

TOP 50

C

Programming

INTERVIEW QUESTION



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Q 1. Why is C called a mid-level programming language?

Ans :

Due to its ability to support both low-level and high-level features, C is considered a middle-level language.

It is both an assembly-level language, i.e. a low-level language, and a higher-level language.

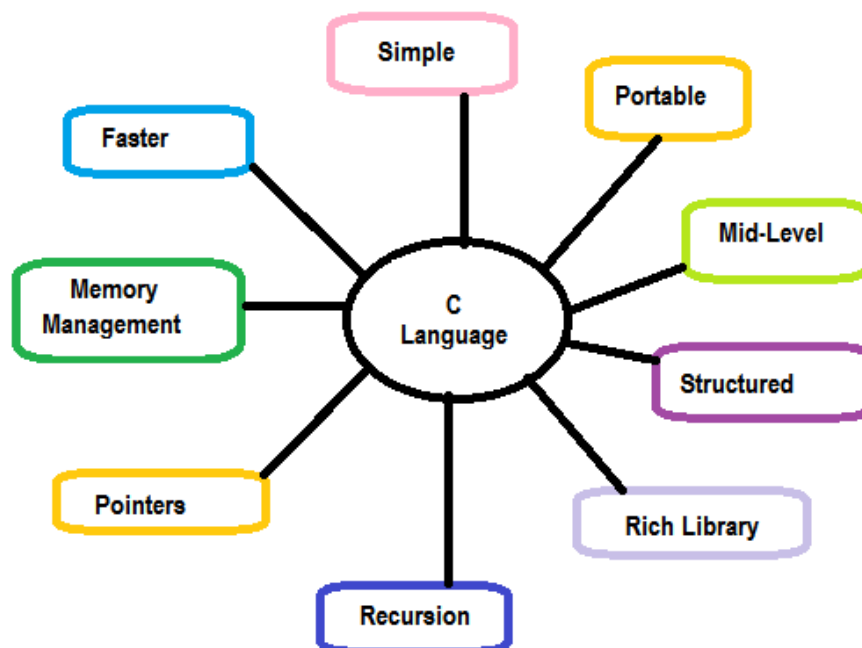
Programs that are written in C are converted into assembly code, and they support pointer arithmetic (low-level) while being machine-independent (high-level).

Therefore, C is often referred to as a middle-level language.

C can be used to write operating systems and menu-driven consumer billing systems.

Q 2. What are the features of the C programming language?

Ans :



Q 3. What are basic data types supported in the C Programming Language?

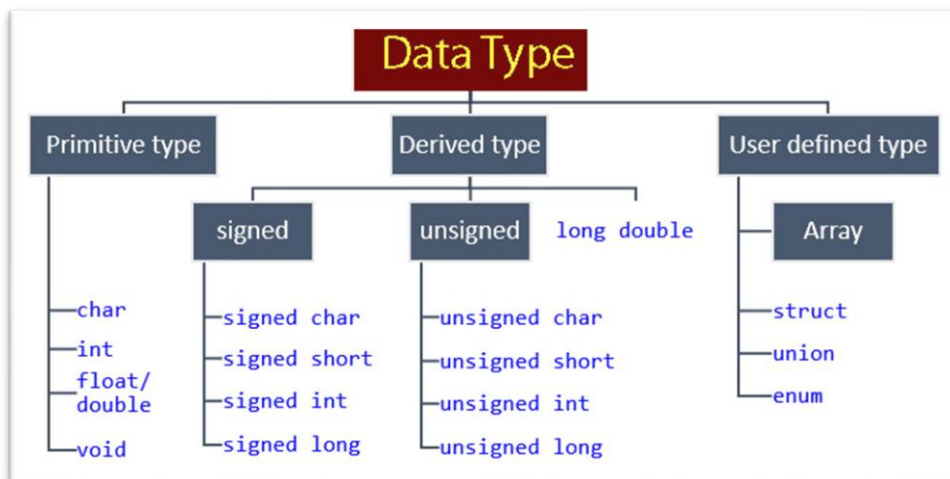
Ans :

Each variable in C has an associated data type.

Each data type requires different amounts of memory and has some specific operations which can be performed over it.

It specifies the type of data that the variable can store like integer, character, floating, double, etc.

