



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE – 35

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (UG & PG)



First Year, Ist Semester

2 Marks Question and Answer

Subject Code & Name: 23ITT101 C Programming and Data structures

UNIT – 1

INTRODUCTION TO C PROGRAMMING

1. Define computers?

A computer is a programmable machine or device that performs pre-defined or programmed computations or controls operations that are expressible in numerical or logical terms at high speed and with great accuracy.

(or)

Computer is a fast operating electronic device, which automatically accepts and store input data, processes them and produces results under the direction of step by step program.

2. What are the basic operations of computer?

- Input
- Process
- Storing
- Controlling and
- Output.

3. What are the characteristics of computer?

- Speed
- Accuracy
- Automation
- Endurance

- Versatility
- Storage and
- Cost reduction

4. Define data and information.

Data: Raw material for information processing

Information: The processed data is called information.

5. List out the operations of CPU.

CPU performs all the calculations, co-ordinates all the units of the computer, interprets the instruction and stores the data's.

6. Define system software.

A set of program that governs the operation of a computer system and makes the hardware works. It controls the internal operations of the computer.

7. What is software?

Software is a set of instruction or program, which are useful for performing a task.

8. Define operating system?

A collection of program used to control the entire operation of the computer. It co-ordinates the hardware and software.

9. What is application software?

Software which is used to solve a specific task is called application software.

10. What is meant by Information technology?

IT refers to the creation, gathering, processing, storage and delivery of information.

11. What is Algorithm?

Algorithm means the logic of a program. It is a step by step description of a program.

12. List out the way how algorithm may be represented?

- Normal English

- Flow chart
- Pseudocode
- Decision table

13. Define compiler.

It is a program used to convert the high level language program into machine language.

14. Define Assembler.

It is a program used to convert the assembly language program into machine language.

15. Define Interpreter.

It is a program used to convert the high level language program into machine language line by line.

16. What are the types of programming language?

- Machine language
- Assembly language
- High level language

17. Define flow chart.

Flow chart is the pictorial representation of a program.

18. List out the basic design structure?

- Sequence structure
- Selection structure
- Iteration structure

19. List out the any three advantages of flowchart.

- Better communication
- Effective synthesis

· Effective analysis

20. What is Data and Information?

Data - Data is the fact or raw material for the information processing.

Information – The processed data is called information.

21. Give the applications of computer?

Word Processing

Internet

Desktop publishing

Digital video or audio composition

Mathematical Calculation

Robotics

Weather analysis

25. What are the components of the computer systems?

Basic components of the computer system are Input Unit, Central Processing Unit, Secondary Storage Unit and Output Unit.

26. What is an ALU?

Arithmetic logic unit, the part of a computer that performs all arithmetic computations, such as addition and multiplication, and all logical operations such as comparison operations. The ALU is one component of the CPU (central processing unit).

27. What is a CPU?

The CPU (central processing unit) is the part of a computer that controls the interpretation and execution of instructions. Generally, the CPU is a single microchip.

28. What is a Statement?

Statement is a single action in a computer. In a computer, statements might include some of the following actions

1. **input data**-information given to the program
2. **process data**-perform operation on a given input
3. **output data**-processed result

38. What is Sequence in algorithm?

All the instructions are executed one after another is called sequence execution.

39. What is Iteration in algorithm?

In some programs, certain set of statements are executed again and again based upon a conditional test. i.e. executed more than one time. This type of execution is called looping or iteration.

40. What is Selection in algorithm?

A selection statement causes the program control to be transferred to a specific part of the program based upon the condition.

If the conditional test is true, one part of the program will be executed, otherwise it will execute the other part of the program.

44. What is Flowchart?

A Flowchart is a pictorial representation of an algorithm. It is often used by programmer as a program planning tool for organizing a sequence of step necessary to solve a problem by a computer.

45. What is pseudo code?

“Pseudo” means imitation of false and “code” refers to the instruction written in the programming language. Pseudo code is programming analysis tool that is used for planning program logic.

46. What are the rules for writing pseudo code? (MAY 2010)

- Write on statement per line.
- Capitalize initial keywords.
- Indent to show hierarchy.
- End multi line structure.
- Keep statements language independent.

1. What are the various types of operators?

C supports the following types of operators

Unary

Unary Plus +

Unary Minus -

Increment ++

Decrement --

Binary

Arithmetic +, -, *, /, %

Relational <, >, <=, >=, ==, !=

Logical &&, ||, !

