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# TYPE CASTING IN JAVA

Research Assignment

by

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Submitted to

Technology Training Head

PUNITH KUMAR SIR

at

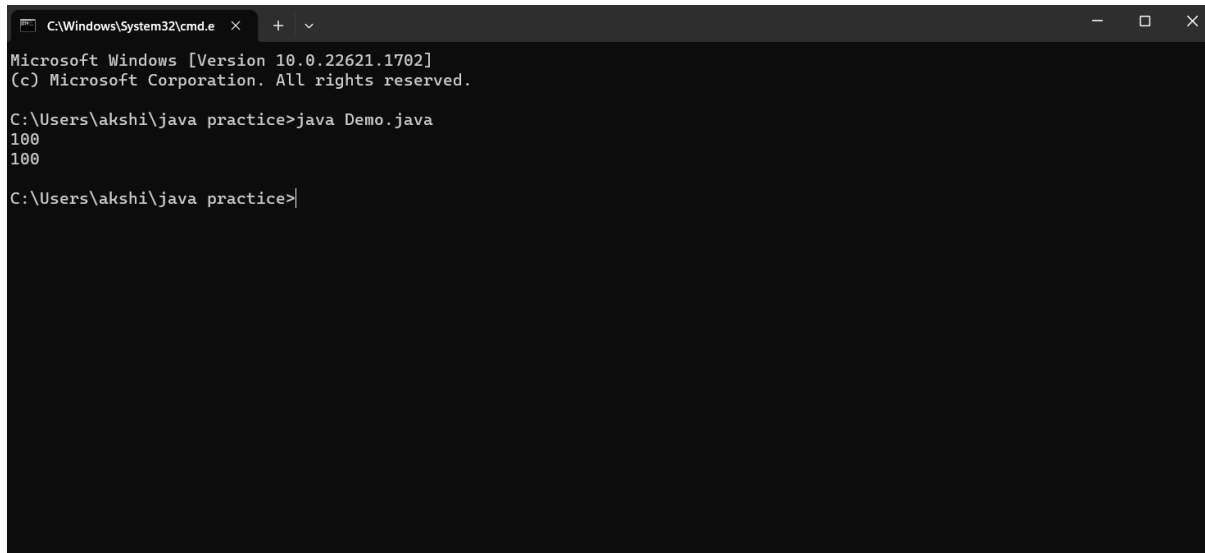
Kodnest Technologies Pvt.Ltd

Karnataka, Bangalore

June 2023

### Program 1

```
class Demo {  
  
public static void main(String args[]) {  
  
    byte a = 100;  
  
    // Casting byte to byte is not required  
  
    byte b = a;  
  
    System.out.println(a);  
  
    System.out.println(b);  
  
    }  
}
```



```
C:\Windows\System32\cmd.exe x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
100  
100  
  
C:\Users\akshi\java practice>|
```

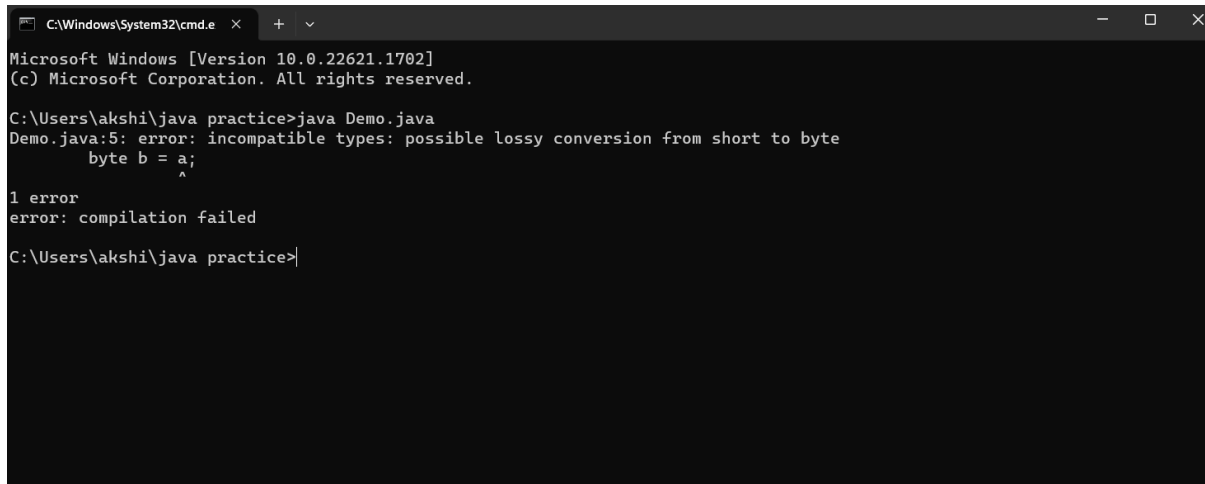
The output of the program is same as before.

### Casting not required

### Program 2

```
class Demo {  
  
public static void main(String args[]) {  
  
    short a = 500;  
  
    // Casting short to byte  
  
    byte b = a;  
  
    //byte b = (byte)a;  
  
    System.out.println(a);  
  
}
```

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



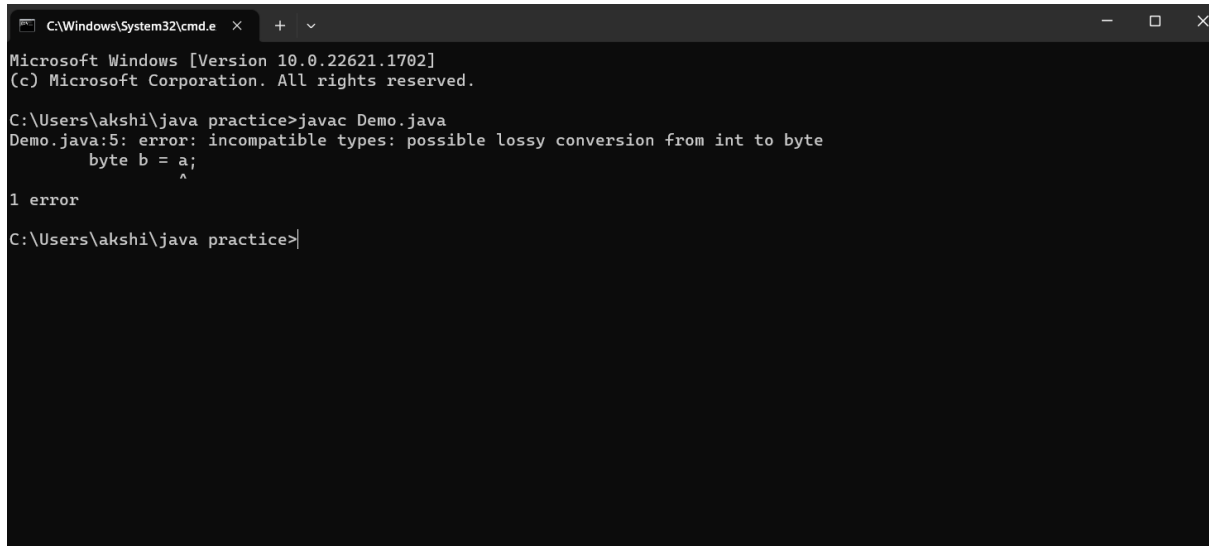
The screenshot shows a Windows command prompt window with the following text:

```
C:\Windows\System32\cmd.exe x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
C:\Users\akshi\java practice>java Demo.java  
Demo.java:5: error: incompatible types: possible lossy conversion from short to byte  
    byte b = a;  
           ^  
1 error  
error: compilation failed  
C:\Users\akshi\java practice>
```

### Explicit type casting

#### Program 3

```
class Demo {  
    public static void main(String args[]) {  
        int a = 300;  
        // Casting int to byte  
        byte b = a;  
        //byte b = (byte)a;  
        System.out.println(a);  
        System.out.println(b);  
    }  
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

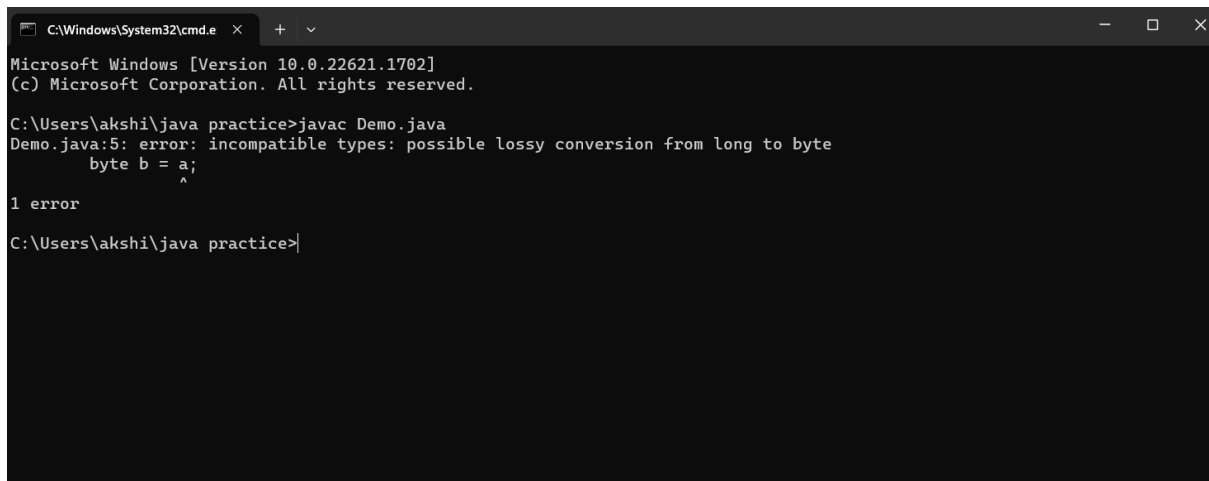
C:\Users\akshi\java practice>javac Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from int to byte
    byte b = a;
           ^
1 error

C:\Users\akshi\java practice>
```

### Explicit type casting

#### Program 4

```
class Demo {
    public static void main(String args[]) {
        long a = 123456789L;
        // Casting long to byte
        byte b = a;
        //byte b = (byte)a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

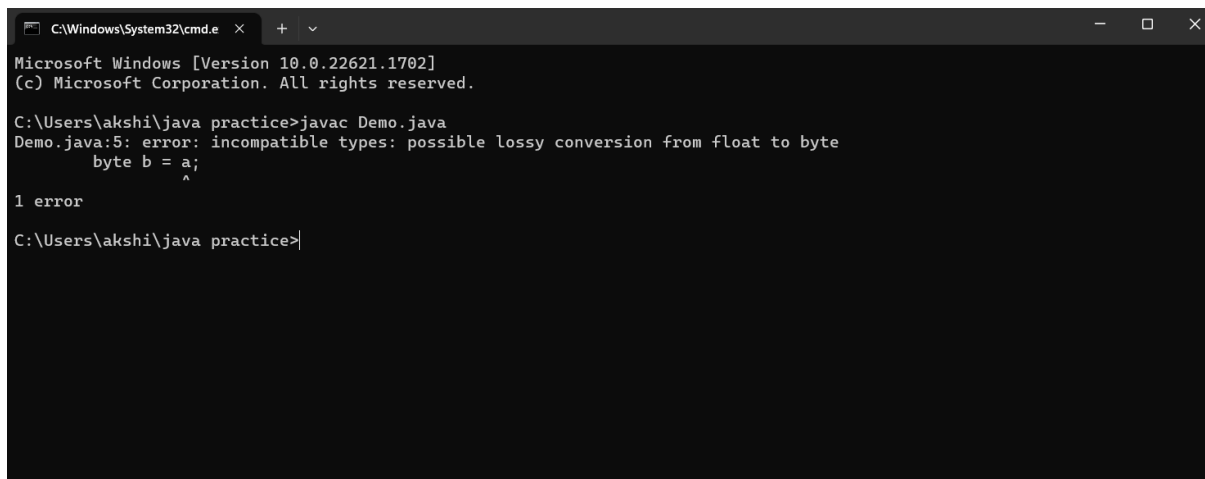
C:\Users\akshi\java practice>javac Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from long to byte
    byte b = a;
           ^
1 error

C:\Users\akshi\java practice>
```

## Explicit type casting

### Program 5

```
class Demo {  
  
    public static void main(String args[]) {  
  
        float a = 123.45f;  
  
        // Casting float to byte  
  
        byte b = a;  
  
        //byte b = (byte)a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.exe'. The window content shows the output of running 'javac Demo.java'. The first line is 'Microsoft Windows [Version 10.0.22621.1702]'. The second line is '(c) Microsoft Corporation. All rights reserved.' The third line is 'C:\Users\akshi\java practice>javac Demo.java'. The fourth line is 'Demo.java:5: error: incompatible types: possible lossy conversion from float to byte'. The fifth line is 'byte b = a;'. The sixth line is '1 error'. The seventh line is 'C:\Users\akshi\java practice>'.