In C data types are broadly classified into 3 categories:



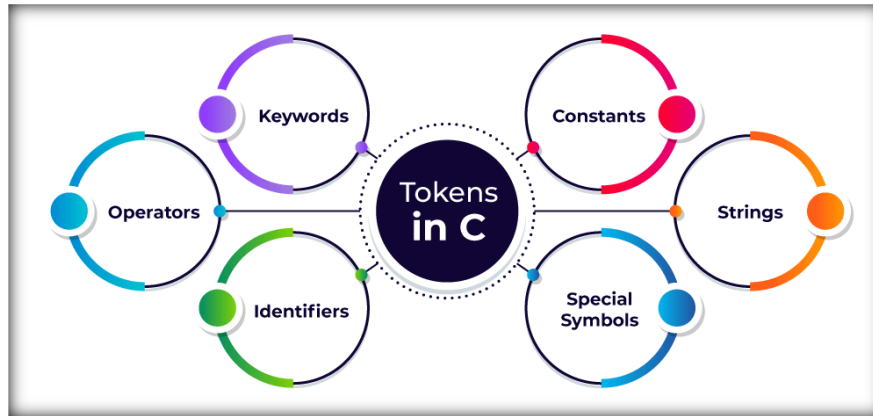
Primitive data types: Primitive data types can be further classified into integer, and floating data types.

User Defined data types: These data types are defined by the user to make the program more readable.

Derived data types: Data types that are derived from primitive or built-in data types.

Q 4. What are tokens in C?

Ans : Tokens are identifiers or the smallest single unit in a program that is meaningful to the compiler. In C we have the following tokens:



- **Keywords:** Predefined or reserved words in the C programming language. Every keyword is meant to perform a specific task in a program. C Programming language supports 32 keywords.
- **Identifiers:** Identifiers are user-defined names that consist of an arbitrarily long sequence of digits or letters with either a letter or the underscore (`_`) as a first Character. Identifier names can't be equal to any reserved keywords in the C programming language. There are a set of rules which a programmer must follow in order to name an identifier in C.
- **Constants:** Constants are normal variables that cannot be modified in the program once they are defined. Constants refer to a fixed value. They are also referred to as literals.



- **Strings:** Strings in C are an array of characters that end with a null character ('\0'). Null character indicates the end of the string;
- **Special Symbols:** Some special symbols in C have some special meaning and thus, they cannot be used for any other purpose in the program. # = {} () , * ; [] are the special symbols in C programming language.
- **Operators:** Symbols that trigger an action when they are applied to any variable or any other object. Unary, Binary, and ternary operators are used in the C Programming language.

Q 5. What do you mean by the scope of the variable?

Ans :

Scope in a programming language is the block or a region where a defined variable will have its existence and beyond that region, the variable is automatically destroyed. Every variable has its defined scope. In simple terms, the scope of a variable is equal to its life in the program. The variable can be declared in three places These are:

- 1) **Local Variables:** Inside a given function or a block
- 2) **Global Variables:** Out of all functions globally inside the program.
- 3) **Formal Parameters:** In-function parameters only.

Q 6. What are preprocessor directives in C?

Ans : In C preprocessor directives are considered the built-in predefined functions or macros that act as a directive to the compiler and are executed before the program execution.

There are multiple steps involved in writing and executing a program in C.

Main types of Preprocessor Directives are Macros, File Inclusion, Conditional Compilation, and Other directives like #undef, #pragma, etc.

Q 7. What is the use of static variables in C?

Ans : Static variables in the C programming language are used to preserve the data values between function calls even after they are out of their scope.

Static variables preserve their values in their scope and they can be used again in the program without initializing again.

Static variables have an initial value assigned to 0 without initialization.

Example:

```
// C program to print initial
// value of static variable
#include <stdio.h>
int main()
{
    static int var;
    int x;

    printf("Initial value of static variable %d\n", var);
    printf("Initial value of variable without static
%d", x);
    return 0;
}
```

Output:

```
Initial value of static variable 0
Initial value of variable without static 0
```

Q 8. What is the difference between malloc() and calloc() in the C programming language?

Ans :

calloc() and malloc() library functions are used to allocate dynamic memory.

Dynamic memory is the memory that is allocated during the runtime of the program from the heap segment. "stdlib.h" is the header file that is used to facilitate dynamic memory allocation in the C Programming language.

