

# C Programming

## Control Flow Statement



DPP-04

**[NAT]**

1. `#include <stdio.h>`  
`void main( )`  
`{`  
`int i = 0;`  
`switch(i)`  
`{`  
`case 0: i = i + 1;`  
`case 1: i = i + 3;`  
`case 2: i = i * 2;`  
`break;`  
`default: i = i + 5;`  
`}`  
`}`  
 The value of i is \_\_\_\_\_.

**[NAT]**

2. `#include <stdio.h>`  
`void main( )`  
`{`  
`int a, b, c, d, e;`  
`b = 1; c = 1; d = 2; e = -1;`  
`a = b++ && c-- || d++ && e--;`  
`switch(c)`  
`{`  
`case 0: a = a + 1;`  
`case 1: a = a - 1;`  
`default: a = a - 2;`  
`}`  
`}`  
 The final value of (a + b + c + d + e) is \_\_\_\_\_.

**[MCQ]**

3. `#include <stdio.h>`  
`int main(void)`  
`{`  
`int x ;`  
`scanf("%d", &x);`

```
switch(x)
{
    case 0: x = x + 1;
    break;
    default: x = x - 1;
    case 1: x = x - 11;
    case 2: x = x + 128;
    break;
}
printf("%c", x);
return 0;
```

What is the output when  $x = -4$ ?

- (a) p                      (b) M  
 (c) Garbage            (d) ERROR

**[MCQ]**

4. `#include <stdio.h>`  
`int main(void)`  
`{`  
`int q, r = 0;`  
`q = 2 * 3/6 + 2.0/5 + 0.2 * 3;`  
`r = -q --;`  
`switch(q - r)`  
`{`  
`case 0: printf("Hello");break;`  
`case 1: printf("Hi");break;`  
`case 2: printf("best hai");break;`  
`case 3: printf("GATE Wallah");`  
`default: printf("2023");`  
`}`  
`return 0;`  
`}`

The output of the program is \_\_\_\_\_.

- (a) Hibest haiGATE Wallah  
 (b) best haiGATE Wallah  
 (c) GATE Wallah2023

(d) GATE Wallah

**[MCQ]**

```
5. #include<stdio.h>
int main()
{
    int j=10, p=0;
    for(;j>0;)
    {
        switch(j)
        {
            case 1: p+=3;
            case 2: p+=5;
            break;
            default: p-=8;
            case 3: p-=7;
            break;
        }
        j=j-3;
        printf("%d\t",p);
    }
    return 0;
}
```

The output is-

- (a) -15 -30 -42 -45
- (b) -15 -45 -30 -42
- (c) -15 -30 -42 -39
- (d) -15 -30 -45 -37

**[NAT]**

```
6. #include<stdio.h>
int main()
{
    int x;
    for(x=0; x<32; x++)
    {
        switch(x)
```

```
{
    case 0: x= x+2;
    case 1: x=x+5;
    case 2: x=x+1;
    default: x=x+7;
}
printf("%d\t",x);
}
return 0;
}
```

The sum of the values printed is \_\_\_\_\_.

**[MCQ]**

7. Consider the following two statements:

P: Case label can be integer or character or floating point numbers.

Q: Only one default is allowed in switch-case structure.

Which of the following statements are INCORRECT?

- (a) Both P and Q
- (b) Only P
- (c) only Q
- (d) Neither P or Q.