```
C:\Windows\System32\cmd.exe x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
C:\Users\akshi\java practice>javac Demo.java  
Demo.java:5: error: incompatible types: possible lossy conversion from float to byte  
    byte b = a;  
           ^  
1 error  
C:\Users\akshi\java practice>
```

## Explicit type casting

### Program 6

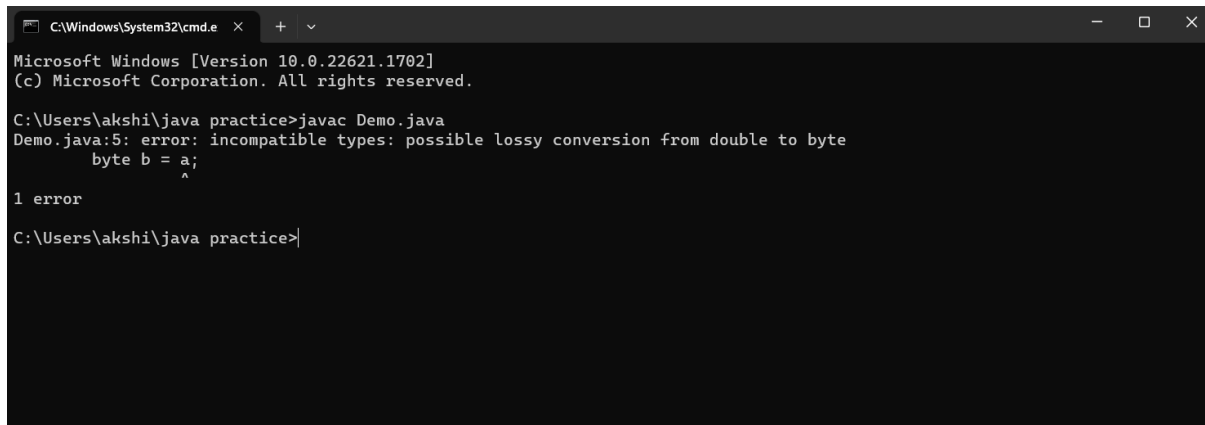
```
class Demo {  
  
    public static void main(String args[]) {  
  
        double a = 123.45;  
  
        // Casting double to byte  
  
        byte b = a;  
  
        //byte b = (byte)a;
```

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

    System.out.println(b);

}

}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.e' with standard window controls. The text inside the window shows the output of a Java compilation attempt. It starts with 'Microsoft Windows [Version 10.0.22621.1702]' and '(c) Microsoft Corporation. All rights reserved.' followed by the command 'C:\Users\akshi\java practice>javac Demo.java'. The output is 'Demo.java:5: error: incompatible types: possible lossy conversion from double to byte' followed by 'byte b = a;' with a caret under the 'a'. Below this is '1 error' and the prompt 'C:\Users\akshi\java practice>|'.

### Explicit type casting

#### Program 7

```
class Demo {

    public static void main(String args[]) {

        char a ='A';

        // Casting char to byte

        byte b = a;

        //byte b = (byte)a;

        System.out.println(a);

        System.out.println(b);

    }

}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

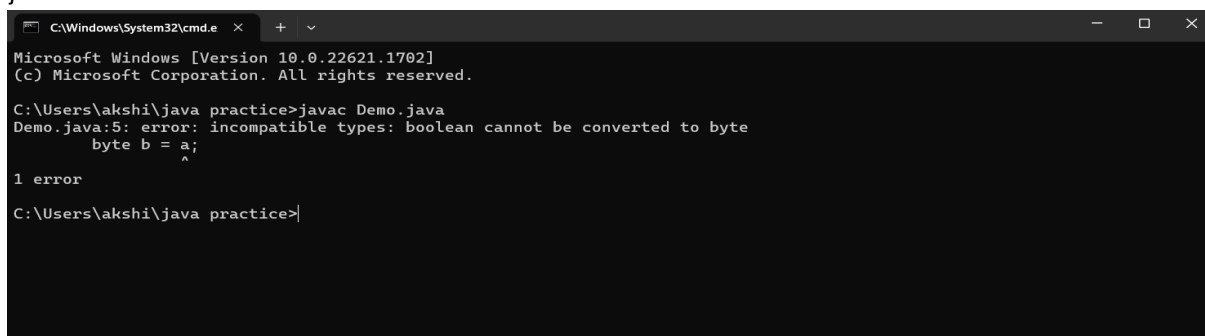
C:\Users\akshi\java practice>javac Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from char to byte
    byte b = a;
            ^
1 error

C:\Users\akshi\java practice>
```

## Explicit typecasting

### Program 8

```
class Demo {
    public static void main(String args[]) {
        boolean a = true;
        // Casting boolean to byte is incompatible
        byte b = a;
        //byte b = (byte)a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>javac Demo.java
Demo.java:5: error: incompatible types: boolean cannot be converted to byte
    byte b = a;
            ^
1 error

C:\Users\akshi\java practice>
```

## No typecasting

### Program 9

```
class Demo {
    public static void main(String args[]) {
```

```
byte a = 100;

// Casting byte to short

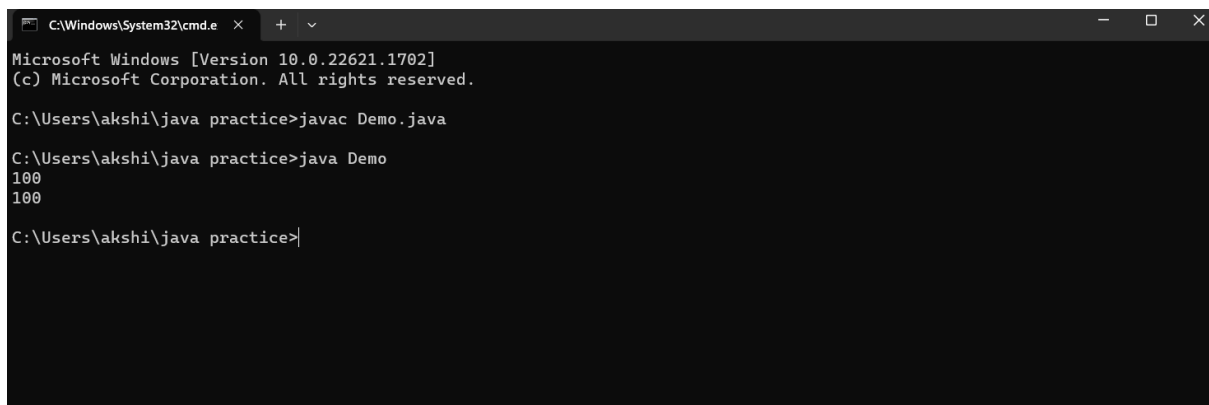
short b = a;

System.out.println(a);

System.out.println(b);

}

}
```



The screenshot shows a Windows command prompt window with the following text:

```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>javac Demo.java

C:\Users\akshi\java practice>java Demo
100
100

C:\Users\akshi\java practice>
```

### Implicit type casting

#### Program 10

```
class Demo {

public static void main(String args[]) {

    short a = 150;

    // Casting short to short not required

    short b = a;

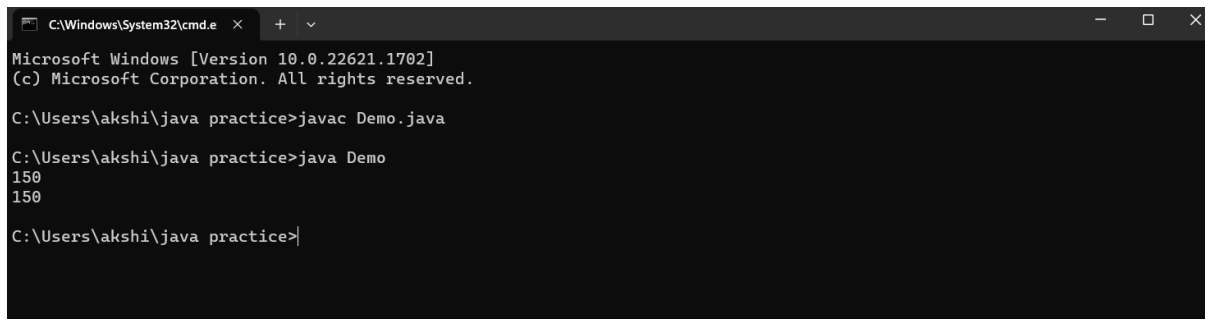
    System.out.println(a);

    System.out.println(b);

}

}
```





```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>javac Demo.java

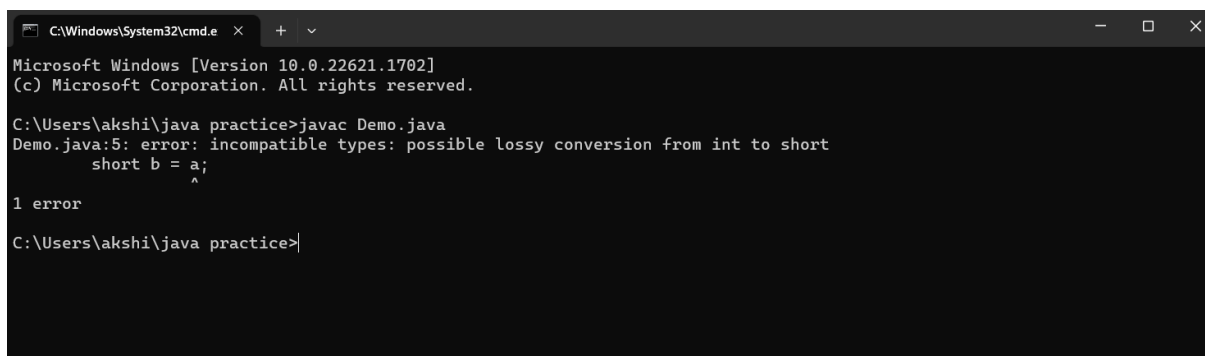
C:\Users\akshi\java practice>java Demo
150
150

C:\Users\akshi\java practice>
```

### Casting not required

#### Program 11

```
class Demo {
    public static void main(String args[]) {
        int a = 150;
        // Casting int to short not possible
        short b = a;
        //short b = (short)a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>javac Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from int to short
    short b = a;
              ^
1 error

C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 12

```
class Demo {
    public static void main(String args[]) {
```

```
long a = 1000000L;

// Casting long to short not possible

short b = a;

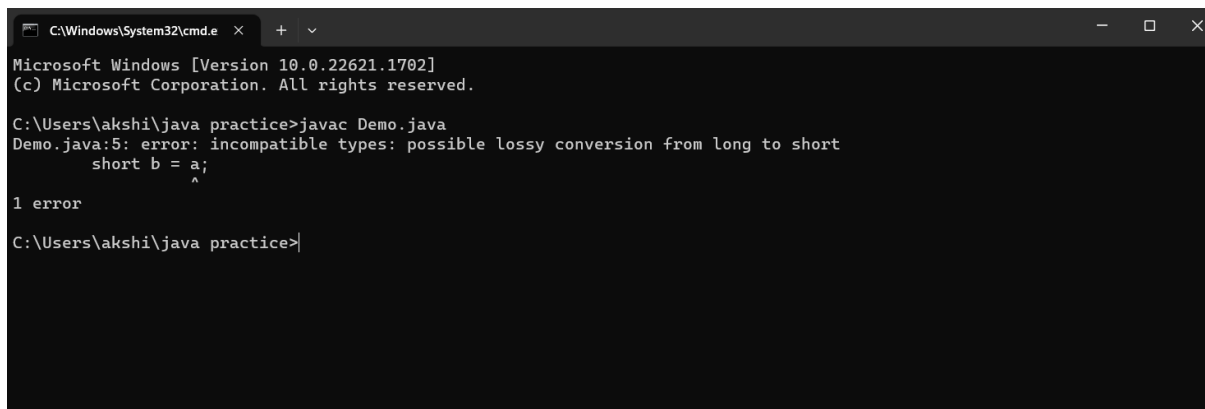
    //short b = (short)a;

System.out.println(a);

System.out.println(b);

}

}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.exe'. The window content shows the following text:

```
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>javac Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from long to short
    short b = a;
              ^
1 error

C:\Users\akshi\java practice>|
```

### Explicit typecasting

#### Program 13

```
class Demo {

public static void main(String args[]) {

    float a = 123.45f;

    // Casting float to short not possible

    short b = a;

