**CDAC Mumbai PG-DAC August 24**

**Assignment No- 4**

1) Write a program that demonstrates widening conversion from int to double and prints the result.

**package** ass4Lab.example;

**public** **class** que1 {

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

// **TODO** Auto-generated method stub

**int** a=14;

**double** d =a;

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

}

}



2) Create a program that demonstrates narrowing conversion from double to int and prints the result.

**package** ass4Lab.example;

**public** **class** que2 {

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

// **TODO** Auto-generated method stub

**double** d=14;

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

}

}



3) Write a program that performs arithmetic operations involving different data types (int, double, float) and observes how Java handles widening conversions automatically.

**package** ass4Lab.example;

**public** **class** que3 {

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

// **TODO** Auto-generated method stub

**int** a=14;

**double** b=15.55;

**float** c=12.3f;

System.***out***.println(a+b);

System.***out***.println(a\*c);

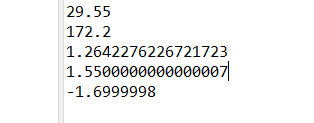
System.***out***.println(b/c);

System.***out***.println(b-a);

System.***out***.println(c-a);

}

}



4) Write a Program that demonstrates widening conversion from int to (double,float, boolean, string) and prints the result.

**package** ass4Lab.example;

**public** **class** que4 {

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

// **TODO** Auto-generated method stub

**int** a=14;

**double** d=a;

**float** f=a;

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

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

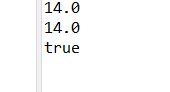
String s=String.*valueOf*(a);

**boolean** b=a!=0;

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

}

}



**Interview Questions**

**Note: Write down this interview question on your notebook ,Take a screenshort & Paste that SS in the word document & upload on your Github.**

**What does the static keyword mean in Java? Explain the difference between static and non-static methods.**

1. What is the role of the static keyword in the context of memory management.

**the static keyword helps manage memory by sharing data and methods across instances of a class, thus reducing memory usage and improving efficiency for certain types of operations.**

1. Can static methods be overloaded and overridden in Java?Howstatic variables shared across multiple instances of a class?

**Overloading Static Methods: Yes, static methods can be overloaded by defining multiple methods with the same name but different parameter lists.**

**Overriding Static Methods: No, static methods cannot be overridden. They can be hidden if a subclass defines a static method with the same name.**

**Sharing Static Variables: Static variables are shared across all instances of a class. There is only one copy of a static variable, which is accessed by all instances.**

1. What is the significance of the final keyword in Java?
2. **Final Variables: Once assigned a value, a final variable cannot be changed. It effectively becomes a constant.**
3. **Final Methods: A final method cannot be overridden by subclasses, ensuring that the method's implementation remains unchanged.**
4. **Final Classes: A final class cannot be subclassed, which prevents other classes from extending it and altering its behavior.**

**In summary, the final keyword is used to restrict modifications: final variables are constants, final methods are immutable, and final classes are unmodifiable.**

1. What are narrowing and widening conversions in Java?

**Widening Conversion: This is the automatic conversion of a smaller data type to a larger one, such as from int to double. It is done implicitly by the compiler and does not lose information.**

**Narrowing Conversion: This is the explicit conversion from a larger data type to a smaller one, such as from double to int. It may involve loss of information and requires explicit casting by the programmer.**

1. Provide examples of narrowing and widening conversions between primitive data types.

Widening Conversion

**byte b = 42;**

**int i = b; // Widening conversion from byte to int**

Narrowing Conversion

**double d = 9.78;**

**int i = (int) d; // Narrowing conversion from double to int**

1. How does Java handle potential loss of precision during narrowing conversions?
2. Explain the concept of automatic widening conversion in Java.

**Automatic widening conversion in Java occurs when a value of a smaller data type is assigned to a variable of a larger data type. The conversion happens implicitly, meaning you don’t need to manually cast the value. This type of conversion is safe because the larger data type can accommodate all possible values of the smaller data type without losing information.**

1. What are the implications of narrowing and widening conversions on type compatibility and data loss?