1. Factorial

**import** java.util.Scanner;

**public** **class** Test {

**public** **static** **void** main(String[] args) {

**int** n;

**long** fact=1;

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a number ");

n = sc.nextInt();

**while**(n>=1)

{

fact = fact \* n;

n--;

}

System.***out***.println("factorial value = "+fact);

}

}

1. Sum of digits of a given number

**import** java.util.Scanner;

**public** **class** Test {

**public** **static** **void** main(String[] args) {

**int** n,r;

**int** sum=0;

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a number ");

n = sc.nextInt();

**while**(n>0)

{

r = n %10;

sum = sum + r;

n = n/10;

}

System.***out***.println("sum of digits = "+sum);

}

}

Reverse of given number:

**import** java.util.Scanner;

**public** **class** Test {

**public** **static** **void** main(String[] args) {

**int** n,r;

**int** rev=0;

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a number ");

n = sc.nextInt();

**while**(n>0)

{

r = n %10;

rev = rev \* 10 + r;

n = n/10;

}

System.***out***.println("Reverse = "+rev);

}

}

Program to check given number is palindrome or not

**import** java.util.Scanner;

**public** **class** Test {

**public** **static** **void** main(String[] args) {

**int** n,r;

**int** rev=0;

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a number ");

n = sc.nextInt();

**int** temp = n;

**while**(n>0)

{

r = n %10;

rev = rev \* 10 + r;

n = n/10;

}

**if**(rev == temp)

{

System.***out***.println("Palindrome");

}

**else**

{

System.***out***.println("Not a palindrome");

}

}

}

Octal number using System.exit(0);

**import** java.util.Scanner;

**public** **class** Test {

**public** **static** **void** main(String[] args) {

**int** n,r;

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a number ");

n = sc.nextInt();

**while**(n>0)

{

r = n %10;

**if**(r>7)

{

System.***out***.println("Not an octal number");

System.*exit*(0);;

}

n = n/10;

}

System.***out***.println("Octal Number");

}

}

Octal number using break;

**import** java.util.Scanner;

**public** **class** Test {

**public** **static** **void** main(String[] args) {

**int** n,r;

**boolean** flag;

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter a number ");

n = sc.nextInt();

flag = **false**;

**while**(n>0)

{

r = n %10;

**if**(r>7)

{

flag=**true**;

System.***out***.println("Not an octal number");

**break**;

}

n = n/10;

}

**if**(flag==**false**)

{

System.***out***.println("Octal Number");

}

}

}

Diamond

**public** **class** Test {

**public** **static** **void** main(String[] args) {

**int** i, j;

**int** n=9;

**for**(i=1; i<=n; i++)

{

System.***out***.println();

**for**(j=n; j>i; j--)

{

System.***out***.print(" ");

}

**for**(j=1; j<=i; j++)

{

System.***out***.print(j+" ");

}

**for**(j =i-1 ; j>=1; j--)

{

System.***out***.print(j+" ");

}

}

**for**(i=i-2; i>=1; i--)

{

System.***out***.println();

**for**(j=n; j>i; j--)

{

System.***out***.print(" ");

}

**for**(j=1; j<=i; j++)

{

System.***out***.print(j+" ");

}

**for**(j =i-1 ; j>=1; j--)

{

System.***out***.print(j+" ");

}

}

}

}

Butterfly:

**public** **class** Test {

**public** **static** **void** main(String[] args) {

**int** i, j;

**int** n=9;

**for**(i=1; i<=n; i++)

{

System.***out***.println();

**for**(j=1; j<=i; j++)

{

System.***out***.print(j+" ");

}

**for**(j=n; j>i; j--)

{

System.***out***.print(" ");

}

**for**(j=n; j>i; j--)

{

**if**(j==n)

{

**continue**;

}

System.***out***.print(" ");

}

**for**(j=i ;j>=1 ;j-- )

{

**if**(j==n)

{

**continue**;

}

System.***out***.print(j+" ");

}

}

**for**(i=i-2; i>=1; i--)

{

System.***out***.println();

**for**(j=1; j<=i; j++)

{

System.***out***.print(j+" ");

}

**for**(j=n; j>i; j--)

{

System.***out***.print(" ");

}

**for**(j=n; j>i; j--)

{

**if**(j==n)

{

**continue**;

}

System.***out***.print(" ");

}

**for**(j=i ;j>=1 ;j-- )

{

**if**(j==n)

{

**continue**;

}

System.***out***.print(j+" ");

}

}

}

}

Inner Diamond:

**public** **class** Test {

**public** **static** **void** main(String[] args) {

**int** i, j;

**int** n=9;

**for**(i=n; i>=1; i--)

{

System.***out***.println();

**for**(j=1; j<=i; j++)

{

System.***out***.print(j+" ");

}

**for**(j=n; j>i; j--)

{

System.***out***.print(" ");

}

**for**(j=n; j>i; j--)

{

**if**(j==n)

{

**continue**;

}

System.***out***.print(" ");

}

**for**(j=i; j>=1; j--)

{

**if**(j==n)

{

**continue**;

}

System.***out***.print(j+" ");

}

}

**for**(i=i+2; i<=n; i++)

{

System.***out***.println();

**for**(j=1; j<=i; j++)

{

System.***out***.print(j+" ");

}

**for**(j=n; j>i; j--)

{

System.***out***.print(" ");

}

**for**(j=n; j>i; j--)

{

**if**(j==n)

{

**continue**;

}

System.***out***.print(" ");

}

**for**(j=i; j>=1; j--)

{

**if**(j==n)

{

**continue**;

}

System.***out***.print(j+" ");

}

}

}

}