        //short b = (short)a;

    System.out.println(a);

    System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from float to short
    short b = a;
            ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

## Explicit typecasting

### Program 14

```
class Demo {

public static void main(String args[]) {

    double a = 123.45;

    // Casting double to short

    short b = a;

    //short b = (short)a;

    System.out.println(a);

    System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from double to short
    short b = a;
            ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

## Explicit typecasting

### Program 15

```
class Demo {

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

```
char a = 'A';

// Casting char to short not possible

short b = a;

    //short b = (short)a;

System.out.println(a);

System.out.println(b);

}

}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.exe'. The window content shows the following text:

```
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from char to short
    short b = a;
              ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 16

```
class Demo {

public static void main(String args[]) {

    boolean a = false;

    // Casting boolean to short is incompatible

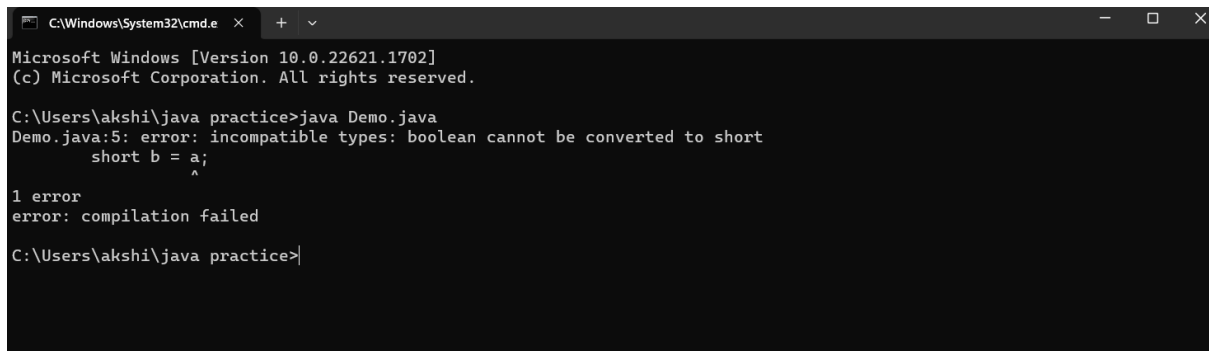
    short b = a;

    System.out.println(a);

    System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: boolean cannot be converted to short
    short b = a;
             ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### No typecasting

#### Program 17

```
class Demo {

    public static void main(String args[]) {

        byte a = 125;

        // Casting byte to int

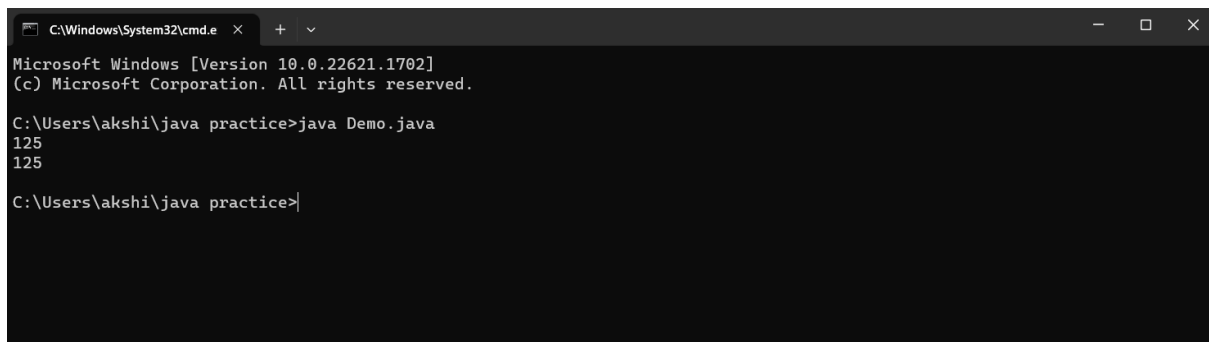
        int b = a;

        System.out.println(a);

        System.out.println(b);

    }

}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
125
125

C:\Users\akshi\java practice>
```

### Implicit typecasting

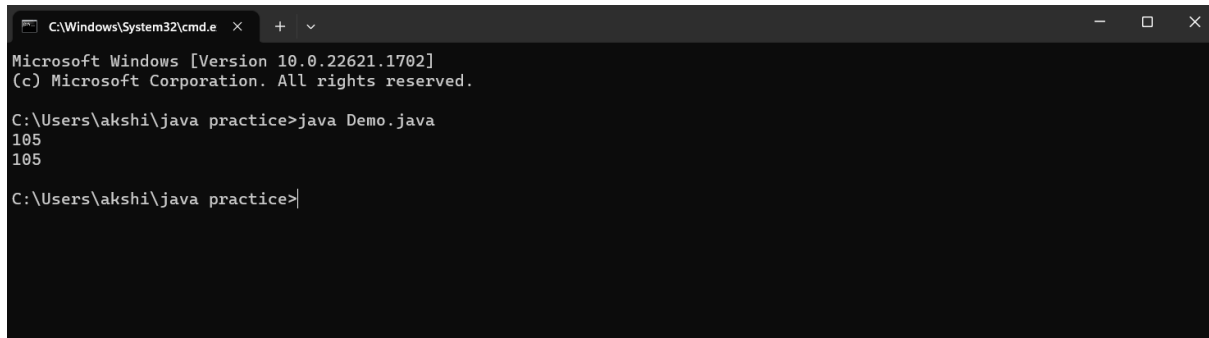
#### Program 18

```
class Demo {

    public static void main(String args[]) {

        short a = 105;
```

```
// Casting short to int  
  
int b = a;  
  
System.out.println(a);  
  
System.out.println(b);  
  
}  
  
}
```

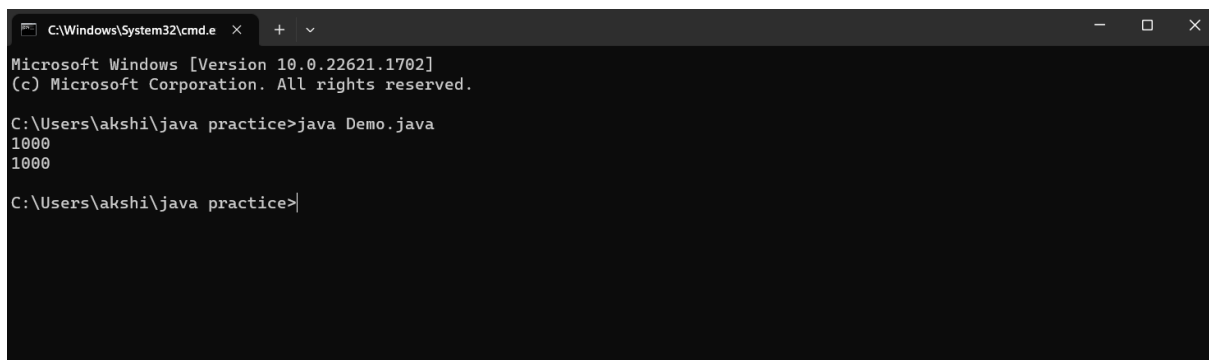


```
C:\Windows\System32\cmd.e  x  +  v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
105  
105  
  
C:\Users\akshi\java practice>
```

### Implicit typecasting

#### Program 19

```
class Demo {  
  
public static void main(String args[]) {  
  
    int a = 1000;  
  
    // Casting int to int not required  
  
    int b = a;  
  
    System.out.println(a);  
  
    System.out.println(b);  
  
}  
  
}
```

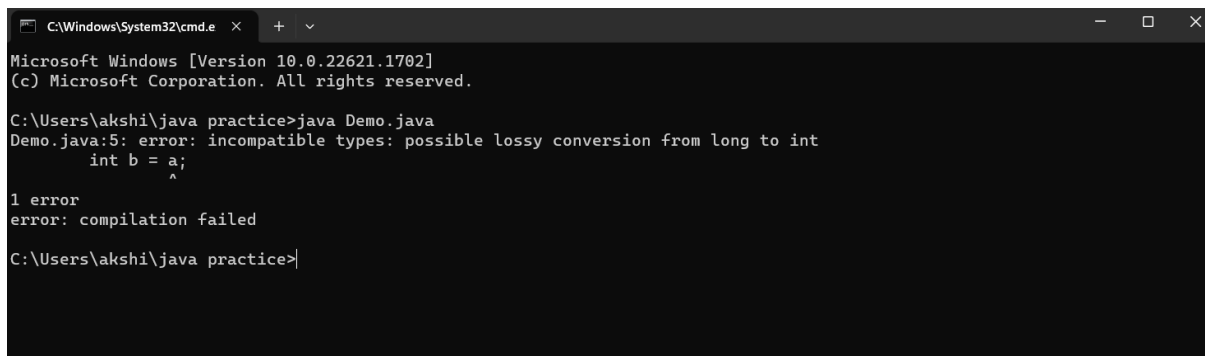


```
C:\Windows\System32\cmd.e  x  +  v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
1000  
1000  
  
C:\Users\akshi\java practice>
```

## Casting not required

### Program 20

```
class Demo {  
  
    public static void main(String args[]) {  
  
        long a = 1000365479L;  
  
        // Casting long to int  
  
        int b = a;  
  
        //int b = (int)a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.exe'. The window content shows the output of running 'java Demo.java'. It displays the Microsoft Windows version (10.0.22621.1702) and copyright information. The command 'C:\Users\akshi\java practice>java Demo.java' is entered. The output shows an error: 'Demo.java:5: error: incompatible types: possible lossy conversion from long to int' with a caret under the 'a' in 'int b = a;'. Below this, it says '1 error' and 'error: compilation failed'. The prompt 'C:\Users\akshi\java practice>' is shown at the bottom.

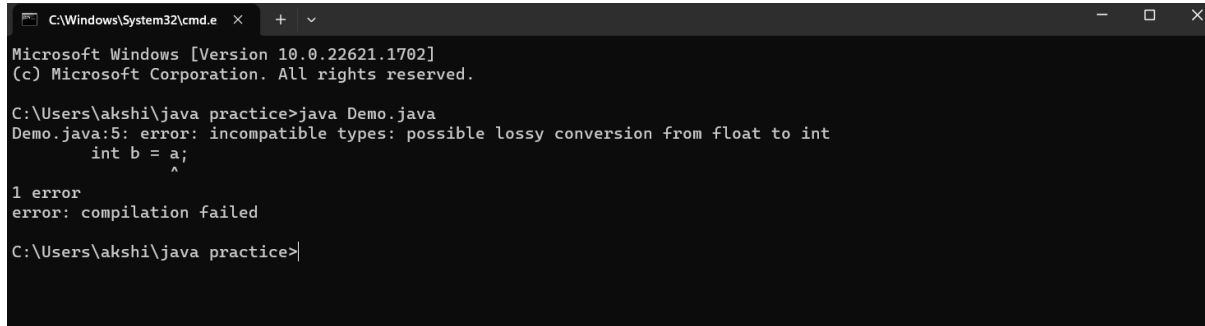
```
C:\Windows\System32\cmd.exe x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
Demo.java:5: error: incompatible types: possible lossy conversion from long to int  
    int b = a;  
           ^  
1 error  
error: compilation failed  
  
C:\Users\akshi\java practice>
```

## Explicit typecasting

### Program 21

```
class Demo {  
  
    public static void main(String args[]) {  
  
        float a = 73.829f;  
  
        // Casting float to int  
  
        int b = a;  
  
        //int b = (int)a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
}
```

```
}  
}
```



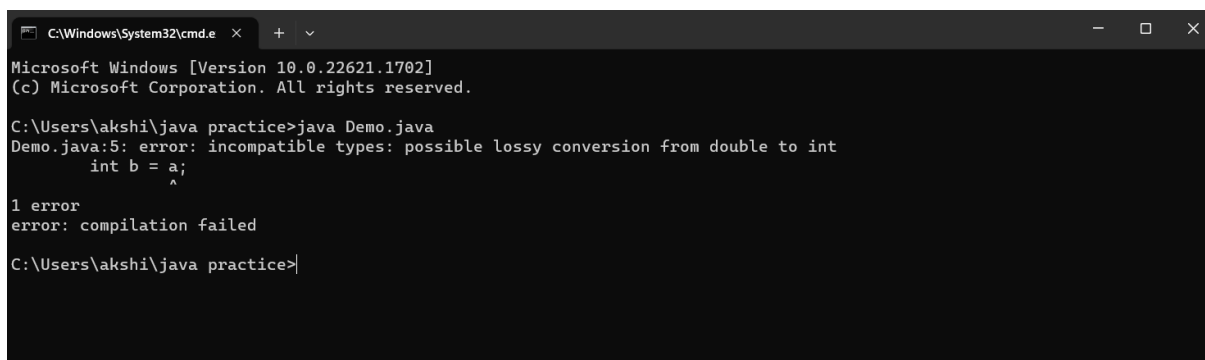
A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.exe'. The window content displays the output of running 'java Demo.java'. It shows a compilation error: 'Demo.java:5: error: incompatible types: possible lossy conversion from float to int' pointing to the line 'int b = a;'. The error summary indicates '1 error' and 'error: compilation failed'.

```
C:\Windows\System32\cmd.exe x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
Demo.java:5: error: incompatible types: possible lossy conversion from float to int  
    int b = a;  
           ^  
1 error  
error: compilation failed  
  
C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 22

