Type Casting in Java:

Casting Refers to Conversion

The Process of Converting the data of one type to another type is called type casting.

There are two types of type casting:

1. Implicit Type Casting
2. Explicit Type Casting

Implicit Type Casting:

Converting the Data of Lower data type to Higher Data type. This is also called as **"Promotion".** In Implicit Type Casting data loss will not occur

Example: Byte to Short conversion.

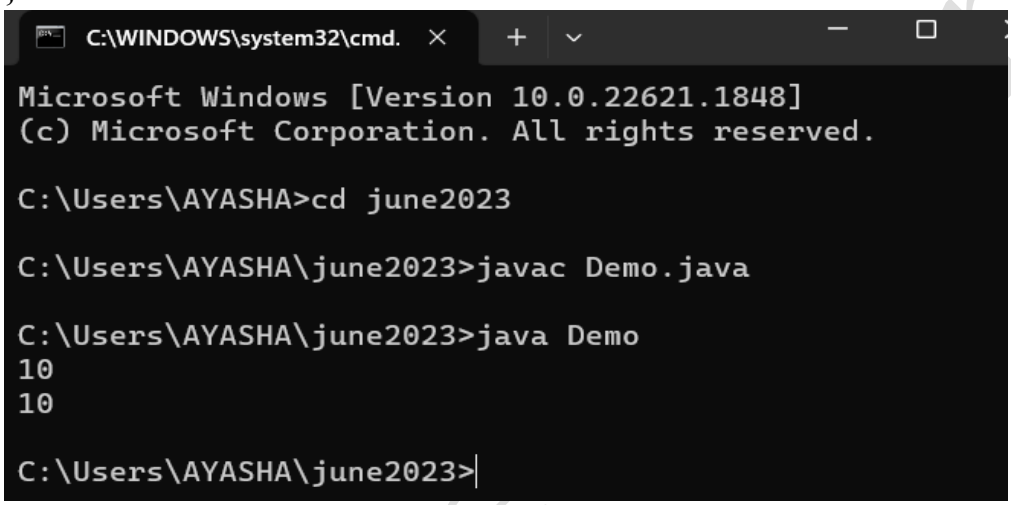
Explicit Type Casting:

Converting the Data of Higher data type to Lower Data type. In Implicit Type Casting there is all possible chance of losing the data.

Example: Int to Short conversion.

Program (Byte to Byte):

```
class Demo
{
	public static void main(String[] args)
	{
		byte a = 10;
		byte b;
		b = a;
		System.out.println(a);
		System.out.println(b);
	}
}
```

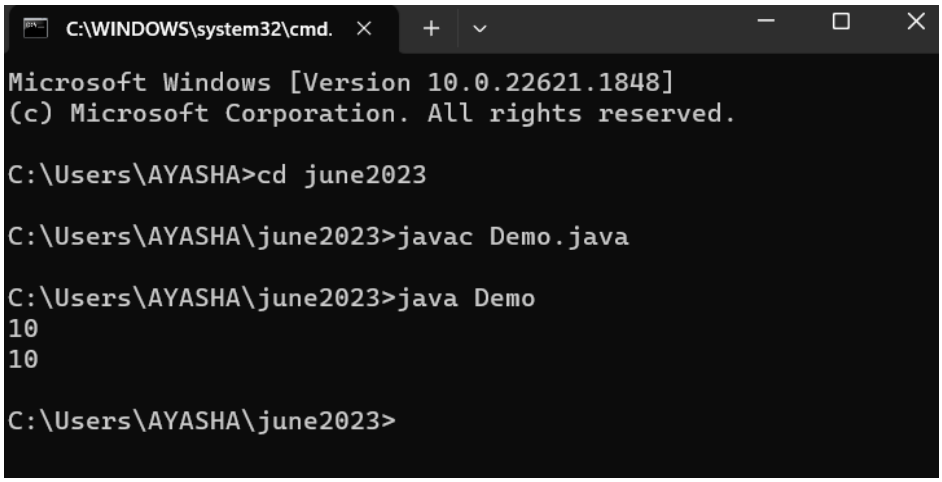


Type Casting is Not Required

Program (Byte to short):

```
class Demo
{
	public static void main(String[] args)
	{
		byte a = 10;
		short b;
		b = a;
		System.out.println(a);
		System.out.println(b);
	}
}
```

