**Example 1: Program to check if the number entered by user is even or odd**

In this program, we have an int variable num. We are using [Scanner class](https://beginnersbook.com/2022/08/java-scanner-class-with-examples/) to get the number entered by the user.

Once the entered number is stored in the variable num, we are using [if..else statement](https://beginnersbook.com/2017/08/if-else-statement-in-java/) to check if the number is **perfectly divisible by 2 or not**. Based on the outcome, it is executing if block (if condition true) or else block (if condition is false).

import java.util.Scanner;

public class JavaExample

{

public static void main(String args[])

{

int num;

System.out.print("Enter an Integer number: ");

//The input provided by user is stored in num

Scanner input = new Scanner(System.in);

num = input.nextInt();

// If number is divisible by 2 then it's an even number

//else it is an odd number

if ( num % 2 == 0 )

System.out.println(num+" is an even number.");

else

System.out.println(num+" is an odd number.");

}

}

import java.util.Scanner;

public class Demo {

public static void main(String[] args) {

/\* This reads the input provided by user

\* using keyboard

\*/

Scanner scan = new Scanner(System.in);

System.out.print("Enter first number: ");

// This method reads the number provided using keyboard

int num1 = scan.nextInt();

System.out.print("Enter second number: ");

int num2 = scan.nextInt();

// Closing Scanner after the use

scan.close();

// Calculating product of two numbers

int product = num1\*num2;

// Displaying the multiplication result

System.out.println("Output: "+product);

}

}

import java.util.Scanner;

public class Demo {

public static void main(String[] args) {

int year;

Scanner scan = new Scanner(System.in);

System.out.println("Enter any Year:");

year = scan.nextInt();

scan.close();

boolean isLeap = false;

if(year % 4 == 0)

{

if( year % 100 == 0)

{

if ( year % 400 == 0)

isLeap = true;

else

isLeap = false;

}

else

isLeap = true;

}

else {

isLeap = false;

}

if(isLeap==true)

System.out.println(year + " is a Leap Year.");

else

System.out.println(year + " is not a Leap Year.");

}

}

**Output:**

## Java Program to calculate Compound Interest

In this java program we are calculating the compound interest, we are taking the **same example** that we have seen above for the calculation.

public class JavaExample {

public void calculate(int p, int t, double r, int n) {

double amount = p \* Math.pow(1 + (r / n), n \* t);

double cinterest = amount - p;

System.out.println("Compound Interest after " + t + " years: "+cinterest);

System.out.println("Amount after " + t + " years: "+amount);

}

public static void main(String args[]) {

JavaExample obj = new JavaExample();

obj.calculate(2000, 5, .08, 12);

}

}

**Output:**

Compound Interest after 5 years: 979.6914166032102

Amount after 5 years: 2979.69141660321

## Program to convert char to String

We have following two ways for char to String conversion.  
Method 1: Using toString() method  
Method 2: Usng [valueOf()](https://beginnersbook.com/2013/12/java-string-copyvalueof-method-example/" \o "Java – String copyValueOf() Method example" \t "_blank) method

class CharToStringDemo

{

public static void main(String args[])

{

// Method 1: Using toString() method

char ch = 'a';

String str = Character.toString(ch);

System.out.println("String is: "+str);

// Method 2: Using valueOf() method

String str2 = String.valueOf(ch);

System.out.println("String is: "+str2);

}

}

**Output:**

String is: a

String is: a

## Converting String to Char

We can convert a String to char using [charAt() method](https://beginnersbook.com/2013/12/java-string-charat-method-example/" \o "Java – String charAt() Method example" \t "_blank) of [String class](https://beginnersbook.com/2013/12/java-strings/).

class StringToCharDemo

{

public static void main(String args[])

{

// Using charAt() method

String str = "Hello";

for(int i=0; i<str.length();i++){

char ch = str.charAt(i);

System.out.println("Character at "+i+" Position: "+ch);

}

}

}

**Output:**

Character at 0 Position: H

Character at 1 Position: e

Character at 2 Position: l

Character at 3 Position: l

Character at 4 Position: o

## Program 1: Palindrome check Using Stack

In this example, user enter a string. The program iterates over the input string by running a loop from 1 to the length of the string  and adds each character of the string to the stack using **push() method**.

