast between Single and Multidimensional Array. CO2
   (f) What is Branching? CO2
   (g)
```
#include <stdio.h>
int main()
{
printf("%d", main);
return 0;
}
```
   What is the output of the code? CO3
   (h) List the types of dynamic memory allocations. CO3
   (i) Define Recursion. CO3
   (j) Define Structures with an example. CO4
   (k) What are User-Defined Data types? CO4
   (l) What are the Pre-processor Directives in C? CO4
   (m) Contrast between Reading and Writing a Data File with an example. CO4
   (n) Which functions are used to access file randomly? CO4

UNIT – I

2. (a) Explain a typical Software Development Life Cycle with the various phases in a neat diagram (7M) CO1
   (b) Develop a C program for the Scenario, Mr. Gupta deposited Rs.1000 in a bank. The bank gives simple interest at the rate of 15% per annum. Write a program to determine the amount in Mr. Gupta's account at the end of 5 years. (Use the formula I = P T R / 100) (7M) CO1

(OR)

3. (a) Discuss various Data Types of Programming Language. (7M) CO1
   (b) Discuss computer characteristics and the three main concepts of structured programming. (7M) CO1

UNIT – II

4. (a) Develop a C program using switch statement, which takes two integer operands and one operator as input from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, %.) (7M) CO2
   (b) Discuss various types of String handling functions with an example. (7M) CO2

(OR)

5. (a) Create a C program for adding two matrices and storing the resultant in the other matrix. (7M) CO2
   (b) Discuss various types of Branching statements in C with an example. (7M) CO2

UNIT – III

6. (a) Develop a C program to determine whether the given string is palindrome or not using functions. (7M) CO3

(b) Contrast between call-by-value and call-by-reference with a suitable example. (7M) CO3

(OR)

7. (a) Explain the usage of Storage classes in C with an example. (7M) CO3

(b) Develop a C program to read list of student names and perform the following operations using functions. (7M) CO3

(i) to print list of names
(ii) to sort them in ascending order
(iii) to print the list after sorting

UNIT – IV

8. (a) Develop a C program to accept the elements of the structure as: Employee-name, Basic pay. Display the same structure along with the DA, CCA and Gross salary for 5 employees.
Note: DA = 51% of Basic pay, CCA = Rs.100 consolidated. (7M) CO4

(b) Distinguish between Structure and Union with suitable examples. (7M) CO4

(OR)

9. (a) Develop a C program to reverse the first N characters of a given text file.
Note: The file name and N are specified through command line. (7M) CO4

(b) Write short notes on pre-processor directives and Unformatted data files. (7M) CO4

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file-2

Hall Ticket Number:

CE/CH/EC/EE124(R20)

B.TECH. DEGREE EXAMINATION, FEBRUARY-2022

Semester II [First Year] (Supplementary)

PROGRAMMING FOR PROBLEM SOLVING

Time: Three hours | Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) Define software. CO1
   (b) List out the characteristics of a computer. CO1
   (c) Develop a C program to find the given character is digit or not with the help of ternary operator. CO1
   (d) Distinguish between break statement and continue statement. CO2
   (e) What is the use of goto statement? CO2
   (f) Define an array. CO2
   (g) Contrast numeric arrays and strings. CO2
   (h) Define recursion. CO3
   (i) Distinguish auto and register storage classes. CO3
   (j) Define null pointer. CO3
   (k) Contrast structure and union. CO4
   (l) What are self-referential structures? CO4
   (m) What are the operations that can be performed on a file? CO4
   (n) List the pre-processor directives available in C. CO4

UNIT – I

2. (a) 'C is structured programming language'. Justify the statement. (7M) CO1
   (b) Distinguish between explicit type conversion and implicit type conversion with examples. (7M) CO1

(OR)

3. (a) Discuss various operators available in C with examples. (7M) CO1
   (b) Discuss various input/output functions in C with examples. (7M) CO1

