

// 1. Program to declare and initialize all primitive data types in Java

```
public class PrimitiveDataTypes {  
    public static void main(String[] args) {  
        byte b = 10;  
        short s = 100;  
        int i = 1000;  
        long l = 10000L;  
        float f = 10.5f;  
        double d = 20.5;  
        char c = 'A';  
        boolean bool = true;  
  
        System.out.println("Byte value: " + b);  
        System.out.println("Short value: " + s);  
        System.out.println("Int value: " + i);  
        System.out.println("Long value: " + l);  
        System.out.println("Float value: " + f);  
        System.out.println("Double value: " + d);  
        System.out.println("Char value: " + c);  
        System.out.println("Boolean value: " + bool);  
    }  
}
```

/* Output:

```
Byte value: 10  
Short value: 100  
Int value: 1000  
Long value: 10000  
Float value: 10.5  
Double value: 20.5  
Char value: A  
Boolean value: true  
*/
```

// 2. Program to convert int to double

```
class IntToDouble {  
    public static void main(String[] args) {  
        int num = 10;  
        double converted = num; // Automatic conversion  
        System.out.println("Int value: " + num);  
        System.out.println("Double value: " + converted);  
    }  
}
```

/* Output:

```
Int value: 10  
Double value: 10.0  
*/
```

// 3. Program to convert double to int using typecasting

```

class DoubleToInt {
    public static void main(String[] args) {
        double d = 9.99;
        int i = (int) d; // Typecasting leads to data loss
        System.out.println("Double value: " + d);
        System.out.println("Converted Int value (Data loss): " + i);
    }
}
/* Output:
Double value: 9.99
Converted Int value (Data loss): 9
*/

```

// 4. Program to calculate the average of three int numbers using typecasting

```

class AverageCalculator {
    public static void main(String[] args) {
        int a = 10, b = 20, c = 30;
        double avg = (a + b + c) / 3.0; // Typecasting to double
        System.out.println("Average: " + avg);
    }
}
/* Output:
Average: 20.0
*/

```

// 5. Program to demonstrate binary, octal, hexadecimal, and floating-point literals

```

class NumberLiterals {
    public static void main(String[] args) {
        int binary = 0b1010; // Binary literal
        int octal = 0123;    // Octal literal
        int hex = 0x1A;      // Hexadecimal literal
        float floatVal = 10.5f;
        double doubleVal = 20.99;

        System.out.println("Binary: " + binary);
        System.out.println("Octal: " + octal);
        System.out.println("Hexadecimal: " + hex);
        System.out.println("Float: " + floatVal);
        System.out.println("Double: " + doubleVal);
    }
}
/* Output:
Binary: 10
Octal: 83
Hexadecimal: 26
Float: 10.5
Double: 20.99
*/

```

// 6. Program to display character and string literals with ASCII values

```
class CharAndStringLiterals {  
    public static void main(String[] args) {  
        char ch = 'A';  
        String str = "Hello, Java!";  
        System.out.println("Character: " + ch + " ASCII: " + (int) ch);  
        System.out.println("String: " + str);  
    }  
}
```

/* Output:

Character: A ASCII: 65

String: Hello, Java!

*/

// 7. Program using boolean literals in if-else

```
class BooleanLiterals {  
    public static void main(String[] args) {  
        boolean isJavaFun = true;  
        if (isJavaFun) {  
            System.out.println("Java is fun!");  
        } else {  
            System.out.println("Java is not fun!");  
        }  
    }  
}
```

/* Output:

Java is fun!

*/

// 8. Program to perform arithmetic operations

```
class ArithmeticOperations {  
    public static void main(String[] args) {  
        int a = 20, b = 10;  
        System.out.println("Addition: " + (a + b));  
        System.out.println("Subtraction: " + (a - b));  
        System.out.println("Multiplication: " + (a * b));  
        System.out.println("Division: " + (a / b));  
        System.out.println("Modulus: " + (a % b));  
    }  
}
```

/* Output:

Addition: 30

Subtraction: 10

Multiplication: 200

Division: 2

Modulus: 0

*/

```
// 10. Program to compare two integers
class RelationalOperators {
    public static void main(String[] args) {
        int a = 10, b = 20;
        System.out.println("a == b: " + (a == b));
        System.out.println("a != b: " + (a != b));
        System.out.println("a > b: " + (a > b));
        System.out.println("a < b: " + (a < b));
        System.out.println("a >= b: " + (a >= b));
        System.out.println("a <= b: " + (a <= b));
    }
}
/* Output:
a == b: false
a != b: true
a > b: false
a < b: true
a >= b: false
a <= b: true
*/
```