MCQ's in C Language

1. What is the correct syntax to declare a variable in C?

   A) variable int;

   B) int variable;

   C) declare variable int;

   D) variable int()

   Answer: B) int variable;

   Explanation: In C, the correct way to declare a variable is by first specifying the type (like `int`, `float`, etc.), followed by the variable name.

2. Which of the following is used to comment a single line in C?

   A) //

   B) #

   C) /* */

   D) \

   Answer: A) //

   Explanation: In C, single-line comments are written using `//`, while multi-line comments are enclosed within `/* */`.

3. What does the `printf()` function do in C?

   A) Takes user input

   B) Prints formatted output

   C) Defines a variable

   D) Allocates memory

   Answer: B) Prints formatted output

   Explanation: `printf()` is used to output text or data in a formatted way to the console.

4. Which of the following is the correct operator to compare two values in C?

A) =

B) ==

C) !=

D) >

Answer: B) ==

Explanation: The `==` operator is used to check for equality between two values. The `=` operator is for assignment.

5. How are array elements accessed in C?

A) Using parentheses `()`

B) Using curly braces `{}`

C) Using square brackets `[]`

D) Using angle brackets `<>`

Answer: C) Using square brackets `[]`

Explanation: Array elements in C are accessed using square brackets, where the index is specified inside the brackets.

6. Which function is used to read formatted input in C?

A) printf()

B) read()

C) scan()

D) scanf()

Answer: D) scanf()

Explanation: `scanf()` is used to read formatted input from the user.

7. What is the size of an `int` variable on most 32-bit systems?

A) 2 bytes

B) 4 bytes

C) 8 bytes

D) 1 byte

Answer: B) 4 bytes

Explanation: On most 32-bit systems, an `int` occupies 4 bytes of memory.

8. Which of the following keywords is used to prevent a function from modifying a variable in C?

A) const

B) volatile

C) static

D) extern

Answer: A) const

Explanation: The `const` keyword in C is used to declare a variable whose value cannot be modified after initialization.

9. What is the output of the following code?

c

Copy code

```
int x = 5;
printf("%d", x++);
```

A) 5

B) 6

C) Compilation error

D) Undefined

Answer: A) 5

Explanation: The `x++` post-increment operator increments the value of `x` after returning the current value, which is why `5` is printed.

10. What is a pointer in C?

A) A type of variable

B) A data type used to store memory addresses

C) A function

D) A keyword

Answer: B) A data type used to store memory addresses

Explanation: A pointer in C holds the memory address of another variable.

11. Which of the following correctly accesses the value stored in a pointer variable in C?

A) ptr

B) *ptr

C) &ptr

D) address(ptr)

Answer: B) *ptr

Explanation: The `*` operator is used to dereference a pointer, meaning it accesses the value stored at the memory address contained in the pointer.

12. What does the `malloc()` function in C do?

A) Allocates memory dynamically

B) Prints a message

C) Returns a value

D) Reads a file

Answer: A) Allocates memory dynamically

Explanation: `malloc()` dynamically allocates a block of memory at runtime.

13. Which of the following data types is not available in C?

A) int

B) float

C) bool

D) double

Answer: C) bool

Explanation: The `bool` type is not native to C, but it can be used in C99 or later standards with `<stdbool.h>`.

14. What is the default return type of `main()` in C if not specified?

A) void

B) int

C) char

D) float

Answer: B) int

Explanation: In standard C, the `main()` function has a default return type of `int` if not explicitly mentioned.

15. How is a function declared in C?

A) returnType functionName(parameters);

B) declare functionName(parameters);

C) function returnType(parameters);

D) returnType (parameters) functionName;

Answer: A) returnType functionName(parameters);

Explanation: In C, functions are declared with a return type, a function name, and parameters enclosed in parentheses.

16. Which loop ensures that the code block is executed at least once in C?

A) for loop

B) while loop

C) do-while loop

D) if-else block

Answer: C) do-while loop

Explanation: The `do-while` loop executes the code block first and checks the condition afterward, ensuring the block runs at least once.