Parameter	Malloc()	Calloc()
Definition	It is a function that creates one block of memory of a fixed size.	It is a function that assigns more than one block of memory to a single variable.
Number of arguments	It only takes one argument.	It takes two arguments.
Speed	malloc() function is faster than calloc().	calloc() is slower than malloc().
Efficiency	It has high time efficiency.	It has low time efficiency.
Usage	It is used to indicate	It is used to indicate contiguous

Parameter	Malloc()	Calloc()
	memory allocation.	memory allocation.

Q 9. What do you mean by dangling pointers and how are dangling pointers different from memory leaks in C programming?

Ans :

- Pointers pointing to deallocated memory blocks in C Programming are known as dangling pointers i.e, whenever a pointer is pointing to a memory location and In case the variable is deleted and the pointer still points to that same memory location then it is known as a dangling pointer variable.
- In C programming memory leak occurs when we allocate memory with the help of the malloc() or calloc() library function, but we forget to free the allocated memory with the help of the free() library function. Memory leak causes the program to use an undefined amount of memory from the RAM which makes it unavailable for other running programs this causes our program to crash.

Q 10. Write a program to convert a number to a string with the help of sprintf() function in the C library.

Ans :



Example:

```
// C program to convert number to
// string using sprintf()
#include <stdio.h>
#include <string.h>

// Driver code
int main()
{
    char res[20];
    float a = 32.23;
    sprintf(res, "%f", a);
    printf("\nThe string for the num is %s", res);
    return 0;
}
```

Output :

```
The string for the num is 32.230000
```

Q 11. What is recursion in C?

Ans : Recursion is the process of making the function call itself directly or indirectly.

A recursive function solves a particular problem by calling a copy of itself and solving smaller subproblems that sum up the original problems.

Recursion helps to reduce the length of code and make it more understandable.

The recursive function uses a LIFO (Last In First Out) structure like a stack.

Every recursive call in the program requires extra space in the stack memory.

Q 12. What is the difference between the local and global variables in C?

Ans :

Local variables are declared inside a block or function but global variables are declared outside the block or function to be accessed globally.

Local Variables	Global Variables
Declared inside a block or a function.	Variables that are declared outside the block or a function.
By default, variables store a garbage value.	By default value of the global value is zero.
The life of the local variables is destroyed after the block or a function.	The life of the global variable exists until the program is executed.
Variables are stored inside the stack unless they are specified by the programmer.	The storage location of the global variable is decided by the compiler.
To access the local variables in other functions parameter passing is required.	No parameter passing is required. They are globally visible throughout the program.

Q 13. What are pointers and their uses?

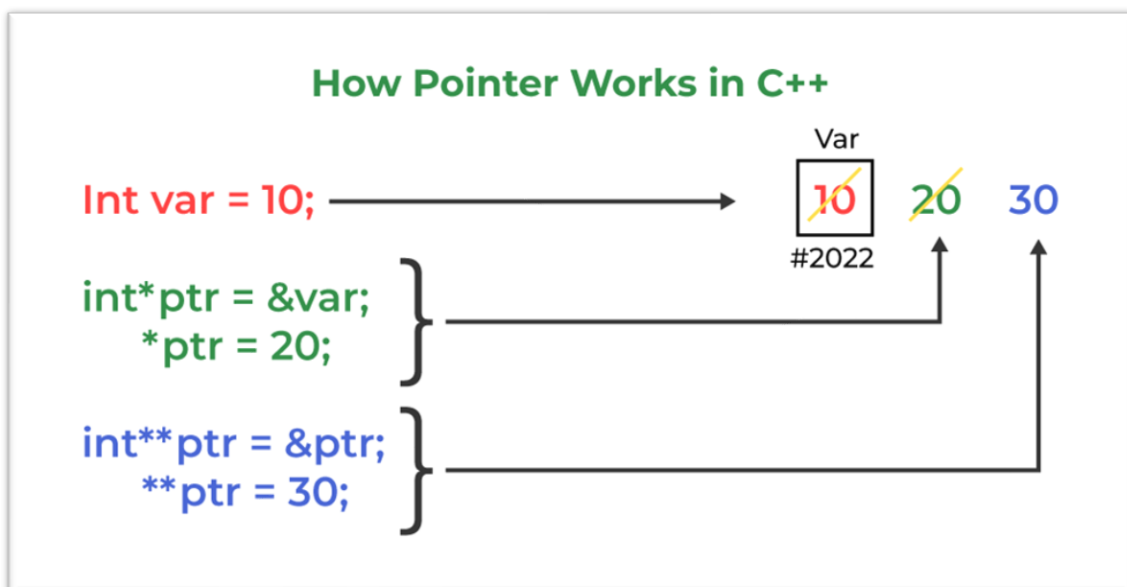
Ans : Pointers are used to store the address of the variable or a memory location.