Output

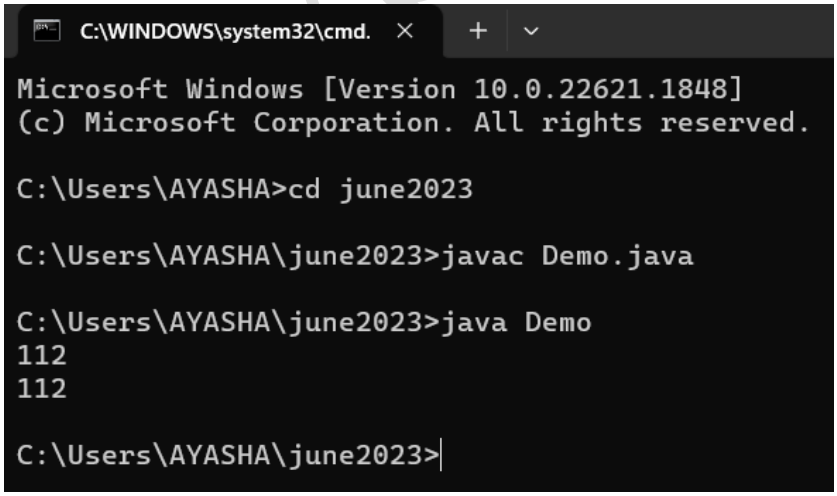


Implicit Type Casting (Lower data Type to Higher Data Type)

Program (Byte to Int):

```
class Demo
{
	public static void main(String[] args)
	{
		byte a = 112;
		int b;
		b = a;
		System.out.println(a);
		System.out.println(b);
	}
}
```

Output:

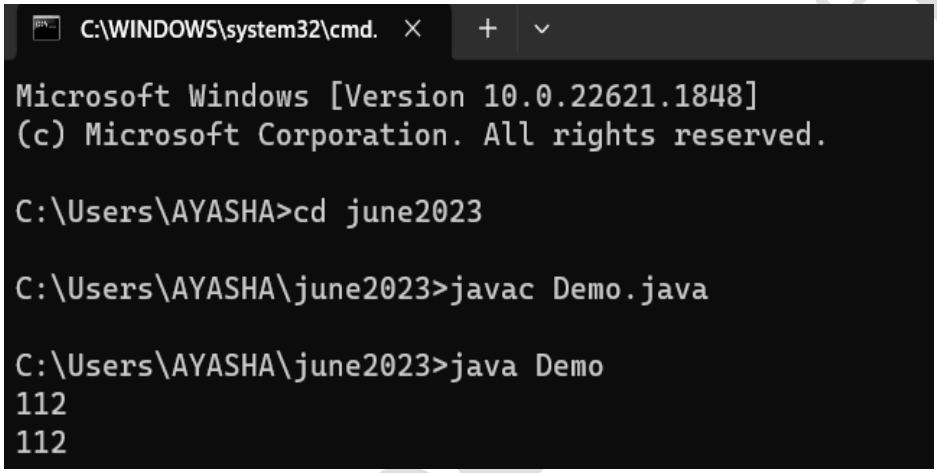


Implicit Type Casting

Program (Byte to long):

```
class Demo
{
	public static void main(String[] args)
	{
		byte a = 112;
		long b;
		b = a;
		System.out.println(a);
		System.out.println(b);
	}
}
```

Output:



Implicit Type Casting

Program (Byte to Float):

```
class Demo
{
	public static void main(String[] args)
	{
		byte a = 112;
		float b;
		b = a;
		System.out.println(a);
		System.out.println(b);
	}
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
112
112
```