UNIT – II

4. (a) Develop a C program to check whether a given character is an upper case letter or a lower case letter or a digit or a special symbol. (7M) CO2
   (b) Develop a C program for multiplication table of a number from 1 to a given range. (7M) CO2

(OR)

5. (a) Create a C program to insert a new integer value at a specified position into an already existing array of 'n' integer values. (7M) CO2
   (b) Discuss about string handling functions with examples. (7M) CO2

UNIT – III

6. (a) Distinguish between call by value and call by reference with examples. (7M) CO3
   (b) Design a recursive function to find greatest common divisor of given two numbers. (7M) CO3

(OR)

7. (a) Define pointer. Explain how to access a value using pointer. Give an example. (7M) CO3
   (b) What is dynamic memory allocation? Discuss about dynamic memory allocation functions with suitable examples. (7M) CO3

UNIT – IV

8. (a) Distinguish between structure and array. (7M) CO4
   (b) Develop a C program using array of structures to read and display 'n' number of student's details consisting of name, roll number and gender. (7M) CO4

(OR)

9. (a) Discuss about various sequential file accessing functions. (7M) CO4
   (b) Create a program that copies the contents of one file to another using command line argument. (7M) CO4

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Hall Ticket Number:

file-2

CE/CH/EC/EE124(R20)

B.TECH. DEGREE EXAMINATION, OCTOBER-2021

Semester II [First Year] (Regular)

PROGRAMMING FOR PROBLEM SOLVING

Time: Three hours | Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) Write the differences between algorithm and flowchart. CO1
   (b) Write a short note on type casting. CO1
   (c) Explain sizeof() with example. CO1
   (d) What is the result of the operation 23>>3? CO2
   (e) How switch case works without break statement? CO2
   (f) What is multi-dimensional array? CO2
   (g) What is pointer to pointer? CO3
   (h) Discriminate puts() and gets(). CO3
   (i) Define pointer array. CO3
   (j) Differentiate between break and continue statements. CO4
   (k) How can you compare two strings? CO4
   (l) How to represent self-referential structures? CO4
   (m) Define Union. How to represent a union? CO4
   (n) Write about different error handling functions on files. CO4

UNIT – I

2. (a) Discuss about Bitwise operators with examples. (7M) CO1
   (b) What is constant? Explain different constants in C. (7M) CO1

(OR)

3. (a) Discuss about increment and decrement operators with examples. (7M) CO1
   (b) Write detailed notes on C data types. (7M) CO1

UNIT – II

4. (a) Draw the flow chart for solving the following problem:
   Your library need your help. Given the expected and actual return dates for a library book, the algorithm calculates the fine (if any). The fee structure is as follows: (7M) CO2

(i) If the book is returned on or before the expected return date, no fine will be charged i.e. fine = 0.

(ii) If the book is returned after the expected return *day* but still within the same calendar month and year as the expected return date, fine = Rs. (15*number of days late).

(iii) If the book is returned after the expected return *month* but still within the same calendar year as the expected return date, fine = Rs. (50*number of months late).

(iv) If the book is returned after the calendar year in which it was expected, there is a fixed fine of Rs.1000.

(b) The absolute distance between two integers x_1 and x_2 is given by $| x_2 - x_1 |$. Write a program which sorts an array $x[\ ]$ of n integers in ascending order of their absolute distances with a given number z. For example, given $x[\ ] = \{9, 1, 12, 4, 2\}$ and $z = 6$, the sorted array will be $x[\ ] = \{4, 9, 2, 1, 12\}$. Note that 4 is closest to 6, and 12 is farthest from 6, in terms of absolute distances. (7M) CO2

(OR)

5. (a) Draw the flowchart for solving the following problem: The algorithm reads the following two parameters – (i) Type of the vehicle, *('M' or 'm' for motorbike, 'C' or 'c' for car, and 'B' or 'b' for Bus)* and (ii) Number of hours that a vehicle spent in the parking lot. The algorithm should compute the parking charge based on the following parking rates – Rs.5, Rs.10 and Rs.50 per hour respectively for motorbike, car and bus. (7M) CO2

