Assignment - 9

A Job Ready Bootcamp in C++, DSA and IOT MySirG Switch Case Problems

1. Write a program which takes the month number as an input and display number of days in that month.

Program -

```
#include<stdio.h>
int main()
{
    int month;

    printf("Enter month number: ");
    scanf("%d",&month);

    switch(month)
    {
        case 1:
            printf("31 days");
            break;
        case 2:
            printf("28 days (29 in leap years)");
            break;
        case 3:
            printf("31 days");
            break;
        case 4:
            printf("30 days");
            break;

         case 5:
             printf("31 days");
            break;
```

```
        case 6:
            printf("30 days");
            break;
         case 7:
            printf("31 days");
            break;
        case 8:
            printf("31 days");
            break;
        case 9:
            printf("30 days");
            break;
         case 10:
            printf("31 days");
            break;
        case 11:
            printf("30 days");
            break;
        case 12:
            printf("31 days");
            break;

        default:
        printf("Invalid month number");
    }

    return 0;
}
```

Output -

Enter month number: 7

31 days

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2. Write a menu driven program with the following options:

a. Addition
b. Subtraction
c. Multiplication
d. Division
e. Exit

Program -

```
#include<stdio.h>

int main()
{
    int ch , a , b;

    while(1)
    {
        printf("\n\n1. Addition");
        printf("\n2. Subtraction");
        printf("\n3. Multiplication");
        printf("\n4. Division");
        printf("\n5. Exit");
        printf("\n\nEnter your choice: ");
        scanf("%d",&ch);

        switch(ch)
        {
            case 1:
                printf("Enter two numbers: ");
                scanf("%d%d",&a,&b);
                printf("%d + %d = %d", a , b , a + b);
                break;

            case 2:
                printf("Enter two numbers: ");
                scanf("%d%d",&a,&b);
```

```
                printf("%d - %d = %d", a , b , a - b);
                break;

            case 3:
                printf("Enter two numbers: ");
                scanf("%d%d",&a,&b);
                printf("%d * %d = %d", a , b , a * b);
                break;

            case 4:
                printf("Enter two numbers: ");
                scanf("%d%d",&a,&b);
                printf("%d / %d = %d", a , b , a / b);
                break;

            case 5:
                break;

            default:
                printf("Invalid choice");
        }
        if(ch == 5)
            break;
    }

    return 0;
}
```

Output -

1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit

Enter your choice: 3
Enter two numbers: 2 5
2 * 5 = 10

1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit

Enter your choice: 5

---

3. Write a program which takes the day number of a week and displays a unique greeting message for the day.

Program -

```
#include<stdio.h>

int main()
{
    int day;

    printf("Enter day number of the week : ");
    scanf("%d",&day);

    switch(day)
    {
        case 1:
            printf("Hey there!");
            break;
        case 2:
            printf("Good luck!");
            break;
        case 3:
```

```
            printf("Hope you're doing good!");
            break;
        case 4:
            printf("Keep working hard!");
            break;
        case 5:
            printf("Take care of yourself!");
            break;
        case 6:
            printf("Eat healthy!");
            break;
        case 7:
            printf("Take a good rest!");
            break;

        default:
            printf("Invalid day number!");
    }
    return 0;
}
```

Output -

Enter day number of the week : 3

Hope you're doing good!

---

4. Write a menu driven program with the following options:

a. Check whether a given set of three numbers are lengths of an isosceles triangle or not

b. Check whether a given set of three numbers are lengths of sides of a right angled triangle or not

c. Check whether a given set of three numbers are equilateral triangle or not

d. Exit

Program -

```
#include<stdio.h>
int main()
{
    int ch , a , b ,c;

    while(1)
    {
        printf("\n\n1. Check for isosceles triangle");
        printf("\n2. Check for right angled triangle");
        printf("\n3. Check for equilateral triangle");
        printf("\n4. Exit");
        printf("\n\nEnter you choice: ");
        scanf("%d",&ch);

        switch(ch)
        {
            case 1:
                printf("Enter three numbers: ");
                scanf("%d%d%d",&a,&b,&c);

                if((a == b && b != c) || (b == c && c != a) || (c == a
&& a != b))
                    printf("Isosceles triangle");
                else
                    printf("Not an Isosceles triangle");
            break;

            case 2:
                printf("Enter length of Hypotenuse: ");
                scanf("%d",&a);
                printf("Enter length of Base: ");
                scanf("%d",&b);
                printf("Enter length of perpendicular: ");
                scanf("%d",&c);
                if((b*b + c*c) == (a*a))
                    printf("Right angled triangle");
                else
                    printf("Not a right angled triangle");
                break;
```

```
            case 3:
                 printf("Enter three numbers: ");
                 scanf("%d%d%d",&a,&b,&c);

                 if(a == b && b == c)
                    printf("Equilateral triangle");
                else
                    printf("Not an equilateral triangle");

            case 4:
                break;

            default:
                printf("Invalid choice!");
        }
        if(ch == 4)
            break;
    }

    return 0;
}
```

