

Programming in C

Operators-2

DPP-02

[MCQ]

1. `#include <stdio.h>`
`int main(void){`
`int a;`
`a = 3 > 5 ? 6 ? 2 : 10 : 20 < 50 ? 9 : 1;`
`printf ("%d", a);`
`return 0;`
`}`
The output value of a is ____
(a) 10
(b) 9
(c) 2
(d) Garbage value

[NAT]

2. `#include <stdio.h>`
`int main(void){`
`int a = 7, b = 15; c, d;`
`c = a | b;`
`d = a & b;`
`printf ("%d", c);`
`printf ("%d", d);`
`return 0;`
`}`
The sum of the values printed by the program is ____.

[MCQ]

3. Consider the following program.
`#include <stdio.h>`
`void main()`
`{`
`int a=2,b=3,c=4,d=5;`
`int e;`
`e=++a && ++b || --c && ++d;`
`printf ("%d%d%d%d",a,b,c,d,e);`
`}`
The output is-
(a) 34351
(b) 34361
(c) 33451
(d) 34451

[NAT]

4. `#include <stdio.h>`
`int main(void){`
`int n = 216;`
`printf ("%d", n<<1);`
`printf ("%d", n>>2);`
`return 0;`
`}`
The difference of the values printed is ____.

[MCQ]

5. Consider the following program:
`#include <stdio.h>`
`int main()`
`{`
`int a;`
`a=0!=2<5?!4!=4?8>7!=1:10:20;`
`printf ("%d", a);`
`return 0;`
`}`
The output is:
(a) 0 (b) 1
(c) 10 (d) 20

[MSQ]

6. If $x=4$, which of the following combinations are valid?
 $x=(a>b)?((a>c)?a:c):b$
(a) $a=4, b=3, c=1$ (b) $a=1, b=4, c=3$
(c) $a=2, b=1, c=4$ (d) $a=1, b=2, c=4$

[NAT]

7. `#include <stdio.h>`
`int main()`
`{`
`int a=10, b=20, c=30, d;`
`d=(a-- -10)?c--:++b;`
`printf ("%d", a+b+c+d);`
`return 0;`
`}`
The output is ____.

[MSQ]

8. Consider the following program:

```
#include <stdio.h>
int main()
{
    int a=10, b=20, c=30, d;
    d=(a<<2)?(c>>1):(b<<1);
    return 0;
}
```

Which of the following statement(s) is/are invalid?

- (a) $c=2d$ (b) $d+5=a$
 (c) $b=d+5$ (d) $a+b+c=d$

[MCQ]

9. Consider the following program:

```
#include <stdio.h>
int main()
{
    int a=printf("GATE Wallah");
    printf("%d", a>>1);
    return 0;
}
```

The output string is-

- (a) 5
 (b) GATE Wallah5
 (c) GATE Wallah6
 (d) 6

[NAT]

10. Consider the following program:

```
#include <stdio.h>
int main()
{
    int a, b=50, c=50;
    a=b++ + c--;
    b=a-- + --c;
    return 0;
}
```

The sum of the values of a, b and c is _____.

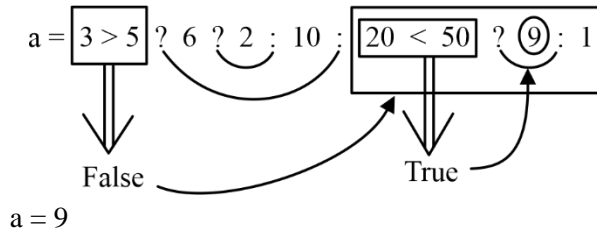
Answer Key

- | | |
|----------|--------------|
| 1. (b) | 6. (a, b, c) |
| 2. (22) | 7. (81) |
| 3. (d) | 8. (b, d) |
| 4. (378) | 9. (b) |
| 5. (a) | 10. (295) |



Hints and Solutions

1. (b)



2. (22)

$7 \rightarrow 0111$

$7 \rightarrow 1111$

$\&$: Bitwise AND.

0 1 1 1

1 1 1 1

0 1 1 1

↓

7

$|$: Bitwise OR

0 1 1 1

1 1 1 1

1 1 1 1

↓

15

$\therefore \text{Sum} = 15 + 7 = 22$

3. (d)

$e = ++a \ \&\& \ ++b \ || \ --c \ \&\& \ ++d$

$e = (++a \ \&\& \ ++b) \ || \ (--c \ \&\& \ ++d)$

$++a$: first increase a to 3 & same value is used

$e = (3 \ \&\& \ ++b) \ || \ (--c \ \&\& \ ++b)$

$++b$: first increase b to 4 & same value is used

$e = (3 \ \&\& \ 4) \ || \ (--c \ \&\& \ ++d);$

$e = 1 \ || \ (--c \ \&\& \ ++d);$

→ never evaluated because short

circuit

$e = 1$

4. (378)

No. of time	Left shift	Right shift
0	216	216
1	432	108
2	—	54

$\therefore \text{Difference} = 432 - 54$
 $= 378$

5. (a)

$a = 0 != 2 < 5 ? !4 != 4 ? 8 > 7 != 1 : 10 : 20;$

$1 < 5 = 1$; Condition True.

The expression $(!4 != 4 ? 8 > 7 != 1 : 10)$ is evaluated.

$!4$ is 0; $0 != 4$ is 1; Condition becomes true. So, $8 > 7 != 1$ is evaluated.

$8 > 7$ is 1 and $1 != 1$ is 0.

So, $a = 0$.

6. (a, b, c)

(a) $(4 > 3) ? ((4 > 1) ? 4 : 1) : 3 = 4$

(b) $(1 > 4) ? ((1 > 3) ? 1 : 3) : 4 = 4$

(c) $(2 > 1) ? ((2 > 4) ? 2 : 4) : 1 = 4$

(d) $(1 > 2) ? ((1 > 4) ? 1 : 4) : 2 = 2$

7. (81)

$d = (10 - 10) ? 30 : 21; // 0$ means condition is false so $b++$ is only evaluated, a is decremented to 9,.

$d = 21$

$a = 9, b = 21, c = 30, d = 21$

$\text{Sum} = 9 + 21 + 30 + 21 = 81$

8. (b, d)

$a << 2$ means $a = 10 * 4 = 40$, condition is true, so $c >> 1$ is evaluated.

$c >> 1$ means $30 / 2 = 15$. Hence, $d = 15$.

$a = 10, b = 20, c = 30, d = 15$

Hence, (b) and (d) are invalid.

9. (b)

“GATE Wallah” is printed and $a=11_{10}$; $a=1011_2$;
 $a \gg 1 = 0101_2 = 5$;
 Output: GATE Wallah5

$a=100$, $b=51$, $c=49$

$b=100+48$; // a is decremented after this line.

$b=148$, $a=99$, $c=48$

Sum = $148+99+48=295$

10. (295)

$b=50$, $c=50$;

$a=50+50$; // b is incremented and c is decremented after this line



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