CDS Questions

1. **The C compiler translates source to assembly code in C Programming.**

2. **The assembler creates object code.**

3. **What is a C Preprocessor?**
Ans: C Preprocessor is a program that processes our source program before it is passed to the compiler.

4. **What is the use of header files as used in C programming?**
Ans: Header files are used to have declarations. It is simple to include a single header file than writing all the needed functions prototypes.

5. **What is the Structure of a C Program?**
Ans: Documentation Section, Linking Section, Definition Section, Global declaration Section, main
function, subprogram section.

6. **Every Program statement in a C program must end with a Semicolon.**

7. **What is the use of main() function?**
Ans: main() is the starting point of program execution.

8. **How many main() functions can there be in a C Program?**
Ans: Only one.

9. **What are Macros?**
Ans: A *macro* is a fragment of code which has been given a name. Whenever the name is used, it is replaced by the contents of the macro. Example: #define UPPER 25.

10. **What are C Tokens?**
Ans: Keywords, Identifiers, Constants, Strings, Special symbols and Operators.

11. **What is a constant? What are types of Constants?**
Ans: There are two types of constants: Numeric and Character Constants

12. **What is a variable?**
Ans: A variable is a data name that may be used to store data value.

13. **Main () function is a pre defined function. True or False?**
Ans: False.

14. what are the fundamental/Primary Datatypes in C?

Ans: integer (int), character (char), floating point (float) and double-precision floating point (double).

15. What are user defined datatypes?

Ans: typedef and enum

16. What are the operators in C?

Ans: Arithmetic, Relational, Logical, Assignment, Increment and Decrement, Conditional, Bitwise, Special

17. What are the special operators in C?

Ans: comma operator, sizeof operator, pointer operators (& and *) and member selection operators (and ->)

18. What is sizeof operator?

Ans: It returns the number of bytes the operand occupies.

19. What is type casting?

Ans: converting a variable of one type to another type.

20. what is the format specifier for integer?

Ans: %d

21. %x is a format specifier for hexadecimal integer.

22. %o is a format specifier for Octal integer.

23. What are control or decision making statements?

Ans: if, switch, conditional operator and goto statements.

24. Syntax of conditional operator?

Ans: condition? result1: result2. If the condition is true, result1 is returned else result2 is returned.

25. What is goto statement?

Ans: The goto statement is used for unconditional jump from one part of the program to another part of the program.

26. What is the difference between while and do-while?

Ans: In case of while loop, the condition is first checked and then the loop is executed.

In case of do-while, the loop is first executed and then the condition is checked. Here in do-while the loop is executed atleast once irrespective of the condition.

27. What is an array?
Ans: An array is a group of related data items that share a common name.

28. How do you declare an array?
Ans: type variable-name[size];

29. How do you initialize an array?
Ans: static type array-name [size]={list of values}

30. How do you declare an array?
Ans: type variable-name[row_size][column_size];

31. What is a string in C?
Ans: A string is a collection of character variables.

32. What are the string handling functions in C?
Ans: strcat()—concatenates two strings, **strcmp()** – compares two strings, **strcpy()** – copies one
string over another, **strlen()** – finds the length of the string.

33. What are the examples of library functions in C?
Ans: printf() and scanf()

34. What does <stdio.h> contain?
Ans: It contains standard I/O library functions.

35. A main program can contain how many functions?
Ans: It can contain any number of functions.

36. What is a pointer?
Ans: A pointer is a variable, which contains the address of another variable.

37. What is NULL pointer?
Ans: A null pointer does not point to any object.

38. Explain the scope of static variables.
Ans: The scope of a static variable is local to the block in which the variable is defined.

39. C is High level Language or Low level language?
Ans: High-Level Language.

40. C programming language is case sensitive?
Ans: Yes.

41. What is Break Statement in C?

Ans: The **break** statement terminates the execution of the current loop and the Control passes to the statement that follows the terminated statement.

42. What is Continue Statement in C?

Ans: Whenever a keyword '**continue**' is encountered inside a loop, the control automatically passes to the beginning of the loop.

43. What is the difference between Break and Continue in C?

Ans: ***break*** statement is used to break any type of loop such as *while*, *do while* and *for* loop. ***Break*** statement terminates the loop body immediately. ***Continue*** statement is used to break current iteration.
After ***continue*** statement the control returns to the top of the loop test conditions.

44. What is a function?

Ans: A function is a self contained block of statements that perform a coherent task of some kind.

45. Why use functions?

Ans: It increases the performance of the system.

46. Explain the use of fflush() function.

Ans: fflush() [returns 0 if buffer successfully deleted / returns EOF on an error] causes the system to empty the buffer associated with the specified output stream.

47. Explain the difference between strcpy() and memcpy() function.

Ans: strcpy() copies a string until it comes across the termination character '\0'. With memcopy(), the programmer needs to specify the size of data to be copied.