(b) Given an array of integers. Find a peak element in it. An array element is peak if it is NOT smaller than its neighbors. For corner elements, we need to consider only one neighbor. For example, for input array {5, 10, 20, 15}, 20 is the only peak element. For input array {10, 20, 15, 2, 23, 90, 67}, there are two peak elements: 20 and 90. Write a program to print all the peak elements in a given array. (7M) CO2

UNIT – III

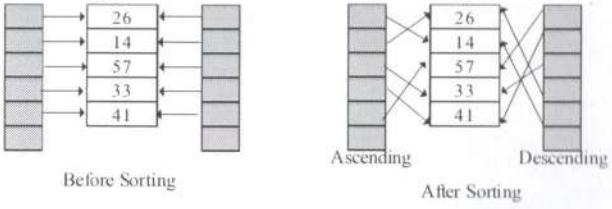
6. (a) Given 3-angles as parameters, Write a function to check whether they form a triangle or not

(A+B+C=180). If yes check whether triangle is scalen, equilateral, isoceless or right angled triangle. (7M) CO3

(b) Write a function to print the first n numbers of the series 1, 2, 4, 7, 11, ... The series starts with 1 and the difference between two consecutive numbers is 1 initially and increases by 1 then onwards. Also print the sum of these n numbers. (7M) CO3

(OR)

7. (a) Write a program that reads integers from the keyboard and places them in an array. The program then will sort the array into ascending and descending order and print the sorted list. The program must not change the original array or create any other integer array. Hint: The solution to this problem requires two pointer arrays shown in the following figure. The first pointer array is rearranged so that it points to the data in ascending sequence. The second pointer array is rearranged so that it points to the data in descending sequence. (i) By using the original array we must be in a position to print the given values (ii) By using the first pointer array we need to display the values in ascending order and similarly (iii) by using the second pointer array we need to display the values in descending order. (7M) CO3



(b) In mathematics, a Kaprekar number is a nonnegative integer whose square can be split into two equal parts that add up to the original number again. For instance, 45 is a Kaprekar number, because $45^2 = 2025$ and $20+25 = 45$. Write a function to find all Kaprekar numbers within a given range. (7M) CO3

UNIT – IV

8. (a) You are given with three text files namely: file1.txt, file2.txt and file3.txt. Write a C-program to copy the contents of file1 to file2, file2 to file3 and file3 to file1. (7M) CO4

Example: Before execution:

file1.txt	*file2.txt*	*file3.txt*
NITW	IITH	IITTP
Warangal	Hyderabad	Tirupati

After Execution:

file1.txt	*file2.txt*	*file3.txt*
IITTP	NITW	IITH
Tirupati	Warangal	Hyderabad

(b) A railway employee is paid 1200/- (rupees) per day for regular 8 hours of work. Any hours over that are paid overtime rate of 100/- per hour. From the employee's gross pay (total pay per month), 2% is deducted for professional tax, 10% for provident fund and 5% for income tax. However, the employee will get 2% (of the gross pay) for the education of a child. Write a program to create a structure of employee and read data of 'N' employees as follows: (7M) CO4

(i) the number of extra hours (which the employee worked during a month).

(ii) the number of children the employee has.

The program should output the 'N' employees gross pay (total pay earned by the employee by working) and net take-home pay (after deductions and earning for child education). Assume all months have 30 days.

(OR)

9. (a) Write a program to create a *structure 'student'* with the member variable number, name, marks and branch. Read sixty students details. Then your program should display the names of the students who got more than 60 marks of CSE branch with name 'Aditya'. (7M) CO4

(b) Two files FILE1.txt and FILE2.txt contain sorted lists of integers. Write a program to produce a third file DATA.txt which holds a single sorted, merged list of these two lists. (7M) CO4

Example:

File1.txt	File2.txt	DATA.txt
1	3	1
5	6	3
8	9	5
		6
		8
		9

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