```
class Demo {  
  
    public static void main(String args[]) {  
  
        double a = 73.829;  
  
        // Casting double to int  
  
        int b = a;  
  
        //int b = (int)a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
  
}
```



A screenshot of a Windows command prompt window, similar to the one above. It shows the compilation of 'Demo.java' for Program 22. The error is 'Demo.java:5: error: incompatible types: possible lossy conversion from double to int' pointing to 'int b = a;'. The error summary shows '1 error' and 'error: compilation failed'.

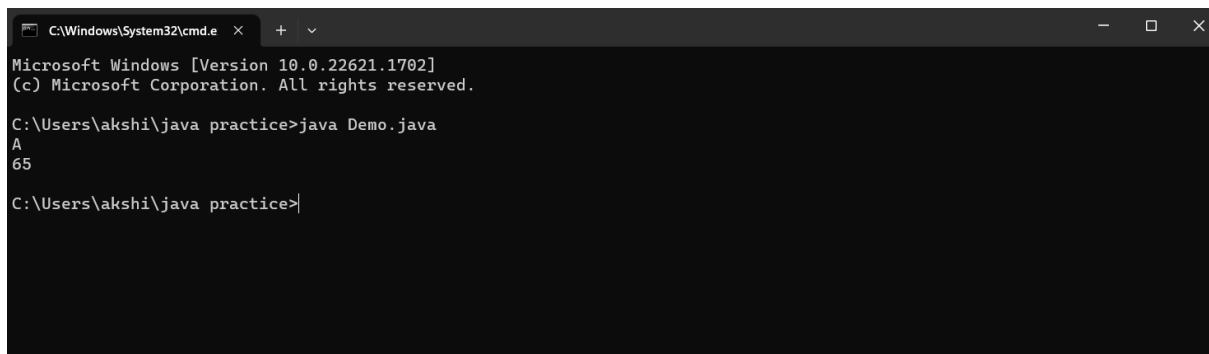
```
C:\Windows\System32\cmd.exe x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
Demo.java:5: error: incompatible types: possible lossy conversion from double to int  
    int b = a;  
           ^  
1 error  
error: compilation failed  
  
C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 23



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

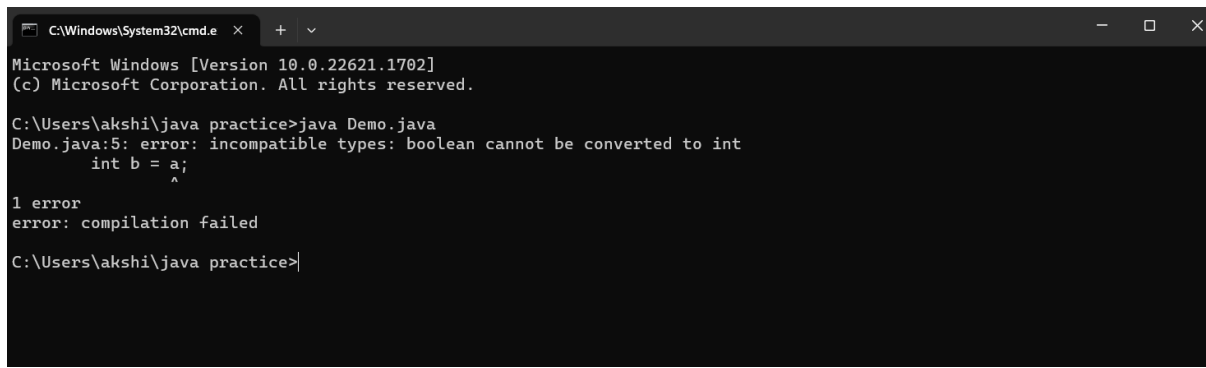


```
C:\Windows\System32\cmd.e  x  +  v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
A  
65  
  
C:\Users\akshi\java practice>
```

### Implicit type casting

#### Program 24

```
class Demo {  
    public static void main(String args[]) {  
        boolean a = true;  
        // Casting boolean to int  
        int b = a;  
        System.out.println(a);  
        System.out.println(b);  
    }  
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

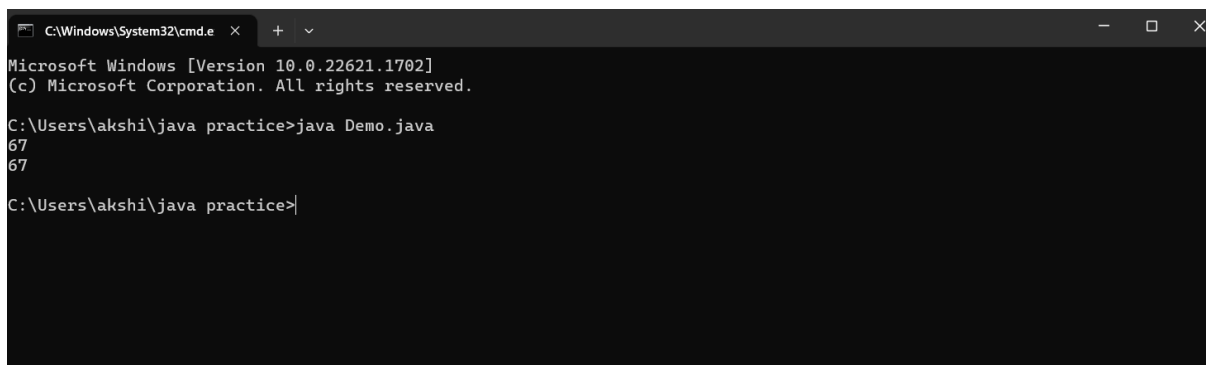
C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: boolean cannot be converted to int
    int b = a;
           ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### No typecasting

#### Program 25

```
class Demo {
    public static void main(String args[]) {
        byte a = 67;
        // Casting byte to long
        long b = a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
67
67

C:\Users\akshi\java practice>
```

### Implicit type casting

#### Program 26

```
class Demo {
    public static void main(String args[]) {
```

```
short a = 6778;

// Casting short to long

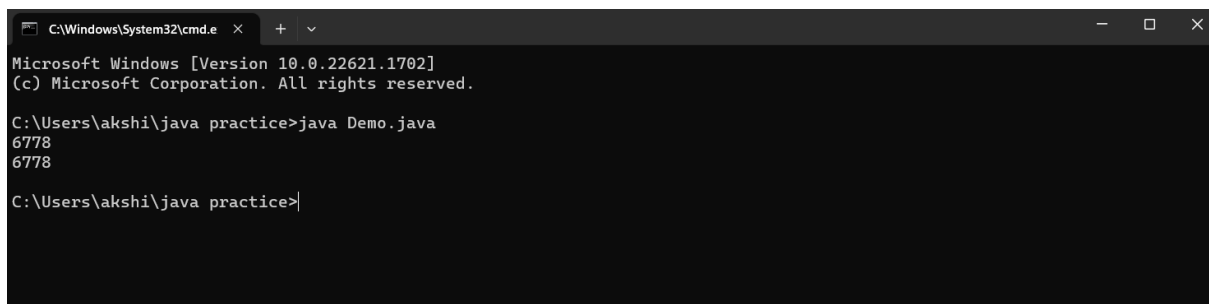
long b = a;

System.out.println(a);

System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
6778
6778

C:\Users\akshi\java practice>
```

### Implicit type casting

#### Program 27

```
class Demo {

public static void main(String args[]) {

    int a = 5000;

    // Casting int to long

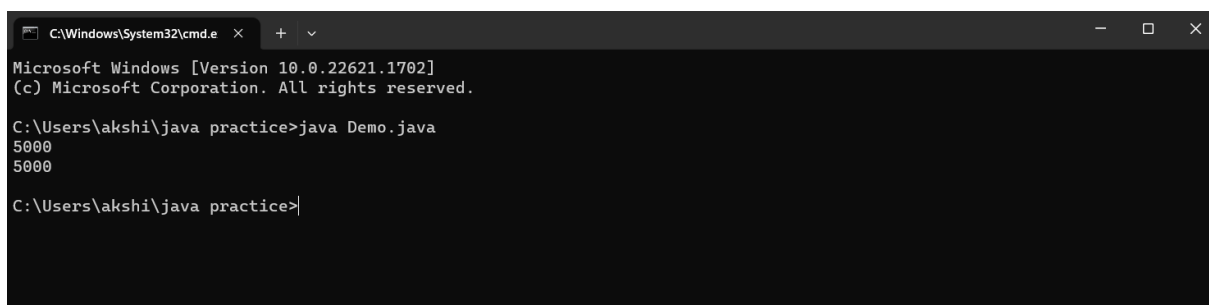
    long b = a;

    System.out.println(a);

    System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

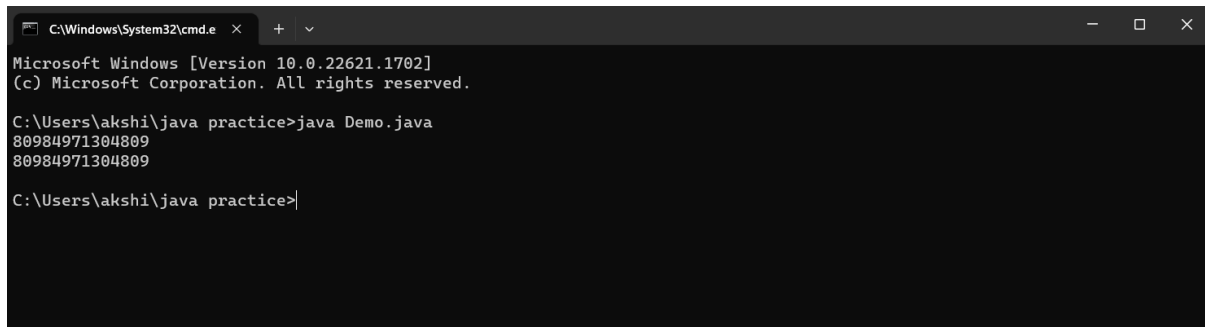
C:\Users\akshi\java practice>java Demo.java
5000
5000

C:\Users\akshi\java practice>
```

### Implicit type casting

### Program 28

```
class Demo {  
  
public static void main(String args[]) {  
  
    long a = 80984971304809l;  
  
    // Casting long to long not required  
  
    long b = a;  
  
    System.out.println(a);  
  
    System.out.println(b);  
  
    }  
}
```



```
C:\Windows\System32\cmd.e x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
80984971304809  
80984971304809  
  
C:\Users\akshi\java practice>|
```

### Casting not required

### Program 29

```
class Demo {  
  
public static void main(String args[]) {  
  
    float a = 4.0827783f;  
  
    // Casting float to long  
  
    long b = a;  
  
    //long b = (long)a;  
  
    System.out.println(a);  
  
    System.out.println(b);  
  
    }  
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

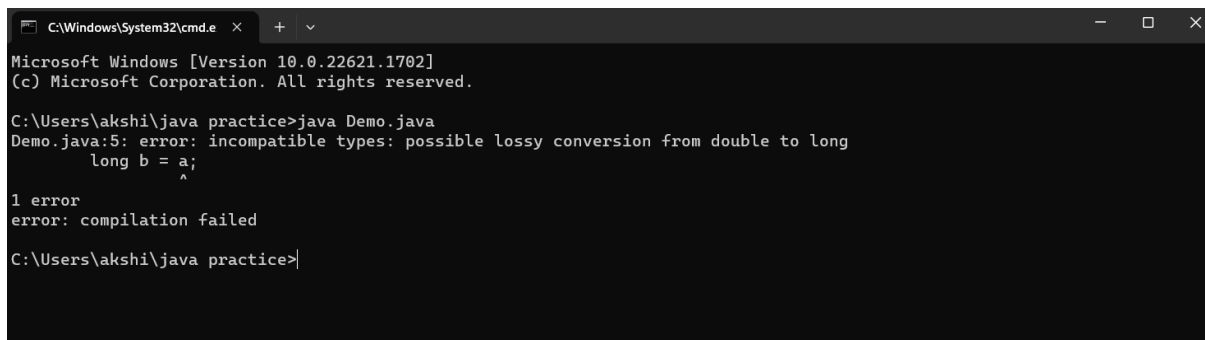
C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from float to long
    long b = a;
           ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 30

```
class Demo {
    public static void main(String args[]) {
        double a = 48.0827783;
        // Casting double to long
        long b = a;
        //long b = (long)a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from double to long
    long b = a;
           ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 31

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

