**Intermediate Level (8-14)**

8. public class TypeCastingDemo {

public static void main(String[] args) {

int intVal = 100;

long longVal = intVal;

float floatVal = longVal;

System.out.println("Implicit Type Casting:");

System.out.println("int value: " + intVal);

System.out.println("Converted to long: " + longVal);

System.out.println("Converted to float: " + floatVal);

double doubleVal = 99.99;

int castedInt = (int) doubleVal;

char castedChar = (char) castedInt;

System.out.println("\nExplicit Type Casting:");

System.out.println("double value: " + doubleVal);

System.out.println("Converted to int: " + castedInt);

System.out.println("Converted to char: " + castedChar);

}

}

9. public class AutoBoxingUnboxingDemo {

public static void main(String[] args) {

int primitiveInt = 100

Integer boxedInt = primitiveInt;

System.out.println("Autoboxing:");

System.out.println("Primitive int: " + primitiveInt);

System.out.println("Boxed Integer object: " + boxedInt);

Integer objectInteger = new Integer(200);

int unboxedInt = objectInteger;

System.out.println("\nUnboxing:");

System.out.println("Integer object: " + objectInteger);

System.out.println("Unboxed primitive int: " + unboxedInt);

}

}

10. import java.util.Scanner;

public class CircleArea {

final static double PI = 3.14159;

public static void main(String[] args)

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the radius of the circle: ");

double radius = scanner.nextDouble();

double area = PI \* radius \* radius;

System.out.println("Area of the circle is: " + area);

scanner.close();

}

}

11. public class CharVsString {

public static void main(String[] args) {

char letter = 'A';

String word = "Apple";

System.out.println("char variable (single character): " + letter);

System.out.println("String variable (multiple characters): " + word);

System.out.println("\n--- Additional Info ---");

int asciiValue = letter; // Implicitly cast to int

System.out.println("ASCII value of char '" + letter + "' is: " + asciiValue);

System.out.println("Length of String \"" + word + "\" is: " + word.length());

}

}

12. public class TypePromotionDemo {

public static void main(String[] args) {

byte b = 10;

byte b2 = 20;

// byte result = b + b2;

int result1 = b + b2;

char c = 'A';

int result2 = c + 1;

int i = 100;

long l = 200L;

long result3 = i + l;

float f = 10.5f;

double d = 20.25;

double result4 = f + d;

System.out.println("Result of byte + byte (promoted to int): " + result1);

System.out.println("Result of char + int (char promoted to int): " + result2);

System.out.println("Result of int + long (int promoted to long): " + result3);

System.out.println("Result of float + double (float promoted to double): " + result4);

}

}

13. public class StaticVsInstance {

static int staticCount = 0;

int instanceCount = 0;

void incrementCounts() {

staticCount++;

instanceCount++;

}

void displayCounts(String objectName) {

System.out.println("[" + objectName + "] staticCount = " + staticCount + ", instanceCount = " + instanceCount);

}

public static void main(String[] args)

StaticVsInstance obj1 = new StaticVsInstance();

obj1.incrementCounts();

obj1.displayCounts("obj1");

StaticVsInstance obj2 = new StaticVsInstance();

obj2.incrementCounts();

obj2.displayCounts("obj2");

StaticVsInstance obj3 = new StaticVsInstance();

obj3.incrementCounts();

obj3.displayCounts("obj3");

}

}

14. public class NumberConversion {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a decimal number: ");

int number = scanner.nextInt();

String binary = Integer.toBinaryString(number);

String hex = Integer.toHexString(number);

String octal = Integer.toOctalString(number);

System.out.println("Binary representation: " + binary);

System.out.println("Hexadecimal representation: " + hex);

System.out.println("Octal representation: " + octal);

scanner.close();

}

}