SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
COIMBATORE – 35
DEPARTMENT OF COMPUTER SIENCE AND ENGINEERING (UG & PG)

First Year, Ist Semester

2 Marks Question and Answer

Subject Code & Name: 23ITT101 Programming in C and Data structures

UNIT 3

ARRAYS, FUNCTIONS,STRUCTURE AND POINTERS

2 MARKS

1. Write definition of function. Indicate types of functions available in C.

A function is a self-contained block or a sub-program of one or more statements that performs a special task when called.

Types of functions

- Without arguments or return values. Eg. abc()
- With arguments but without return values. Eg. abc (int x)
- With arguments and return values. Eg. int abc(int x)
- Without argument but with return values. Eg. int abc().

2. Write the difference between pre-defined (library) function and user defined function.

Library(Pre-defined) function	User defined function
Contains Pre-defined set of functions	The user defined the functions
User cannot understand the internal working	User can understand internal working
Source code is not visible	Source code is visible
User cannot modify the function	User can modify the function

3. Differentiate between structure and union.

Structure	Union
A structure is defined with 'struct' keyword	A union is defined with'union' ke yword
All members of a structure can be manipulated simultaneously	The members of a union can be manipulated only one at a time
The size of a structure object is equal to the sum of the individual sizes of the member object	The size of a union object is equal to the size of the largest member object
Structure members are allocated distinct memory locations	Union members share common memory space for their exclusive usage

Structures are not memory efficient when compared to unions	Unions are memory efficient

4. What are the advantages of unions over structures?

- Union save memory space as the size of a union variable is equal to its largest sized member. In contrast, the size of a structure variable is equal to the sum of the sizes of all its individual member elements.
- Unions are particularly useful in situation where there is a need to use only one of its member elements at any given point of time.

5. What is a pointer?

A pointer is a memory variable that stores a memory address. It can have any name that is legal for another variable and it is declared in the same fashion like other variables but it is always denoted by pre fixing '*' operator. **Pointer Declaration:** datatype * variable-name;
Example: int *x, c=5; x=&a;

6. Write the features of a pointer.

Features:

- Pointers save memory space.
- Execution time with the pointer is faster because data is manipulated with the address, direct access to memory location.
- The memory is accessed efficiently with the pointers.
- Pointers are used with data structures.
- We can access elements of any type of array irrespective if its subscript range.
- Pointers are used in file handling.

7. What are the uses of Pointers?

- Pointers are used to return more than one value to the function
- Pointers are more efficient in handling the data in arrays
- Pointers reduce the length and complexity of the program
- They increase the execution speed
- The pointers save data storage space in memory.

8. What is an array and its types?

An array is a group of similar data types stored under a common name. **Example:** int a[10]; Here a[10] is an array with 10 values. The array types are

- One-Dimensional Array
- Two-Dimensional Array
- Multi-Dimensional Array

9. Differentiate call by value and call by reference.

Call by value	Call by reference
Only values of the variables are passed as parameters	Pointer or reference to the variable is passed as parameter.
Any change made to the value will not reflected in the variable storage location	Any change made to the variables gets reflected at the original location of the variable

10. What is the difference between Array and Pointer?

Array	Pointer

Array allocates space automatically	Pointer is explicitly assigned to point to an allocated space
It cannot be resized	It can be resized using realloc()
It cannot be reassigned	It can be reassigned
Size of array name gives the number of bytes occupied by the array	Size of pointer name returns the number of pointer used to store the pointer variable.

11. What are the various dynamic memory allocation functions?

- malloc() - Used to allocate blocks of memory in required size of bytes.
- free () - Used to release previously allocated memory space.
- calloc() - Used to allocate memory space for an array of elements.
- realloac() - Used to modify the size of the previously allocated memory space.

12. What are the advantages of union over structures?

- The unions save memory space as the size of the union variable is equal to its largest size member. In contrast, the size of the structure variable is equal to the sum of the sizes of all its individual member elements.
- Unions are particularly useful in situations when there is a need to use only one of its member elements at any given point of time.

13. State the advantages of user defined functions over pre-defined functions.

- A user defined function allows the programmer to define the exact function of the module as per requirement. This may not be the case with predefined function. It may or may not serve the desired purpose completely.
- A user defined function gives flexibility to the programmer to use optimal programming instructions, which is not possible in predefined function.

14. Write the syntax for pointers to structure.

Struct S

{

char datatype1;

int datatype2;

float datatype3;

};

Struct S *sptr //sptr ia pointer to structure S

15. How will you define enumerated data type?

 enum data-type (variable1 , variable 2,…variable n};

   Example: enum mar_status { single,married,widow };

     enum mar_status person1,person2;

     person1=married;

     Here the person1 is assigned to value zero.

16. Define Strings.

  The group of characters, digit and symbols enclosed within quotes is called as String (or) character Arrays. Strings are always terminated with '\0' (NULL) character. The compiler automatically adds '\0' at the end of the strings.

Example: char name[]={'C','O','L','L','E','G','E','\0'};

17. Is it better to use a macro or a function?

      Macros are more efficient (and faster) than function, because their corresponding code is inserted directly at the point where the macro is called. There is no overhead involved in using a macro like there is in placing a call to a function. However, macros are generally small and cannot handle large, complex coding constructs. In cases where large, complex constructs are to handled, functions are more suited

18. List any five-library functions.

- ceil(x)
- sqrt(x)
- log(x)
- pow(x,y)
- sin(x)

19. List the header files in 'C' language.

- <stdio.h> contains standard I/O functions
- <ctype.h> contains character handling functions
- <stdlib.h> contains general utility functions
- <string.h> contains string manipulation functions
- <math.h> contains mathematical functions
- <time.h> contains time manipulation functions

20. What are the steps in writing a function in a program?

- **Function Declaration (Prototype declaration):**

      Every user-defined functions has to be declared before the main().

- **Function Callings:**

      The user-defined functions can be called inside any functions like main(), user-defined function, etc.

- **Function Definition:**

      The function definition block is used to define the user-defined functions with statements.

    21.write Array syntax
    data-type arrayName [arraySize];

  data_type array_name[row_size][column_size];

22.Structure syntax

struct structName

{

  // structure definition

Data_type1 member_name1;

Data_type2 member_name2;

Data_type2 member_name2;

};

23.How to Access Structure Elements?

Syntax

structVariable.structMember