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July Java A2 Batch(Online)  
Assignment on Type casting (July 20)

### Type Casting :

The process of converting data of one type to data of another is called type casting.

There are two types of type casting

1. **Implicit Type Casting**
2. **Explicit Type Casting**

### Implicit Type Casting / Type Promotion / Widening:

The process of converting data of smaller data type to data of larger datatype.

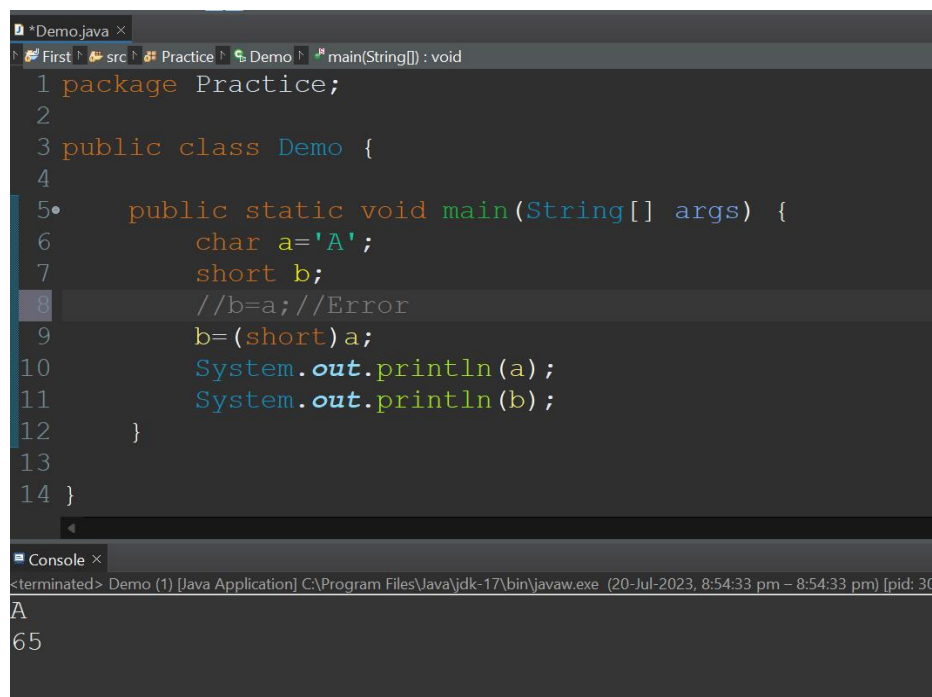
### Explicit Type Casting / Narrowing:

The process of converting data of larger data type to data of smaller datatype.

### char to char:

**No conversion** is required from **char to char** because there is no point in converting to same datatype itself.

### char to short:



```
*Demo.java ×
First ▾ src ▾ Practice ▾ Demo ▾ main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         char a='A';
7         short b;
8         //b=a; //Error
9         b=(short)a;
10        System.out.println(a);
11        System.out.println(b);
12    }
13
14 }

Console ×
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 8:54:33 pm – 8:54:33 pm) [pid: 30
A
65
```

Implicit conversion is not possible because we are trying to fit data of larger datatype i.e char(2bytes) into smaller datatype i.e short(1byte) so there may be a chance of losing the data.

Error because cannot convert from **char to short**  
So performed **Explicit Type Conversion.**

## char to byte:

```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         char a='A';
7         byte b;
8         //b=a;//Error
9         b=(byte)a;
10        System.out.println(a);
11        System.out.println(b);
12    }
13
14 }
```

```
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 9:28:37 pm - 9:28:38 pm) [pid: 42332]
A
65
```

Error because cannot convert from char to byte  
So performed Explicit Type Conversion.