48. Define recursion in C.

Ans: A programming technique in which a function may call itself.

49. What is difference between call by value and call by reference in

Ans: In **call by value** the value to function interchange is passed by value. And in **call by reference** the address is passed by using symbol '&' and the value is accessed by using symbol '*'.

50. List out differences between arrays and linked list

Ans: The difference between arrays and linked lists are:

a. Arrays are linear data structures. Linked lists are linear and non-linear data structures.
b. Linked lists are linear for accessing, and non-linear for storing in memory
c. Array has homogenous values. And each element is independent of each other positions. Each node in the linked list is connected with its previous node which is a pointer to the node.

d. Array elements can be modified easily by identifying the index value. It is a complex process for modifying the node in a linked list.
e. Array elements can not be added, deleted once it is declared. The nodes in the linked list can be added and deleted from the list.

51. Explain the term enumerations in C

Ans: A set of named integer constants is known as an enumeration. The enumeration type declaration includes the name of the enumeration tag and the definition of a set of named integers.
Ex: enum CITY {Mumbai, Bangalore, Chennai, New Delhi} metros;

52. What is the use of typedef?

Ans: The keyword typedef is used for defining user defined data types.

53. How to create user defined datatypes?

Ans: by using the keyword "typedef"
Syntax: typedef type identifier;
Example: typedef int units;

54. In header files whether functions are declared or defined?

Ans: Functions are declared within header file. That is function prototypes exist in a header file,not function bodies. They are defined in library (lib).

55. What is static memory allocation?

Ans: Static Memory Allocation: Memory is allocated for the declared variable by the compiler.

56. What is dynamic memory allocation?

Ans: Dynamic Memory Allocation: Allocation of memory at the time of execution (run time) is known as dynamic memory allocation.

57. What functions are used to create dynamic memory allocation?

Ans: calloc() and malloc()

58. What is the difference between malloc() and calloc()?

Ans: malloc() is a one argument function while calloc() is two argument function malloc() take garbage value at initial time while calloc() take null values at initial time.

59. What is the purpose of main( ) function?

Ans: The function main() calls / invokes other functions within it. The execution of the program always starts with main() function.

60. What is the difference between a string and an array?

Ans: The following are the differences:

a. String can hold only char data. Where as an array can hold any data type.
b. An array size can not be changed. Where as a string size can be changed if it is a char pointer
c. The last element of an array is an element of the specific type. The last character of a string is a null –'\0' character.
d. The length of an array is to specified in [] at the time of declaration (except char[]). The length of the string is the number of characters + one (null character).

61. Difference between array and pointer?

Ans:

Array

i. Array allocates space automatically
ii. It cannot be resized
iii. It cannot be reassigned
iv. sizeof (arrayname) gives the number of bytes occupied by the array.

Pointer

1-Explicitly assigned to point to an allocated space.
2-It can be sized using realloc()
3-pointer can be reassigned.
4-sizeof (p) returns the number of bytes used to store the pointer variable p

62. What are the uses of a pointer?

Ans: Pointer is used in the following cases

1. It is used to access array elements
2. It is used for dynamic memory allocation.
3. It is used in Call by reference
4. It is used in data structures like trees, graph, linked list etc.
5.

63. What is a structure?

Ans: Structure constitutes a super data type which represents several different data types in a single unit. A structure can be initialized if it is static or global.

64. What is a union?

Ans: Union is a collection of heterogeneous data type but it uses efficient memory utilization techniqueby allocating enough memory to hold the largest member. Here a single area of memory contains values of different types at different time. A union can never be initialized.

65. What are the differences between structures and union?

Ans: A structure variable contains each of the named members, and its size is large enough to hold all the members. Structure elements are of same size. A union contains one of the named members at a given time and is large enough to hold the largest member. Union element can be of different sizes.

66. What are the differences between structures and arrays?

Ans: Structure is a collection of heterogeneous data type but array is a collection of homogeneous data types.

Array

1-It is a collection of data items of same data type.
2-It has declaration only
3-.There is no keyword.
4- array name represent the address of the starting element.

Structure

1-It is a collection of data items of different data type.
2- It has declaration and definition
3- keyword struct is used
4-Structure name is known as tag it is the short hand notation of the declaration.

67. What are enumerations?

Ans: They are a list of named integer-valued constants. Example:enum color { black , orange=4,yellow, green, blue, violet };This declaration defines the symbols “black”, “orange”, “yellow”, etc. to have the values “1,” “4,” “5,” … etc. The difference between an enumeration and a macro is that the enum actually declares a type, and therefore can be type checked.

68. Differentiate between for loop and a while loop? What are it uses?

Ans: For executing a set of statements fixed number of times we use for loop while when the number of iterations to be performed is not known in advance we use while loop.

69. What the advantages of using Unions?

Ans: When the C compiler is allocating memory for unions it will always reserve enough room for the largest member.