Once all the characters of the given string are added to the stack. The program runs a while loop until the stack is empty and at each iteration removes the last character of the string using **pop() method** and adds it to the reverseString variable.

The pop() method removes the **last character from the stack**. In the last step compare the string and reverseString to check if the string is palindrome or not.

import java.util.Stack;

import java.util.Scanner;

class PalindromeTest {

public static void main(String[] args) {

System.out.print("Enter any string:");

Scanner in=new Scanner(System.in);

String inputString = in.nextLine();

Stack stack = new Stack();

for (int i = 0; i < inputString.length(); i++) {

stack.push(inputString.charAt(i));

}

String reverseString = "";

while (!stack.isEmpty()) {

reverseString = reverseString+stack.pop();

}

if (inputString.equals(reverseString))

System.out.println("The input String is a palindrome.");

else

System.out.println("The input String is not a palindrome.");

}

}

Output 1:

Enter any string:abccba

The input String is a palindrome.

Output 2:

Enter any string:abcdef

The input String is not a palindrome.

## Program 2: Palindrome check Using Queue

In this example, we are using Queue to reverse the given string. Each character of the string is read by using [String charAt() method](https://beginnersbook.com/2013/12/java-string-charat-method-example/). These characters are added to the Queue using add() method. Once all the characters are added. We are iterating the Queue and removing the last character of the Queue using remove() method and appending it to the reverseString.

import java.util.Queue;

import java.util.Scanner;

import java.util.LinkedList;

class PalindromeTest {

public static void main(String[] args) {

System.out.print("Enter any string:");

Scanner in=new Scanner(System.in);

String inputString = in.nextLine();

Queue queue = new LinkedList();

for (int i = inputString.length()-1; i >=0; i--) {

queue.add(inputString.charAt(i));

}

String reverseString = "";

while (!queue.isEmpty()) {

reverseString = reverseString+queue.remove();

}

if (inputString.equals(reverseString))

System.out.println("The input String is a palindrome.");

else

System.out.println("The input String is not a palindrome.");

}

}

Output 1:

Enter any string:xyzzyx

xyzzyx

The input String is a palindrome.

## Program to count vowels and consonants in a given String

Here we have two variables vcount and ccount to keep the count of vowels and consonants respectively. We have converted each char of the string to lowercase using [toLowerCase() method](https://beginnersbook.com/2013/12/java-string-tolowercase-method-example/) for easy comparison.

We are then comparing each char of the string to vowels ‘a’, ‘e’, ‘i’, ‘o’, ‘u’ using [charAt() method](https://beginnersbook.com/2013/12/java-string-charat-method-example/) and [if..else..if statement](https://beginnersbook.com/2017/08/if-else-statement-in-java/), if a match is found then we are increasing the vowel counter vcount else we are increasing the Consonant counter ccount.

public class JavaExample {

public static void main(String[] args) {

String str = "BeginnersBook";

int vcount = 0, ccount = 0;

//converting all the chars to lowercase

str = str.toLowerCase();

for(int i = 0; i < str.length(); i++) { char ch = str.charAt(i); if(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') { vcount++; } else if((ch >= 'a'&& ch <= 'z')) {

ccount++;

}

}

System.out.println("Number of Vowels: " + vcount);

System.out.println("Number of Consonants: " + ccount);

}

}

## Example: Java Program to add two given Matrices

In the following example we have two matrices MatrixA and MatrixB, we have declared these matrices as multi-dimensional arrays.

**Two matrices can only be added** or subtracted only if they have same dimension which means they must have the **same number of rows and columns**. Here we have two MatrixA and MatrixB which have same rows and columns. The addition of these matrices will have same rows and columns.

