Darbhanga College of Engineering

Computer Science & Engineering Dept.

Programming for Problem Solving, 2nd Semester (Question Paper)

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1) The C language consist of_____number of keywords.
A] 32 B] 40 C] 24 D] 56

2) Which of the following is a keyword used for a storage class?
A] Printf B] external C] auto D] scanf

3) The prototype of the function in the header file is-
A]Stdio.h B] stdlib.h C] conio.h D] io.h

4) Preprocessor Directives are used for -
A] Macro Expansion B] File Inclusion
C] Conditional Compilation D] All of these

5) Which operator has the lowest priority ?
A] ++ B] % C] + D] ||

6) The type cast operator is-
A] (type) B] cast() C] // D] " "

7) File manipulation functions in C are available in which header file ?
A] streams.h B] stdio.h C] stdlib.h D] files.h

8) Which pair of functions below are used for single xharacter I/O ?
A] getchar()and putchar() B] scanf() and printf()
C] input() and output() D] Non of these

9) Qhich function is used to read character as you type ?
A] getchar() B] getch() C] getche() D] Both (B) and (C)

10) What is the output of this program ?

```
void main() {
int a=b=c=10;
a=b=c=50;
printf("\n %d %d %d",a,b,c); }
```

A] 50 50 50 B] Compile Time Error C] 10 10 10 D] Three Gaebage Value

11) Which format specifier is used to print the values of double type variable
A]%If B]%Id C]%Iu D] %f

12) What will be the output of the following program?

```
Void main ( ) {
Double x=28;
Int r;
R= x%5;
Printf ("\n r=%d", r); }
```

A] r= 3 B] Run time Error C]Compile time Erroe D]None of the Above

13) What the follwing function call mean?

```
Strcpy(s1 , s2 );
```

A]copies s1 string into s2 B]copies s2 string into s1
C]copies both s1 and s2 D] None of these

14) What will be the output of the following program?

```
Void main( ) {
Int x []= {10,20,30,40,50};
Print f (" \n %d %d %d %d ", x [4] ,3[x] ,x[2] ,1[x] ,x[0] ); }
```

A]Error B]10 20 30 40 50 C]50 40 30 20 10 D]None of these

15) Which of the following is not s keyword of 'C' ?
A]auto B]register C]int D]function

16) What will be the out put ?

```
Void main ( ) {
Char a[] = “INFO” ;
a + +;
printf (“ \n %s”, a); }
```

A] Error B] INFO C] NFO D] None of these

17) Which of the following operatorhas right to left associativity?

A] && B] // C] % D] sizeof

18) What wiil be the out put ?

```
Void main ( ) {
Int I ;
I=0x10+ 010+10;
Printf (“\nx=%x”, i); }
```

A] x= 34 B] i= 34 C] I = 22 D]Error

19) Explicite type conversion is known as

A] conversion B] disjunction C] separation D] casting

20) By default a function returns a value of type

A] int B] char C] void D] None of these

21) What will be the value of x after executing the program ?

```
void main ( ) {
int x;
x = printf(“I See, Sea in C”);
printf(“\n x= % d” , x); }
```

A] x= 15 B] x=2 C] Garbage value D] Error

22) What is sizeof In ‘C’ ?

A] Operator B] Reserve Worf C] Both (A) and (B) D] Function

23) Study the following C program

```
Void main ( ) {
Int a= 0;
For ( ; a ;);
A++; }
```

What will be the value of the variable a, on the execution of the above program

A] I B] 0 C] –1 D] None of these

25) Which is not keyword in ‘C’ ?

A]typedef B] const C] near D] complex

26) What will be the output of the following program code ?

```
void main ( ) {
char a[]= “Hello World” ;
char *p ;
p=a;
printf(“\n%d%d%d%d”,sizeof(a), sizeof(p), stren (a), strlen(p) ); }
```

A] 11 11 10 10 B] 10 10 10 10 C] 12 12 11 11 D] 12 2 11 11

27) The meaning of arrow operator in a->b

A] (*a).b B] a.(*b) C] a.b D] None of these

28) What will be the output of the following program code?

```
Void main ( ) {
Printf (“\n ABC\b\b\bInfo World”); }
```

A] Info world B] ABC Info world C] strxfrm D] strcut

29) Which is valid string function ?

A] strpbrk B] strlen C] strxfrm D] strcut

30) What will be the size of following structure?

```
Struct sample {
Static int x;
int y,z; } ;
```

A]6 bytes B] 2 bytes C] + bytes D] None of these

31) Which of the following function not convert floating point number to string ?