Pointer can also be used to refer to another pointer function.

The main purpose of the pointer is to save memory space and increase execution time.

Uses of pointers are:

- To pass arguments by reference
- For accessing array elements
- To return multiple values
- Dynamic memory allocation
- To implement data structures
- To do system-level programming where memory addresses are useful



Q 14. What is typedef in C?

Ans : In C programming, typedef is a keyword that defines an alias for an existing type.

Whether it is an integer variable, function parameter, or structure declaration, typedef will shorten the name.

Syntax:

```
typedef <existing-type> <alias-name>
```

Here,

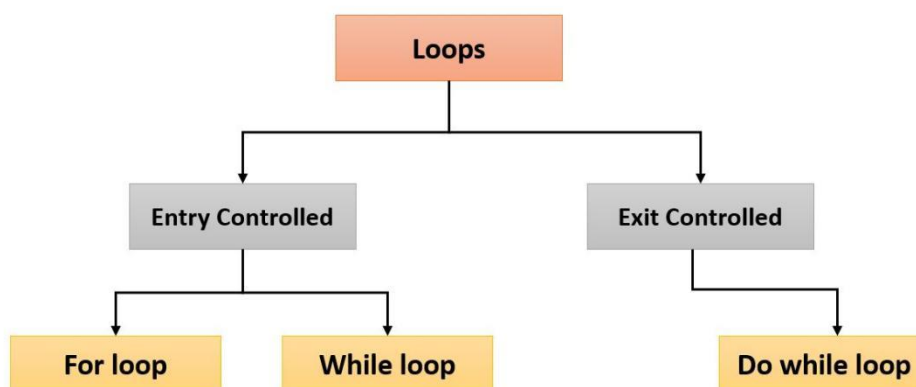
- **existing type** is already given a name.
- **alias name** is the new name for the existing variable.

Q 15. What are loops and how can we create an infinite loop in C?

Ans : Loops are used to execute a block of statements repeatedly.

The statement which is to be repeated will be executed n times inside the loop until the given condition is reached.

There are two types of loops Entry controlled and Exit-controlled loops in the C programming language.



An Infinite loop is a piece of code that lacks a functional exit. So, it repeats indefinitely.

There can be only two things when there is an infinite loop in the program.

One it was designed to loop endlessly until the condition is met within the loop.

Another can be wrong or unsatisfied break conditions in the program.

Example :

```
// C program for infinite loop
// using for, while, do-while
#include <stdio.h>

// Driver code
int main()
{
    for (;;) {
        printf("Infinite-loop\n");
    }

    while (1) {
        printf("Infinite-loop\n");
    }

    do {
        printf("Infinite-loop\n");
    } while (1);

    return 0;
}
```



Q 16. What is the difference between type casting and type conversion?

Ans :

Type Casting	Type Conversion
The data type is converted to another data type by a programmer with the help of a casting operator.	The data type is converted to another data by a compiler.
It can be applied to both compatible data types as well as incompatible data types.	Type conversion can only be applied to only compatible data types.
In Type casting in order to cast the data type into another data type, a caste operator is needed	In type conversion, there is no need for a casting operator.
Type casting is more efficient and reliable.	Type conversion is less efficient and less reliable than type casting.
Type casting takes place during the program design by the programmer.	Type conversion is done at compile time.
Syntax: destination_data_type = (target_data_type)	Syntax: int a = 20; float b; b = a; // a = 20.0000

Type Casting	Type Conversion
<code>variable_to_be_converted;</code>	

Q 17. What are header files and their uses?

Ans : C language has numerous libraries which contain predefined functions to make programming easier.

Header files contain predefined standard library functions.

All header files must have a '.h' extension.

Header files contain function definitions, data type definitions, and macros which can be imported with the help of the preprocessor directive '#include'. Preprocessor directives instruct the compiler that these files are needed to be processed before the compilation.

There are two types of header files i.e, User-defined header files and Pre-existing header files.