Implicit Type Casting

Program (Byte to Double):

```
class Demo
{
	public static void main(String[] args)
	{
		byte a = 112;
		double b;
		b = a;
		System.out.println(a);
		System.out.println(b);
	}
}
```

Output:

```
C:\Users\AYASHA>cd june2023

C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
112
112
```

Implicit Type Casting

Program (Byte to char):

```
class Demo
  {
	public static void main(String[] args)
	{
		byte a = 112;
		char b;
		b = (char)a;
		System.out.println(a);
```

```
            System.out.println(b);
        }
}
```

Output

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
112
p
```

Explicit Type Conversion

Note: Byte to Boolean conversion is not possible.

Program (Short to Byte):

```
class Demo
  {
        public static void main(String[] args)
        {
            short a = 248;
            byte b;
            b = (byte)a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
248
248
```

Explicit Type Casting

Program (Short to Int):

```
class Demo
  {
        public static void main(String[] args)
        {
            short a = 248;
```

```
            int b;
            b = a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
248
248
```

Implicit Type Conversion

Program (Short to long):

```
class Demo
  {
        public static void main(String[] args)
        {
            short a = 248;
            long b;
            b = a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
248
248
```

Implicit Type Conversion

Program (Short to float):

```
class Demo
  {
        public static void main(String[] args)
        {
            short a = 248;
            float b;
```

```
            b = a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
248
248.0
```

Implicit Type Conversion

Program (Short to double):

```
class Demo
  {
        public static void main(String[] args)
        {
            short a = 248;
            double b;
            b = a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
248
248.0
```

Implicit Type Conversion

Program (short to char):

```
class Demo
  {
        public static void main(String[] args)
        {
            short a = 112;
```

```
            char b;
            b = (char)a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
248
?
```

Explicit Type Conversion

Note: Short to Boolean Conversion is not possible

```
C:\Users\AYASHA\june2023>javac Demo.java
Demo.java:7: error: incompatible types: short cannot be converted to boolean
b = (boolean)a;
             ^
1 error
```

Program (Int to Byte):

```
class Demo
  {
        public static void main(String[] args)
        {
            int a = 112;
            byte b;
            b = (byte)a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
112
112
```

Explicit Type Conversion

Program (Int to short):

```
class Demo
  {
        public static void main(String[] args)
        {
              int a = 112;
              short b;
              b = (byte)a;
              System.out.println(a);
              System.out.println(b);
        }
}
```

Output

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
112
112
```

Explicit Type Conversion

Program (Int to long):

```
class Demo
  {
        public static void main(String[] args)
        {
              int a = 112;
              long b;
              System.out.println(a);
              System.out.println(b);
        }
}
```

Output

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
112
112
```

Implicit Type Conversion

Program (Int to float):

```
class Demo
  {
        public static void main(String[] args)
        {
              int a = 248;
              float b;
              b = a;
              System.out.println(a);
              System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
248
248.0
```

Implicit Type Conversion

Program (Int to double):

```
class Demo
  {
        public static void main(String[] args)
        {
              int a = 248;
              double b;
              b = a;
              System.out.println(a);
              System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
248
248.0
```

Implicit Type Conversion

Program (Int to char):

```
class Demo
  {
        public static void main(String[] args)
        {
              int a = 248;
              char b;
              b = (char)a;
              System.out.println(a);
              System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
112
p
```

Explicit Type Conversion

Note: Int to Boolean Conversion is not possible

```
C:\Users\AYASHA\june2023>javac Demo.java
Demo.java:7: error: incompatible types: int cannot be converted to boolean
b = (boolean)a;
            ^
1 error
```

Program (long to byte):

```
class Demo
{
        public static void main(String[] args)
        {
              long a = 1124765498l;
              byte b;
              b = (byte)a;
              System.out.println(a);
              System.out.println(b);
       }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
1124765498
58
```

Explicit Type Conversion

Program (long to short):

