1. Who developed C language?

C language was developed by **Dennis Ritchie** in **1970 at Bell Laboratories**.

2. Which type of language is C?

**C is a high – level language** and general purpose structured programming language.

3. What is a compiler?

Compile is a software program that transfer program developed in high level language into executable object code

4. What is IDE?

The process of editing, compiling, running and debugging is managed by a single integrated application known as **Integrated Development Environment** (IDE)

5. What is a program?

A computer program is a collection of the instructions necessary to solve a specific problem.

6. What is an algorithm?

The approach or method that is used to solve the problem is known as algorithm.

7. What is structure of C program?

A C program contains Documentation section, Link section, Definition section, Global declaration section, Main function and other user defined functions

8. What is a C token and types of C tokens?

The smallest individual units are known as C tokens. C has six types of tokens Keywords, Constants, Identifiers, Strings, Operators and Special symbols.

9. What is a Keyword?

Keywords are building blocks for program statements and have fixed meanings and these meanings cannot be changed.

10. How many Keywords (reserve words) are in C?

There are 32 Keywords in C language.

11. What is an Identifier?

Identifiers are user-defined names given to variables, functions and arrays.

12. What is a Constant and types of constants in C?

Constants are fixed values that do not change during the program execution. Types of constants are Numeric Constants (Integer and Real) and Character Constants (Single Character, String Constants).

13. What are the Back Slash character constants or Escape sequence characters available in C?

Back Slash character constant are \t, \n, \0

14. What is a variable?

Variables are user-defined names given to memory locations and are used to store values. A variable may have different values at different times during program execution

15. What are the Data Types present in C?

Primary or Fundamental Data types (int, float, char, double, long double), Derived Data types(arrays, structures, unions, enum)

16. How to declare a variable?

The syntax for declaring variable is data type variable\_name for example

int x=10;

17. What is meant by initialization and how we initialize a variable?

While declaring a variable assigning value is known as initialization. Variable can be initialized by using assignment operator (=).

18. What are integer variable, floating-point variable and character variable?

A variable which stores integer constants are called integer variable. A variable which stores real values are called floating-point variable. A variable which stores character constants are called character variables.

19. How many types of operator or there in C?

C consist Arithmetic Operators (+, -, \*, /,%),

Relational Operators (<;, <;=, >; >;=, !=),

Logical Operators (&amp;&amp;, ||, !),

Assignment Operators (=, +=, -=, \*=, /=),

Increment and Decrement Operators (++, &#8211;),

Conditional Operator (?:),

Bitwise Operators (<<, >>, ~, &, |, ^)

Special Operators (. , , \*, sizeof)

20. What is RAM?

RAM – Random Access Memory is a temporary storage medium in a computer. RAM is a volatile memory i.e all data stored in RAM will be erased when the computer is switched off.

21. What do mean by network?

Computer networking refers to connecting computers to share data, application software and hardware devices. Networks allow sharing of information among various computers and permit users to share files

22. List a few unconditional control statements in C.

* break statement
* continue statement
* goto statement
* exit() function

23. What is an array?

An array is a collection of values of the same data type. Values in array are accessed using array name with subscripts in brackets []. Syntax of array declaration is

int arr[10];

24. What is Multidimensional Arrays

An array with more than one index value is called a multidimensional array. To declare a multidimensional array you can do follow syntax

int arr2d[3][3];

25. Define string ?

An array of characters is known as a string. For example

char str[80];

Above statement declares a string array with 80 characters.

26. Mention four important string handling functions in C languages.

There are four important string handling functions in C languages.

* strlen();
* strcpy();
* strcat();
* strcmp();

The header file #include<string.h> is used when these functions are called in a C program.

27. Explain about the constants which help in debugging?

A #if directive test can be offered with #else and #else if directives. This allows conditional branching of the program to run sections of the code according to the result. Constants defined with a #define directive can be undefined with the #undef directive. The #ifdef directive has a companion directive #ifndef. These commands can be useful when debugging problem code to hide and unhide sections of the program.

28. Define and explain about ! Operator?

The logical operator! NOT is a unary operator that is used before a single operand. It returns the inverse value of the given operand so if the variable “c” had a value of true then! C would return value of false. The not operator is very much useful in C programs because it can change the value of variables with successful iterations. This ensures that on each pass the value is changed.

29. What is operator precedence?

Operator precedence defines the order in which C evaluates expressions.

e.g. in the expression a=6+b\*3, the order of precedence determines whether the addition or the multiplication is completed first. Operators on the same row have equal precedence.

