

C Programming

1. struct node

```
{  
int i;  
float j;  
};  
struct node *s[10];
```

The above C declaration defines

GATE CSE 2000

1.

1.

- a. An array, each element of which is pointer to a structure of type node
- b. A structure of 2 fields, each field being a pointer to an array of 10 elements
- c. A structure of 3 fields: an integer, a float, and an array of 10 elements
- d. An array, each element of which is a structure of type node

Answer (a)

2. The number of tokens in

```
printf("i = %d, &i - %x", i, &i);
```

GATE CSE 2000

1.

1.

- a. 3
- b. 10
- c. 25
- d. 22

Answer (b)

3. Assume that objects of the type short, float and long occupy 2 bytes, 4 bytes and 8 bytes, respectively. The memory requirement for variable t, ignoring alignment

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```
struct {  
short s [5];  
union {  
float y;  
long z;  
}u;  
} t;
```

1.

1.

- a. 22 bytes
- b. 18 bytes
- c. 14 bytes
- d. 10 bytes

Answer (b)

4. Consider the given three C functions:

```
[P1] int * g (void)
```

```
{  
int x = 10;  
return (&x);  
}
```

```
[P2] int * g (void)
```

```
{  
int * px;  
*px = 10;  
return px;  
}
```

```
[P3] int * g (void)
```

```
{  
int * px
```

```
px = (int *) malloc (sizeof(int));
*px = 10;
return px;
}
```

Which of the above three functions are likely to cause problems?

GATE CSE 2001

1.

1.

- a. Only P1 and P2
- b. Only P3
- c. Only P1 and P3
- d. P1, P2, and P3

Answer (a)

5. What does the given program print?

```
char c[] = "GATE2011"
char *p = c;
printf ("%s", p + p[3] - p[1]);
```

GATE CSE 2011

1.

1.

- a. GATE 2011
- b. 2011
- c. E2011
- d. 011

Answer (b)

6. The output of the following C program is_____

GATE CSE 2015 Set 1

```
void f1(int a, int b) {
int c;
c=a; a=b; b=c;
```

```

}
void f2(int *a, int *b) {
int c;
c=*a; *a=*b; *b=c;
}
int main(){
int a=4, b=5, c=6;
f1(a,b);
f2(&b, &c);
printf("%d",c-a-b);
}

```

1.

1.

- a. -5
- b. 6
- c. -6
- d. 0

Answer (a)

7. The following program prints _____

```

#include < stdio.h >
void f (int *p, int *q) {
p = q;
*p = 2;
}
int i = 0, j = 1;
int main ( ){
f(&i, &j);
printf ("%d %d \n", i, j);
return 0;
}

```

GATE CSE 2010

1.

1.

- a. 2 2
- b. 2 1
- c. 0 1
- d. 0 2

Answer (d)

8. Consider the following C program

```
void f(int, short);  
void main()  
{  
int i = 100;  
short s = 12;  
short *p = &s;  
_____ ; // call to f()  
}
```

Which one of the following expressions, when placed in the blank above, will **NOT** result in a type checking error?

GATE CSE 2016 Set 1

1.

1.

- a. f(s,*s)
- b. i = f(i,s)
- c. f(i,*s)
- d. f(i,*p)

Answer (d)

9. The output of the following C program is

GATE CSE 2018

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

```

struct Ournode{
char x,y,z;
};
int main(){
struct Ournode p = {'1', '0', 'a'+2};
struct Ournode *q = &p;
printf ("%c, %c", *((char*)q+1), *((char*)q+2));
return 0;
}

```

1.

1.

- a. 0, c
- b. 0, a+2
- c. '0', 'a+2'
- d. '0',c'

Answer (a)

10. The output of the following C program is

```

#include < stdio.h >
void mystery(int *ptrb, int *ptrb) {
int *temp;
temp = ptrb;
ptrb = ptrb;
ptrb = ptrb;
}
int main() {
int a=2016, b=0, c=4, d=42;
mystery(&a, &b);
if (a < c)
mystery(&c, &a);
mystery(&a, &d);

```

```
printf("%d\n", a);  
}
```

GATE CSE 2016 Set 1

1.

1.

- a. 2016
- b. 2018
- c. 016
- d. 16

Answer (a)

11. The output of the following C program is

```
#include <stdio.h >  
int main () {  
int arr [] = {1,2,3,4,5,6,7,8,9,0,1,2,5}, *ip = arr+4;  
printf ("%d\n", ip[1]);  
return 0;  
}
```

GATE CSE 2019

1.

1.

- a. 6
- b. 5
- c. 66
- d. 0

Answer (a)

12. The most appropriate matching for the following pairs

X: `m=malloc(5); m= NULL;`

Y: `free(n); n->value = 5;`

Z: `char *p; *p='a';`

1: using dangling

2: using uninitialized pointers

3. lost memory

is:

GATE CSE 2000

1.

1.

- a. X-1 Y-3 Z-2
- b. X-2 Y-1 Z-3
- c. X-3 Y-2 Z-1
- d. X-3 Y-1 Z-2

Answer (d)

13. Consider the following C function

GATE CSE 2004

