

CS & IT ENGINEERING

Programming in C

Functions and Storage Classes


DPP-01 Discussion Notes



By- Pankaj Sharma sir



TOPICS TO BE COVERED



01 Question

02 Discussion

Q.1

Consider the following program:

#include<stdio.h>

int f2(int a){

int b=0;

b=b+5;

return a*b;

}

int f1(int a){

int b;

b=f2(a);

return a*b;

}

int main(){

int i, a=5, b=4;

for(i=0;i<2;i++){

b-=f1(a)-f2(a);

printf("%d\t", b);

}

return 0;

}

The sum of the printed values is _____

a

5

b

4-96

[NAT]

i=0

b -= f1(a) - f2(a);

125 - 25

b -= 100

b = b - 100

 $\Rightarrow b = 4 - 100 = -96$

-96 + (-196)

 $\Rightarrow -292$

i=1

b -= f1(a) - f2(a)

f1(5)

125 - 25

b -= 100

b = b - 100;

= -96 - 100

5 - -196

-196

Q.2

[MCQ]



Consider the following program:

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

```
void print(int n){
```

```
    for(n++;n++;n++)
```

```
        printf("GATE Wallah");
```

```
}
```

```
int main(){
```

```
    void print();
```

```
    void print();
```

```
    print(-9);
```

```
    return 0;
```

```
}
```

Which of the following is correct?

-8 → True ✓

-6 → True ✓

-4 → True ✓

-2 → True ✓

A.

Compilation error

B.

"GATE Wallah" will be printed infinite number of times.

C.

"GATE Wallah" will be printed 5 times.

D.

"GATE Wallah" will be printed 4 times.

No problem

} declaration

(D)

Q.3

Consider the following program.

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

```
void f(int n){
```

```
    switch(n << 1 + n){
```

```
        default: printf("Sresth");
```

```
        case 4: printf("Parakram");
```

```
        case 3: printf("2024");
```

```
        break;
```

```
        case 2: printf("2025");
```

```
    }
```

```
}
```

```
int main(){
```

```
    f(1);
```

```
    return 0;
```

```
}
```

The output is-

[MCQ]



+
<<

n | 1

n << 1 + n
1 + 1

n << 2

⇒ n × 2²

⇒ 1 × 2²

⇒ 4

A.

B.

C.

D.

A

Parakram2024

SresthParakram2024

Parakram

Sresth2025

Q.4

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

```
int x;
```

```
printf("GATE"):printf("")?printf("2024"):printf("%d",printf("Wallah  
Parakram"));
```

}

f0;

```
return 0;
```

}

The output is-

GATE2024

GATEWallah Parakram4

Wallah Parakram15

GATE4



x = pf(".", d, ¹⁵⁾ ~~pf("wallah [MO~~
~~Parakram"))~~;
exp3

$x = pf("./d", 15) \quad x = \underbrace{pf("")}_{exp1} ? \underbrace{pf('2024')}_{exp2} : pf("./d", pf("Wallah Parakram"))$

```

x = 10 < 5 ? pf("./d", pf("GATE")) : pf("") ? pf("2024"): pf("./d",
pf("Wallaah
Paradigam"));

```

Diagram illustrating the evaluation of the expression:

```

x = 10 < 5 ? pf("./d", pf("GATE")) : pf("") ? pf("2024"): pf("./d", pf("Wallaah Paradigam"));

```

The diagram shows the flow of execution:

- exp1** points to the condition `x = 10 < 5`.
- exp2** points to the first part of the ternary operator: `pf("./d", pf("GATE"))`.
- exp3** points to the second part of the ternary operator: `pf("") ? pf("2024"): pf("./d", pf("Wallaah Paradigam"))`.
- A **True** path leads from the condition to the first part.
- A **False** path leads from the condition to the second part.

Wallah Program 15

Q.5

[NAT]



Consider the following program:

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

```
int f(int 1b, int 2a){
```

```
    int x;
```

```
    x = a << b;
```

```
    b = x * a--;
```

```
    return a + b - x;
```

```
}
```

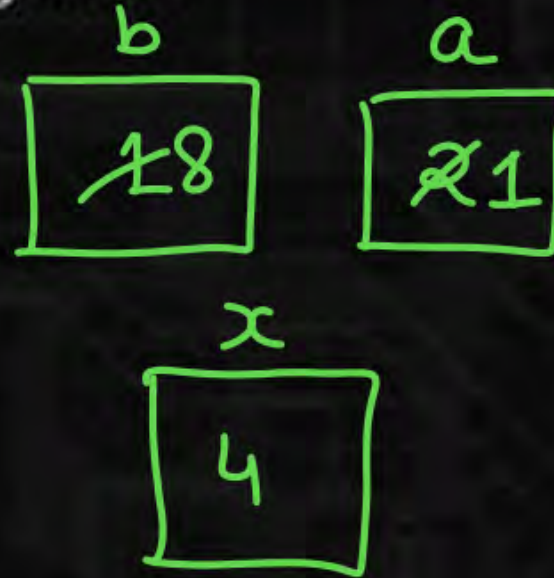
```
int main(){
```

```
    printf("%d", 5f(1, 2));
```

```
    return 0;
```

```
}
```

The value printed is 5.



$$1 + 8 - 4 = \textcircled{5}$$

$$2 \ll 1 \Rightarrow 2 \times 2^1 \Rightarrow 4$$

$$b = x \times \textcircled{a--}$$

(i) use a

(ii) $a = a - 1$

$$\textcircled{b = x \times a}$$
$$\textcircled{a = a - 1}$$

$$b = 4 \times 2 = 8$$

Q.6

Consider the following program:

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

```
int r(int num){  
    return --num;  
}
```

```
int main(){  
    int n=4;  
    for (r(n);r(n++);r(--n))  
        printf("%d\t",r(--n));  
    return 0;  
}
```

The output is-

A.

123

B.

1234

C.

321

D.

4321

[MCQ]



Handwritten analysis of the for loop:

```
for( ① r(n); ② r(n++); ③ r(--n) )  
{  
    printf("/.d\t", r(4));  
}
```

Arrows indicate the flow of execution: ① points to the first condition, ② points to the second condition, and ③ points to the third condition. The value of $r(n)$ is shown as 3, 2, 1, 0, and 3.

Handwritten calculations:

$$\begin{aligned} r(4) &\Rightarrow 3 \\ r(4) &\Rightarrow 3 \\ r(3) &\Rightarrow 2 \\ r(2) &\Rightarrow 1 \end{aligned}$$

Handwritten diagram showing the sequence of values:

3	2	1
3	2	1
3	2	1

o/p. 3 2 1