For example, if our code needs to take input from the user and print desired output to the screen then 'stdio.h' header file must be included in the program as #include<stdio.h>.

This header file contains functions like scanf() and printf() which are used to take input from the user and print the content.

Q 18. What are the functions and their types?

Ans : The function is a block of code that is used to perform a task multiple times rather than writing it out multiple times in our program. Functions avoid repetition of code and increase the readability of the program.

Modifying a program becomes easier with the help of function and hence reduces the chances of error.

There are two types of functions:

1) **User-defined Functions:** Functions that are defined by the user to reduce the complexity of big programs. They are built only to satisfy the condition in which the user is facing issues and are commonly known as “tailor-made functions” .

2) **Built-in Functions:** Library functions are provided by the compiler package and consist of special functions with special and different meanings. These functions give programmers an edge as we can directly use them without defining them.

Q 19. What is the difference between macro and functions?

Ans :

A macro is a name that is given to a block of C statements as a pre-processor directive.

Macro is defined with the pre-processor directive. Macros are pre-processed which means that all the macros would be preprocessed before the compilation of our program.

However, functions are not preprocessed but compiled.

Macro	Function
Macros are preprocessed.	Functions are compiled.
Code length is increased using macro.	Code length remains unaffected using function.
Execution speed using a macro is faster.	Execution speed using function is

Macro	Function
	slower.
The macro name is replaced by the macro value before compilation.	Transfer of control takes place during the function call.
Macro doesn't check any Compile-Time Errors.	Function check Compile-time errors.

Q 20. How to convert a string to numbers in C?

Ans : In C we have 2 main methods to convert strings to numbers i.e, Using string stream, Using stoi() library Function, and using atoi() library function.

- **sscanf():** It reads input from a string rather than standard input.
- **atoi():** This function takes a string literal or a character array as an argument and an integer value is returned.

Q 21. What are reserved keywords?

Ans : Every keyword is meant to perform a specific task in a program.

Their meaning is already defined and cannot be used for purposes other than what they are originally intended for.

C Programming language supports 32 keywords.

Some examples of reserved keywords are auto, else, if, long, int, switch, typedef, etc.



Q 22. What is a structure?

Ans : The structure is a keyword that is used to create user-defined data types.

The structure allows storing multiple types of data in a single unit.

The structure members can only be accessed through the structure variable.

```
struct student
{
    char name[20];
    int roll_no;
    char address[20];
    char branch[20];
};
```

Below is the C program to implement structure:

Example:

```
#include <stdio.h>
#include <string.h>

// Structure student declared
struct student {
    char name[20];
    int roll_no;
    char address[50];
    char branch[50];
};

int main()
```

```
{
    struct student obj;
strcpy(obj.name, "Kamlesh_Joshi");
    obj.roll_no = 27;
    strcpy(obj.address, "Haldwani");
    strcpy(obj.branch, "Computer Science And
Engineering");
printf("Name: %s\n", obj.name);
    printf("Roll_No: %d \n", obj.roll_no);
    printf("Address: %s\n", obj.address);
    printf("Branch: %s", obj.branch);

    return 0;
}
```

Output :

Name: Kamlesh_Joshi

Roll_No: 27

Address: Haldwani

Branch: Computer Science And Engineering





Q 23. What is union?

Ans : A union is a user-defined data type that allows users to store multiple types of data in a single unit. However, a union does not occupy the sum of the memory of all members.

It holds the memory of the largest member only. Since the union allocates one common space for all the members we can access only a single variable at a time.

The union can be useful in many situations where we want to use the same memory for two or more members.

Syntax:

```
union name_of_union
{
    data_type name;
    data_type name;
};
```

24. What is an r-value and l -value?

Ans:

- An “l-value” refers to an object with an identifiable location in memory (i.e. having an address).
- An “l-value” will appear either on the right or left side of the assignment operator(=).
- An “r-value” is a data value stored in memory at a given address. An “r-value” refers to an object without an identifiable location in memory (i.e. without an address).

Q 26. What is the sleep() function?

Ans :

- sleep() function in C allows the users to wait for a current thread for a given amount of time.
- sleep() function will sleep the present executable for the given amount of time by the thread but other operations of the CPU will function properly. sleep() function returns 0 if the requested time has elapsed.

Q 27. What are enumerations?

