

Assignment-4

1. Define the Storage Class in C. Describe the four types of variable storage classes.
2. Write a program in C to multiply two matrices. Take the size and elements of the matrices through keyboard.
3. What is an array? Explain the advantage of array of pointers with a suitable example.
4. Define Structure? How it differs from union with example?
5. What is meant by the following terms?
(i) Nested structures (ii) Array of structures.
6. What is a String? State the various operations that can be performed on it.
7. Write a program to create an array of structure to hold records of 20 cricketers. Each record contains name, country, age, and average runs scored by a player. Further write a function to pass these records as argument. In the function definition, find the record of the player whose average is maximum and display his details back in the calling function.
8. Write a program to input numbers in an array. Further create a function which arranges the elements of the array from smallest to largest using pointers.
9. Write a program to find out an element from a group of data elements.
10. An array is declared as `int a [100]`; If the base address of the array is 5000, what will be address of `a[59]`.
11. Differentiate between dot operator and \rightarrow operator to access structure objects.
12. How a structure is different from an array? Write a C program to store employee details such as EmpId, Name, Salary and Age for 50 employees and display the same for the users.
13. Define a pointer. How do you declare and initialize a pointer? Write a program to add the contents of an integer array using pointer.
14. Define scope and lifetime of a variable.
15. What are the drawbacks of static memory allocation?
16. When null pointer is used? Explain the local and external variables.
17. Explain the following functions of dynamic memory allocation:
(i) `Malloc ()`
(ii) `calloc ()`
(iii) `realloc ()`
(iv) `free ()`
18. How to declare and initialize a Two-dimensional array? Discuss with examples.

19. On successful execution of the below code predict the result, if address of variable 'a' is 210?

```
void main( )  
{  
    float a, *b;  
    b = &a;  
    b = b+3;  
    printf ("%d",b);  
}
```

20. Illustrate the different ways to initialize a string during compile time as well as during run time.

Write a program to count the number of words and number of characters in an input string.

21. Write a program to allocate space dynamically to store N numbers. Find the sum and average of these numbers.

22. Attempt any one part of the following:

(a) "A variable is declared as static". Illustrate with example the behavior of the variable.

(b) Write a program in C to print the transpose of a matrix.

23. There is a two-dimensional array of type integer. Write the statement to display the base address of the array.

24. Write a program to accept elements of an array from user and sort and display them in ascending order.

25. Write a program to concatenate two strings without using standard library function.