STRUCTURE
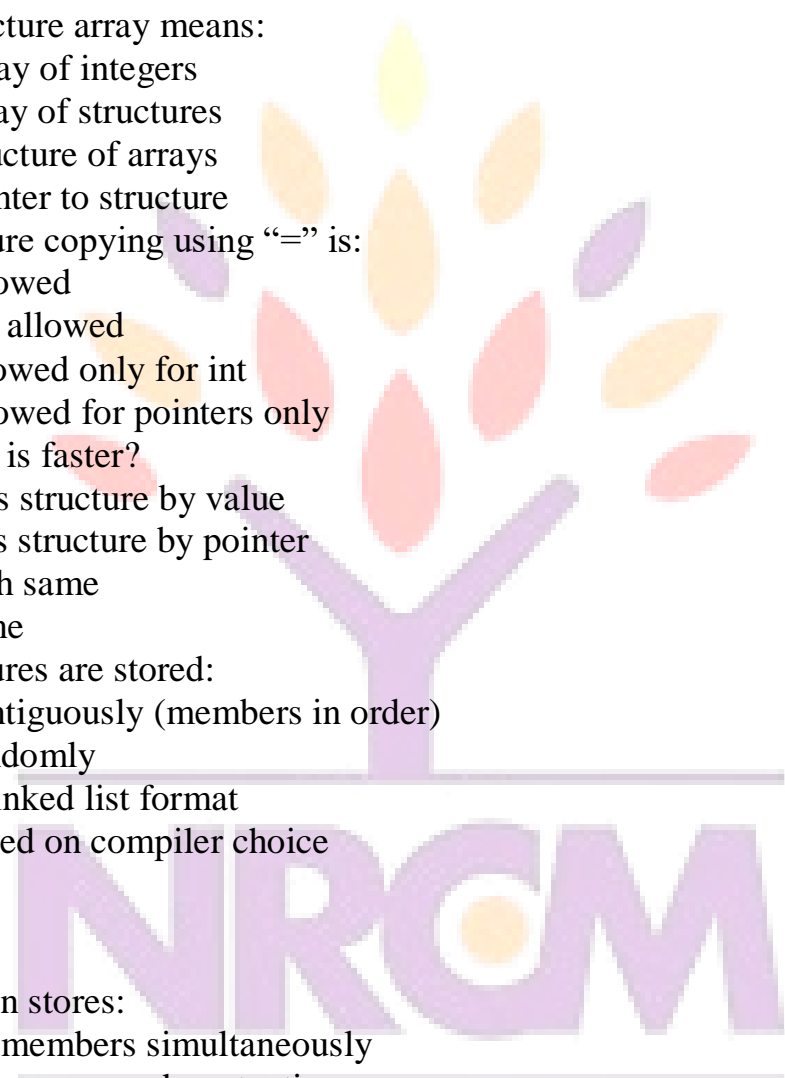
1. A structure in C is used to:
   A. Store same data type
   B. Store different data types
   C. Store functions
   D. Allocate memory dynamically
2. Which keyword is used to define a structure?
   A. struct
   B. structure
   C. record
   D. union
3. What is a member of a structure?
   A. Another function
   B. A variable inside struct
   C. A pointer list
   D. None
4. Size of structure depends on:
   A. Number of members
   B. Data types of members
   C. Padding/alignment
   D. All of these
5. Accessing structure members uses:
   A. . operator
   B. -> operator
   C. Both A & B
   D. :: operator
6. Structure variables are stored in:
   A. Stack
   B. Heap
   C. Both (depends on declaration)
   D. Code segment
7. Function returning a structure is:
   A. Not allowed
   B. Allowed
   C. Allowed only with pointer
   D. Causes error
8. Passing structure to function requires:
   A. Whole struct or pointer

B. Only integer fields

C. Only char fields

D. None

9. sizeof(struct x) gives:

A. Number of variables

B. Memory size in bytes

C. Address of struct

D. None

10. Structure inside another structure is known as:

A. Deep structure

B. Nested structure

C. Multi-struct

D. Double struct

11. Which of the following is valid?

A. struct A { int x; } a;

B. struct A a { int x; };

C. struct { int x; } A;

D. struct; A { int x; };

12. Structure variables can be initialized:

A. At declaration

B. After declaration

C. Not allowed

D. Only using memset

13. Structure padding is used to:

A. Reduce memory

B. Increase memory

C. Align data properly

D. Shuffle memory

14. A structure can contain:

A. Arrays

B. Pointers

C. Other structures

D. All of these

15. The arrow operator (->) is used with:

A. Structure variable

B. Structure pointer

C. Integer pointer

D. None

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16. What is structure tag?
    A. Name of structure definition
    B. Member name
    C. Function name
    D. Address
17. A structure array means:
    A. Array of integers
    B. Array of structures
    C. Structure of arrays
    D. Pointer to structure
18. Structure copying using "=" is:
    A. Allowed
    B. Not allowed
    C. Allowed only for int
    D. Allowed for pointers only
19. Which is faster?
    A. Pass structure by value
    B. Pass structure by pointer
    C. Both same
    D. None
20. Structures are stored:
    A. Contiguously (members in order)
    B. Randomly
    C. In linked list format
    D. Based on compiler choice

