

1) Read two integer values to perform bitwise operations (&, |, ^, <<, >>)

```
#include <stdio.h>
int main()
{
    int a, b;
    printf("enter two integer values :");
    scanf("%d %d", &a, &b);
    printf("\n bitwise AND (a&b) = %d", a & b);
    printf("\n Bitwise OR (a|b) = %d", a | b);
    printf("\n Bitwise XOR (a^b) = %d", a ^ b);
    printf("\n Bitwise NOT (~a) = %d", ~a);
    printf("\n Bitwise NOT (~b) = %d", ~b);
    printf("\n Left shift (a<<1) = %d", a << 1);
    printf("\n Right shift (a>>1) = %d", a >> 1);
    return 0;
}
```

Output

Enter two integers values : 4, 2

Bitwise AND (a&b) = 0

Bitwise OR (a|b) = 71441108

Bitwise XOR (a^b) = 71441108

Bitwise NOT (~a) = -5

Bitwise NOT (~b) = -71441105

Left shift (a<<1) = 8

Right shift (a>>1) = 2

2) Relational operators (<, <=, >, >=, ==, !=)

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

```
int main()
```

```
{
```

```
    int a, b;
```

```
    printf("enter two integer values :");
```

```
    scanf("%d %d", &a, &b);
```

```

printf("\n Results of relational operations\n");
printf("a < b: %d\n", a < b);
printf("a > b: %d\n", a > b);
printf("a <= b: %d\n", a <= b);
printf("a >= b: %d\n", a >= b);
printf("a != b: %d\n", a != b);
printf("a == b: %d\n", a == b);
return 0;
}

```

Output :

Enter two integer values : 4, 2

Results of relational operations:

a < b : 0

a > b : 1

a >= b : 1

a <= b : 0

a != b : 1

a == b : 0

3) a = 4, b = 2 ; 4 == 2

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

```
int main()
```

```
{
```

```
int a, b;
```

```
printf("Enter two integer values:");
```

```
scanf("%d %d", &a, &b);
```

```
if (a == b) {
```

```
printf("Both numbers are equal.\n");
```

```
}
```

```
else {
```

```
printf("Both numbers are not equal.\n");
```

```
return 0;
```

```
}
```

Output:-

Enter two integer values : 4, 2

Both numbers are not equal.

MCQ's on → increment, decrement  
→ shift operations

1) what will be the output of the following c code?

```
#include <stdio.h>
int main()
{
    int x = 5;
    int y = x++ / 2;
    printf("%d", y);
    return 0;
}
```

1) 3      a) compile-time error      b) None of these      ~~c) 2~~

2) what will be the output of the following c code?

```
#include <stdio.h>
int main() {
    int a = 10;
    int b = --a;
    printf("%d, %d\n", a, b);
    return 0;
}
```

1) 10, 9      b) 9, 10      ~~c) 9, 9~~      d) 10, 10

3) what will be the output of the following c code?

```
#include <stdio.h>
int main() {
    int i = 1;
    int result = ++i + i++;
    printf("%d, %d\n", i, result);
    return 0;
}
```

1) 3, 3      2) 3, 4      3) 3, 5      d) undefined behavior

4) what is the output of the following c code?

```
#include <stdio.h>
int main() {
    int a = 5, b;
    b = ++a;
    printf("a = %d, b = %d", a, b);
    return 0;
}
```



5) what will be the output of the following 'c' code?

```
#include <stdio.h>
int main()
{
    int i=0;
    int x=i++, y=++i;
    printf("%d %d\n", x, y);
    return 0;
}
```

- a) 0, 2    b) 0, 1    c) 1, 2    d) undefined

6) what will be the output of the following 'c' code?

```
#include <stdio.h>
void main() {
    int x=4, y=2;
    y = --x;
    z = x - -;
    printf("%d %d %d", x, y, z);
}
```

- a) 323    b) 233    c) 322    d) 234

7) what will be the output of the following 'c' code?

```
#include <stdio.h>
void main()
{
    int a=-5;
    int k=(a++, ++a);
    printf("%d\n", k);
}
```

- a) -4    b) -5    c) 4    d) -3

8) what will be the output of the following 'c' code?

```
#include <stdio.h>
int main()
{
    int i=10;
    int *p=&i;
    printf("%d\n", *p++);
}
```

- a) 10    b) 11    c) garbage value    d) Address of i

9) #include <stdio.h>

int main()