A] fcvt B] gevt C] eevt D] hcvt

32) What will be the output ?

```
void main ( ) {
printf("%d",'B' < 'A' ); }
```

A] Error B] 1 C] 0 D] None of these

33) Which one of the following is condirional directive ?

A] #nifdefn B] #ifdefn C] # ifdefn D] #nifdef

34) What will be the output ?

```
void main ( ) {
int x;
unsigned y;
printf("\n%d %d", sizeof(x), sizeof(y) ); }
```

A] 22 B] 24 C] 44 D] None of these

35) int **x;

A]x is a pointer to pointer B] x is not pointer

C] x is long D] None of these

36) What will be the output ?

```
void main ( ) {
printf("\n %d %d", 10&20, 10/ 20); }
```

A] 00 B] 10 10 C] 0 30 D] 20 20

37) Which of the following is used as a string termination character ?

A] 0 B] \0 C] /0 D] None of these

38) What will be the output ?

```
void main ( ) {
int I= 48;
printf("\n %c %d" ,I,I ); }
```

A] Error B] 48 48 C] 1 48 D] 0 48

39) A static variable by default gets initialized to

A] 0 B] blank space C] 1 D] garbage value

40) Find out on which line no . you will get an error ?

```
Line 1: void main ( )
Line 2: {
Line 3: print("\n Hello World")
Line 4: }
```

A] Line 1 B] Line 2 C] Line 3 D] Line 4

41) What will be the output of the following program ?

```
void main ( ) {
int x=10,y=20;
printf ("\n %d",x,y); }
```

A] 10 B] 20 C] 10 20 D] None of these

42) Which function reallocates memory ?

A] realloc B] alloc C] malloc D] None of these

43) What will be the size of following union declaration?

```
Union Test {
Int x;
Char y;
Float z; } ;
```

A] 7 bytes B] 4bytes C] 1byte D] 4 bytes

44) A declaration float a,b; accupies_____of memory ?

A] 1 bytes B] 4bytes C] 8byte D] 16 bytes

45) What is the output of the following program ?

```
void main() {
int x=40;y=30;z=80;
if(x<y<z)
printf("\n Hello world");
```

else
printf(“\nGood by”);

A] Hello world B]Good by C]Compile time error D]None of these

46) Which of the following is not a relational operator?

A]! B] != C]>= D]<

47) what will be the output ?

```
void main(){
char *p=”Hello world”;
int *q;
p++;
q = (int *)p;
q++;
printf(“\n %s\n%s,p,q); }
```

A] ello world B]Error Ello world

C] ello world D] ello world Lo world llo world

48) which of the following is an operator in ‘C’?

A] , B] $ C] @ D] None of these

49) What is the output of the following code?

```
Void main() {
Int c=0, d=5,e=10,a;
A=c>1?d>1||e>1?100:200:300;
Printf(“a=%d”,a); }
```

A] a=300 B]a=100 C] a=200 D] None of these

50) Which among the following is a unconditional control structure?

A] do-while B] if –else C] goto D] for

51) Which of the following language is predecessor to C Programming Language?

A] A B]B C] BCPL D]C++

52) C programming language was developed by

A] Dennis Ritchie B]Ken Thompson C] Bill Gates D] Peter Norton

53) C was developed in the year ____

A] 1970 B] 1972 C] 1976 D] 1980

54) C is a____language

A] High Level B] Low Level C] Middle Level D] Machine Level

55) C language is available for which of the following Operating Systems?

A] DOS B] Windows C]Unix D] All of these

56) Which of the following symbol is used to denote a pre-processor statement?

A] ! B]# C] ~ D];

57) Which of the following is a Scalar Data type

A] Float B] Union C] Array D] Pointer

58) Which of the following are tokens in C?

A] Keywords B]Variables C]Constants D]All of the above

59) What is the valid range of numbers for int type of data?

A] 0 to 256 B] -32768 to +32767 C] -65536 to +65536 D] No specific range

60) Which symbol is used as a statement terminator in C?