17. What does `#include <stdio.h>` signify in C?

A) Imports the entire C library

B) Includes the standard input/output library

C) Defines new data types

D) Declares variables

Answer: B) Includes the standard input/output library

Explanation: `#include <stdio.h>` tells the preprocessor to include the header file containing declarations for input/output functions like `printf()` and `scanf()`.

18. Which keyword is used to exit a function in C?

A) break

B) exit

C) return

D) continue

Answer: C) return

Explanation: The `return` keyword is used to exit a function and optionally return a value to the calling function.

19. What will be the output of the following code?

c

Copy code

```
int x = 4;
printf("%d", x << 1);
```

A) 4

B) 2

C) 8

D) 16

Answer: C) 8

Explanation: The `<<` operator shifts the bits of `x` to the left by one position, multiplying its value by 2, so 4 becomes 8.

20. Which of the following is the correct way to declare a pointer to an integer in C?

A) int *ptr;

B) int ptr*;

C) ptr int*;

D) *int ptr;

Answer: A) int *ptr;

Explanation: The correct syntax for declaring a pointer to an integer is `int *ptr;`, where `*` signifies that it is a pointer.

21. What is the output of the following code?

c

Copy code

```
int a = 10;
printf("%d", a == 10);
```

A) 1

B) 10

C) 0

D) Error

Answer: A) 1

Explanation: In C, relational operators like `==` return `1` if the expression is true, and `0` if false. Since `a == 10` is true, the output is `1`.

22. Which of the following is used to dynamically allocate memory in C?

A) calloc()

B) initmem()

C) reallocate()

D) mallocfree()

Answer: A) calloc()

Explanation: `calloc()` allocates memory for an array and initializes all elements to zero. `malloc()` allocates memory but does not initialize it.

23. What is the default value of a local variable in C if it is not initialized?

A) 0

B) Undefined

C) Null

D) Empty string

Answer: B) Undefined

Explanation: Local variables in C do not have a default value and contain garbage data if not explicitly initialized.

24. Which function is used to free dynamically allocated memory in C?

A) free()

B) malloc()

C) delete()

D) remove()

Answer: A) free()

Explanation: The `free()` function deallocates memory that was previously allocated by `malloc()` or `calloc()`.

25. Which of the following can store a NULL value?

A) int

B) float

C) pointer

D) char

Answer: C) pointer

Explanation: A NULL pointer is a special value assigned to pointers to indicate that it does not point to any valid memory location.

26. What does the `sizeof()` function return in C?

A) The size of an array

B) The number of elements in an array

C) The memory size (in bytes) of a variable or data type

D) The length of a string

Answer: C) The memory size (in bytes) of a variable or data type

Explanation: The `sizeof()` operator in C returns the size, in bytes, of a variable or data type.

27. What is the purpose of a `void` pointer in C?

A) To store integers

B) To point to any data type

C) To perform arithmetic operations

D) To store memory addresses only for characters

Answer: B) To point to any data type

Explanation: A `void` pointer is a generic pointer that can point to any data type but must be cast to a specific type before dereferencing.

28. Which of the following is not a valid storage class in C?

A) auto

B) static

C) dynamic

D) extern

Answer: C) dynamic

Explanation: C supports `auto`, `static`, `extern`, and `register` as storage classes, but not `dynamic`.

29. What is the correct syntax to declare a constant variable in C?

A) constant int x;

B) const int x;

C) int x const;

D) int constant x;

Answer: B) const int x;

Explanation: The `const` keyword is used to declare a constant variable whose value cannot be changed once initialized.

30. Which of the following is a correct way to declare an array in C?

A) array[5] int;

B) int array[5];

C) int[5] array;

D) declare array[5];

Answer: B) int array[5];

Explanation: In C, arrays are declared with the data type first, followed by the array name and size in square brackets.

