# CONTROL STATEMENTS

SARTHAK SANAY

# (1) AIM:-

To write a program in C to determine whether a number given by the user is even or odd using if-else statement.

## CODE:-

```c
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a number: ");
    scanf("%d", &n);
    if(n%2==0)
        printf("%d is an even number.", n);
    else
        printf("%d is an odd number.", n);
    return 0;
}
```

## OUTPUT SCREEN:-

```
Output

/tmp/g9bLqKY57R.o
Enter a number: 8
8 is an even number.
```

```
Enter a number: 7
7 is an odd number.
```

# (2) AIM:-

To implement a calculator in C using switch-case statements.

## CODE:-

```c
#include <stdio.h>
int main()
{
    int c, n1, n2;
    printf("Enter 1 for addition, 2 for multiplication, 3 for division,
and 4 for subtraction: ");
    scanf("%d", &c);
    printf("Enter 1st number: ");
    scanf("%d", &n1);
    printf("Enter 2nd number: ");
    scanf("%d", &n2);
    switch(c)
    {
        case 1:
            printf("Sum of %d and %d is %d", n1, n2, n1+n2);
            break;

        case 2:
            printf("Product of %d and %d is %d \n\n", n1, n2, n1*n2);
            break;

        case 3:
            printf("Quotient of %d and %d is %d \n\n", n1, n2, n1/n2);
            break;

        case 4:
            printf("Difference between %d and %d is %d \n\n", n1, n2,
n1-n2);
```

```c
            break;


        default:
            printf("Enter correct number as input for choice.");
            break;
    }
    return 0;
}
```

## OUTPUT SCREEN:-

# (3) AIM:-

To practice printing all 10 patterns using loops (while, do-while, for).

## PATTERN 1:- (using for loop)

```c
#include <stdio.h>
int main()
{
    int i, j, N;
    printf("Enter value of N: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        for(j=1; j<=i; j++)
        {
            printf("*");
        }
        printf("\n");
    }
    return 0;
}
```

## OUTPUT 1:-

```
Output

/tmp/TdAABLrVBA.o
Enter value of N: 5
*
**
***
****
*****
```

## PATTERN 2:- (using while loop)

```c
#include <stdio.h>
int main()
{
    int i=1, j, N;
    printf("Enter value of N: ");
    scanf("%d", &N);
    while(i<=N)
    {
        j=1;
        while(j<=i)
        {
            printf("%d", j);
            j++;
        }
        printf("\n");
        i++;
    }
    return 0;
}
```

## OUTPUT 2:-

```
Output

/tmp/TdAABLrVBA.o
Enter value of N: 5
1
12
123
1234
12345
```

## PATTERN 3:-

```c
#include <stdio.h>
int main()
{
    int i, j, N, c=1;
    printf("Enter value of N: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        for(j=1; j<=i; j++)
        {
            printf("%d", c);
            c++;
        }
        printf("\n");
    }
    return 0;
}
```

## OUTPUT 3:-

```
Output

/tmp/TdAABLrVBA.o
Enter value of N: 4
1
23
456
78910
```

## PATTERN 4:-

```c
#include <stdio.h>
int main()
{
    int i, j, N;
    printf("Enter the value of N: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        for(j=i; j<=N; j++)
        {
            printf("*");
        }
        printf("\n");
    }
    return 0;
}
```

## OUTPUT 4:-

```
Output

/tmp/TdAABLrVBA.o
Enter the value of N: 5
*****
****
***
**
*
```

## PATTERN 5:- (Square pattern using for loop)

```c
#include <stdio.h>
int main()
{
    int i, j, N;
    printf("Enter the value of N: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        for(j=1; j<=N; j++)
        {
            if(i==1 || j==1 || j==N || i==N)
                printf("*");
            else
                printf(" ");
        }
        printf("\n");
    }
    return 0;
}
```

## OUTPUT 5:-

```
Output

/tmp/hXdOQeeZ1r.o
Enter the value of N: 4
****
*  *
*  *
****
```

## PATTERN 6:-

```c
#include <stdio.h>
int main()
{
    int i, j, N, c;
    printf("Enter the value of N: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        c= 1;
        for(j=i; j<=N; j++)
        {
            printf("%d", c);
            c++;
        }
        printf("\n");
    }
    return 0;
}
```