A] ! B] # C]~ D] ;

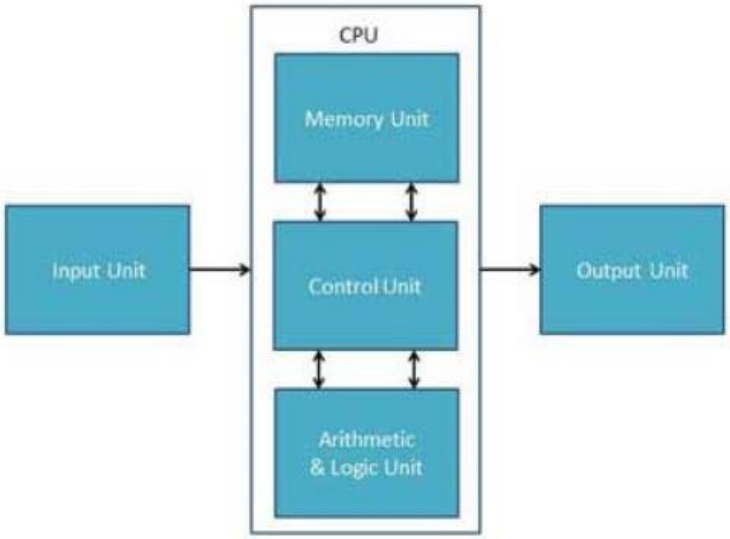
MODULE-1

Short Questions

1. Component of computer system.

All types of computers follow the same basic logical structure and perform the following five basic operations for converting raw input data into information useful to their users.

S.No.	Operation	Description
1	Take Input	The process of entering data and instructions into the computer system.
2	Store Data	Saving data and instructions so that they are available for processing as and when required.
3	Processing Data	Performing arithmetic, and logical operations on data in order to convert them into useful information.
4	Output Information	The process of producing useful information or results for the user, such as a printed report or visual display.
5	Control the workflow	Directs the manner and sequence in which all of the above operations are performed.



2. Describe Operating system.

The Operating System is a program with the following features −

1. An operating system is a program that acts as an interface between the software and the computer hardware.
2. It is an integrated set of specialized programs used to manage overall resources and operations of the computer.
3. It is a specialized software that controls and monitors the execution of all other programs that reside in the computer, including application programs and other system software.

Objectives of Operating System

The objectives of the operating system are −

4. To make the computer system convenient to use in an efficient manner.
5. To hide the details of the hardware resources from the users.
6. To provide users a convenient interface to use the computer system.
7. To act as an intermediary between the hardware and its users, making it easier for the users to access and use other resources.
8. To manage the resources of a computer system.
9. To keep track of who is using which resource, granting resource requests, and mediating conflicting requests from different programs and users.
10. To provide efficient and fair sharing of resources among users and programs.

Characteristics of Operating System

Here is a list of some of the most prominent characteristic features of Operating Systems −

11. **Memory Management** − Keeps track of the primary memory, i.e. what part of it is in use by whom, what part is not in use, etc. and allocates the memory when a process or program requests it.
12. **Processor Management** − Allocates the processor (CPU) to a process and deallocates the processor when it is no longer required.
13. **Device Management** − Keeps track of all the devices. This is also called I/O controller that decides which process gets the device, when, and for how much time.
14. **File Management** − Allocates and de-allocates the resources and decides who gets the resources.
15. **Security** − Prevents unauthorized access to programs and data by means of passwords and other similar techniques.
16. **Job Accounting** − Keeps track of time and resources used by various jobs and/or users.
17. **Control over System Performance** − Records delays between the request for a service and from the system.

