

Q1: Differentiate between for and while loop?

Ans: For Loop

The for loop is used for definite loops when the number of iterations is known.

While Loop

The while loop is used when the number of iterations



Q2: What is run time error?

Ans: A program error that occurs while the program is running.

Occurs due to performing an illegal operation such as dividing a num by zero.



Q3 Differentiate between high level and machine level language?

Ans: High-level

High level languages are near to human languages.

Deep Knowledge of hardware is not required to write programs.

Low-level

Low-level languages are far from human languages.

Deep Knowledge of hardware is required to write programs.

Q4: What is a variable? How to declare a legal variable in C program?

Ans: A variable is a named unit of data that may be assigned a value. If value is modified the name does not change. We can declare a variable... in following way. Variable →  $n=1$  ← value



Q5: What is preprocessor directive?

Ans: Before a C program is compiled in a compiler, source code is processed by a program called preprocessor. Commands used in preprocessor are called preprocessor directives and they begin with # symbol.



Q6: Define a bug?

Ans: A bug refers to an error, fault or flaw in any computer program or a hardware system.

A bug produces unexpected results or causes a system to behave unexpectedly.



Q7: What is Keyword? Also give an example?

Ans: Keywords are predefined, reserved words used in programming that have special meanings to the compiler. For example int, struct, switch, break.



Q8: What are control statement? Give its example.

Ans: Control statements enable us to specify the flow of program control. They make it possible to make decisions, to perform tasks repeatedly or to jump from one section of code to another. Examples: if, else, else if, switch, break.



Q9: What is nested loop?

Ans: The placing of one loop inside the body of another loop is called nesting. A loop inside another loop is called a nested loop.



Q10: Differentiate between prefix and postfix increment operators?

Ans: Prefix

Postfix

The prefix increment returns the value of a variable after it has been incremented.

The postfix increment returns the value of a variable before it has been incremented.



Q11: What is the difference between while and do-while loops?

Ans: While

do-while

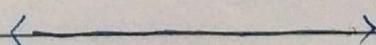
The while loop evaluates the condition first and then execute the statements.

The do-while loop executes the statements first before evaluating the condition.



Q12: What is struct Keyword in C?

Ans: "struct" Keyword is used to define a structure. "struct" defines a new data type which is a collection of different types of data.



Q13: What is the use of Compiler in C language?

Ans: In C language Compiler is used to translate source code from a high-level programming language to low-level language to create an executable program.



Q14: What is continue statement?

Ans: The continue statement is used inside loops. When a continue statement is encountered inside a loop control jumps to the beginning of the loop for next iteration.



Q15: What is function prototype in C?

Ans: A function prototype is simply the declaration of a function that specifies function's name, parameters and return type. It does not contain function body.

int heading(void)  
  ^  
Return type      function name      parameters (arguments)



Q16: Why main function is necessary in each C program?

Ans: Each program must contain main() function because main() function is the place where the execution of a C program starts. When the program is executed, the control enters main() function and start executing its statements.

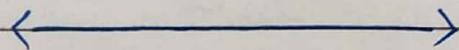


Q17: Convert following algebraic equation into C expression  $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Ans: The C expression is following

$(-b + \sqrt{b*b - 4*a*c}) / 2*a$

$(-b - \sqrt{b*b - 4*a*c}) / 2*a$ .



Q18: What is flow-chart?

Ans: Flow chart is a graphical representation of a computer program in relation to its sequence of functions.



Q19: Give 2-dimentional C array declarations of different types?

Ans: Different ways to initialize

two dimentional arrays are following.

int c[2][3] = {{1, 3, 0}, {-1, 5, 9}};

int c[][][3] = {{1, 3, 0}, {-1, 5, 9}};

int c[2][3] = {1, 3, 0, -1, 5, 9};



Q20: What is switch statement?

Ans: C has a built-in multiple-branch

selection statement called switch. A switch

statement tests the value of a

variable and compares it with multiple cases

Once the case match is found, a

block of statements associated with that

particular case is executed.



Q21: What is the purpose of

default statement in switch statement?

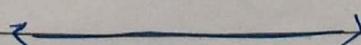
Ans: If switch expression does

not match with any case,

default statements are executed by

the program that's why default

statement is used in switch statement.



Q22: What is variable initialization?