```
// Casting char to long

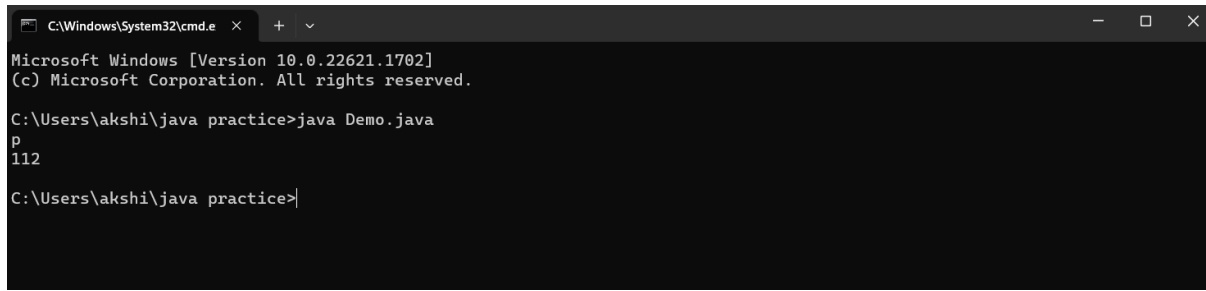
long b = a;

System.out.println(a);

System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
p
112

C:\Users\akshi\java practice>
```

### Implicit type casting

#### Program 32

```
class Demo {

public static void main(String args[]) {

    boolean a = true;

    // Casting boolean to long not possible

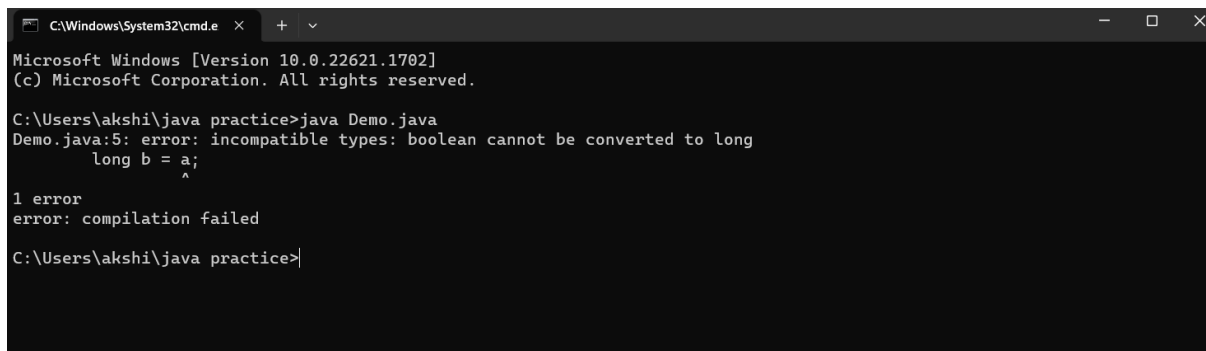
    long b = a;

    System.out.println(a);

    System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

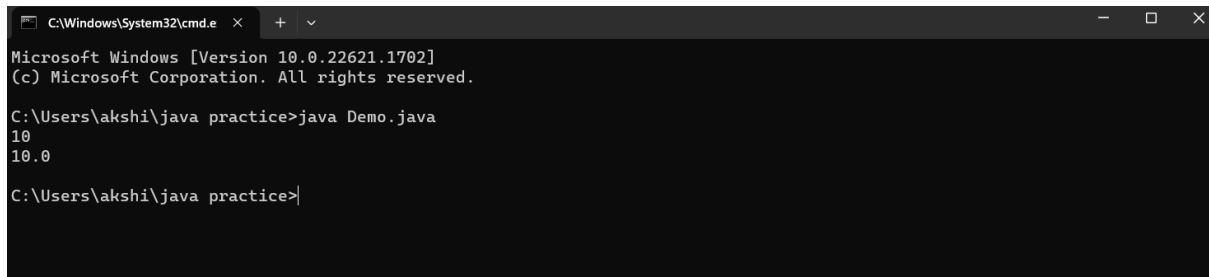
C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: boolean cannot be converted to long
    long b = a;
           ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### Explicit typecasting

### Program 33

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

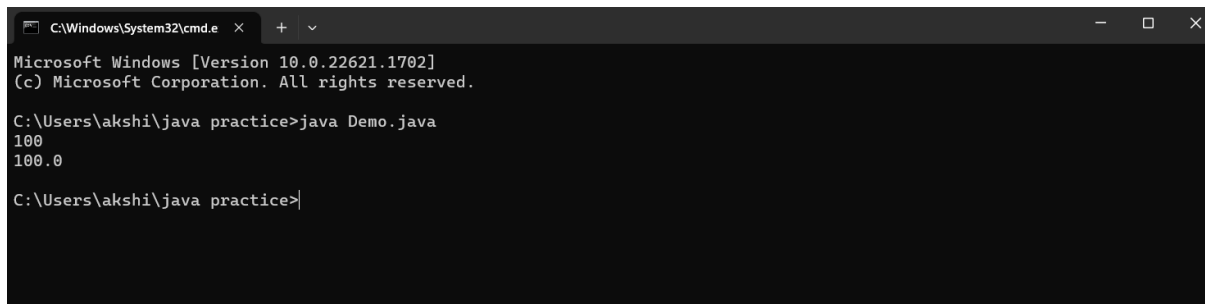


```
C:\Windows\System32\cmd.e x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
10  
10.0  
  
C:\Users\akshi\java practice>|
```

### Implicit type casting

### Program 34

```
class Demo {  
  
    public static void main(String args[]) {  
  
        short a = 100;  
  
        // Casting short to float  
  
        float b = a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

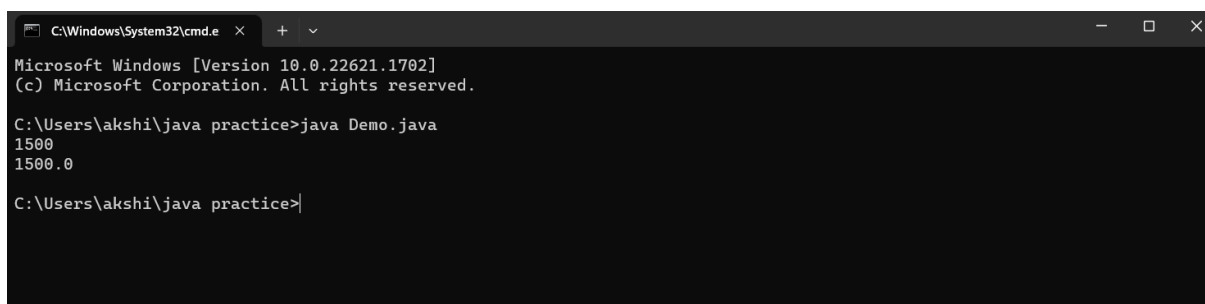
C:\Users\akshi\java practice>java Demo.java
100
100.0

C:\Users\akshi\java practice>
```

### Implicit typecasting

#### Program 35

```
class Demo {
    public static void main(String args[]) {
        int a = 1500;
        // Casting int to float
        float b = a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
1500
1500.0

C:\Users\akshi\java practice>
```

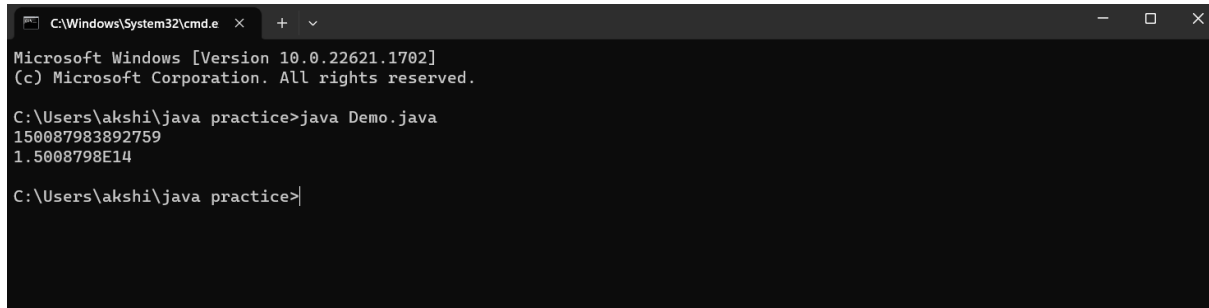
### Implicit typecasting

#### Program 36

```
class Demo {
    public static void main(String args[]) {
        long a = 150087983892759L;
        // Casting long to float
```



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

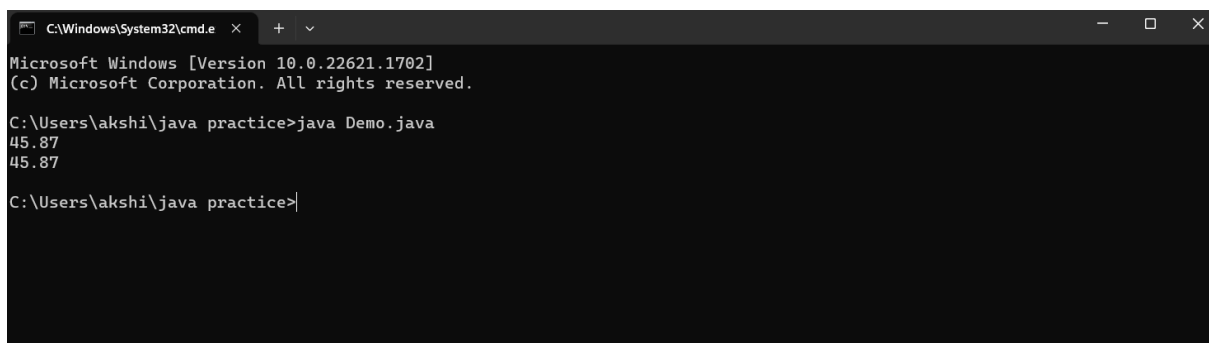


```
C:\Windows\System32\cmd.e  x  +  v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
150087983892759  
1.5008798E14  
  
C:\Users\akshi\java practice>
```

### Implicit typecasting

#### Program 37

```
class Demo {  
  
public static void main(String args[]) {  
  
    float a = 45.87f;  
  
    // Casting float to float not required  
  
    float b = a;  
  
    System.out.println(a);  
  
    System.out.println(b);  
  
}  
  
}
```

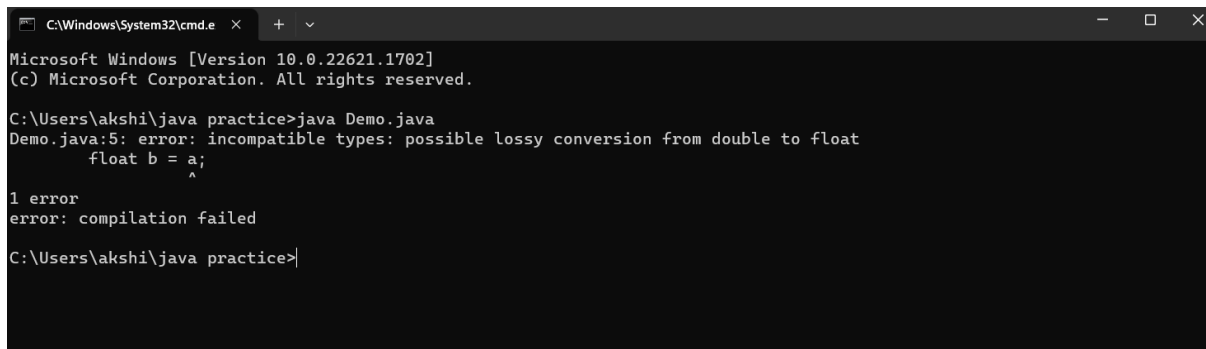


```
C:\Windows\System32\cmd.e  x  +  v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
45.87  
45.87  
  
C:\Users\akshi\java practice>
```