**[MCQ]**

```
8. #include<stdio.h>
int main()
{
    int x=4, y=5;
    x=x==y==5;
    switch(1)
    {
        x=x+11;
    }
    printf("%d", ++x);
    return 0;
}
```

The output is-

- (a) 0
- (b) 1
- (c) 11
- (d) Compiler Error

## Answer Key

1. (8)
2. (2)
3. (a)
4. (c)
5. (d)

6. (69)
7. (b)
8. (b)



## Hints and solutions

1. (8)

If no break statements exist then all the case statements are executed

```
i = 0;
i = 0 + 1 = 1;
i = 1 + 3 = 4;
i = 4 * 2 = 8
```

2. (2)

b  $\overline{1} 2$       c  $\overline{1} 0$       d  $\overline{2}$       e  $\overline{-1}$   
    a  $\overline{-1}$

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

This part won't be evaluated because of short circuit

(1 && 1)  
     ↓  
   True

switch(0)  
 {

case 0: a = a + 1 ⇒ a = 1 + 1 = 2

case 1: a = a - 1 ⇒ a = 2 - 1 = 1

default: a = a - 2 ⇒ a = 1 - 2 = -1

∴ a + b + c + d + e =  $\overline{1} + \overline{2} + 0 + 2 - \overline{1} = 2$

}

3. (a)

X = -4, default case is executed. Since there are no breaks, case 1 and case 2 will also be executed.

```
x=x-1;//x=-5
x=x-11;//x=-16
x=x+12;//x=112
```

The equivalent character with ASCII value 112 is p.

4. (c)

q = 1 + 0.4 + 0.6 = 2.0 when assigned to integer variable, q=2

q  $\overline{2} 1$   
 r  $\overline{0} - 2$   
 r = r - q

After this q is decremented to 1.

q - r = 1 + 2 = 3

Output: GATE Wallah2023

[Note: there is no break after case 3]

5. (d)

```
j=10;
switch(10)
{
    case 1: p+=3;
    case 2: p+=5;
    break;
    default: p-=8;//p= 0 - 8= -8
    case 3: p-=7;//p= -8 -7 = -15
    break;
}
j=j-3;//j=7
printf("%d\t",p); // -15
j=7;
switch(7)
{
```

```
    case 1: p+=3;
    case 2: p+=5;
    break;
    default: p-=8;//p= -15 - 8= -23
    case 3: p-=7;//p= -23 -7 = -30
    break;
}
```

```
j=j-3;//j=4
printf("%d\t",p); // -30
j=4;
switch(4)
{
```

```
    case 1: p+=3;
    case 2: p+=5;
    break;
```

```

default: p-=8;//p= -30 - 8= -38
case 3: p-=7;//p= -38 -7 = -45
break;
}
j=j-3;//j=1
printf("%d\t",p); // -45
j=1;
switch(1)
{
    case 1: p+=3; //p= -45 +3 =-42
    case 2: p+=5; //p = -42 + 5 =-37
    break;
    default: p-=8;
    case 3: p-=7;
    break;
}
j=j-3;//j=-2
printf("%d\t",p); // -37
Output: -15 -30 -45 -37

```

**6. (69)**

```

x=0; 0<32 -> TRUE
switch(0){
    case 0: x= x+2;//x=0+2=2
    case 1: x=x+5;//x=2+5=7
    case 2: x=x+1;//x=7+1=8
    default: x=x+7;//x=8+7=15
}
printf("%d\t",x);//15 is printed
x is incremented to 16.
x=16; 16<32-> TRUE
switch(16)
{
    case 0: x= x+2;
    case 1: x=x+5;

```

```

    case 2: x=x+1;
    default: x=x+7;//x=16+7=23
}
printf("%d\t",x);//23 is printed
x is incremented to 24.
x=24; 24<32-> TRUE
switch(24)
{
    case 0: x= x+2;
    case 1: x=x+5;
    case 2: x=x+1;
    default: x=x+7;//x=24+7=31
}
printf("%d\t",x);//31 is printed
x is incremented to 32.
32<32 is FALSE. Execution stops.
Sum of printed values= 15+23+31=69

```

**7. (b)**

P: INCORRECT. Case label can never be floating point numbers.

Q: CORRECT. Only one default is allowed in switch-case structure.

**8. (b)**

```

x=4, y=5
x=x==y==5;
x==y is 0 and 0==5 is 0.
So x=x==y==5 is equivalent to x=0.
The switch is never executed here.
So, printf("%d", ++x) increments x to 1 and prints it.
Output: 1

```



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