```
void swap (int a, int b)
{
int temp;
temp = a;
a = b;
b = temp;
}
```

In order to exchange the values of two variables x and y

1.

1.

- a. call swap (x,y)
- b. call swap (&x, &y)
- c. swap (x, y) cannot be used as it does return any value
- d. swap (x,y) cannot be used as the parameters are passed by value

Answer (d)

14. Assume the following C variable declaration


```
int * A[10], B[10][10];
```

Of the following expressions

I. A[2]

II. A[2] [3]

III. B[1]

IV. B[2] [3]

Which will not give compile-time errors if used as left-hand sides of assignment statements in a C program?

GATE CSE 2003

1.

1.

- a. I, II and IV
- b. II, III and IV
- c. II and IV
- d. IV only

Answer (a)

15. In the C language

- a) At most one activation record exists between the current activation record and the activation record for the main
- b) The number of activation records between the current activation record and the activation record for the main depends on the actual function calling sequence.
- c) The visibility of global variables depends on the actual function calling sequence.
- d) Recursion requires the activation record for the recursive function to be saved on a different stack before the recursive function can be called.

GATE CS 2002

1.

1.

- a. There is no such restriction in C language
- b. True
- c. False. In C, variables are statically scoped, not dynamically
- d. False. The activation records are stored on the same stack

Answer (b)

16. Consider the following C program:

```
#include <stdio.h>

int jumble(int x, int y){
x=2*x+y;
return x;
}

int main(){
int x=2, y=5;
y=jumble(y,x);
x=jumble(y,x);
printf("%d \n", x);
return 0;
}
```

The value printed by the program is ____

(GATE 2019)

1.

1.

- a. 26
- b. 25
- c. 20
- d. 0

Answer (a)

17. Consider the following C program:

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

```
int main(){
```

```
int arr[]={1,2,3,4,5,6,7,8,9,0,1,2,5}, *ip=arr+4;
```

```
printf("%d\n", ip[1]);
```

```
return 0;
```

```
}
```

The number that will be displayed on execution of the program is _____

(GATE 2019)

1.

1.

a. 6

b. 7

c. 8

d. 0

Answer (a)

18. Consider the following C function.

```
void convert(int n){  
if(n<0)  
    printf("%d",n);  
else {  
    convert(n/2);  
    printf("%d",n%2);  
}  
}
```

Which one of the following will happen when the function convert is called with any positive integer n as an argument?

(GATE 2019)

1.

1.
 - a. It will print the binary representation of **n** and terminate
 - b. It will print the binary representation of **n** in the reverse order and terminate
 - c. It will print the binary representation of **n** but will not terminate
 - d. It will not print anything and will not terminate

Answer (d)

19. Consider the following C program:

```
#include <stdio.h>
int r(){
static int num=7;
return num--;
}
int main(){
for (r();r();r())
printf("%d",r());
return 0;
}
```

Which one of the following values will be displayed on execution of the programs?

(GATE 2019)

1.
 1.
 - a. 41
 - b. 52
 - c. 63
 - d. 630

Answer (b)

20. Consider the following C program:

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

```

float sum = 0.0, j = 1.0, i = 2.0;
while (i/j > 0.0625){
j = j + j;
sum = sum + i/j;
printf("%f\n", sum);
}
return 0;
}

```

The number of times the variable sum will be printed, when the above program is executed, is _____

(GATE 2019)

1.

1.

- a. 0
- b. 5
- c. 1
- d. None of the above

Answer (b)

21. Consider the following C program:

```

#include <stdio.h>
int main()
{
int a[ ] = {2, 4, 6, 8, 10};
int i, sum = 0, *b = a + 4;
for (i = 0; i < 5; i++)
sum = sum + (*b - i) - *(b - i);
printf ("%d\n", sum);
return 0;
}

```

The output of the above C program is _____

(GATE 2019)

1.

1.

a. 10

b. 12

c. 15

d. 20

Answer (a)

22. Consider the following C program:

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

```
void fun1(char *s1, char *s2){
```

```
    char *tmp;
```

```
    tmp = s1;
```

```
    s1 = s2;
```

```
    s2 = tmp;
```

```
}
```

```
void fun2(char **s1, char **s2){
```

```
    char *tmp;
```

```
    tmp = *s1;
```

```
    *s1 = *s2;
```

```
    *s2 = tmp;
```

```
}
```

```
int main(){
```

```
    char *str1 = "Hi", *str2 = "Bye";
```

```
    fun1(str1, str2); printf("%s %s ", str1, str2);
```

```
    fun2(&str1, &str2); printf("%s %s", str1, str2);
```

```
    return 0;
```

```
}
```

The output of the program above is

(GATE 2018)

1.

1.

- a. Hi Bye Bye Hi
- b. Hi Bye Hi Bye
- c. Bye Hi Hi Bye
- d. Bye Hi Bye Hi

Answer (a)

23. Consider the following C code. Assume that unsigned long int type length is 64 bits.