31. What is the function of the `break` statement in C?

A) To terminate the entire program

B) To exit a loop or switch statement

C) To skip the next iteration of a loop

D) To stop the function execution

Answer: B) To exit a loop or switch statement

Explanation: The `break` statement is used to exit a `for`, `while`, or `do-while` loop or to exit a `switch` statement prematurely.

32. Which of the following control structures is used for decision-making in C?

A) if-else

B) for

C) while

D) switch

Answer: A) if-else

Explanation: The `if-else` control structure is used for decision-making in C based on conditional expressions.

33. What will be the output of the following code?

c

Copy code

```
int a = 5, b = 10;

printf("%d", a > b ? a : b);
```

A) 5

B) 10

C) 15

D) Error

Answer: B) 10

Explanation: The ternary operator checks the condition `a > b`. Since it's false, the value of `b` is printed, which is 10.

34. Which of the following cannot be used as a variable name in C?

A) while

B) total

C) sum

D) average

Answer: A) while

Explanation: `while` is a keyword in C and cannot be used as an identifier for variables.

35. What is the main purpose of the `main()` function in C?

A) To declare variables

B) To execute the entire program

C) To perform all input/output operations

D) To serve as the entry point for the program

Answer: D) To serve as the entry point for the program

Explanation: In C, the `main()` function is the entry point from where program execution begins.

36. Which of the following is not an escape character in C?

A) \n

B) \t

C) \e

D) \

Answer: C) \e

Explanation: `\e` is not a valid escape sequence in C. Common escape sequences include `\n` (newline), `\t` (tab), and `\\` (backslash).

37. What will be the output of the following code?

c

Copy code

```
int x = 1;
switch (x)
{
    case 1: printf("One");
```

```
    case 2: printf("Two");
}
```

A) One

B) OneTwo

C) Two

D) Error

Answer: B) OneTwo

Explanation: Without a `break` statement, the `switch` case falls through, meaning both `One` and `Two` will be printed.

38. How are string literals stored in memory in C?

A) As integer arrays

B) As character arrays

C) As byte arrays

D) As float arrays

Answer: B) As character arrays

Explanation: String literals are stored as arrays of characters in memory, with a terminating null character `\0`.

39. Which operator is used to access members of a structure in C?

A) .

B) ->

C) &

D) %

Answer: A) .

Explanation: The dot operator `.` is used to access members of a structure in C.

40. What is a recursive function in C?

A) A function that calls itself

B) A function that returns void

C) A function that returns an array

D) A function that takes no parameters

Answer: A) A function that calls itself

Explanation: A recursive function is one that calls itself in its definition to solve smaller instances of the problem.

Which of the following is used to represent a logical condition in C?

A) 1 and 0

B) True and False

C) Yes and No

D) T and F

Answer: A) 1 and 0

Explanation: In C, `1` represents true and `0` represents false in logical conditions.

42. What is the output of the following code?

c

Copy code

```
int a = 5;
printf("%d", a << 2);
```

A) 10

B) 20

C) 15

D) 25

Answer: B) 20

Explanation: The `<<` operator shifts bits to the left by 2 positions. Shifting 5 (which is `101` in binary) by 2 results in `10100`, which equals 20.

43. Which library function is used to find the length of a string in C?

A) strlen()

B) sizeof()

C) count()

D) len()

Answer: A) strlen()

Explanation: `strlen()` is used to find the length of a string, excluding the null character at the end.

44. Which keyword is used in C to define a structure?

A) struct

B) structure

C) class

D) define

Answer: A) struct

Explanation: The keyword `struct` is used to define a structure, a user-defined data type in C.

45. Which of the following functions in C converts a string to an integer?

A) atof()

B) atoi()

C) itoa()

D) atol()

Answer: B) atoi()

Explanation: The `atoi()` function converts a string to an integer. `atof()` converts a string to a float, and `itoa()` is used to convert an integer to a string.