```
class Demo
{
	public static void main(String[] args)
	{
		long a = 1124765498l;
		short b;
		b = (short)a;
		System.out.println(a);
		System.out.println(b);
	}
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
1124765498
-28870
```

Explicit Type Conversion

Program (long to int):

```
class Demo
{
	public static void main(String[] args)
	{
		long a = 1124765498l;
		int b;
		b = (int)a;
		System.out.println(a);
		System.out.println(b);
```

```
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
1124765498
1124765498
```

Explicit Type Conversion

Program (long to float):

```
class Demo
{
    public static void main(String[] args)
    {
        long a = 1124765498l;
        float b;
        b = a;
        System.out.println(a);
        System.out.println(b);
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
1124765498
1.12476544E9
```

Implicit Type Conversion

Program (long to double):

```
class Demo
{
    public static void main(String[] args)
    {
        long a = 1124765498l;
        double b;
        b = a;
        System.out.println(a);
        System.out.println(b);
```

```
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
1124765498
1.12476544E9
```

Implicit Type Conversion

Program (long to char):

```
class Demo
{
    public static void main(String[] args)
    {
        long a = 1124765498l;
        char b;
        b = (char)a;
        System.out.println(a);
        System.out.println(b);
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
1124765498
?
```

Explicit Type Conversion

Program (float to byte):

```
class Demo
{
    public static void main(String[] args)
    {
        float a = 3.147f;
        byte b;
        b = (byte)a;
        System.out.println(a);
        System.out.println(b);
```

```
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
3.147
3
```

Explicit Type Conversion

Program (float to short):

```
class Demo
{
    public static void main(String[] args)
    {
        float a = 3.147f;
        short b;
        b = (short)a;
        System.out.println(a);
        System.out.println(b);
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
3.147
3
```

Explicit Type Conversion

Program (float to int):

```
class Demo
{
    public static void main(String[] args)
    {
        float a = 3.147f;
        int b;
        b = a;
        System.out.println(a);
        System.out.println(b);
```

```
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
3.147
3
```

Explicit Type Conversion

Program (float to long):

```
class Demo
{
    public static void main(String[] args)
    {
        float a = 3.147f;
        long b;
        b = a;
        System.out.println(a);
        System.out.println(b);
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
3.147
3
```

Explicit Type Conversion

Program (float to double):

```
class Demo
{
    public static void main(String[] args)
    {
        float a = 3.147f;
        double b;
        b = a;
        System.out.println(a);
        System.out.println(b);
```

```
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
3.147
3.14700000743865967
```

Implicit Type Conversion

Program (float to char):

```
class Demo
{
    public static void main(String[] args)
    {
        float a = 3.147f;
        char b;
        b = a;
        System.out.println(a);
        System.out.println(b);
    }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
3.147
□
```

Implicit Type Conversion

Program (double to byte):

```
class Demo
{
    public static void main(String[] args)
    {
        double a = 33.44;
        byte b;
        b = (byte)a;
        System.out.println(a);
```

```
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
33.14
33
```

Explicit Type Conversion

Program (double to short):

```
class Demo
{
        public static void main(String[] args)
        {
            double a = 33.44;
            short b;
            b = (short)a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
33.14
33
```

Explicit Type Conversion

Program (double to int):

```
class Demo
{
        public static void main(String[] args)
        {
            double a = 33.44;
            int b;
            b = (int)a;
            System.out.println(a);
```

```
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
33.14
33
```

Explicit Type Conversion

Program (double to long):

```
class Demo
{
        public static void main(String[] args)
        {
            double a = 33.44;
            long b;
            b = (long)a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
33.14
33
```

Explicit Type Conversion

Program (double to float):

```
class Demo
{
        public static void main(String[] args)
        {
            double a = 33.44;
            float b;
            b = (float)a;
            System.out.println(a);
```