## OUTPUT 6:-

```
Output

/tmp/TdAABLrVBA.o
Enter the value of N: 4
1234
123
12
1
```

## PATTERN 7:-

```c
#include <stdio.h>
int main()
{
    int i, j, N;
    printf("Enter the value of N: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        for(j=N; j>=1; j--)
        {
            if(j>i)
                printf(" ");
            else
                printf("*");
        }
        printf("\n");
    }
    return 0;
}
```
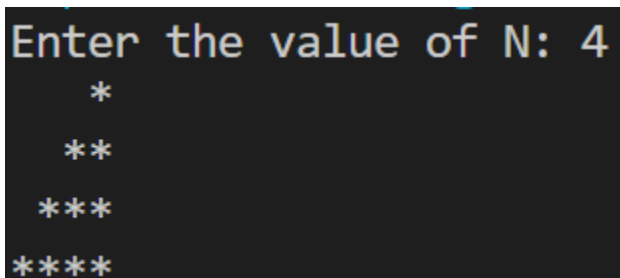
## OUTPUT 7:-

```
Enter the value of N: 4
   *
  **
 ***
****
```

## PATTERN 8:-

```c
#include <stdio.h>
int main()
{
    int i, j, N, c;
    printf("Enter the value of N: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        c= 1;
        for(j=N; j>=1; j--)
        {
            if(j>i)
                printf(" ");
            else
            {
                printf("%d", c);
                c++;
            }
        }
        printf("\n");
    }
    return 0;
}
```
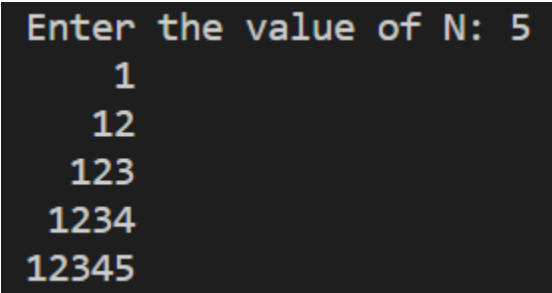
## OUTPUT 8:-

```
Enter the value of N: 5
    1
   12
  123
 1234
12345
```

## PATTERN 9:- (using do-while loop)

```c
#include <stdio.h>
int main()
{
    int i=1, j, N;
    printf("Enter the value of N: ");
    scanf("%d", &N);
    do
    {
        j= 1;
        do
        {
            if (j>=i)
                printf("*");
            else
                printf(" ");
            j++;
        } while (j<=N);
        printf("\n");
        i++;
    } while (i<=N);
    return 0;
}
```

## OUTPUT 9:-

```
Output

/tmp/TdAABLrVBA.o
Enter the value of N: 5
*****
 ****
  ***
   **
    *
```

## PATTERN 10:-

```c
#include <stdio.h>
int main()
{
    int i, j, N, c=1;
    printf("Enter the value of N: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        for(j=1; j<=N; j++)
        {
            if(j>=i)
            {
                printf("%d", c);
                c++;
            }
            else
                printf(" ");
        }
        printf("\n");
    }
    return 0;
}
```

## OUTPUT 10:-

```
Output

/tmp/TdAABLrVBA.o
Enter the value of N: 3
123
 45
  6
```

# (4) AIM:-

To implement a program in C to find the factorial of a number given by the user using iterative approaches (loops).

## CODE:-

```c
#include <stdio.h>
int main()
{
    int n, p=1;
    printf("Enter a number: ");
    scanf("%d", &n);
    for(int i=n; i>=1; i--)
    {
        p= p*i;
    }
    printf("Factorial of %d is %d", n, p);
    return 0;
}
```

## OUTPUT SCREEN:-

```
Output

/tmp/fXC2zbx9VP.o
Enter a number: 5
Factorial of 5 is 120
```

# (5) AIM:-

To write a program in C to generate the Fibonacci series up to a specified number of terms by the user using a loop.

## CODE:-

```c
#include <stdio.h>
int main()
{
    int n;
    printf("Enter the number of terms: ");
    scanf("%d", &n);
    printf("Fibonacci Series:-\n");
    int a=0, b=1, c=a+b; // initializing the first three terms
    printf("%d\t%d\t",a, b);
    for(int i=3; i<=n; i++)
    {
        printf("%d\t",c);
        a=b;
        b=c;
        c= a+b;
    }
    return 0;
}
```

## OUTPUT SCREEN:-

```
Output

/tmp/fXC2zbx9VP.o
Enter the number of terms: 10
Fibonacci Series:-
0   1   1   2   3   5   8   13  21  34  |
```