3. Explain algorithm and flowchart with examples.

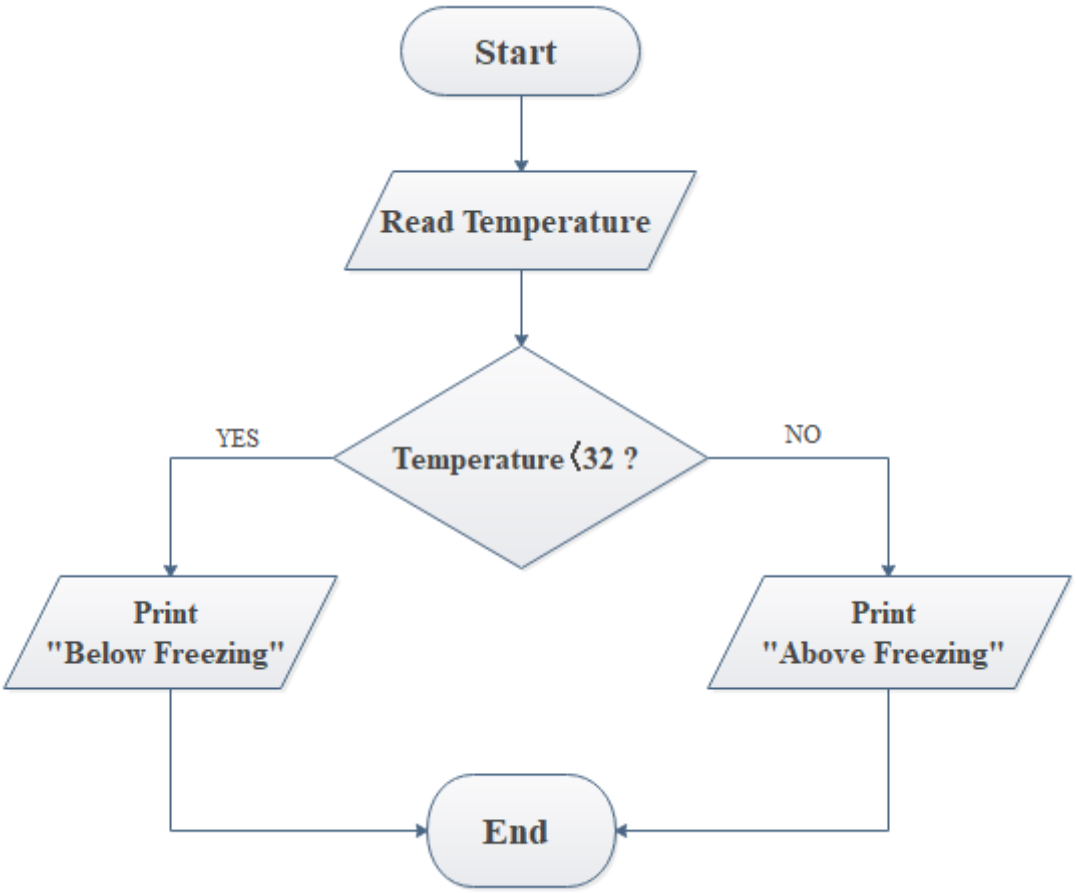
Definition of Algorithm

To write a logical step-by-step method to solve the problem is called algorithm, in other words, an algorithm is a procedure for solving problems. In order to solve a mathematical or computer problem, this is the first step of the procedure. An algorithm includes calculations, reasoning and data processing. Algorithms can be presented by natural languages, pseudo code and flowcharts, etc.

Definition of Flowchart

A flowchart is the graphical or pictorial representation of an algorithm with the help of different symbols, shapes and arrows in order to demonstrate a process or a program. With algorithms, we can easily understand a program. The main purpose of a flowchart is to analyze different processes. Several standard graphics are applied in a flowchart:

A flowchart is a diagrammatic representation that illustrates the sequence of operations to be performed to get the solution to a problem. It can be seen from the definition that flow always accompanies with business or transaction. However, not all of the flows can be expressed by flowcharts, unless these flows are based on some fixed routines and stable links. Here is an example of the algorithm flowchart.



4. Explain storage classes in c.

Storage Classes are used to describe the features of a variable/function. These features basically include the scope, visibility and life-time which help us to trace the existence of a particular variable during the runtime of a program.

1. auto: This is the default storage class for all the variables declared inside a function or a block. Hence, the keyword auto is rarely used while writing programs in C language. Auto variables can be only accessed within the block/function they have been declared and not outside them (which defines their scope). Of course, these can be accessed within nested blocks within the parent block/function in which the auto variable was declared. However, they can be accessed outside their scope as well using the concept of pointers given here by pointing to the very exact memory location where the variables resides. They are assigned a garbage value by default whenever they are declared.

2. extern: Extern storage class simply tells us that the variable is defined elsewhere and not within the same block where it is used. Basically, the value is assigned to it in a different block and this can be overwritten/ changed in a different block as well. So an extern variable is nothing but a global variable initialized with a legal value where it is declared in order to be used elsewhere. It can be accessed within any function/block. Also, a normal global variable can be made extern as well by placing the 'extern' keyword before its declaration/definition in any function/block. This basically signifies that we are not initializing a new variable but instead we are using/accessing the global variable only. The main purpose of using extern variables is that they can be accessed between two different files which are part of a large program.

3**. static**: This storage class is used to declare static variables which are popularly used while writing programs in C language. Static variables have a property of preserving their value even after they are out of their scope! Hence, static variables preserve the value of their last use in their scope. So we can say that they are initialized only once and exist till the termination of the program. Thus, no new memory is allocated because they are not re-declared. Their scope is local to the function to which they were defined. Global static variables can be accessed anywhere in the program. By default, they are assigned the value 0 by the compiler.