Bitwise &, ^, <<, >>

Assignment =

Shorthand assignment +=, -=, *=, /=, %=

Ternary

?:

Special

Sizeof(), *, ->

4. List different datatypes available in C?

Data types are used to specify the type of a variable. In c, the data types are classified into 3 category. They are,

Primary or Built-in : int , char, float

Derived : array, enum, pointer

User defined : function, structure

7. What is the variable? Illustrate with an example

- Variable is a named storage area
- Used to assign a name to a value
- To declare a variable, we need to specify the data type of the value and the variable name

Data type variable _name ;

- Example

```
int reg; float avg;
```

9. What is the importance of keywords in C?

Keywords are reserved identifiers

They perform a specific task, specify the data type

Keyword can not be used as an identifier

Ex: for, if, int

10. List out various Input & output statements in C?

The input & output statements are classified into formatted & unformatted I/O

Formatted I/O : User can able to design/format the output

Unformatted I/O: doesn't allow the users to design the output

Type Input Output

Formatted scanf() printf()

Unformatted Getch(), getch()

getchar()

gets()

putch(), putchar()

puts()

12. Define C?

C is a structured programming language.

c was developed in 1970s by Dennis Ritchie at bell telephone laboratories.

13. What are character set?

1. letters

2. digits

3. special characters

4. white space

15. Define constant?

Constants are fixed values that do not change during the execution of the program.

17. Define string constants?

A string constant is a sequence of character enclosed in double quotes.

Example: "hello"

18. What is variable?

A variable is data name that may be used to store the value.

19. Write short notes about main () function in 'C' program.

- Every C program must have main () function.
- All functions in C, has to end with ‘()’ parenthesis.
- It is a starting point of all ‘C’ programs.
- The program execution starts from the opening brace ‘{‘ and ends with closing brace ‘}’, within which executable part of the program exists.

20. Define void?

Void is an empty data type. It returns nothing. The void type has no value.

21. Define operators?

An operator is a symbol that is to perform mathematical or logical manipulation. It is used in program to manipulate data and variables.

25. What are the different data types available in ‘C’?

There are four basic data types available in ‘C’.

1. int
2. float
3. char
4. double

27. What is an Operator and Operand?

An operator is a symbol that specifies an operation to be performed on operands.

Example: *, +, -, / are called arithmetic operators.

The data items that operators act upon are called operands.

Example: a+b; In this statement a and b are called operands.

28. What is Ternary operators or Conditional operators?

Ternary operators is a conditional operator with symbols ? and :

Syntax: variable = exp1 ? exp2 : exp3

If the exp1 is true variable takes value of exp2. If the exp2 is false, variable takes the value of exp3.

29. What are the Bitwise operators available in 'C'?

& - Bitwise AND

| - Bitwise OR

~ - One's Complement

>> - Right shift

<< - Left shift

^ - Bitwise XOR are called bit field operators

Example: $k = \sim j$; where \sim take one's complement of j and the result is stored in k .

30. What are the logical operators available in 'C'?

The logical operators available in 'C' are

&& - Logical AND

|| - Logical OR

! - Logical NOT

31. What is the difference between Logical AND and Bitwise AND?

Logical AND (&&): Only used in conjunction with two expressions, to test more than one condition. If both the conditions are true the returns 1. If false then return 0.

AND (&): Only used in Bitwise manipulation. It is a unary operator.

32. What is the difference between '=' and '==' operator?

Where = is an assignment operator and == is a relational operator.

Example:

while (i=5) is an infinite loop because it is a non zero value and while (i==5) is true only

35. What is the difference between 'a' and "a"?

'a' is a character constant and "a" is a string.

39. How many bytes are occupied by the int, char, float, long int and double?

int - 2 Bytes

char - 1 Byte float - 4 Bytes long int - 4 Bytes double - 8 Bytes

40. What are the types of I/O statements available in 'C'?

There are two types of I/O statements available in 'C'.

- Formatted I/O Statements
- Unformatted I/O

42. What is a global variable?

The global variable is a variable that is declared outside of all the functions. The

global variable is stored in memory, the default value is zero. Scope of this variable is available in all the functions. Life as long as the program's execution doesn't come to an end.