Output -

1. Check for isosceles triangle
2. Check for right angled triangle
3. Check for equilateral triangle
4. Exit

Enter you choice: 3
Enter three numbers: 3 3 3
Equilateral triangle

1. Check for isosceles triangle
2. Check for right angled triangle
3. Check for equilateral triangle
4. Exit

Enter you choice: 4

5. Convert the following if-else-if construct into switch case:

if(var == 1)
System.out.println("good");
else if(var == 2)
System.out.println("better");
else if(var == 3)
System.out.println("best");
else
System.out.println("invalid");

Program -

```
#include<stdio.h>

int main()
{
    int var;
    printf("Enter a value: ");
    scanf("%d",&var);

    switch(var)
    {
        case 1:
            printf("good");
            break;

        case 2:
            printf("better");
            break;

        case 3:
            printf("best");
            break;
```

```
        default:
            printf("Invalid");
    }
    return 0;
}
```

Output -
Enter a value: 3
Best

---

6. Program to check whether a year is a leap year or not. Using switch statement

Program -

```
#include<stdio.h>

int main()
{
    int y;
    printf("Enter a year: ");
    scanf("%d",&y);

    switch((y % 4 == 0 && y % 100 != 0) || y % 400 == 0)
    {
        case 1:
            printf("Leap year");
            break;

        case 0:
            printf("Not Leap year");
            break;
    }
    return 0;
}
```

Output -

Enter a year: 2000
Leap year

7. Program to take the value from the user as input electricity unit charges and calculate total electricity bill according to the given condition . Using the switch statement.

For the first 50 units Rs. 0.50/unit
For the next 100 units Rs. 0.75/unit
For the next 100 units Rs. 1.20/unit
For units above 250 Rs. 1.50/unit
An additional surcharge of 20% is added to the bill.

Program -

```
#include<stdio.h>

int main()
{
    int unit;
    double bill;

    printf("Enter electricity unit: ");
    scanf("%d",&unit);

    switch(unit)
    {
      case 1 ... 50:
            bill = unit * 0.50;
            printf("Electricity bill = %lf",bill);
            break;

      case 51 ... 150:
            bill = unit * 0.75;
            printf("Electricity bill = %lf",bill);
            break;

      case 151 ... 250:
```

```
            bill = unit * 1.20;
            printf("Electricity bill = %lf",bill);
            break;

      default:
            if(unit > 250)
            {
              bill = unit * 1.50 + 20;
              printf("Electricity bill = %lf",bill);
            }
            else
                printf("Invalid unit entered!");
    }

    return 0;
}
```

Output -

Enter electricity unit: 157
Electricity bill = 188.400000

---

8. Program to convert a positive number into a negative number and negative number into a positive number using a switch statement.

Program -

```
#include<stdio.h>

int main()
{
    int n;
    printf("Enter a positive or a negative number: ");
    scanf("%d",&n);

    if(n == 0)
```

```
    {
       printf("0 is neither positive nor negative");
       return 0;
    }
    switch(n > 0)
    {
        case 1:
            printf("%d converted %d",n,n * -1);
            break;

        case 0:
            printf("%d converted to %d",n,n * -1);
            break;
    }
    return 0;
}
```

Output -

Enter a positive or a negative number: -5

-5 converted to 5

---

9. Program to Convert even number into its upper nearest odd number Switch Statement.

Program -

```
#include<stdio.h>

int main()
{
    int n;
    printf("Enter an even number: ");
    scanf("%d",&n);
```

```
    switch(n % 2)
    {
        case 0:
            printf("%d converted to upper nearest odd number :
%d",n,n+ 1);
            break;

        case 1:
            printf("Not an even number");
            break;
    }
    return 0;
}
```

Output -

Enter an even number: 4

4 converted to upper nearest odd number : 5

---

10. C program to find all roots of a quadratic equation using switch case.

Program -

```
#include<stdio.h>
#include<math.h>
int main()
{
    int a , b , c , D , x1 , x2;
    printf("Enter the value of a , b and c: ");
    scanf("%d%d%d",&a,&b,&c);

    if(a == 0)
    {
        printf("Value of \'a\' should not be 0!");
        return 0;
    }

    D = b * b - 4 * a * c;
```

```
    switch(D > 0)
    {
        case 1:
            x1 = (-b + sqrt(D))/(2 * a);
            x2 = (-b - sqrt(D))/(2 * a);
            printf("Roots are real and distinct!");
            printf("\nRoots are %d and %d",x1,x2);
            break;

        case 0:
            if(D == 0)
            {
                x1 = (-b + sqrt(D))/(2 * a);
                printf("Roots are real and equal!");
                printf("\nBoth roots are %d",x1);
            }
            else
                printf("Roots are imaginary!");
    }

    return 0;
}
```

Output -

Enter the value of a , b and c: 1 10 25
Roots are real and equal!
Both roots are -5