

CS & IT ENGINEERING

Control flow statements

Programming in C

Decision control statement-1


DPP 01 Discussion Notes



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TOPICS TO BE COVERED



01 Question

02 Discussion

Q.1

```
#include <stdio.h>
int main(void){
    int i = 2, j = 3, k = 4;
    if (i < j ? 1 : 0)
        printf("GATE");
    else
        printf("Wallah2023");
    return 0;
}
```

The output of the program is GATE

i j k [NAT]
2 3 4

if(expression)
2 < 3 ? 1 : 0
exp1 exp2 exp3
True
if(1)



Q.2

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

```
void main( ) {
```

```
    int a, b, c, d;
```

```
    a = 2; b = -1; c = 3; d = -4;
```

```
    if(a = b - c - d)
```

```
        printf("%d%d%d", a++, b--, c++);
```

```
    else
```

```
        printf("%d%d%d", c--, ++a, ++b);
```

```
}
```

The output is 310.

A.

1 -2 4

~~B.~~

3 1 0

C.

2 1 -3

D.

3 3 0

a

~~20~~

b

~~0~~

c

3

d

-4

[MCQ]



$$\begin{aligned} a &= b - c - d \\ &= -1 - 3 - (-4) \\ &= -4 + 4 \end{aligned}$$

a=0 ~ Assignment

if (expression)

if (a=0)

if (0) → False

B

Q.3

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

```
int main(void){
```

```
int a = 3 > 2 ? 0 ? 0 : 1 : 5;
```

```
if(a == a - 1)
```

false

```
printf("GATE 2023");
```

```
else
```

```
printf("GATE WALLAH");
```

```
return 0;
```

```
}
```

The output of the program is ____.

A.

GATE 2023

☒ B.

GATE WALLAH

C.

Compiler error

D.

Garbage value

a
1

[MCQ]



a = 3 > 2 ? 0 ? 0 : 1 : 5 ;

(3 > 2) ? (0 ? 0 : 1) : 5

exp1 exp2 exp3

True

a = 0 ? 0 : 1

a = 1

Q.4

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

```
void main( ) {
```

```
int a;
```

```
    a = printf("GATE Wallah 2023");
```

```
    if(a%4 == 0)
```

```
        a = a + 5;
```

```
    else
```

```
        a = a - 5;
```

```
    printf("%d", a++);
```

```
}
```

The value of a at the end of the program is 22.

a
21
16
22

[NAT]



21

$$16 \% 4 == 0$$

$$0 == 0 \text{ True}$$

Q.5

#include <stdio.h>

void main() {

int i, j, k;

j = 4;

k = 0;

i = j < k ? k : j--;

if(j < i) $3 < 4$

j = j + k - 1;

if(j == i)

j = j - i;

else

j = j + --k;

printf("%d", j + k - i);

}

The output is -4.i
4j
4, 3k
0, -1**[NAT]**

$$i = \underbrace{j < k}_{\text{exp1}} ? \underbrace{k}_{\text{exp2}} : \underbrace{j--}_{\text{exp3}};$$

$$j = 3 + 0 - 1 = 2$$

$$\underbrace{4 < 0}_{\text{false}} ? k : j--$$

i = j--;

(i) use the value of j
(ii) Dec. the value

(i) i = j i = 4
(ii) j = j - 1;

j = j + (-k) \Rightarrow (i) k = k - 1
j = j + k \Rightarrow j = 2 + (-1) = 2 - 1 = 1

Q.6

Consider the following program:

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

```
int main()
```

```
{
```

```
    int a=19, b=20;
```

```
    if(True a++<b--) printf("%d",a+++--b);
```

```
    else printf("%d", ++a+--b);
```

```
    return 0;
```

```
}
```

The output is 38.

$$\begin{array}{c} a \\ \boxed{\begin{array}{r} 20 \\ 19 \\ \hline 21 \end{array}} \end{array} \quad \begin{array}{c} b \\ \boxed{\begin{array}{r} 18 \\ 20 \\ \hline 19 \end{array}} \end{array}$$

[NAT]



if (a++ < b--)
19 < 20 \Rightarrow True

+ ✓
++ ✓

a+++ --b

(a++) + (--b)

20 + 18

\Rightarrow 38

Q.7

```
#include<stdio.h>
void main()
{
int a=0;
printf("%d", a);
if(a=2){
    printf("Hi");
    printf("%d",a);
}else{
    printf("Bye");
}
printf("%d", a);
}
```

The output string is:

a
02

o/p: 0Hi22

[MCQ]



a=2

(A)

if(2)

A.

0Hi22

B.

0Hi20

C.

0Bye0

D.

0Hi00

Q.8

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

```
    int a=0, b=0;
```

```
    a=(a=4)||(b=1);
```

```
    if(a&& b) printf("CProgramming"); X
```

```
    else printf("PankajSharma");
```

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

```
}
```

The output is-

A.

Cprogramming0

B.

CProgramming1

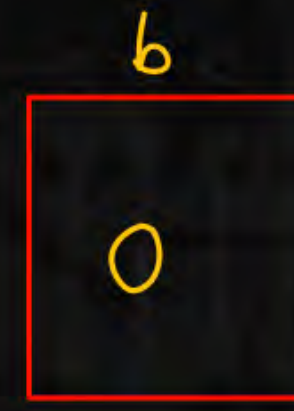
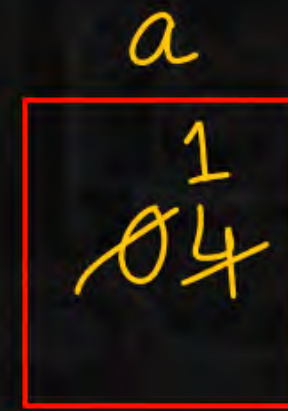
☒ C.

PankajSharma0

D.

PankajSharma1

[MCQ]



if (1 && 0)
if (0) ^{false}

a = (a=4) || (b=1)

a = 4 || (b=1)
never eval.

Short-circuit Eval.

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