**Assignment-9 Solution Name – Om Pant**

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

Ans-

#include<stdio.h>

int main(){

    int mNum,days;

    printf("Enter Month Number ( considering Jan as 1 )\n");

    scanf("%d",&mNum);

    switch(mNum){

        case 1:

            days = 31;

            printf("January : %d Days",days);

            break;

        case 2:

            days = 28;

            printf("February : %d Days (29 in Leap Year)",days);

            break;

        case 3:

            days = 31;

            printf("March : %d Days",days);

            break;

        case 4:

            days = 30;

            printf("April : %d Days",days);

            break;

        case 5:

            days = 31;

            printf("May : %d Days",days);

            break;

        case 6:

            days = 30;

            printf("June : %d Days",days);

            break;

        case 7:

            days = 31;

            printf("July : %d Days",days);

            break;

        case 8:

            days = 31;

            printf("August : %d Days",days);

            break;

        case 9:

            days = 30;

            printf("September : %d Days",days);

            break;

        case 10:

            days = 31;

            printf("October : %d Days",days);

            break;

        case 11:

            days = 30;

            printf("November : %d Days",days);

            break;

        case 12:

            days = 31;

            printf("December : %d Days",days);

            break;

        default:

            printf("Enter a valid Month Number !! \n");

    }

    return 0;

}

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

a. Addition

b. Subtraction

c. Multiplication

d. Division

e. Exit

Ans-

#include<stdio.h>

#include<stdlib.h>

int main(){

    int n1,n2;

    char choice;

    while(1){

        printf("Enter Your Choice\n");

        printf("a. Addition \nb. Subtraction \nc. Multiplication \nd. Division \ne. Exit \n");

        fflush(stdin);

        scanf("%c",&choice);

        fflush(stdin);

        switch (choice)

        {

            case 'a':

                printf("Enter Two Numbers\n");

                scanf("%d%d",&*n1*,&*n2*);

                printf("Addition: %d \n\n",n1+n2);

                break;

            case 'b':

                printf("Enter Two Numbers\n");

                scanf("%d%d",&*n1*,&*n2*);

                printf("Subtraction: %d \n\n",n1-n2);

                break;

            case 'c':

                printf("Enter Two Numbers\n");

                scanf("%d%d",&*n1*,&*n2*);

                printf("Multiplication: %d \n\n",n1\**n2*);

                break;

            case 'd':

                printf("Enter Two Numbers\n");

                scanf("%d%d",&*n1*,&*n2*);

                printf("Divison: %d \n\n",n1/n2);

                break;

            case 'e':

                printf("Exited ....\n");

                return 0;

            default:

                printf("Enter a valid Option\n\n");

                break;

        }

    }

    return 0;

}

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

Ans-

#include<stdio.h>

int main(){

    int wNum;

    printf("Enter Week Number ( considering monday - 1.. )\n");

    scanf("%d",&wNum);

    switch(wNum){

        case 1:

            printf("Happy Monday !!\n");

            break;

        case 2:

            printf("Happy Tuesday !!\n");

            break;

        case 3:

            printf("Happy Wednesday !!\n");

            break;

        case 4:

            printf("Happy Thursday !!\n");

            break;

        case 5:

            printf("Happy Friday !!\n");

            break;

        case 6:

            printf("Happy Saturday !!\n");

            break;

        case 7:

            printf("Happy Sunday !!\n");

            break;

        default:

            printf("Enter a valid Day Number !! \n");

            break;

    }

    return 0;

}

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

Ans-

// 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

#include<stdio.h>

int main(){

    int a,b,c;

    char choice;

    while(1){

        printf("Enter Your Choice\n");

        printf("a. Check whether a given set of three numbers are lengths of an isosceles triangle or not \n");

        printf("b. Check whether a given set of three numbers are lengths of sides of a right angled triangle or not \n");

        printf("c. Check whether a given set of three numbers are equilateral triangle or not \n");

        printf("d. Exit \n");

        fflush(stdin);

        scanf("%c",&choice);

        fflush(stdin);

        switch (choice)

        {

            case 'a':

                printf("Enter the sides of triangle\n");

                scanf("%d%d%d",&*a*,&*b*,&*c*);

                if(a==b || b==c || c==a){

                    printf("It's a Isosceles Triangle\n\n");

                }

                else{

                    printf("It's not a Isosceles Triangle\n\n");

                }

                break;

            case 'b':

                printf("Enter the sides of triangle\n");

                scanf("%d%d%d",&*a*,&*b*,&*c*);

                if (((a\*a) + (b\*b) == (c\*c)) || (a\*a) + (c\*c) == (b\*b)  || (b\*b) + (c\*c) == (a\*a)  ){

                    printf("It's a Right Triangle\n\n");

                }

                else{

                    printf("It's not a right Triangle\n\n");

                }

                break;

            case 'c':

                printf("Enter the sides of triangle\n");

                scanf("%d%d%d",&*a*,&*b*,&*c*);

                if (a == b && b==c ){

                    printf("It's a Equilateral Triangle\n\n");