Ans: The process of assigning a value to a variable at the time of declaration is known as variable initialization. The equal sign = is used to initialize a variable.



Q23: Define EOF markers?

Ans: EOF stands for end-of-file.

It is used to indicate the end of a text file. It is placed after the last character in the file.

It is denoted by EOF in C language.



Q24: What is the purpose of file pointer?

Ans: File pointer is a pointer that refers to a file on the secondary storage. It is a variable of data type "File" that is defined in stdio.h. It is used to access and manipulate a data file. The file pointer is associated with a file after declaration.



Q25: What is built-in function? Give Examples.

Ans: Built-in functions are the type of functions which are already defined or created in a program or in programming framework. User or developer can directly use built-in function by only calling it i.e. printf, scanf



Q26: What is dangling pointer?

Ans: A pointer pointing to a memory location that has been deleted is called a dangling pointer. Dangling pointers arise when an object is deleted or deallocated, without modifying the value of pointer.



Q27: Distinguish between formal parameters

and actual parameters?

Ans: Formal

Actual

(i) Formal parameters are used in function header.

(ii) Actual parameters are used in function call.

(ii) Formal parameters receive values passed to the function.

(ii) Actual parameters are the values that passed to function.



Q28: Which function is used to copy one string to another string?

Ans: `strcpy` can be used to copy one string to another. Remember that C strings are character arrays. You must pass character array, or pointer to character array to this function where string will be copied.



Q29: What is pointer constant?

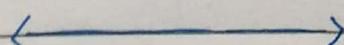
Ans: This is a pointer which will point to one address which we initialize at declaration time. After that we can not change that address. But the value at the address we can change.

Declaration: `int *const ptx;`



Q30: What is the drawback of Global variables?

Ans: Global variables exist in the memory as long as the program is running. These variables occupy memory longer than local variable this can cause of out of memory issue.



Q31: What is the infinite loop?

Ans: A loop in which the ending condition never occurs is called infinite loop. It repeats forever until the user intervenes to stop the loop.



Q32: What is pass by reference in C?

Give example?

Ans: Passing by reference means that the memory address of the variable is passed to the function

Example: function birthday(int &age)  
{ age = age + 1; }

int myAge = 14

birthday (myAge);

Output: The value of myAge is now 15



Q33: Evaluate the expression  $25 * (6 + (50 - 48) / 2) + 15$  ; ?

Ans:  $25 * (6 + (50 - 48) / 2) + 15$  ;

$25 * (6 + \frac{2}{2}) + 15$  ;

$25 * (7) + 15$  ;

$175 + 15$  ;

190 ;



Q34: What is type casting?

Ans: The process of converting the data type of a value during execution is known as type casting.

An example of typecasting is converting an integer to a string.



Q35: What are comments? Also mention their types?

Ans: Comments are the lines of program that are not executed. The compiler ignores comments and does not include them in the executable program.

Comments are used to increase the readability of the program. There are two types of comments

- (i) Single-line comments
- (ii) Multi-line comments



Q36: What is meant by Syntax error? Explain with example?

Ans: Syntax error is a type of error that occurs when an invalid statement is written in program. A program containing syntax errors cannot be compiled successfully.

Typing 'forx' instead of 'for' is an example of syntax error.

Q37: What are .h files and what should we put in them?

Ans: .h is the extension of a header file.

Headers files are collection of standard library functions to perform different tasks. Each header file contains different types of predefined function.



Q38: What should be the code

"int i=3; i=i+1;" do?

Ans: Code: i=3; i=i+1;

Process: i=3+1

Output: i=4



Q39: What is the right type to use for Boolean values in C?

Ans: C does not have boolean data types and normally uses integers for boolean testing. Zero is used to represent false and One is used to represent true.



Q40: Convert the following statements/expressions into proper C expression

$$x = x + 32$$
$$m - (\frac{32}{2}) + n$$

Ans:  $x = \underline{x + 32}$   
 $\underline{m - (\frac{32}{2}) + n}$

$$x = (x + 32) / (m - (32/2) + n);$$



Q41: What will the preprocessor do for a program?

Ans: Before a C program is compiled in a compiler, source code is processed by a program called Preprocessor. This process is called preprocessing.



Q42: What is Object code?

Ans: A program in machine language is called object code. It is also called object program. Computer understands object code directly.



Q43: How to add comments in C  
Program?

