Simple Programs

6] In the simple interest program, in the expression keep an int to the left and all floats to the right. Why does the program not compile.

Answer:

when we assign value of small memory data type into higher memory data type that time we would not get any error because small memory can easily adjust into higher memory area . You can think it as you have a half liter water and you are asked that can you pour it into 1 liter container . Obviously our answer would be yes.

Now think it as reverse manner when you have 1 liter water and you asked that can you pour it into half liter container than our answer would be no . Because we know that how can we fill 1 liter of water into half liter container . Data would be loss than we have to apply some technique to do that . So we cannot assign value of higher memory data type to smaller memory data type easily . For do that we use down casting .

so we cannot assign directly

double i=10.25;

float j=i ;//// it would create type mismatch error

to avoid this you have to perform explicit down casting

float j =(float)i ; // It would execute without any issue

7] In the program that calculates the slope, what happens when the x-coordinates of the line are the same?

Answer:

Infinity

9] With reference to the program where PI id defined as a constant. What is the naming convention of the constant variable?

Answer:

Static final double PI = 3.141; Or we can just use Math.PI if we want greater precision.

Boolean algebra

1] What are the possible values a boolean variable can take?

Answer:

A Boolean expression can consist of Boolean data, such as the following:

* BOOLEAN values (YES and NO, and their synonyms, ON and OFF, and TRUE and FALSE)
* BOOLEAN variables or formulas
* Functions that yield BOOLEAN results
* BOOLEAN values calculated by comparison operators

2] What are the values a boolean expression can resolve to?

Answer:

True and False.

3] What is the difference between the following sets of operators:

A] && , &

Answer:

& is a bitwise operator and compares each operand bitwise.

It is a binary AND Operator and copies a bit to the result if it exists in both operands.

Assume integer variable A holds 60 and variable B holds 13 then

(A & B) will give 12 which is 0000 1100.

Whereas && is a logical AND operator and operates on boolean operands. If both the operands are true, then the condition becomes true otherwise it is false. Assume boolean variable A holds true and variable B holds false then (A && B) is false.

& is to be used during bitwise operations and && is useful during logical operations.

B] || , |

Answer:

| is a bitwise operator and compares each operands bitwise.

It is a binary OR Operator and copies a bit to the result it exists in either operands.

Assume integer variable A holds 60 and variable B holds 13 then

(A | B) will give 61 which is 0011 1101.

Whereas || is a logical OR operator and operates on boolean operands. If both the operands are false, then the condition becomes false otherwise it is true. Assume boolean variable A holds true and variable B holds false then (A && B) is true.

| is to be used during bitwise operations and || is useful during logical operations.

Which of these is called the short circuit operators?

Answer:

[**AND(&&)**](https://www.geeksforgeeks.org/operator-in-java-with-examples/)**short circuit**

[**OR(||)**](https://www.geeksforgeeks.org/operator-in-java/)**short circuit**

5] What are the most common situations where the circuit operators are used?

Answer:

In [Java logical operators](https://www.geeksforgeeks.org/java-logical-operators-with-examples/), if the evaluation of a logical expression exit in between before complete evaluation, then it is known as **Short-circuit**. A short circuit happens because the result is clear even before the complete evaluation of the expression, and the result is returned. Short circuit evaluation avoids unnecessary work and leads to efficient processing.

6] In a program, typically where are boolean expressions used?

Boolean, or boolean logic, is a subset of algebra used for creating true/false statements. Boolean expressions use the operators AND, OR, XOR, and NOT to compare values and return a true or false result.

7] Does java have support for a ‘boolean’ data type?

In **Java**, the **boolean** keyword is a primitive **data type**. It is used to store only two possible values, either true or false.

Conditional statements

7] Provide your comments on this code:

if ( i<50 && i>100 ) System.out.println(“Hello”);

In the above expression, the if statement did not have braces. When should braces be put? when can they be avoided?

Answer:

Braces are not required for one statement but are always good.

If the true or false clause of an if statement has **only one statement**, we do not need to use braces.

But if there are more statements in the if block we must use braces as it is can cause less errors.

8] What do you mean by nesting? What are the rules related to nested blocks of code?Upto what level can blocks be nested?

Answer:

In Java, it is possible to define a class within another class, such classes are known as nested classes.

Nested classes are divided into two categories:

**1.]static nested class :** Nested classes that are declared *static* are called static nested classes.

**2.]inner class :**An inner class is a non-static nested class.

Some rules:

* Every block of code in Java starts with a open curly brace { and ends with close curly brace }.
* There is no restriction on the number of blocks inside a block and the level of nesting the blocks. i.e. Blocks can be nested and can be included inside other blocks.
* Block of code in Java is commonly used in if, for and while statements.
* All class and method contents are also blocks e.g., the class content or the main method in the examples are blocks.
* It is advised to indent i.e. put tabs or spaces so that the inside blocks are one tab more than the containing block. Indenting the blocks will help in resolving the compilation errors faster and the programs will be easy to read.

Level for nesting:

There is no depth limit for a nested loop.

It’s designed in such a way so that its only depth limit is the amount of RAM it can allocate.

9] Can you write a switch case based on the value of a string variable?

In a switch statement, can default be placed at the top instead of at the bottom? Why is it usually placed at the top? What do you understand by idioms in a programming language?

Answer:

Yes we can write a switch case based on the value of a string variable. The **default statement** doesn't have to come at the end. **It** may appear **anywhere** in the body of the **switch statement**.

A **programming idiom** is a pattern, algorithm or way of structuring code. ... To say that code isn't **idiomatic** is to say that it doesn't structure itself in ways that allow human readers to think about the code effectively