**CONTROL or CONTROL FLOW STATEMENTS:**

**Conditional or Decision-Making Statement**

* Simple if statement
* if-else statement
* if-else-if ladder
* Nested if statement
* Nested if-else
* switch case statement

**if statement**

* The “if” statement is used to evaluate a condition.
* The control of the program is diverted depending upon the specific condition.
* The condition of the if statement gives a Boolean value, either true or false.

**Simple if statement**

* It is the most basic statement among all control flow statement.
* It evaluates a Boolean expression and enables the program to enter a block of code if the expression evaluates to true.

**Syntax**

if(condition)

{

//statement

}

**Example: Direct declaration value**

public class ExampleIf{

public static void main(String[] args){

int num = 20;

if(num>10){

System.out.println(“The number is greater than 10”);

}

}

}

**Example: User defined value**

package com.demo.Example;  
import java.util.Scanner;

public class ExampleIf{

public static void main(String[] args){

Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter the value: ");  
 int num = sc.nextInt();

if(num>10){

System.out.println(“The number is greater than 10”);

}

}

}

**if-else statement**

* The [if-else statement](https://www.javatpoint.com/java-if-else) is an extension to the if-statement, which uses another block of code, i.e., else block.
* The else block is executed if the condition of the if-block is evaluated as false.

**Syntax**

if(condition)

{

//statement

}

else

{

//statement

}

**Example: Direct declaration value**

public class ExampleIfElse {  
 public static void main(String[] args){  
 int num = 25;  
 if (num>50){  
 System.out.println("Entered number is larger");  
 }else{  
 System.out.println("Entered number is smaller");  
 }  
 }  
}

**Example: User defined value**

package com.demo.Example;  
import java.util.Scanner;  
public class ExampleIf {  
 public static void main(String[] args){  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter the value: ");  
 int num = sc.nextInt();  
 if (num>50){  
 System.*out*.println("Entered number is larger");  
 }else{  
 System.*out*.println("Entered number is smaller");  
 }  
 }  
}

**if-else-if ladder**

* The if-else-if statement contains the if-statement followed by multiple else-if statements.
* We can also define an else statement at the end of the chain.

**Syntax**

if(condition)

{

//statement

}

else if(condition)

{

//statement

}else if(condition)

{

//statement

}else

{

//statement

}

**Example: Direct declaration value**

public class Example2 {  
 public static void main(String[] args){  
 int price = 250;  
 if(price>100 && price<=150){  
 System.*out*.println("Seat from 1 to 20");  
 }else if(price>150 && price<=200){  
 System.*out*.println("Seat from 21 to 40 ");  
 }else if(price>200 && price<=500){  
 System.*out*.println("Seat from 41 to 60");  
 }else{  
 System.*out*.println("Special cabin");  
 }  
 }  
}

**Example: User defined value**

package com.demo.Example;  
  
import java.util.Scanner;  
  
public class Example2 {  
 public static void main(String[] args){  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter the ticket price:");  
 int price = sc.nextInt();  
 if(price>100 && price<=150){  
 System.*out*.println("Seat from 1 to 20");  
 }else if(price>150 && price<=200){  
 System.*out*.println("Seat from 21 to 40 ");  
 }else if(price>200 && price<=500){  
 System.*out*.println("Seat from 41 to 60");  
 }else{  
 System.*out*.println("Special cabin");  
 }  
 }  
}

**Nested if statement**

In nested if-statements, the if statement can contain a **if** or **if-else** statement inside another if or else-if statement.

**Syntax**

if(condition)

{

//statement1

if(condition){

//statement2

}

}

else{

//statement3

}

**Example: Direct declaration value**

public class NestedIf{

public static void main(String[] args){

int num = 40;

if(num>0){

System.out.println(“This is positive number”);

if(num%2){

System.out.println(“The number is even”);

}

} else{

System.out.println(“The number is odd”);

}

}

}

**Example: User defined value**

package com.demo.Example;  
  
import java.util.Scanner;

public class NestedIf{

public static void main(String[] args){

Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter the value: ");  
 int num = sc.nextInt();

if(num>0){

System.out.println(“This is positive number”);

if(num%2){

System.out.println(“The number is even”);

}

} else{

System.out.println(“Enter valid number”);

}

}

}

**Nested if-else statement**

* In Java, nested if-else statements involve placing one if-else statement inside another if-else statement.
* This allows for more complex decision-making by enabling multiple levels of conditions to be evaluated.
* Each if-else block can contain its own if-else statements, creating a hierarchy of conditions.