30. Explain about the functions strcat() and strcmp()?

This function concatenates the source string at the end of the target string. Strcmp() function compares two strings to find out whether they are the same or different. The two strings are compared character by character until there is a mismatch or end of one of the strings is reached, whichever occurs first. If in case two strings are identical, a value of zero is returned. If there is no matches between two strings then a difference of the two non matching values are returned according to ASCII values.

31. Define function

A function is a module or block of program code which deals with a particular task. Each function has a name or identifier by which is used to refer to it in a program. A function can accept a number of parameters or values which pass information from outside, and consists of a number of statements and declarations, enclosed by curly braces { }, which make up the doing part of the object

32. Differentiate built-in functions and user – defined functions.

Built – in functions are used to perform standard operations such as finding the square root of a number, absolute value and so on. These are available along with the C compiler and are included in a program using the header files math.h, string.h and so on.

User defined functions are written by the user or programmer to compute a value or perform a task. It contains a statement block which is executed during the runtime whenever it is called by the main program.

33. Distinguish between actual and formal arguments.

Actual arguments are variables whose values are supplied to the function in any function call. Formal arguments are variables used to receive the values of actual arguments from the calling program.

34. Explain the concept and use of type void.

A function which does not return a value directly to the calling program is referred as a void function. The void functions are commonly used to perform a task and they can return many values through global variable declaration.

35. What is recursion?

A function calling itself again and again to compute a value is referred to as recursive function or recursion. Recursion is useful for branching processes and is effective where terms are generated successively to compute a value.

36. Advantages of functions :

* Avoid repetition of codes.
* Increases program readability.
* Divide a complex problem into simpler ones.
* Reduces chances of error.
* Modifying a program becomes easier by using function.

37. Advantages of Arrays

* Arrays represent multiple data items of the same type using a single name.
* In arrays, the elements can be accessed randomly by using the index number.
* Arrays allocate memory in contiguous memory locations for all its elements.

38. Limitations of Arrays

* the dimension of an array is determined the moment the array is created, and cannot be changed later on;
* Memory may not be available in contiguous fashion and may be scattered.

39. Compare while and do-while

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **While Loop** | **do-while loop** |
| 1 | while loop is called **entry control loop** | do-while loop is called **exit control loop** |
| 2 | while loop will check the condition first and then it may or may not get executed depending on the condition. | do-while check the condition at the end of the loop block, and makes obligatory to execute the loop at least one time. |
| 3 | https://www.differencebtw.com/wp-content/uploads/2017/04/While.jpg | https://www.differencebtw.com/wp-content/uploads/2017/11/while-loop-vs-do-while-loop-990x495.jpg |
| 4 | int b=0;  while(b<10)  {  System.out.println(b);  }  //here nothing will be printed as the value of b is not less than 10 and it will not let enter the loop and will exit | int a=10;  do{  System.out.println(a);  }  while(a<10);  //here the a is not less than 10 then also it will execute once as it will execute do while exiting it checks that a is not less than 10 so it will exit the loop |

40. What is a **sentinel controlled loop** in programming

The idea of a sentinel controlled loop is that there is a special value (the "sentinel") that is used to say when the loop is done. In this example, the user will enter a zero to tell the program that the sum is complete. The general scheme of the program is given below:

**Program to Add up User-entered Integers**

The loop will add each integer the user enters to a sum. A counting loop could do this if we knew how many integers were in the list. But often users don't know this in advance, or would find it annoying to find out. (If you have a column of integers, you would like to add them one by one until you reach the last one. It would be annoying if you needed to count them first.)

void main ()

{

int value; // data entered by the user

int sum = 0; // initialize the sum

printf( "\nEnter first integer (enter 0 to quit):\n" );

scanf(“%d”,&value);

while ( value != 0 )

{

//add value to sum

Sum=sum+value;

//get the next value from the user

printf("\nEnter next integer (enter 0 to quit):\n" );

scanf(“%d”,&value);

}

printf( "Sum of the integers:%d ", sum );

}

}

41. Compare Call by Value Parameter Passing Technique with Call by Reference Parameter Passing Technique in C

* In Call by value method original value is not modified whereas, in Call by reference method, the original value is modified.
* In Call by value, a copy of the variable is passed whereas in Call by reference, a variable itself is passed.
* In Call by value, actual and formal arguments will be created in different memory locations whereas in Call by reference, actual and formal arguments will be created in the same memory location.
* Call by value is the default method in programming languages like C++, PHP, Visual Basic NET, and C# whereas Call by reference is supported only Java language.
* Call by Value, variables is passed using a straightforward method whereas Call by Reference, pointers is required to store the address of variables.