UNION

1. A union stores:
   A. All members simultaneously
   B. Only one member at a time
   C. Only last member
   D. None
2. Keyword used to declare a union:
   A. struct
   B. union
   C. shared
   D. memory

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3. Size of a union is:
   A. Sum of all members
   B. Size of largest member
   C. Always 1 byte
   D. None
4. A union can contain:
   A. Arrays
   B. Pointers
   C. Structures
   D. All of these
5. Accessing union members uses:
   A. . operator
   B. -> operator
   C. Both A & B
   D. :: operator
6. Union is mainly used to:
   A. Save memory
   B. Increase speed
   C. Reduce code
   D. None
7. Two union variables can be copied using "="?
   A. Yes
   B. No
   C. Only for int
   D. Only with pointer
8. Default value of union members is:
   A. 0
   B. Garbage
   C. NULL
   D. Compiler-dependent
9. Union is stored in:
   A. Stack or Heap depending on declaration
   B. CPU registers
   C. ROM
   D. Code section
10. Only one union member should be used at a time because:
    A. Others get deleted
    B. All members share same memory

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C. Compiler restricts

D. None

11. A union inside structure is:

A. Not allowed

B. Allowed

C. Forbidden

D. Optional

12. Structure inside union is:

A. Allowed

B. Not allowed

C. Causes segmentation fault

D. Only if static

13. Union initialization allows:

A. Initializing only first member

B. All members

C. Random members

D. Not allowed

14. Unions are useful for:

A. Type conversion

B. Memory-efficient data formats

C. Device drivers

D. All of these

15. Which operator accesses union pointer?

A. .

B. ->

C. *

D. &

16. Anonymous union means:

A. Union without name

B. Union without members

C. Union inside struct

D. Pointer to union

17. Unions do not support:

A. Multiple active members

B. Pointers

C. Functions

D. Variables

18. Value of inactive union member is:

A. Valid

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B. Undefined

C. Zero

D. Same as previous

19. Union members occupy:

A. Separate memory

B. Same memory

C. Heap always

D. Static only

20. Union is best suited for:

A. Storing different data types alternately

B. Storing multiple data at once

C. Arrays

D. File handling

DYNAMIC MEMORY ALLOCATION (DMA)

1. DMA is defined in header:
A. stdio.h
B. stdlib.h
C. string.h
D. memory.h

2. malloc() returns:
A. void pointer
B. int pointer
C. NULL pointer
D. Same type as allocated

3. calloc() initializes memory with:
A. -1
B. 0
C. Random values
D. NULL

4. realloc() is used to:
A. Free memory
B. Change size of allocated block
C. Copy data
D. None

5. free() is used to:
A. Reduce pointer value
B. Release allocated memory

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C. Increase array size

D. Initialize memory

6. malloc(n) allocates:

   A. n bytes

   B. n integers

   C. n floats

   D. n words

7. If malloc fails, it returns:

   A. 0

   B. -1

   C. NULL

   D. Undefined

8. calloc() requires:

   A. Number of elements + size

   B. Only number of elements

   C. Only size

   D. Return type

9. realloc(ptr, 0) behaves like:

   A. malloc

   B. free

   C. calloc

   D. memset

10. Double free error occurs when:

    A. malloc called twice

    B. free called twice

    C. free not called

    D. calloc used

11. Memory leak happens when:

    A. free is not called

    B. malloc fails

    C. calloc initializes

    D. realloc changes size

12. Dangling pointer is:

    A. pointer not initialized

    B. pointer to freed memory

    C. pointer to array

    D. pointer to int

13. Use of sizeof inside malloc is:

    A. Recommended

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    B. Not required

    C. Wrong

    D. Optional

14. After free(ptr), ptr becomes:

    A. NULL automatically

    B. Wild pointer

    C. Static

    D. Zero

15. realloc() returns:

    A. Same address always

    B. New or same address

    C. NULL only

    D. Pointer to int

16. Which is correct?

    A. p = malloc(10 * sizeof(int));

    B. p = malloc(int * 10);

    C. malloc(p, 10);

    D. address = malloc(int);

17. calloc vs malloc:

    A. calloc initializes memory, malloc does not

    B. malloc is slower

    C. calloc uses linked list

    D. malloc returns double pointer

18. free(NULL) results in:

    A. Crash

    B. Error

    C. Nothing happens

    D. Memory leak

19. Pointer after realloc must be assigned to:

    A. Same pointer variable

    B. Different pointer

    C. Both allowed

    D. Not required

20. Which function allocates contiguous memory?

    A. malloc

    B. calloc

    C. realloc

    D. free

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