**Syntax**

if(condition)

{

//statement1

if(condition){

//statement2

} else{

//statement3

}

}

**Example: Direct declaration value**

public class NestedIfElse{

public static void main(String[] args){

int num = 40;

if(num>0){

if(num<18){

System.out.println(“Cannot vote-minor”);

}

else{

System.out.println(“Can vote-adult”);

}

} else{

System.out.println(“Enter valid number”);

}

}

}

**Example: User defined value**

package com.demo.Example;  
import java.util.Scanner;

public class NestedIfElse{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);  
 System.out.println("Enter the value: ");  
 int num = sc.nextInt();

if(num>0){

if(num<18){

System.out.println(“Cannot vote-minor”);

}

else{

System.out.println(“Can vote-adult”);

}

} else{

System.out.println(“Enter valid number”);

}

}

}

**Switch case statement**

* [Switch statements](https://www.javatpoint.com/java-switch) are similar to if-else-if statements.
* The switch statement contains multiple blocks of code called cases and a single case is executed based on the variable which is being switched.
* The switch statement is easier to use instead of if-else-if statements.
* It also enhances the readability of the program.

**Syntax**

switch(expression){

case 1: statement

break;

case 2: statement

break;

default: statement

}

**Example: Direct declaration value**

public class SwitchCaseExample {

public static void main(String[] args) {

int day = 3; // Example value representing the day of the week

// Switch statement to determine the day of the week

switch (day) {

case 1:

System.out.println("Monday");

break;

case 2:

System.out.println("Tuesday");

break;

case 3:

System.out.println("Wednesday");

break;

case 4:

System.out.println("Thursday");

break;

case 5:

System.out.println("Friday");

break;

case 6:

System.out.println("Saturday");

break;

case 7:

System.out.println("Sunday");

break;

default:

System.out.println("Invalid day"); // Default case if no matches are found

break;

}

}

}

**Example: User defined value**

package com.demo.Example;  
import java.util.Scanner;  
  
public class ExampleSwitch {  
 public static void main(String[] args){  
 Scanner sc = new Scanner(System.in);  
 System.out.println("Enter the case number:");  
 int num = sc.nextInt();  
 switch (num){  
 case 1:  
 System.out.println("Selected english language");  
 break;  
 case 2:  
 System.out.println("Selected tamil language");  
 break;  
 default:  
 System.out.println("Selected language hindi");  
 }  
 }  
}

**Example: User defined value**

import java.util.Scanner;

public class Calculator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

// Display menu

System.out.println("Select an operation:");

System.out.println("1. Addition");

System.out.println("2. Subtraction");

System.out.println("3. Multiplication");

System.out.println("4. Division");

// Get user choice

System.out.print("Enter your choice (1/2/3/4): ");

int choice = scanner.nextInt();

// Get user input for numbers

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

double num1 = scanner.nextDouble();

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

double num2 = scanner.nextDouble();

// Perform the operation based on user choice

double result;

switch (choice) {

case 1:

// Addition

result = num1 + num2;

System.out.println("Result: " + result);

break;

case 2:

// Subtraction

result = num1 - num2;

System.out.println("Result: " + result);

break;

case 3:

// Multiplication

result = num1 \* num2;

System.out.println("Result: " + result);

break;

case 4:

// Division

if (num2 != 0) {

result = num1 / num2;

System.out.println("Result: " + result);

} else {

System.out.println("Error: Division by zero is not allowed.");

}

break;

default:

System.out.println("Invalid choice. Please select a valid operation.");

break;

}

}

}