Ans: Comments on single line are added by using double slash " // ". Anything written on the right side of double slash is considered as comments. Comments on Multiple lines are added by using " /\* " and " \*/ " symbols. Anything written between two symbols is considered as comments.

← →  
Q44: Why we use do-while loop  
in C?

Ans: If we want to execute the statements first before evaluating the condition then we use do-while loop because the body of do-while loop is always executed at least once, regardless of whether the condition is met.

← →  
Q45: Define low level language?

Ans: A language that is close to hardware and far from human language is called low level language

Q46: What is variable initialization  
and why it is important?

Ans: The process of assigning a value to a variable at the time of declaration is known as variable initialization. The variable may have garbage value if it is not initialized. It may produce unexpected results in some compilers that's why initialization is important.



Q47: List the different types of control structures in C?

Ans: Control structures are the statements that control the flow of source code. There are three categories of control structures. List of these three structures is following:

(1) Decision Making	(2) Looping	(3) Jumping statements
(i) if statements	(i) for loop	(i) break statement
(ii) Switch statement	(ii) while loop	(ii) continue statement
(iii) Conditional statement	(iii) do-while loop	(iii) goto statement



Q48: What is the advantage of an array over individual variables?

Ans: An individual variable can store single value at a time whereas as an array can store more than one value at a time under single variable name that's why array is more advantageous than individual variable.



Q49: What are escape sequences?

Ans: In C language an escape sequence refers to a combination of characters beginning with back slash(\) followed by letters or digits. Escape sequences represent non-printable and special characters in character and literal strings i.e \n for new line, \t for horizontal tab.



Q50: What is linker?

Ans: A program that combines the object program with additional library files and generate a single executable file is known as linker.



Q51: Why break statement is used in switch statement?

Ans: The break statement in each case label is used to exit from switch body. If break is not used, all case blocks coming after matching case will also be executed.



Q52: Why it is important to close a file. How it is closed?

Ans: It is important to close a file because an opened file occupied memory. Closing of files releases the memory occupied by file. An opened file is closed by using the fclose() function.



Q53: What is the scope of local variable?

Ans: The area where a variable can be accessed is known as scope of variable. Local variable can be used only in the function in which it is declared.



Q54: What is meant by Case Sensitivity in C language?

Ans: It means that C language can differentiate between uppercase and lowercase words. All keywords are usually written in lowercase.

← →  
Q55: What is Logical error and how it can be detected?

Ans: A type of error that occurs due to the poor logic of the programmes is known as logical error. The user needs to review the whole program to find out the logical error.

← →  
Q56: What is the purpose of goto statement and why it is not preferable?

Ans: The goto statement is used to perform an unconditional transfer of control to a named label. The label must be in the same function. Goto statement is not preferable because

it makes difficult to trace the control flow of a program, making the program hard to understand and hard to modify.



Q57: Differentiate between function prototype and function definition?

Ans: Prototype

Function prototype consists of single statement that provides information to compiler about function. Function prototype is not written in braces.

Definition

Function definition consists of different statements to perform a task. Function definition is written in braces.



Q58: Which function is used to find the length of a string?

Ans: The 'strlen()' function calculates the length of a given string.

The 'strlen()' function takes a string as an argument and returns its length.



Q59: Define recursive function?

Ans: A recursive function is a function that calls itself during its execution. This enables the function to repeat itself several times.



Q60: It is necessary to initialize the const variable in C?

Ans: When the const qualifier is used, the declared variable must be initialized at declaration because it is then not allowed to be changed.



Q61: Define a structure?

Ans: Structure is a group of variables of different data types represented by a single name. We use struct keyword to create structure in C.



Q62: What does the characters "r" and "w" mean when writing programs that will make use of files?

Ans: Character "r" is used to open the file in read only mode. For example `fopen("book.txt", "r");`. Character "w" is used to open the file in write only mode. For example `fopen("book.txt", "w");`

Q63: Define syntax of structure?

Ans: `Struct structure_name`

```
{ data-type variable1;  
    data-type variable2;  
    data-type variable3;  
    ;  
    data-type variableN;  
};
```

} Members of structure

Q64: How many main() functions are defined in a C program justify your answer?

Ans: We can define only one main() function in C program because main() function is the place where the execution starts and if we define two main() functions compiler will not be

able to decide that which main() function is to be used.



Q65: Why a programmer use fopen() and fclose() function in C program?