This is how we declare a matrix as multi-dimensional array:  
**Matrix:** This matrix has two rows and four columns.

| 1 1 1 1 |

| 2 3 5 2 |

**The declaration of this matrix as 2D array:**

int[][] MatrixA = { {1, 1, 1, 1}, {2, 3, 5, 2} };

We are using [for loop](https://beginnersbook.com/2015/03/for-loop-in-java-with-example/) to add the corresponding elements of both the matrices and store the addition values in sum matrix. For example: sum[0][0] = MatrixA[0][0] + MatrixB[0][0], similarly sum[0][1] = MatrixA[0][1] + MatrixB[0][1] and so on.

public class JavaExample {

public static void main(String[] args) {

int rows = 2, columns = 4;

// Declaring the two matrices as multi-dimensional arrays

int[][] MatrixA = { {1, 1, 1, 1}, {2, 3, 5, 2} };

int[][] MatrixB = { {2, 3, 4, 5}, {2, 2, 4, -4} };

/\* Declaring a matrix sum, that will be the sum of MatrixA

\* and MatrixB, the sum matrix will have the same rows and

\* columns as the given matrices.

\*/

int[][] sum = new int[rows][columns];

for(int i = 0; i < rows; i++) {

for (int j = 0; j < columns; j++) {

sum[i][j] = MatrixA[i][j] + MatrixB[i][j];

}

}

// Displaying the sum matrix

System.out.println("Sum of the given matrices is: ");

for(int i = 0; i < rows; i++) {

for (int j = 0; j < columns; j++) {

System.out.print(sum[i][j] + " ");

}

System.out.println();

}

}

}

**Output:**

# java program to find factorial of a given number using recursion

BY CHAITANYA SINGH | FILED UNDER: [JAVA EXAMPLES](https://beginnersbook.com/category/java-examples/)

Here we will **write programs to find out the factorial of a number using recursion**.

**Program 1:**  
Program will prompt user for the input number. Once user provide the input, the program will calculate the factorial for the provided input number.

/\*\*

\* @author: BeginnersBook.com

\* @description: User would enter the 10 elements

\* and the program will store them into an array and

\* will display the sum of them.

\*/

import java.util.Scanner;

class FactorialDemo{

public static void main(String args[]){

//Scanner object for capturing the user input

Scanner scanner = new Scanner(System.in);

System.out.println("Enter the number:");

//Stored the entered value in variable

int num = scanner.nextInt();

//Called the user defined function fact

int factorial = fact(num);

System.out.println("Factorial of entered number is: "+factorial);

}

static int fact(int n)

{

int output;

if(n==1){

return 1;

}

//Recursion: Function calling itself!!

output = fact(n-1)\* n;

return output;

}

}

Output:

Enter the number:

5

Factorial of entered number is: 120

**Program 2:**  
If you do not want user intervention and simply want to specify the number in program itself then refer this example.

class FactorialDemo2{

public static void main(String args[]){

int factorial = fact(4);

System.out.println("Factorial of 4 is: "+factorial);

}

static int fact(int n)

{

int output;

if(n==1){

return 1;

}

//Recursion: Function calling itself!!

output = fact(n-1)\* n;

return output;

}

}

## Example 1: Program to check whether the given number is Armstrong number

public class JavaExample {

public static void main(String[] args) {

int num = 370, number, temp, total = 0;

number = num;

while (number != 0)

{

temp = number % 10;

total = total + temp\*temp\*temp;

number /= 10;

}

if(total == num)

System.out.println(num + " is an Armstrong number");

else

System.out.println(num + " is not an Armstrong number");

}

}

Output:

370 is an Armstrong number

In the above program we have used while loop, However you can also use for loop. To use for loop replace the while loop part of the program with this code:

for( ;number!=0;number /= 10){

temp = number % 10;

total = total + temp\*temp\*temp;

}

## Program to print odd numbers from 1 to n where n is 100

In the following example we have provided the value of **n as 100** so the program will print the odd numbers from 1 to 100.

The logic we are using in this program is that we are looping through integer values from 1 to n using for loop and we are checking each value whether the **value%2 !=0** which means it is an odd number and we are displaying it. To understand this program, you should have the basic knowledge of [for loop](https://beginnersbook.com/2015/03/for-loop-in-java-with-example/) and [if statement](https://beginnersbook.com/2017/08/if-else-statement-in-java/).

class JavaExample {

public static void main(String args[]) {

int n = 100;

System.out.print("Odd Numbers from 1 to "+n+" are: ");

for (int i = 1; i <= n; i++) {

if (i % 2 != 0) {

System.out.print(i + " ");

}

}

}

}