43. What are the Escape Sequences present in 'C'

\n - New Line

\b - Backspace

\t - Form feed

\' - Single quote

\\ - Backspace

\t - Tab

\r - Carriage return

\a - Alert

\\" - Double quotes

45. Write the limitations of getchar() and scanf() functions for reading strings

getchar()

To read a single character from stdin, then getchar() is the appropriate.

scanf()

scanf() allows to read more than just a single character at a time.

46. What is the difference between scanf() and gets() function?

In scanf() when there is a blank was typed, the scanf() assumes that it is an end.

gets() assumes the enter key as end. That is gets() gets a new line (\n) terminated string of characters from the keyboard and replaces the '\n' with '\0'.

47. What is meant by Control String in Input/Output Statements?

Control Statements contains the format code characters, specifies the type of data that the user accessed within the Input/Output statements.

48. What is the output of the programs given below?

```
main() main()
{
float a; float a;
int x=6, y=4; int x=6, y=4;
a=x/y; a=(float) x/y;
printf("Value of a=%f", a); printf("Value of a=%f",a);
}
```

Output:

1. 1.500000

49. What is the output of the following program when, the name given with spaces?

```
main()
{
char name[50]; printf("\n name\n"); scanf("%s", name); printf("%s",name);
}
```

Output:

Lachi (It only accepts the data upto the spaces)

51. Why we don't use the symbol '&' symbol, while reading a String through scanf()?

The '&' is not used in scanf() while reading string, because the character variable

itself specifies as a base address.

Example: name, &name[0] both the declarations are same.

52. What is the output of the program?

main()		increment()
{		{
increment();		static int i=1;
increment();		printf(“%d\n”,i)
increment();		i=i+1;
}		}
OUTPUT:	3	
1 2		

53. Why header files are included in ‘C’ programming? · This section is used to include the function definitions used in the program.

· Each header file has ‘h’ extension and include using ‘# include’ directive at the beginning of a program.

54. List out some of the rules used for ‘C’ programming.

· All statements should be written in lower case letters. Upper case letters are only for symbolic constants.

· Blank spaces may be inserted between the words. This improves the readability of statements.

· It is a free-form language; we can write statements anywhere between ‘{‘ and ‘}’. a = b + c;

d = b*c;

(or)

a = b+c; d = b*c;

· Opening and closing braces should be balanced.

55. Define delimiters in ‘C’.

Delimiters	Use
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:	Colon	Useful for label
;	Semicolon	Terminates Statement
() []	Parenthesis Square Bracket Curly Brace Hash	Used in expression and functions
{ }	Comma	Used for array declaration Scope of statement Preprocessor directive
#		Variable Separator
,		

56. What do you mean by variables in 'C'?

- A variable is a data name used for storing a data value.
- Can be assigned different values at different times during program execution.
- Can be chosen by programmer in a meaningful way so as to reflect its function in the program.
- Some examples are: Sum percent_1 class_total

57. List the difference between float and double datatype.

S No	Float	Double Float / Double
1	Occupies 4 bytes in memory	Occupies 8 bytes in memory
2	Range : 3.4 e-38 to 3.8e+38	Range : 1.7 e-308 to 1.7e+308
3	Format Specifier: % f	Format Specifier: % lf
4	Example :float a;	Example :double y; There exists long double having a range of 3.4 e -4932 to 3.4 e +4932 and occupies 10 bytes in memory. Example : long double k;

59. List the types of operators.

S No	Operators Types	Symbolic Representation
1	Arithmetic operators	= , - , * , / and %
2	Relational operators	> , < , == , >= , <= and !=
3	Logical operators	&& , and !
4	Increment and Decrement operators	++ and --
5	Assignment operators	= , += , -= , *= , /= , ^= , ;= , &=
6	Bitwise operators Comma operator Conditional operator	& , , ^ , >> , << , and ~
7		,
8		? :

62. Distinguish Increment and Decrement operators.

S No	Increment ++	Decrement --
1	Adds one to its operand	Subtracts one from its operand
2	Equivalent $x = x + 1$	Equivalent $x = x - 1$
3	Either follow or precede operand	Either follow or precede operand
4	Example : ++x; x++;	Example : --x; x--;

64. What is the use of sizeof() operator?

- The sizeof() operator gives the bytes occupied by a variable.
- No of bytes occupied varies from variable to variable depending upon its data types.

Example:

```
int x,y;
```

```
printf(“%d”,sizeof(x));
```

Output:

2

66. What are global variable in ‘C’?

- This section declares some variables that are used in more than one function. such variable are called as global variables.
 - It should be declared outside all functions.
-