Ans: fopen() function is used by a programmer to open a file to perform operations such as reading, writing etc. An opened file is closed by using fclose function. Syntax: File\_Pointer = fopen(File\_Name, Mode);  
fclose(file\_pointer)



Q66: What is a pointer? Write an example of initialization of a pointer?

Ans: A pointer in C language is a variable that stores the address of another variable of same data type.

Initialization of pointer variable:

```
int a;
```

```
int *ptr;
```

```
a = 10;
```

```
ptr = &a;
```



Q67: Evaluate the expression?

$$y = 6/2 * 2 + 3 * 5 + 7;$$

Ans:

$$y = 6/2 * 2 + 3 * 5 + 7;$$

$$y = 3 * 2 + 3 * 5 + 7;$$

$$y = 6 + 15 + 7;$$

$$y = 28;$$



Q68: What is scope and life time of a local and global variable?

Ans: Local variable

Scope: Local variable

can be used only in the function in which it is declared.

Lifetime: The lifetime of local variable starts when control enters the function in which it is declared and it ends when control exits from function

Global variable

Scope: Global variables

can be used by all functions in the program.

Lifetime: Global variables exist in the memory as long as the program is running.



Q69: What is function overloading?

Ans: The method of using same function name for different functions is called function overloading.

Two or more functions having same name but different arguments are known as overloaded functions.



Q70: Write statements to declare and display string?

Ans:

```
main() {  
    char name[] = "PAKISTAN"  
    printf("Name is %s", name);  
}
```



Q71: Write three rules of declaring an identifier in C program?

Ans: (1) The first character of an identifier can only contain alphabet (a-z, A-Z) or underscore (-)

(2) Identifiers are also case sensitive in C. For example 'name' and 'Name' are two identifiers in C.

(3) Keywords are not allowed to

be used as identifiers.



Q72: What are primitive data types?

Shortly discuss one of them.

Ans: A primitive data type is

a data type that is built

into a programming language. Primitive data types are also known as pre-defined

or basic data types. C language supports four

Primitive data types - char, int, float, void.

int are used to store whole numbers (integers).

int data type requires 2 bytes.



Q73: What is meant by fatal error?

Ans: A fatal error is an error

that causes a program to terminate

without any warning or saving its

state. A fatal error, upon occurring,

aborts the application currently running.



Q74: What is the purpose of getch()?

Ans: getch() is a predefined function

in "conio.h" this will tell to the

console to wait for sometime until

a key is hit given after

running of program.

Q75: Differentiate 1-D array and 2-D array?

1-D

A simple data structure that stores a collection of similar type data in a contiguous block of memory.

It is called single dimensional array

2-D

A type of array that stores multiple data elements of the same type in matrix or table like format with a

number of rows and columns  
It is called multidimensional array

Q76: In file - processing why a programmers use fgets and fputs functions in C program?

Ans: The fputs() and fgets() in C programming are used to write and read string from stream. The fputs() function writes a line of character into file. It outputs string to a stream. The fgets() function reads a line of characters from file. It gets string from a stream.

Q77: Differentiate between pseudocode and algorithm?

Ans: Algorithm

Algorithm is an unambiguous specification of how to solve a problem

Pseudocode

An informal high-level description of the operating principle of a computer program or other algorithm



Q78: What is difference between arithmetic operator and logical operators?

Ans: Arithmetic operators work with numbers of some sort e.g. integers, floats while logical operators work with boolean values like 'true' or 'false'.



Q79: What will be the output of following code?

Code

Output

int p=10, q=3, x=-2;

Output of this code

if((p+q)<14.8&(x<q-3));

is "1" because the

printf("%d", x+3);

condition is true and

else

$x+3 = -2+3 = 1$ .

printf("%d", p-2);



Q80: What is the output of following code?

Code

```
int var = 6;
```

```
var += 2;
```

```
printf("The value of variable
```

```
is = %d", var);
```

```
Var += 2
```

```
printf("The value of variable
```

```
is = %d", var);
```

Output

The value of variable is = 8

The value of variable is = 0



Q81: Is the following statement valid

or invalid? float = 3.14 \* x; Give reason

if it is invalid.

Ans: float = 3.14 \* x is an invalid

statement because float is a keyword

which is used to represent floating point

values and key words are not

allowed to be used as variable name or

identifier.