```
unsigned long int fun(unsigned long int n){
    unsigned long int i, j = 0, sum = 0;
    for (i = n; i > 1; i = i/2) j++;
    for (; j > 1; j = j/2) sum++;
    return(sum);
}
```

The value returned when we call fun with the input 240 is

(GATE 2018)

1.

1.

- a. 4
- b. 5
- c. 6
- d. 40

Answer (a)

24. Consider the following C program

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

```
#include <string.h>
```

```
void printlength (char *s, char *t) {  
    unsigned int c=0;  
    int len = ((strlen(s) - strlen(t)) > c) ? strlen(s): strlen(t);  
    printf("%d\n",len);  
}
```

```
void main () {  
    char *x = "abc",  
    char *y = "defgh";  
    printlength (x,y);  
}
```

Recall that strlen is defined in string. h as returning a value of type size_t, which is an unsigned int. The output of the program is ____

(GATE 2017)

1.

1.

- a. 3
- b. 5
- c. 7
- d. 9

Answer (a)

25. The output of executing the following C program is _____ .

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

```
int total (int v) {  
    static int count = 0;  
    while(v) {
```



```
    count += v&1;
    v >>= 1;
}
return count ;
}
```

```
void main () {
    static int x = 0;
    int i =5;
    for (; i>0;i-) {
        x=x+total(i);
    }
    printf("%d\n",x);
}
```

(GATE 2017)

1.

1.

- a. 23
- b. 25
- c. 27
- d. 29

Answer (a)

26. Consider the following function implemented in C:

```
void printxy(int x, int y) {
    int *ptr;
    x=0;
    ptr=&x;
    y=*ptr;
    *ptr=1;
    printf("%d, %d", x, y);
}
```

```
}
```

The output of invoking `printxy(1,1)` is

(GATE 2017)

1.

1.

- a. 0, 0
- b. 0, 1
- c. 1, 0
- d. 1, 1

Answer (c)

27. Consider the C program fragment below which is meant to divide x by y using repeated subtraction. The variables x , y , q and r are all unsigned int.

```
while (r >= y) {  
    r = r - y;  
    q = q + 1;  
}
```

Which of the following condition on the variables x , y , q and r before the execution of the fragment will ensure that the loop terminates in a state satisfying the condition $x == (y * q + r)$?

(GATE 2017)

1.

1.

- a. $(q == r) \ \&\& \ (r == 0)$
- b. $(x > 0) \ \&\& \ (r == x) \ \&\& \ (y > 0)$
- c. $(q == 0) \ \&\& \ (r == x) \ \&\& \ (y > 0)$
- d. $(q == 0) \ \&\& \ (y > 0)$

Answer (c)

28. Consider the following snippet of a C program. Assume that `swap(&x, &y)` exchanges the contents of x and y .

```
int main () {
```

```

int array[] = {3,5,1,4,6,2};
int done = 0;
int i;

while (done == 0) {
    done = 1;
    for (i = 0, i<=4; i++) {
        if (array[i]< array[i+1]) {
            swap (&array[i], &array[i+1]);
            done = 0;
        }
    }
    for (i=5; i>=1; i-) {
        if (array[i] > array [i-1]) {
            swap(&array[i], &array[i-1]);
            done = 0;
        }
    }
    printf("%d", array[3]);
}

```

The output of the program is _____

(GATE 2017)

1.

1.

- a. 3
- b. 4
- c. 5
- d. 6

Answer (a)

29. Consider the following C program.

```

#include<stdio.h>
int main () {
    int m = 10;
    int n, n1;
    n = ++m;
    n1 = m++;
    n--;
    -n1;
    n-= n1;
    printf ("%d",n),
    return 0;
}

```

The output of the program is _____

(GATE 2017)

1.

1.

- a. 0
- b. 1
- c. 5
- d. None of the above

Answer (a)

30. What will be the output of the following C program?

```

void count(int n){
    static int d=1;
    printf("%d ", n);
    printf("%d ", d);
    d++;
    if(n>1) count(n-1);
}

```

```
    printf("%d ", d);  
}
```

```
void main(){  
    count(3);  
}
```

(GATE 2016)

1.

1.

- a. 3 1 2 2 1 3 4 4 4
- b. 3 1 2 1 1 1 2 2 2
- c. 3 1 2 2 1 3 4
- d. 3 1 2 1 1 1 2

Answer (a)