# Branch : CSE/IT Batch: Hinglish

# Subject: Programming in C

# Chapter : Control Flow Statements

## Topic: Switch 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 excuted

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

**2. (2)**

b | 2 c | 0 d | 2 e | –1
a | –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 = –1 + 2 + 0 + 2 – 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 | 2 1
r | 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