4. register: This storage class declares register variables which have the same functionality as that of the auto variables. The only difference is that the compiler tries to store these variables in the register of the microprocessor if a free register is available. This makes the use of register variables to be much faster than that of the variables stored in the memory during the runtime of the program. If a free register is not available, these are then stored in the memory only. Usually few variables which are to be accessed very frequently in a program are declared with the register keyword which improves the running time of the program. An important and interesting point to be noted here is that we cannot obtain the address of a register variable using pointers.

5. What is variable?

A variable is nothing but a name given to a storage area that our programs can manipulate. Each variable in C has a specific type, which determines the size and layout of the variable's memory; the range of values that can be stored within that memory; and the set of operations that can be applied to the variable.

6. What is a logic variable?

Logic variable. (Programming) A variable in a logic programming language which is initially undefined ("unbound") but may get bound to a value or another logic variable during unification of the containing clause with the current goal.

MODULE-2

1. List the C Arithmetic Operators.

An arithmetic operator performs mathematical operations such as addition, subtraction, multiplication, division etc on numerical values (constants and variables).

Operator	Meaning of Operator
+	addition or unary plus
-	subtraction or unary minus
*	multiplication
/	division
%	remainder after division (modulo division)

MODULE-3

1. **List the if...else Statement.**

if statement (including if...else and nested if..else) in C programming with the help of examples.

C if Statement

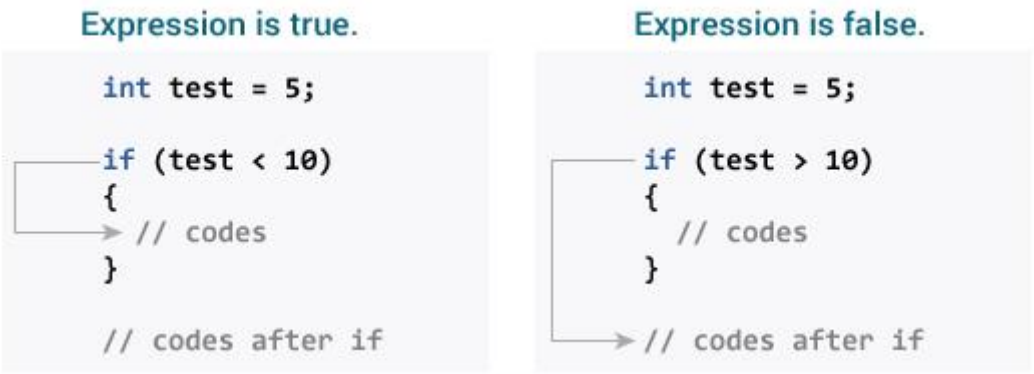
The syntax of the `if` statement in C programming is:

```
if (test expression)
{
  // statements to be executed if the test expression is true
}
```

How if statement works?

The `if` statement evaluates the test expression inside the parenthesis `()`.

- If the test expression is evaluated to true, statements inside the body of `if` are executed.
- If the test expression is evaluated to false, statements inside the body of `if` are not executed.



2. // Program to display a number if it is negative

```
#include <stdio.h>
int main() {
   int number;

   printf("Enter an integer: ");
   scanf("%d", &number);

   // true if number is less than 0
   if (number < 0) {
      printf("You entered %d.\n", number);
   }
```

```
        printf("The if statement is easy.");

    return 0;
}
```

3. Write c programming using if...else statement

```
// Check whether an integer is odd or even

#include <stdio.h>
int main() {
    int number;
    printf("Enter an integer: ");
    scanf("%d", &number);

    // True if the remainder is 0
    if  (number%2 == 0) {
        printf("%d is an even integer.",number);
    }
    else {
        printf("%d is an odd integer.",number);
    }

    return 0;
}
```

4. List the loop in c programming.

C programming has three types of loops:

for loop
while loop
do...while loop

5. Explain for loop with syntax.

The syntax of the for loop is:

```
for (initializationStatement; testExpression; updateStatement)
{
    // statements inside the body of loop
}
```

How for loop works?

- The initialization statement is executed only once.
- Then, the test expression is evaluated. If the test expression is evaluated to false, the `for` loop is terminated.
- However, if the test expression is evaluated to true, statements inside the body of `for` loop are executed, and the update expression is updated.
- Again the test expression is evaluated.

6. **Write a programe to print numbers from 1 to 10**

```
#include <stdio.h>
#include<conio.h>

int main() {
  int i;

  for (i = 1; i < 11; ++i)
  {
    printf("%d ", i);
  }
  return 0;
}
```

Output

```
1 2 3 4 5 6 7 8 9 10
```

7.