Ans : In C, enumerations (or enums) are user-defined data types. Enumerations allow integral constants to be named, which makes a program easier to read and maintain.

For example, the days of the week can be defined as an enumeration and can be used anywhere in the program.

```
enum enumeration_name{constant1, constant2, ... };
```

Example:

```
// An example program to demonstrate working
// of enum in C
#include <stdio.h>
enum week { Mon, Tue, Wed, Thur, Fri, Sat, Sun };
int main()
{
    enum week day;
    day = Wed;
    printf("%d", day);
    return 0;
}
```

Output

2

- In the above example, we declared “day” as the variable, and the value of “Wed” is allocated to day, which is 2. So as a result, 2 is printed.

Q 28: What is a volatile keyword?

Ans : Volatile keyword is used to prevent the compiler from optimization because their values can't be changed by code that is outside the scope of current code at any time.

The System always reads the current value of a volatile object from the memory location rather than keeping its value in a temporary register at the point it is requested, even if previous instruction is asked for the value from the same object.

Q 29. Write a C program to print the Fibonacci series using recursion and without using recursion.

Ans :

```
#include <stdio.h>

void Fibonacci(int num, int first, int second, int
third)
{
    if (num > 0) {
        third = first + second;
        first = second;
        second = third;
        printf("%d ", third);
    }
}
```

```

Fibonacci(num - 1, first, second, third)
    }
}
int main()
{
    int num;

    printf("Please Enter number of Elements: ");
    scanf("%d", &num);

    printf(
        "Fibonacci Series with the help of
        Recursion:\n");
    printf("%d %d ", 0, 1);
    Fibonacci(num - 2, 0, 1, 0);
    printf("\nFibonacci Series without Using
    Recursion:\n");
    int first = 0, second = 1, third = 0;
    printf("%d %d ", 0, 1);
    for (int i = 2; i < num; i++) {
        third = first + second;

        printf("%d ", third);

        first = second;
        second = third;
    }
    return 0;
}

```


Output:

```
Please Enter number of Elements: 5
Fibonacci Series with the help of Recursion:
0 1 1 2 3
Fibonacci Series without Using Recursion:
0 1 1 2 3
```

Q 30. Write a C program to check whether a number is prime or not.

Example:

```
#include <math.h>
#include <stdio.h>
int main()
{
    int num;
    int check = 1;
    printf("Enter a number: \n");
    scanf("%d", &num);
    for (int i = 2; i <= sqrt(num); i++) {

        if (num % i == 0) {
            check = 0;
            break;
        }
    }
}
```

```

if (num <= 1) {
    check = 0;
}
if (check == 1) {
    printf("%d is a prime number", num);
}
else {
    printf("%d is not a prime number", num);
}
return 0;
}

```

Q 31. How is source code different from object code?

Ans :

Source Code	Object Code
Source code is generated by the programmer.	object code is generated by a compiler or another translator.
High-level code which is human-understandable.	Low-level code is not human-understandable.
Source code can be easily modified and contains less number of statements than object code.	Object code cannot be modified and contains more statements than source code.
Source code can be changed over time	Object code can be modified and is

Source Code	Object Code
and is not system specific.	system specific.
Source code is less close to the machine and is input to the compiler or any other translator.	Source code is more close to the machine and is the output of the compiler or any other translator.
Language translators like compilers, assemblers, and interpreters are used to translate source code to object code.	Object code is machine code so it does not require any translation.

Q 32. What is static memory allocation and dynamic memory allocation?

Ans :

- **Static memory allocation:** Memory allocation which is done at compile time is known as static memory allocation. Static memory allocation saves running time. It is faster than dynamic memory allocation as memory allocation is done from the stack. This memory allocation method is less efficient as compared to dynamic memory allocation. It is mostly preferred in the array.
- **Dynamic memory allocation:** Memory allocation done at execution or run time is known as dynamic memory allocation. Dynamic memory allocation is slower than static memory allocation as memory allocation is done from the heap. This memory allocation method is more efficient as compared to static memory allocation. It is mostly preferred in the linked list.



Q 33. What is pass-by-reference in functions?

Ans :

Pass by reference allows a function to modify a variable without making a copy of the variable.

The Memory location of the passed variable and parameter is the same, so any changes done to the parameter will be reflected by the variables as well.

Q 34. What is a memory leak and how to avoid it?

Ans : Whenever a variable is defined some amount of memory is created in the heap. If the programmer forgets to delete the memory.

