CS & IT ENGINEERING

Programming in C

Data types and operators

DPP. 03 Discussion

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Operators

Q.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 9

A. 10

B. 9

C. 2

D. Garbage value

$a = (3>5)\ ?\ (6\ ?\ 2 : 10) : (20<50\ ?\ 9 : 1)$

exp1 exp2 exp3

$a = 20<50\ ?\ 9 : 1$

exp1 exp2 exp3

True

$a = 9$

Q.2

```
#include <stdio.h>
int main(void){
    int a = 7, b = 15; c, d;
     c = a | b;        15
     d = a & b;        7
     printf("%d", c);  15
     printf("%d", d);  7
     return 0;
     }
```

a : 0000000000000111

b : 0000000000001111

a|b 00000000.00001111 ⇒ 15

a&b 0000000000000111 ⇒ 7

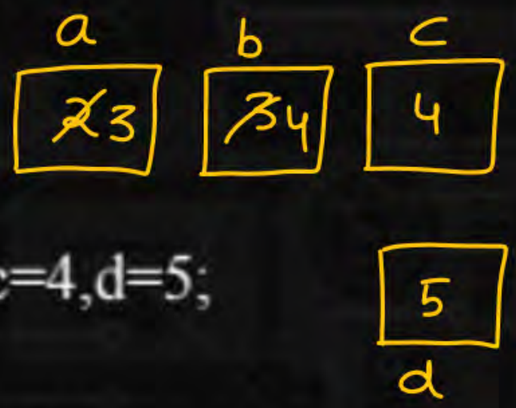
The sum of the values printed by the program is 22.

Q.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%d",a,b,c,d,e);
    }
```

The output is-



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

$a = a+1$ ✓

$(3 \;\&\&\; ++b) \,||\, (--c \;\&\&\; ++d)$

$b = b+1$

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

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

34451

Never evaluated short-circuit Eval.

A. 34351

B. 34361

C. 33451

D. 34451 ✓

Q.4

```
#include <stdio.h>
int main(void){
        int n = 216;
        printf("%d", n<<1);
        printf("%d", n>>2);
        return 0;
}
```

$216 \times 2 = 532$

$\Rightarrow \frac{216}{2^2} = \frac{216}{4} = 54$

The difference of the values printed is 478.

$$\begin{array}{r} 532 \\ 54 \\ \hline 478 \end{array}$$

Q.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

exp1 ? exp2 : exp3

> != =

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

exp1 | exp2 | exp3

True

0!=2<5

0!=1 True 1

a = !4!=4 ? 8>7!=1 : 10

exp1 | exp2 | exp3

!4!=4

0!=4 ⇒ True

a = 8>7!=1 ⇒ a = 1!=1 (0)

a = 0

Q.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

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

exp1 exp2 exp3

true

(4>1)?4:1

x = 4

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

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

2>4?2:4

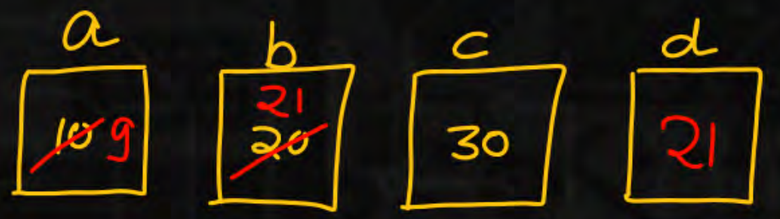
d) (1>2)?((1>4)?1:4):2

A, B, C

Q.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 81.



d = (a-- - 10)? c-- : ++b

exp1 exp2 exp3

(10 - 10)? c-- : ++b

0

False

d = ++b ;

d => 21

30 + 30 + 21

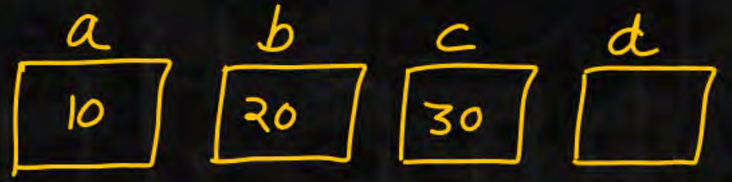
= 81

Q.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] 30 2x15 correct/valid

b] 15+5 10
20 10
invalid

c] 20 15+5
valid 20 20

d] 10+20+30 15
invalid

10<<2 ⇒ 10x2x2 = 40

30>>1 ⇒ 30/2 = 15

b<<1 ⇒ 20<<1 ⇒ 20x2 = 40

d = 40 ? 15 : 40
exp1 exp2 exp3

True

d = 15

B,D

A. c = 2d

B. d + 5 = a

C. b = d + 5

D. a + b + c = d

Q.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-

11

5

11>>1

$\Rightarrow \frac{11}{2} = 5$

GATE Wallah5

A. 5

B. GATE Wallah6

C. GATE Wallah5

D. 6

Q.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 295.

a = b++ + c-- (Post op.)

a = 50 + 50

b = a-- + --c

b = 100 + 48

148

99 + 148 + 48

100 + 147 + 48

=> 295


THANK YOU GW
SOLDIERS !