46. What is the result of the expression `10 % 3` in C?

A) 0

B) 1

C) 2

D) 3

Answer: C) 1

Explanation: The modulus operator `%` returns the remainder of the division of `10` by `3`, which is `1`.

47. What is the value of `sizeof(char)` in C?

A) 1

B) 2

C) 4

D) 8

Answer: A) 1

Explanation: The size of a `char` in C is 1 byte, regardless of the system.

48. Which operator is used to get the address of a variable in C?

A) *

B) &

C) %

D) @

Answer: B) &

Explanation: The `&` operator is used to get the address of a variable. It is called the "address-of" operator.

49. What is the correct syntax for defining a function pointer in C?

A) int (*funcPtr)(int);

B) int &funcPtr(int);

C) int *funcPtr(int);

D) funcPtr int(*)(int);

Answer: A) int (*funcPtr)(int);

Explanation: A function pointer in C is declared using the syntax `returnType (*pointerName)(parameterType)`.

50. What is the default return type of the `main()` function in C?

A) int

B) void

C) char

D) float

Answer: A) int

Explanation: By default, the return type of the `main()` function is `int`, and it returns `0` if the program executes successfully.

51. Which of the following statements is true about recursion in C?

A) A recursive function is faster than an iterative function.

B) Recursion always improves performance.

C) A recursive function calls itself.

D) Recursion is not allowed in C.

Answer: C) A recursive function calls itself.

Explanation: A recursive function is a function that calls itself within its own definition to solve smaller sub-problems.

52. Which operator is used to access the value of a structure member through a pointer?

A) .

B) ->

C) &

D) %

Answer: B) ->

Explanation: The `->` operator is used to access a member of a structure through a pointer.

53. Which function is used to compare two strings in C?

A) strcmp()

B) compare()

C) strcpy()

D) strlen()

Answer: A) strcmp()

Explanation: The `strcmp()` function compares two strings lexicographically and returns `0` if they are equal.

54. Which keyword is used to define a block of code that can only be accessed by one thread at a time in C?

A) synchronized

B) mutex

C) atomic

D) C does not have such a keyword

Answer: D) C does not have such a keyword

Explanation: C does not have built-in support for thread synchronization. Features like mutexes and critical sections are provided by libraries or operating system functions, not keywords.

55. What will be the output of the following code?

c

Copy code

```
int arr[] = {1, 2, 3, 4, 5};

printf("%d", arr[2]);
```

A) 2

B) 3

C) 4

D) 5

Answer: B) 3

Explanation: Array indices in C start from 0, so `arr[2]` refers to the third element in the array, which is `3`.

56. Which of the following functions is used to append one string to another in C?

A) strcat()

B) strcpy()

C) strapp()

D) appendstr()

Answer: A) strcat()

Explanation: The `strcat()` function concatenates (appends) one string to the end of another.

57. In C, which keyword is used to create a macro?

A) define

B) macro

C) const

D) #define

Answer: D) #define

Explanation: The `#define` directive is used to create macros in C, which are preprocessor commands that replace text during preprocessing.

58. Which of the following statements about pointers in C is true?

A) Pointers cannot be null.

B) Pointers can store the address of a variable.

C) Pointers cannot point to functions.

D) Pointers are used to return values from a function.

Answer: B) Pointers can store the address of a variable.

Explanation: Pointers store the memory address of a variable, making them a crucial part of memory management in C.

59. What will be the result of the following expression in C?

c

Copy code

```
5 == 5 ? printf("Yes") : printf("No");
```

A) Yes

B) No

C) Error

D) 5

Answer: A) Yes

Explanation: The ternary operator evaluates `5 == 5`, which is true, so `"Yes"` is printed.

60. Which function is used to open a file in C?

A) open()

B) fopen()

C) fileopen()

D) start()

Answer: B) fopen()

Explanation: The `fopen()` function is used to open a file in C. It requires the file name and mode (e.g., read, write, etc.).