{

int c = 2^3;

printf("%d\n", c);

a) 1      b) 8      c) 9      d) 10

10) #include <stdio.h>

int main() {

int a = 5;

int b = a++;

printf("value of a: %d\n", a);

printf("value of b: %d\n", b);

return 0;

}

a) 6, 6      ~~b) 6, 5~~      c) 5, 6      d) 5, 5

11) #include <stdio.h>

int main() {

int a = 5;

int b = --a;

printf("value of a: %d\n", a);

printf("value of b: %d\n", b);

return 0;

}

a) 4, 3

b) 5, 4

~~c) 4, 4~~

d) compilation error

12) #include <stdio.h>

int main() {

int a = 5;

int b = a--;

printf("value of a: %d\n", a);

printf("value of b: %d\n", b);

return 0;

}

~~a) 4, 5~~

b) 4, 4

c) garbage value

d) 4, 5, 4

13) #include <stdio.h>

void main()

{

char a = 'a';

int x = (a \* 10) + 7;

printf("%d\n", x);

}

a) 6

b) junk value

c) compile time error

d) 3

14) #include &lt;stdio.h&gt;

void main () {

int x = 4;

int \*p = &amp;x;

int \*k = p++;

int r = p - k;

printf("%d", r);

}

a) 4

b) 8

c) 1

d) Run time error

15) #include &lt;stdio.h&gt;

int main () {

int a = 4, n, i, result = 0;

scanf("%d", &amp;n);

for (i = 0, i &lt; n; i++)

result += a;

}

a) Addition of a and n

b) subtraction of a and n

c) multiplication of a and n

d) division of a and n

16) #include &lt;stdio.h&gt;

int main () {

int a = 2;

if (a &gt;&gt; 1)

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

}

a) 0

b) 1

c) 2

d) NO output

17) The left shift operator (&lt;&lt;) can be used as an alternative

a) Dividing by 2

b) multiply by 2

c) Taking the modulo

d) None of the mentioned

18) #include &lt;stdio.h&gt;

int main () {

int x = -2;

printf("%d\n", x &gt;&gt; 1);

return 0;

}

a) 1

b) -1

c)  $2^{31}-1$ 

d) either -1 or 1



19) #include <stdio.h>

```
int main () {  
    int x = 2;  
    x = x << 1;  
    printf ("y d \n", x);  
}
```

9/4 b) 1 c) depends on the compiler d) 3

20) comment on the output of the following c code.

```
#include <stdio.h>  
int main () {  
    int i, n, a = 4;  
    scanf ("%d", &n);  
    for (i = 0; i < n; i++)  
        a = a * 2;  
}
```

9/4 Logical shift left

c) Arithmetic shift right

b) Logical shift right

d) Bitwise exclusive OR

21) what will be the final value of c in the following c statement?  
(initial value of c = 2)

1.  $c << 1$ ;

a)  $c = 1$ ;

b)  $c = 2$ ;

c)  $c = 3$ ;

~~d)  $c = 4$ ;~~

22) what is the result of the expression  $10 << 2$ ?

a) 20

~~b) 40~~

~~c) 30~~

d) 2

$= 10 \times 2^2 = 10 \times 4 = 40$ . Binary  $\rightarrow 10$  is 00001010.

23) which of the following is equivalent to multiplying an integer x by 8?

a)  $x >> 3$

~~b)  $x << 3$~~

c)  $x * 2^3$

d)  $x * 8$

24) what is the result of the expression  $16 >> 3$ ?

9/2

b) 4

c) 8

d) 1

(25) #include <stdio.h>

```
void main ()
```

```
{
```

```
    unsigned int x = -5;
```

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

```
    return 0;
```

```
}
```

26) what is the result of the expression  $5 \leq 2$ ?

- a) 20    b) 10    c) 40    d) 8

27) what is the result of expression  $10 \gg 1$ ?

- a) 5    b) 10    c) 20    d) 1

28) what is the result of  $20 \gg 2$  for a positive integer

- a) 10    b) 5    c) 4    d) undefined

29) #include <stdio.h>

```
int main() {
```

```
    int num = -10;
```

```
    int result = num >> 1;
```

```
    printf("Result of -10 >> 1 : %d\n",
```

```
    return 0;
```

```
}
```

- a) -5    b) -6    c) 5    d) implementation - defined

30) #include <stdio.h>

```
int main() {
```

```
    int num = 15;
```

```
    int result = num << 0;
```

```
    printf("Result of 15 << 0 : %d\n", result);
```

```
    return 0;
```

```
}
```

- a) 0    b) 15    c) undefined    d) error