### Casting not required

### Program 38

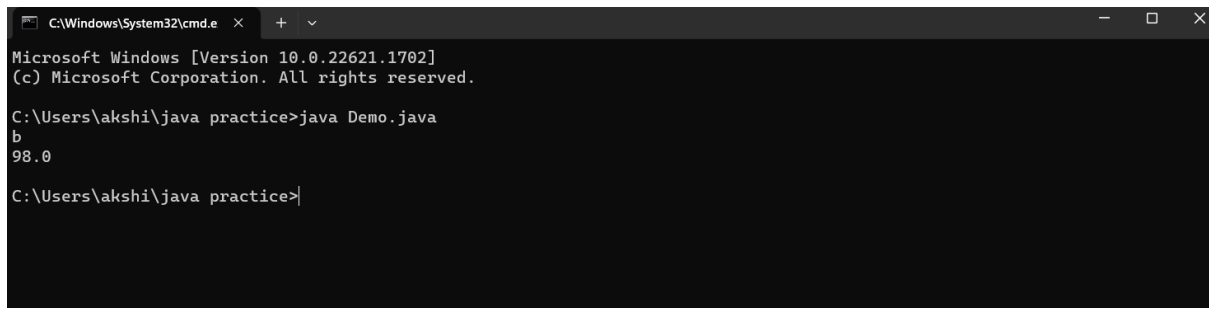
```
class Demo {  
  
    public static void main(String args[]) {  
  
        double a = 45.87774;  
  
        // Casting double to float  
  
        float b = a;  
  
        //float b = (float)a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.exe'. The window content shows the output of running 'java Demo.java'. It displays the Microsoft Windows version (10.0.22621.1702) and copyright information. The command prompt shows the directory 'C:\Users\akshi\java practice' and the command 'java Demo.java'. The output shows a compilation error: 'Demo.java:5: error: incompatible types: possible lossy conversion from double to float' with a caret pointing to 'a' in 'float b = a;'. Below the error, it says '1 error' and 'error: compilation failed'. The prompt returns to 'C:\Users\akshi\java practice>|'.

### Explicit typecasting

### Program 39

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



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
b
98.0

C:\Users\akshi\java practice>
```

### Implicit typecasting

#### Program 40

```
class Demo {

    public static void main(String args[]) {

        boolean a = true;

        // Casting boolean to float is incompatible

        float b = a;

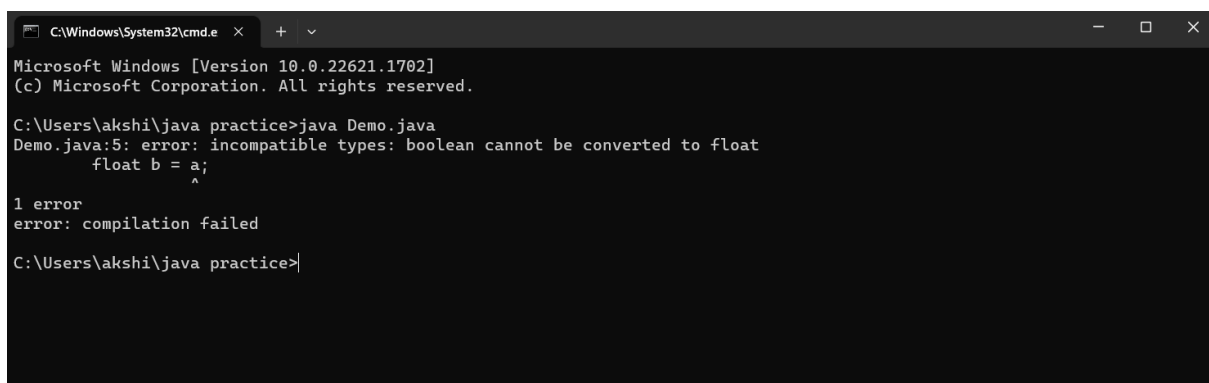
        //float b = (float)a;

        System.out.println(a);

        System.out.println(b);

    }

}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: boolean cannot be converted to float
    float b = a;
            ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### No typecasting

#### Program 41

```
class Demo {

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

```
byte a = 19;

// Casting byte to double

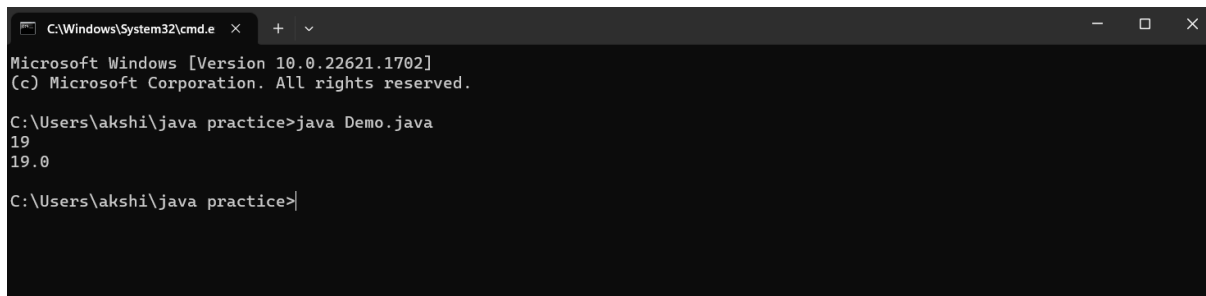
double b = a;

System.out.println(a);

System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
19
19.0

C:\Users\akshi\java practice>
```

### Implicit typecasting

#### Program 42

```
class Demo {

public static void main(String args[]) {

    short a = 1967;

    // Casting short to double

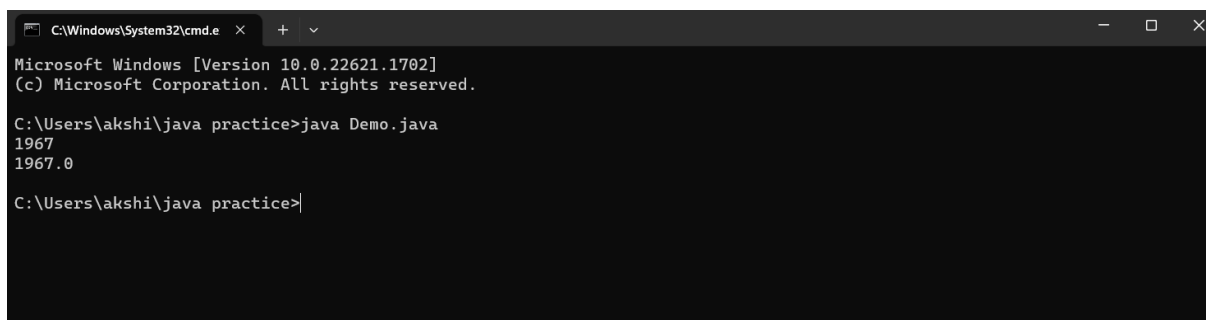
    double b = a;

    System.out.println(a);

    System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

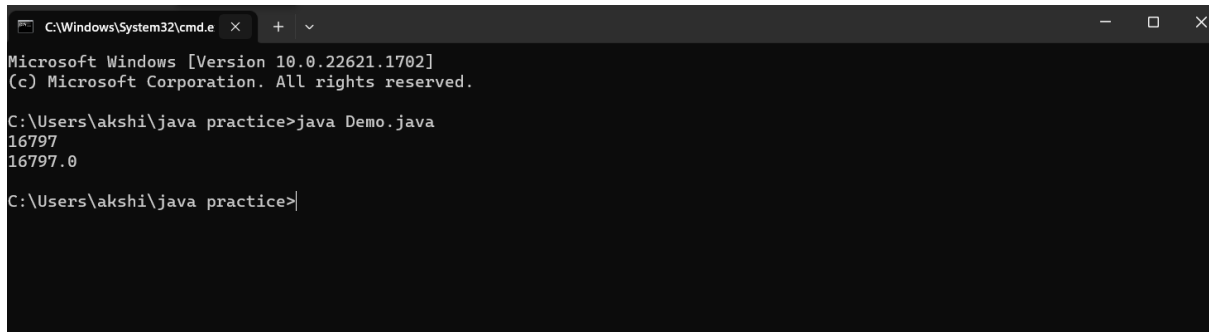
C:\Users\akshi\java practice>java Demo.java
1967
1967.0

C:\Users\akshi\java practice>
```

### Implicit typecasting

### Program 43

```
class Demo {  
  
    public static void main(String args[]) {  
  
        int a = 16797;  
  
        // Casting int to double  
  
        double b = a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
}
```



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

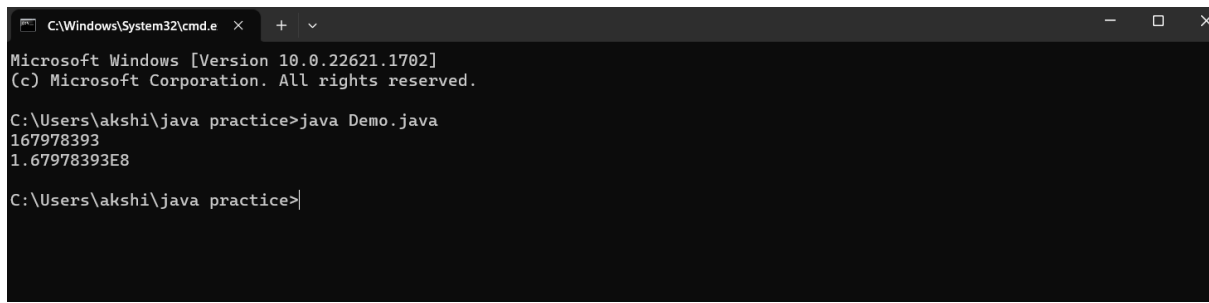
C:\Users\akshi\java practice>java Demo.java
16797
16797.0

C:\Users\akshi\java practice>
```

### Implicit typecasting

### Program 44

```
class Demo {  
  
    public static void main(String args[]) {  
  
        long a = 167978393l;  
  
        // Casting long to double  
  
        double b = a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

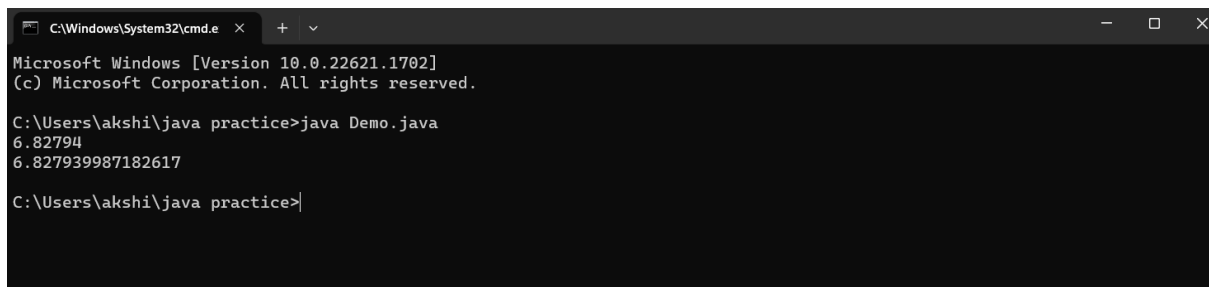
C:\Users\akshi\java practice>java Demo.java
167978393
1.67978393E8

C:\Users\akshi\java practice>
```

### Implicit typecasting

#### Program 45

```
class Demo {
    public static void main(String args[]) {
        float a = 6.82794f;
        // Casting float to double
        double b = a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
6.82794
6.827939987182617

C:\Users\akshi\java practice>
```

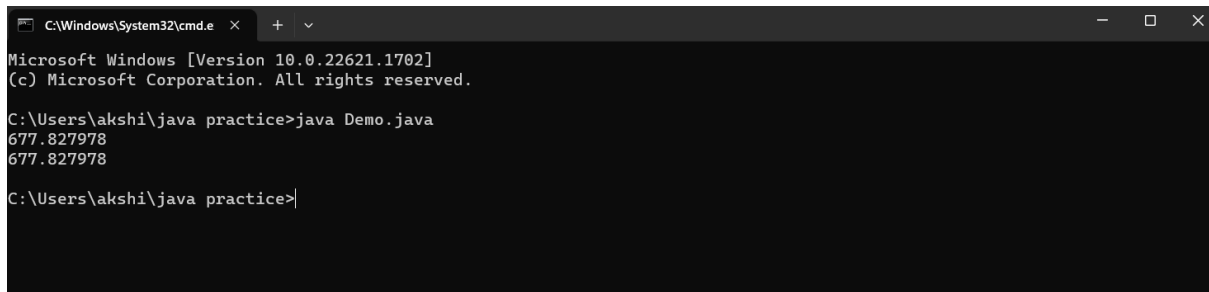
### Implicit typecasting

#### Program 46

```
class Demo {
    public static void main(String args[]) {
        double a = 677.827978;
        // Casting double to double not required
        double b = a;
```

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

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



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
677.827978
677.827978

C:\Users\akshi\java practice>|
```