This undeleted memory in the heap is called a memory leak.

The Performance of the program is reduced since the amount of available memory was reduced.

To avoid memory leaks, memory allocated on the heap should always be cleared when it is no longer needed.

Q 35. What are command line arguments?

Ans :

Arguments that are passed to the main() function of the program in the command-line shell of the operating system are known as command-line arguments.

Syntax:

```
int main(int argc, char *argv[]){/*code which  
is to be executed*/}
```

Q 36. What is an auto keyword?

Ans :

Every local variable of a function is known as an automatic variable in the C language.

Auto is the default storage class for all the variables which are declared inside a function or a block.

Auto variables can only be accessed within the block/function they have been declared. We can use them outside their scope with the help of pointers.

By default auto keywords consist of a garbage value.

Q 37 . Write a program to print “Hello-World” without using a semicolon.

Ans :

```
// C program to print hello-world
// without using semicolon
#include <stdio.h>
// Driver code
int main()
{
    if (printf("Hello - World")) {
    }
    return 0;
}
```



Q 38. Write a C program to swap two numbers without using a third variable.

Ans :

```
#include <stdio.h>

int main()
{
    // Variable declaration
    int var1 = 50;
    int var2 = 60;

    printf(
        "Values before swap are var1 = %d and
var2 = %d\n",
        var1, var2);

    var1 = var1 + var2;
    var2 = var1 - var2;
    var1 = var1 - var2;

    printf("Values after swap are var1 = %d and var2
= %d",
        var1, var2);

    return 0;
}
```

Output

Values before swap are var1 = 50 and var2 = 60

Values after swap are var1 = 60 and var2 = 50

Q 39. Write a program to check whether a string is a palindrome or not.

Ans :

```
#include <stdio.h>
#include <string.h>
void Palindrome(char s[])
{
    int start = 0;
    int end = strlen(s) - 1;
    while (end > start) {
        if (s[start++] != s[end--]) {
            printf("%s is not a Palindrome \n", s);
            return;
        }
    }
    printf("%s is a Palindrome \n", s);
}
int main()
{
    Palindrome("abba");
    return 0;
}
```

Output

```
abba is a Palindrome
```

Q 40. Explain modifiers.

Ans :

Modifiers are keywords that are used to change the meaning of basic data types in C language.

They specify the amount of memory that is to be allocated to the variable.

There are five data type modifiers in the C programming language:

- long
- short
- signed
- unsigned
- long long



Q 41. Write a program to print the factorial of a given number with the help of recursion.

Ans :

```
#include <stdio.h>

unsigned int factorial(unsigned int n)
{
    if (n == 0)
        return 1;
    return n * factorial(n - 1);
}

int main()
{
    int num = 5;
    printf("Factorial of %d is %d", num,
factorial(num));

    return 0;
}
```

Output :

```
Factorial of 5 is 120
```

Q 42. Write a program to check an Armstrong number.

Ans :

```
#include <stdio.h>

int main()
{
    int n;
    printf("Enter Number \n");
    scanf("%d", &n);
    int var = n;
    int sum = 0;
    while (n > 0) {
        int rem = n % 10;
        sum = (sum) + (rem * rem * rem);
        n = n / 10;
    }

    if (var == sum) {
        printf("%d is an Armstrong number \n", var);
    }
    else {
        printf("%d is not an Armstrong number", var);
    }
    return 0;
}
```

Output :

```
Enter Number
0 is an Armstrong number|
```

Q 43. Write a program to reverse a given number.

Ans :

```
#include <stdio.h>

// Driver code
int main()
{
    int n, rev = 0;

    printf("Enter Number to be reversed : ");
    scanf("%d", &n);

    int r = 0;
    while (n != 0)
    {
        r = n % 10;
        rev = rev * 10 + r;
        n /= 10;
    }

    printf("Number After reversing digits is: %d", rev);
    return 0;
}
```

Output:

```
Enter Number to be reversed :  
Number After reversing digits is: 321
```

Q 44. What is the use of an extern storage specifier?

Ans :

The extern keyword is used to extend the visibility of the C variables and functions in the C language.

Extern is the short name for external. It is used when a particular file needs to access a variable from any other file.

Extern keyword increases the redundancy and variables with extern keyword are only declared not defined.

By default functions are visible throughout the program, so there is no need to declare or define extern functions.