                }

                else{

                    printf("It's not a Equilateral Triangle\n\n");

                }

                break;

            case 'd':

                printf("Program Terminated ....\n");

                return 0;

            default:

                printf("Enter a valid Option\n\n");

                break;

        }

    }

    return 0;

}

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

*if(var == 1)*

*printf("good");*

*else if(var == 2)*

*printf("better");*

*else if(var == 3)*

*printf("best");*

*else*

*printf("invalid");*

*Ans –*

#include<stdio.h>

int main(){

    int var;

    printf("Enter a number\n");

    scanf("%d",&var);

    switch(var){

        case 1:

            printf("Good");

            break;

        case 2:

            printf("Better");

            break;

        case 3:

            printf("Best");

            break;

        default:

            printf("Invalid");

            break;

    }

    return 0;

}

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

Ans-

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

#include<stdio.h>

int main(){

    int year;

    printf("Enter a Year\n");

    scanf("%d",&year);

    switch(year%4==0){

        case 1:

            switch(year%100 == 0 ){

                case 1:

                switch(year%400 ==0){

                    case 1:

                        printf(" Leap Year\n");

                        break;

                    case 0:

                        printf("Not a leap Year");

                        break;

                }

                break;

                case 0:

                    printf("Leap Year\n");

            }

            break;

        case 0:

            printf("Not A Leap year\n");

            break;

    }

}

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.

Ans-

#include<stdio.h>

int main(){

    int units;

    float total,tax,grandTotal;

    printf("Enter Units\n");

    scanf("%d",&units);

    switch (units)

    {

    case 1 ... 50:

        total = units \* 0.50;

        tax = (units \* 20)/100.0;

        grandTotal = total + tax;

        break;

    case 51 ... 150:

        total = units \* 0.75;

        tax = (units \* 20)/100;

        grandTotal = total + tax;

        break;

    case 151 ... 250:

        total = units \* 1.20;

        tax = (units \* 20)/100;

        grandTotal = total + tax;

        break;

    default:

        total = units \* 1.50;

        tax = (units \* 20)/100;

        grandTotal = total + tax;

        break;

    }

    printf("Your Electricity Bill for %d Units is:\n\tBase Pay:  %.2f Rupees \n\t20%% Additional Tax :%.2f Rupees\n\tTotal Bill: %.2f Rupees",units,total,tax,grandTotal);

}

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

Ans –

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

#include<stdio.h>

int main(){

    int num,choice;

    printf("Enter Your Choice :\n1: Convert Positive -> Negative\n2: Convert Negative -> Positive\n\n");

    scanf("%d",&choice);

    switch (choice)

    {

    case 1:

        printf("Enter a Positive number\n");

        scanf("%d",&*num*);

        num \*= -1;

        printf("Converted Number: %d\n",num);

        break;

    case 2:

        printf("Enter a Negative number\n");

        scanf("%d",&*num*);

        num \*= -1;

        printf("Converted Number: %d\n",num);

        break;

    default:

        printf("Please Enter a Valid number\n");

        break;

    }

    return 0;

}

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

Ans –

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

#include<stdio.h>

int main(){

    int num;

    printf("Enter a Number:\t");

    scanf("%d",&num);

    switch(num%2 == 0){

        case 1:

            num+=1;

            printf("upper nearest odd number is %d\n ",num);

            break;

        case 0:

            printf("Please Enter Even Number\n\n");

            break;

        default:

            printf("Please Enter valid Number\n\n");

            break;

    }

    return 0;

}

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

Ans-

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

#include <stdio.h>

#include <math.h>

int main()

{

    float a, b, c;

    float root1, root2, imaginary;

    float discriminant;

    printf("Enter values of a, b, c of quadratic equation (aX^2 + bX + c): ");

    scanf("%f%f%f", &a, &b, &c);

    discriminant = (b \* b) - (4 \* a \* c);

    switch(discriminant > 0)

    {

        case 1:

            /\* If discriminant is positive \*/

            root1 = (-b + sqrt(discriminant)) / (2 \* a);

            root2 = (-b - sqrt(discriminant)) / (2 \* a);

            printf("Two distinct and real roots exists: %.2f and %.2f",

                    root1, root2);

            break;

        case 0:

            /\* If discriminant is not positive \*/

            switch(discriminant < 0)

            {

                case 1:

                    /\* If discriminant is negative \*/

                    root1 = root2 = -b / (2 \* a);

                    imaginary = sqrt(-discriminant) / (2 \* a);

                    printf("Two distinct complex roots exists: %.2f + i%.2f and %.2f - i%.2f",

                            root1, imaginary, root2, imaginary);

                    break;

                case 0:

                    /\* If discriminant is zero \*/

                    root1 = root2 = -b / (2 \* a);

                    printf("Two equal and real roots exists: %.2f and %.2f", root1, root2);

                    break;

            }

    }

    return 0;

}