### Casting not required

#### Program 47

```
class Demo {

    public static void main(String args[]) {

        char a = 'G';

        // Casting char to double

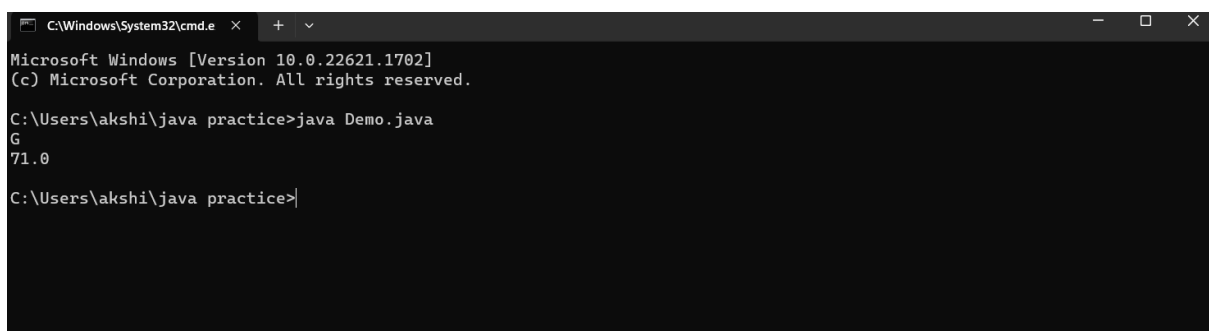
        double b = a;

        System.out.println(a);

        System.out.println(b);

    }

}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

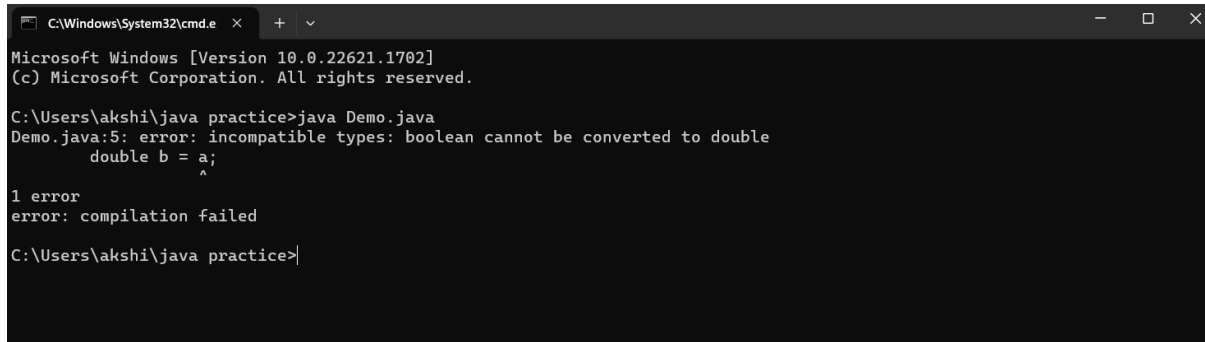
C:\Users\akshi\java practice>java Demo.java
G
71.0

C:\Users\akshi\java practice>|
```

### Implicit typecasting

#### Program 48

```
class Demo {  
    public static void main(String args[]) {  
        boolean a = false;  
        // Casting boolean to double is incompatible  
        double b = a;  
        //double b = (double)a;  
        System.out.println(a);  
        System.out.println(b);  
    }  
}
```



The screenshot shows a Windows command prompt window with the title bar 'C:\Windows\System32\cmd.exe'. The window content displays the output of running 'java Demo.java'. It shows the Microsoft Windows version (10.0.22621.1702) and copyright information. The command executed is 'C:\Users\akshi\java practice>java Demo.java'. The output is 'Demo.java:5: error: incompatible types: boolean cannot be converted to double', with a caret pointing to the variable 'a' in the line 'double b = a;'. Below this, it says '1 error' and 'error: compilation failed'. The prompt returns to 'C:\Users\akshi\java practice>|'.

### No typecasting

#### Program 49

```
class Demo {  
    public static void main(String args[]) {  
        byte a = 56;  
        // Casting byte to char  
        char b = a;  
        //char b = (char)a;  
        System.out.println(a);  
        System.out.println(b);  
    }  
}
```





```
C:\Windows\System32\cmd.e  X  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

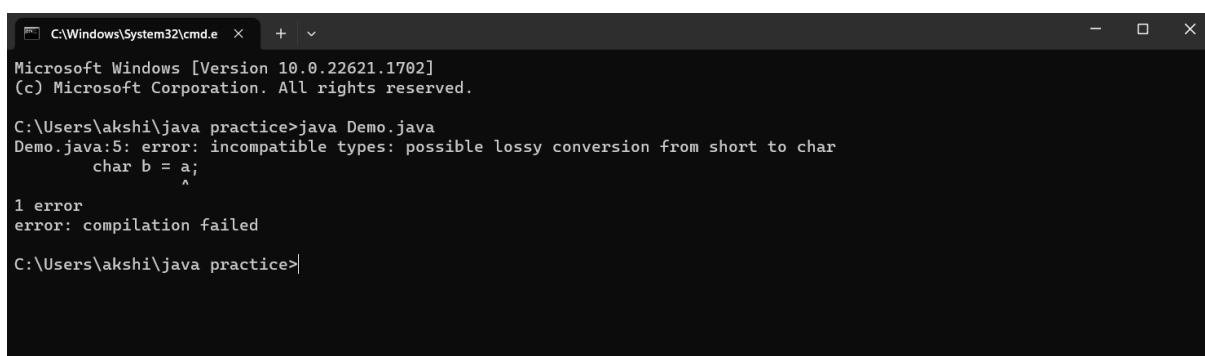
C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from byte to char
    char b = a;
            ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 50

```
class Demo {
    public static void main(String args[]) {
        short a = 56;
        // Casting short to char
        char b = a;
        //char b = (char)a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e  X  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from short to char
    char b = a;
            ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 51

```
class Demo {
    public static void main(String args[]) {
```

```
int a = 5496;

// Casting int to char

char b = a;

    //char b = (char)a;

System.out.println(a);

System.out.println(b);

}

}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.exe'. The window content shows the following text:

```
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from int to char
    char b = a;
           ^
1 error
error: compilation failed

C:\Users\akshi\java practice>|
```

### Explicit typecasting

#### Program 52

```
class Demo {

public static void main(String args[]) {

    long a = 5496363l;

    // Casting long to char

    char b = a;

        //char b = (char)a;

    System.out.println(a);

    System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e  ×  +  ▾
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from long to char
    char b = a;
           ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 53

```
class Demo {

    public static void main(String args[]) {

        float a = 7.8337f;

        // Casting float to char

        char b = a;

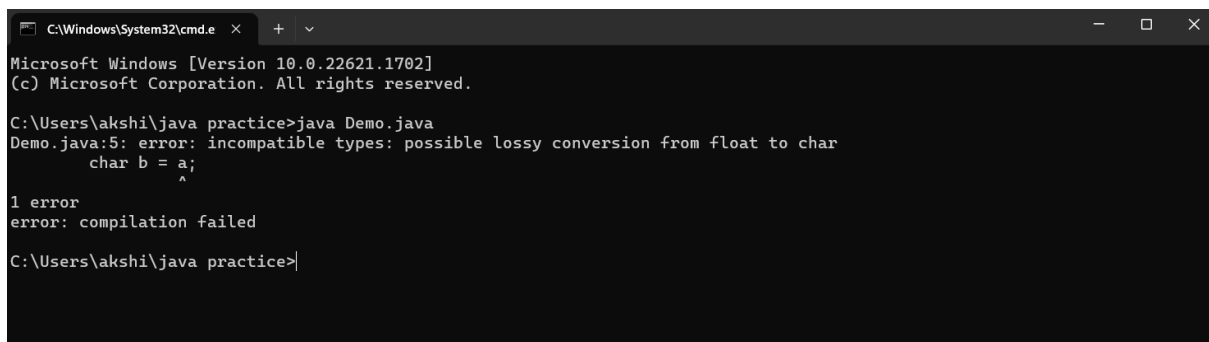
        //char b = (char)a;

        System.out.println(a);

        System.out.println(b);

    }

}
```



```
C:\Windows\System32\cmd.e  ×  +  ▾
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from float to char
    char b = a;
           ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 54

```
class Demo {

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

```
double a = 77.8337;

// Casting double to char

char b = a;

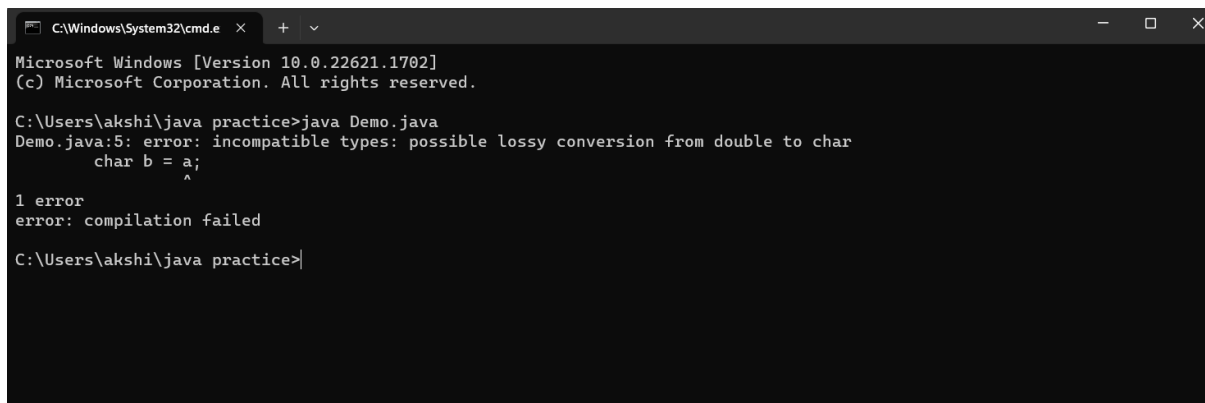
    //char b = (char)a;

System.out.println(a);

System.out.println(b);

}

}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.exe'. The window content shows the following text:

```
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: possible lossy conversion from double to char
    char b = a;
           ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### Explicit typecasting

#### Program 55

```
class Demo {

public static void main(String args[]) {

    char a = 'Y';

    // Casting char to char is not required

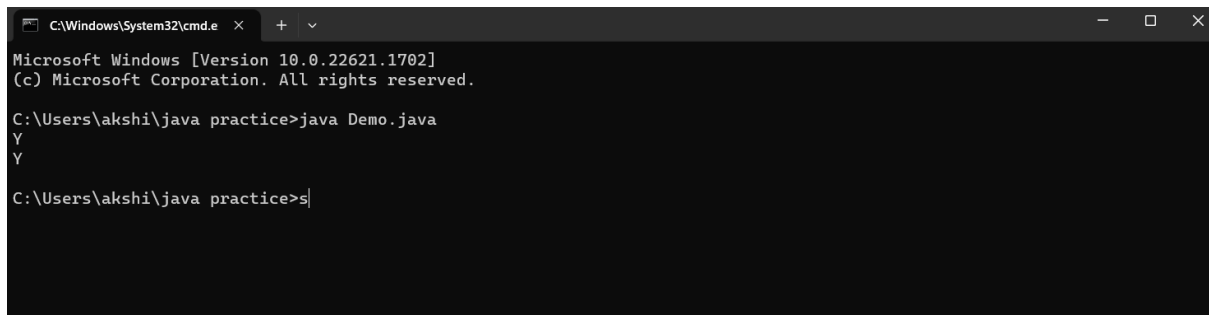
    char b = a;

    System.out.println(a);

    System.out.println(b);

}

}
```



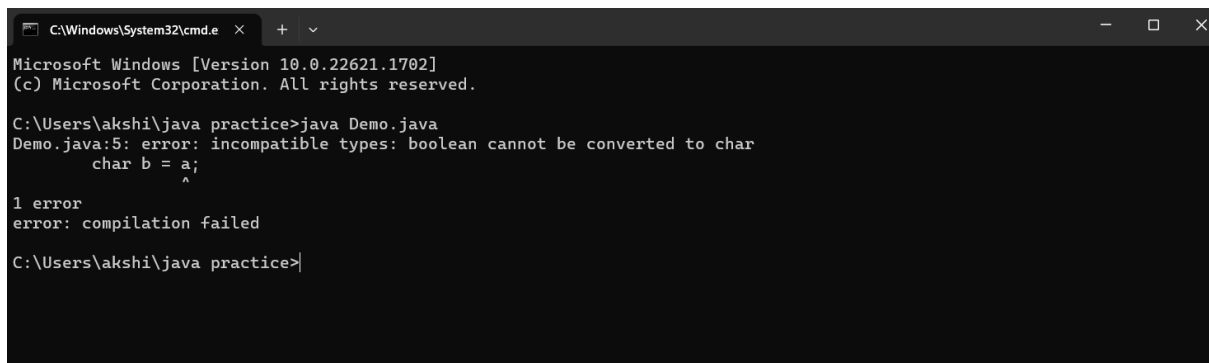
```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Y
Y
C:\Users\akshi\java practice>|
```