Q 45. What is the use of printf() and scanf() functions in C Programming language? Also, explain format specifiers.

Ans :

printf() function is used to print the value which is passed as the parameter to it on the console screen.

Syntax:

```
print( "%X" ,variable_of_X_type);
```

scanf() method, reads the values from the console as per the data type specified.

Syntax:

```
scanf( "%X" ,&variable_of_X_type);
```

In C format specifiers are used to tell the compiler what type of data will be present in the variable during input using scanf() or output using print().

- %c: Character format specifier used to display and scan character.
- %d, %i: Signed Integer format specifier used to print or scan an integer value.
- %f, %e, or %E: Floating-point format specifiers are used for printing or scanning float values.
- %s: This format specifier is used for String printing.
- %p: This format specifier is used for Address Printing.

Q 46. What is near, far, and huge pointers in C?

Ans :

- **Near Pointers:** Near pointers are used to store 16-bit addresses only. Using the near pointer, we can not store the address with a size greater than 16 bits.
- **Far Pointers:** A far pointer is a pointer of 32 bits size. However, information outside the computer's memory from the current segment can also be accessed.
- **Huge Pointers:** Huge pointer is typically considered a pointer of 32 bits size. But bits located outside or stored outside the segments can also be accessed.



Q 47. Mention file operations in C.

Ans :

In C programming Basic File Handling Techniques provide the basic functionalities that programmers can perform against the system.

C file operations refer to the different possible operations that we can perform on a file in C such as:

1. Creating a new file – `fopen()` with attributes as “a” or “a+” or “w” or “w+”
2. Opening an existing file – `fopen()`
3. Reading from file – `fscanf()` or `fgets()`
4. Writing to a file – `fprintf()` or `fputs()`
5. Moving to a specific location in a file – `fseek()`, `rewind()`
6. Closing a file – `fclose()`

Q 48. Write a Program to check whether a linked list is circular or not.

Ans :

```
#include <stdio.h>
#include <stdlib.h>
struct Node {
    int data;
    struct Node* next;
};
int isCircular(struct Node* head)
{
    // If given linked list is null then it is circular
    if (head == NULL) {
        return 1;
    }
    struct Node* ptr;
    ptr = head->next;
```

```

while (ptr != NULL && ptr != head) {
    ptr = ptr->next;
}
return (ptr == head);
}
struct Node* newnode(int data)
{
    struct Node* first;
    first = (struct Node*)malloc(sizeof(struct Node));
    first->data = data;
    first->next = NULL;
    return first;
}
int main()
{
    struct Node* head = newnode(10);
    head->next = newnode(12);
    head->next->next = newnode(14);
    head->next->next->next = newnode(16);
    head->next->next->next->next = head;
    if (isCircular(head)) {
        printf("Linked List is Circular\n");
    }
    else {
        printf("Linked List is Not Circular\n");
    }
    return 0;
}

```

Q 49 . Write a program to Merge two sorted linked lists.

Ans :

```
#include <stdio.h>
#include <stdlib.h>
struct Node {
    int data;
    struct Node* next;
};

struct Node* mergeSortedLists(struct Node* a, struct Node* b) {
    struct Node dummy = {0, NULL}, *tail = &dummy;
    while (a && b)
        if (a->data <= b->data) tail = tail->next = a, a = a->next;
        else tail = tail->next = b, b = b->next;
    tail->next = a ? a : b;
    return dummy.next;
}

void printList(struct Node* head) {
    while (head) printf("%d -> ", head->data), head = head->next;
    printf("NULL\n");
}

int main() {
    struct Node *list1, *list2;
    struct Node* mergedList = mergeSortedLists(list1, list2);
    printList(mergedList);
    return 0;
}
```


50. What is the difference between `getc()`, `getchar()`, `getch()` and `getche()`.

Ans :

- **`getc()`:** The function reads a single character from an input stream and returns an integer value (typically the ASCII value of the character) if it succeeds. On failure, it returns the EOF.
- **`getchar()`:** Unlike `getc()`, `gechar()` can read from standard input; it is equivalent to `getc(stdin)`.
- **`getch()`:** It is a nonstandard function and is present in 'conio.h' header file which is mostly used by MS-DOS compilers like Turbo C.
- **`getche()`:** It reads a single character from the keyboard and displays it immediately on the output screen without waiting for enter key.

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