70. What is the difference between Strings and Arrays?

Ans: String is a sequence of characters ending with NULL .it can be treated as a one dimensional array of characters terminated by a NULL character.

71. In C, why is the void pointer useful? When would you use it?

Ans: The void pointer is useful because it is a generic pointer that any pointer can be cast into and back again without loss of information.

72. What is a NULL Pointer? Whether it is same as an uninitialized pointer?

Ans: Null pointer is a pointer which points to nothing but uninitialized pointer may point to anywhere.

73. Are pointers integer?

Ans: No, pointers are not integers. A pointer is an address. It is a positive number.

74. Can a Structure contain a Pointer to itself?

Ans: Yes such structures are called self-referential structures.

75. Difference between syntax vs logical error?

Ans:

Syntax Error

1-These involves validation of syntax of language.
2-compiler prints diagnostic message.

Logical Error

1-logical error are caused by an incorrect algorithm or by a statement mistyped in such a way
that it doesn't violet syntax of language.
2-difficult to find.

76. What is pre-increment and post-increment?

Ans: ++n (pre increment) increments n before its value is used in an assignment operation or any expression containing it. n++ (post increment) does increment after the value of n is used.

77. What is a file?

Ans: A file is a region of storage in hard disks or in auxiliary storage devices.It contains bytes of
information .It is not a data type.

78. What are the types of file?

Ans: Files are of two types
1-high level files (stream oriented files) :These files are accessed using library functions
2-low level files(system oriented files) :These files are accessed using system calls

79. What is FILE?

Ans: FILE is a predefined data type. It is defined in stdio.h file.

80. What is a file pointer?

Ans: The pointer to a FILE data type is called as a stream pointer or a file pointer. A file pointer points to the block of information of the stream that had just been opened.

81. Difference between an array of pointers and a pointer to an array?

Ans:

Array of pointers

i. Declaration is: data_type *array_name[size];

2-Size represents the row size.
3- The space for columns may be dynamically
Pointers to an array
1-Declaration is data_type (*array_name)[size];
2-Size represents the column size.

82. Are the variables argc and argv are always local to main?
Ans: Yes they are local to main.

83. Can main () be called recursively?
Ans: Yes any function including main () can be called recursively.

83.What are the stages of developing your C program?
Ans: There are four stages of developing C program
Creating the program
Compiling the program
Linking the program with functions that are needed from C Library
Running the program.

84. What are the storage classes in C?
Ans: auto, static, extern and register.

85. What are the compile time operators?
Ans: only sizeof is a compile time operator.

86. What are the storage classes in C?
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Ans: only sizeof is a compile time operator.

88. Incase of for() loop, initialization is mandatory. True or false?
Ans: False.

89. Incase of for() loop, test-condition is mandatory. True or false?
Ans: True.

90. What is <ctype.h > used for?
Ans: Character testing and conversion functions

91. C follows Top down Approach.

92. Explain the difference between exit() and _exit() function.
Ans: exit() does cleanup work like closing file descriptor, file stream and so on, while _exit() does not.

93. What are volatile variables?
Ans: Volatile variables are like other variables except that the values might be changed at any given point of time only by 'some external resources'.

94. What does static variable mean in C?
Ans: static is an access qualifier that limits the scope but causes the variable to exist for the lifetime of the program.

95. Out of fgets() and gets() which function is safe to use and why?
Ans: fgets() is safer than gets(), because we can specify a maximum input length. Neither one is completely safe, because the compiler can't prove that programmer won't overflow the buffer he pass to fgets ().

96. What do the 'c' and 'v' in argc and argv stand for?
Ans: The c in argc(argument count) stands for the number of command line argument the program is invoked with and v in argv(argument vector) is a pointer to an array of character string that contain the arguments.

97. What is the difference between a Stack and an Array?
Ans: STACK

i) Stack is a ordered collection of items
ii) Stack is a dynamic object whose size is constantly changing as items are pushed and popped .
iii) Stack may contain different data types
iv) Stack is declared as a structure containing an array to hold the element of the stack, and an integer to indicate the current stack top within the array.

ARRAY

i) Array is an ordered collection of items
ii) Array is a static object i.e. no of item is fixed and is assigned by the declaration of the array
iii) It contains same data types.
iv) Array can be home of a stack i.e. array can be declared large enough for maximum size of the stack.

98. What actions are performed when a function is called?
Ans: When a function is called

i) arguments are passed
ii) local variables are allocated and initialized
ii) transferring control to the function.

99. What do you mean by garbage collection?
Ans: It is a technique in which the operating system periodically collects all the deleted space onto the free storage list. It takes place when there is minimum amount of space left in storage list or when CPU is ideal. The alternate method to this is to immediately reinsert the space into free storage list which is time consuming.

100. What is a flow chart?
Ans: A flowchart is a type of diagram that represents an algorithm or process, showing the steps as boxes of various kinds, and their order by connecting these with arrows.