### Casting not required

#### Program 56

```
class Demo {
    public static void main(String args[]) {
        boolean a = false;
        // Casting boolean to char is incompatible
        char b = a;
        //char b = (char)a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: boolean cannot be converted to char
    char b = a;
            ^
1 error
error: compilation failed
C:\Users\akshi\java practice>|
```

### No typecasting

#### Program 57

```
class Demo {
    public static void main(String args[]) {
```

```
byte a = 19;

// Casting byte to boolean

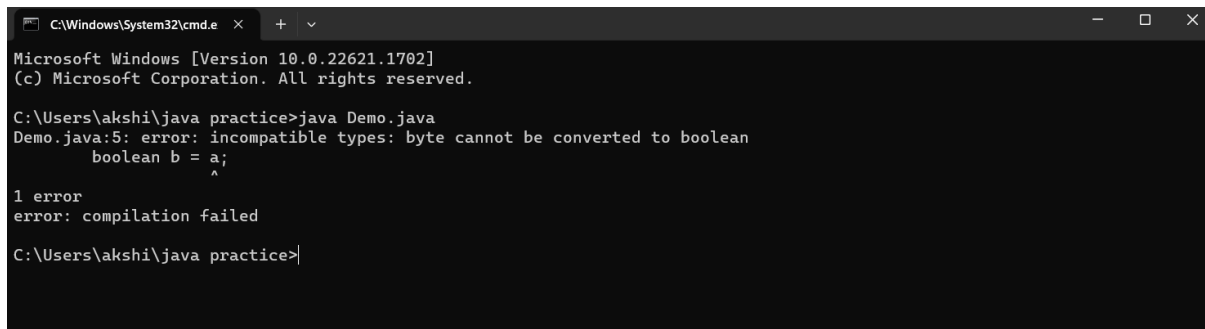
boolean b = a;

System.out.println(a);

System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e  x  +  v

Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: byte cannot be converted to boolean
    boolean b = a;
               ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### No typecasting

#### Program 58

```
class Demo {

public static void main(String args[]) {

    short a = 765;

    // Casting short to boolean

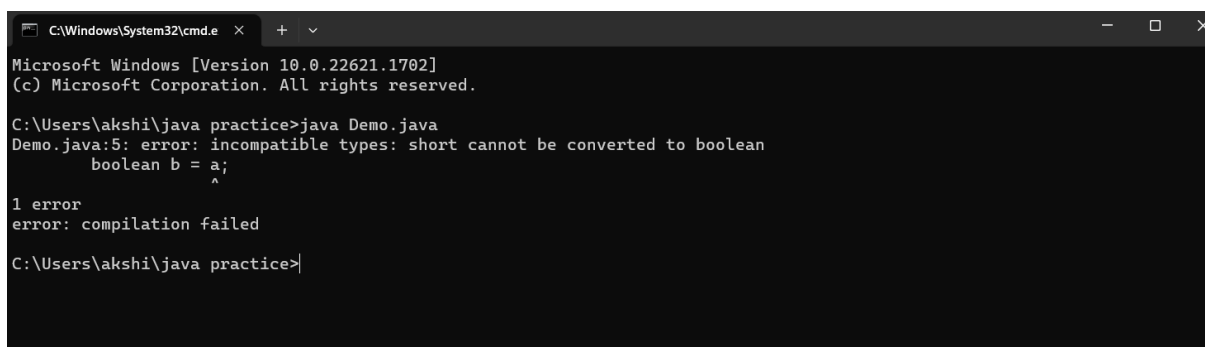
    boolean b = a;

    System.out.println(a);

    System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e  x  +  v

Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

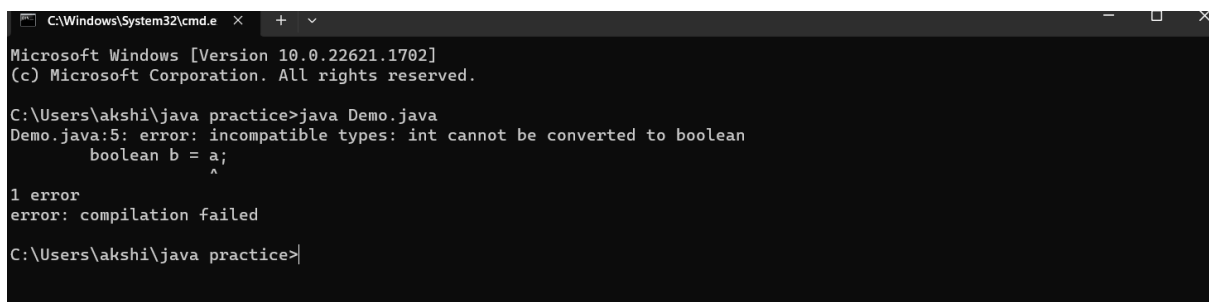
C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: short cannot be converted to boolean
    boolean b = a;
               ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

## No typecasting

### Program 59

```
class Demo {  
  
    public static void main(String args[]) {  
  
        int a = 28376;  
  
        // Casting int to boolean  
  
        boolean b = a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.e' with standard window controls. The text inside the window shows the command 'java Demo.java' being executed, which results in a compilation error: 'Demo.java:5: error: incompatible types: int cannot be converted to boolean'. The error points to the line 'boolean b = a;'. The prompt then shows '1 error' and 'error: compilation failed'.

```
C:\Windows\System32\cmd.e  x  +  v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
Demo.java:5: error: incompatible types: int cannot be converted to boolean  
    boolean b = a;  
              ^  
1 error  
error: compilation failed  
C:\Users\akshi\java practice>
```

## No typecasting

### Program 60

```
class Demo {  
  
    public static void main(String args[]) {  
  
        long a = 283716266l;  
  
        // Casting long to boolean  
  
        boolean b = a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
}
```

```
}  
  
C:\Windows\System32\cmd.e x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
Demo.java:5: error: incompatible types: long cannot be converted to boolean  
    boolean b = a;  
              ^  
1 error  
error: compilation failed  
  
C:\Users\akshi\java practice>|
```

## No typecasting

### Program 61

```
class Demo {  
  
    public static void main(String args[]) {  
  
        float a = 5.83f;  
  
        // Casting float to boolean  
  
        boolean b = a;  
  
        System.out.println(a);  
  
        System.out.println(b);  
  
    }  
  
}
```

```
C:\Windows\System32\cmd.e x + v  
Microsoft Windows [Version 10.0.22621.1702]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\akshi\java practice>java Demo.java  
Demo.java:5: error: incompatible types: float cannot be converted to boolean  
    boolean b = a;  
              ^  
1 error  
error: compilation failed  
  
C:\Users\akshi\java practice>|
```

## No typecasting

### Program 62

```
class Demo {  
  
    public static void main(String args[]) {
```



```
double a = 578.8586;

// Casting double to boolean

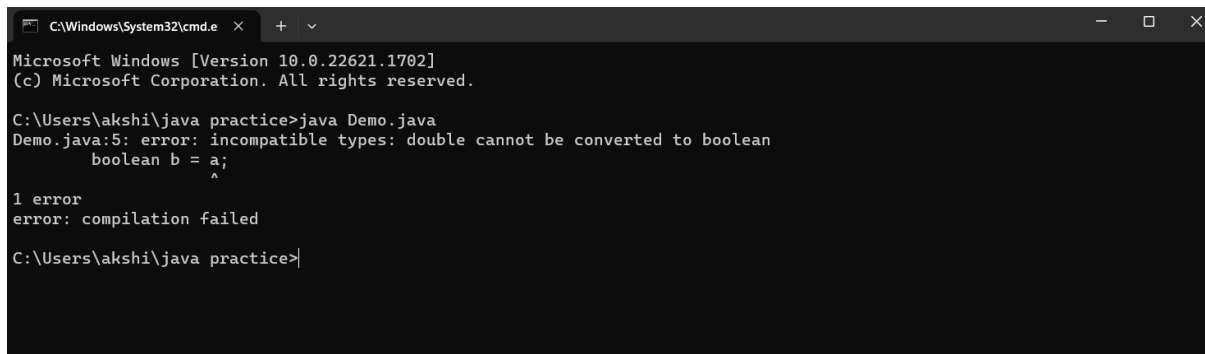
boolean b = a;

System.out.println(a);

System.out.println(b);

}

}
```

A screenshot of a Windows command prompt window. The title bar shows 'C:\Windows\System32\cmd.exe'. The window content shows the following text:

```
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: double cannot be converted to boolean
    boolean b = a;
               ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### No typecasting

#### Program 63

```
class Demo {

public static void main(String args[]) {

    char a = 'k';

        // Casting char to boolean

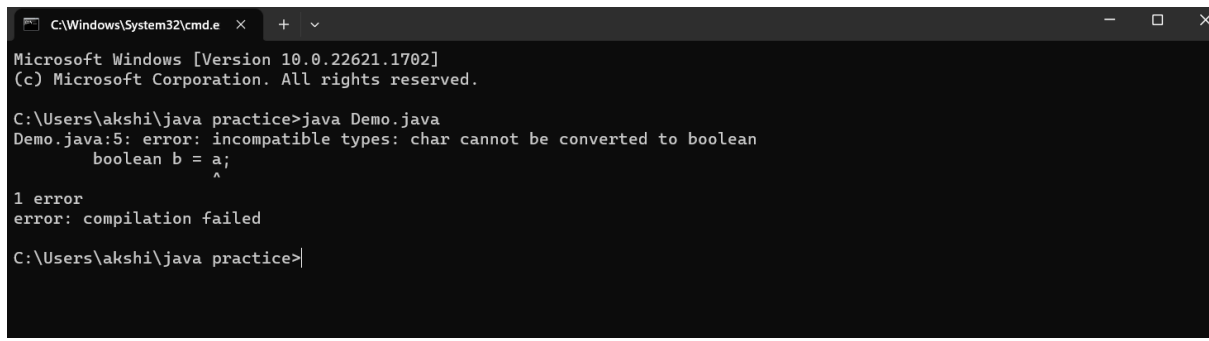
    boolean b = a;

    System.out.println(a);

    System.out.println(b);

}

}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
Demo.java:5: error: incompatible types: char cannot be converted to boolean
    boolean b = a;
               ^
1 error
error: compilation failed

C:\Users\akshi\java practice>
```

### No typecasting

#### Program 64

```
class Demo {
    public static void main(String args[]) {
        boolean a = true;
        // Casting boolean to boolean is not required
        boolean b = a;
        System.out.println(a);
        System.out.println(b);
    }
}
```



```
C:\Windows\System32\cmd.e  x  +  v
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\akshi\java practice>java Demo.java
true
true

C:\Users\akshi\java practice>
```

### Casting not required

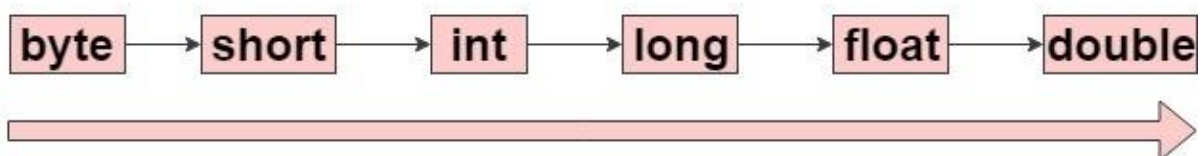
Destination data type	Source data type							
	byte	short	int	long	float	double	char	boolean
	byte	-	✗	✗	✗	✗	✗	✗
	short	✓	-	✗	✗	✗	✗	✗
	int	✓	✓	-	✗	✗	✗	✗
	long	✓	✓	✓	-	✗	✗	✗
	float	✓	✓	✓	✓	-	✗	✗
	double	✓	✓	✓	✓	✓	-	✗
	char	✗	✗	✗	✗	✗	-	✗
	boolean	✗	✗	✗	✗	✗	✗	-

— Data assignment possible but no automatic conversion happens

✗ not compatible because source data type is higher than destination data type

✓ Compatible because source data type is lower than destination data type

## Automatic Type Conversion (Widening - implicit)



## Narrowing (explicit)