```
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
33.14
33.14
```

Explicit Type Conversion

Program (double to char):

```
class Demo
{
        public static void main(String[] args)
        {
            double a = 33.44;
            char b;
            b = (char)a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac demo.java

C:\Users\AYASHA\june2023>java Demo
33.14
!
```

Explicit Type Conversion

Program (char to byte):

```
class Demo
{
        public static void main(String[] args)
        {
            char = ‘a’;
             byte b;
            b =(byte)a;
            System.out.println(a);
```

```
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
a
97
```

Explicit Type Conversion

Program (char to short):

```
class Demo
{
        public static void main(String[] args)
        {
            char = 'a';
            short b;
            b = (short)a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
a
97
```

Explicit Type Conversion

Program (char to int):

```
class Demo
{
        public static void main(String[] args)
        {
            char = 'a';
            int b;
            b = a;
```

```
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
a
97
```

Implicit Type Conversion

Program (char to long):

```
class Demo
{
        public static void main(String[] args)
        {
            char = ‘a’;
            long b;
            b = a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
a
97
```

Implicit Type Conversion

Program (char to float):

```
class Demo
{
        public static void main(String[] args)
        {
            char = ‘a’;
            float b;
```

```
            b = a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
a
97.0
```

Implicit Type conversion

Program (char to double):

```
class Demo
{
        public static void main(String[] args)
        {
            char = 'a';
            double b;
            b = a;
            System.out.println(a);
            System.out.println(b);
        }
}
```

Output:

```
C:\Users\AYASHA\june2023>javac Demo.java

C:\Users\AYASHA\june2023>java Demo
a
97.0
```

Implicit Type conversion

Note: char to Boolean Conversion not possible

Note: Boolean to any Data type Conversion not possible

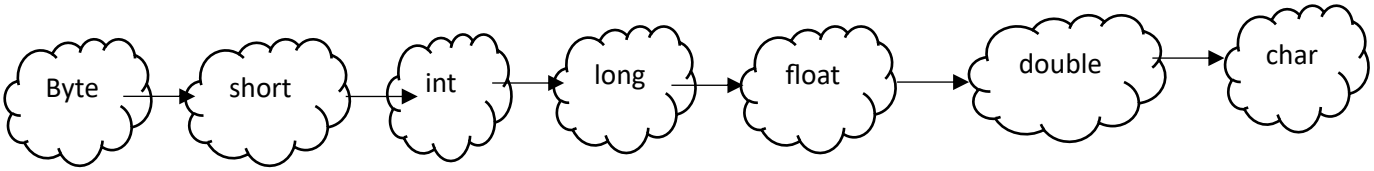


TABLE REPRESENTATION OF TYPE CASTING:

	Byte	**short**	**int**	**long**	**float**	**double**	**char**	**boolean**
byte	CNR	Yes Implicit	Yes Implicit	Yes Implicit	Yes Implicit	Yes Implicit	Yes Explicit	NA
short	Yes Explicit	CNR	Yes Implicit	Yes Implicit	Yes Implicit	Yes Implicit	Yes Explicit	NA
int	Yes Explicit	Yes Explicit	CNR	Yes Implicit	Yes Implicit	Yes Implicit	Yes Implicit	NA
long	Yes Explicit	Yes Explicit	Yes Explicit	CNR	Yes Implicit	Yes Implicit	Yes Implicit	NA
float	Yes Explicit	Yes Explicit	Yes Explicit	Yes Explicit	CNR	Yes Implicit	Yes Implicit	NA
double	Yes Explicit	Yes Explicit	Yes Explicit	Yes Explicit	Yes Explicit	CNR	Yes Implicit	NA
char	Yes Explicit	Yes Explicit	Yes Implicit	Yes Implicit	Yes Implicit	Yes Implicit	CNR	NA
boolean	NA	NA	NA	NA	NA	NA	NA	NA

CNR: Can not Required
NA: Not Possible.