## char to int:

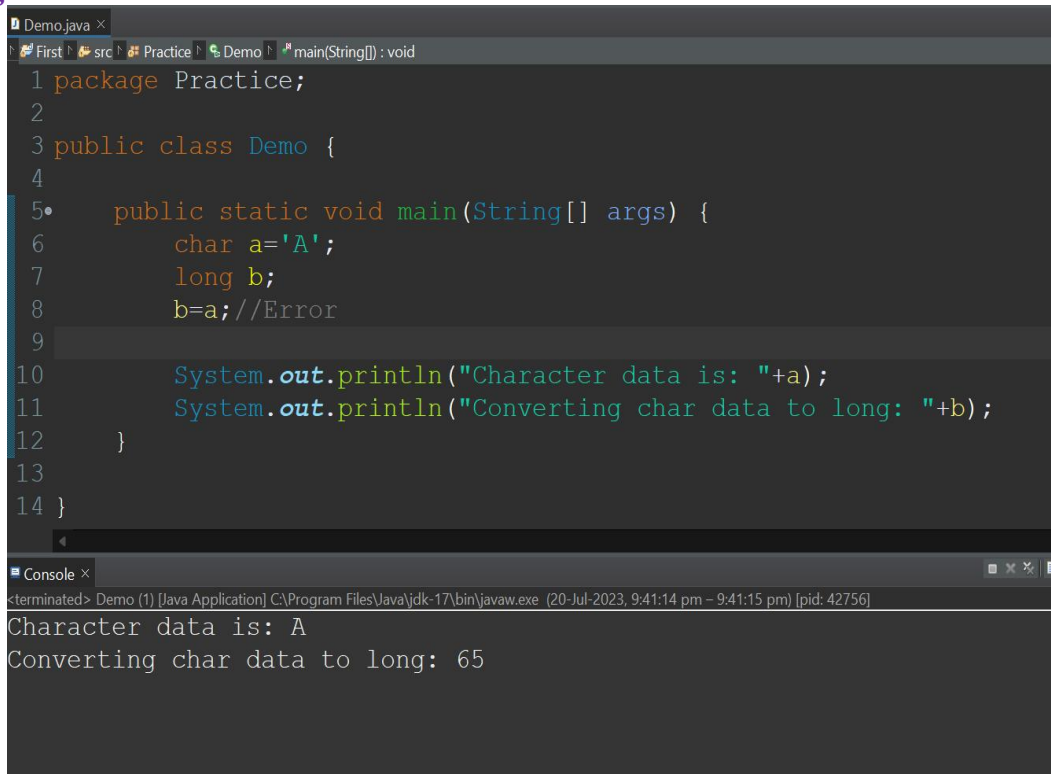
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         char a='A';
7         int b;
8         b=a;//Error
9         //b=(int)a;
10        System.out.println("Character data is: "+a);
11        System.out.println("Converting char data to int: "+b);
12    }
13
14 }
```

```
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 9:34:47 pm - 9:34:48 pm) [pid: 33308]
Character data is: A
Converting char data to int: 65
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e char(2bytes) into larger datatype i.e int(4bytes) .

We can convert char to int by Implicit Type Conversion.

## char to long:



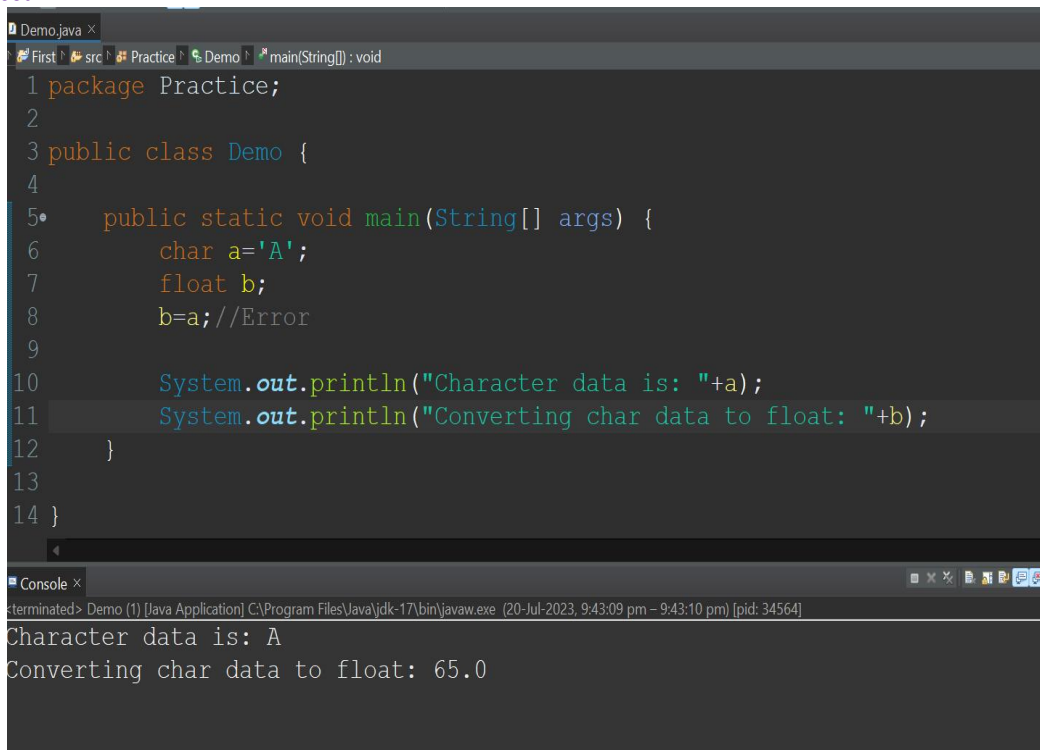
```
Demo.java x
First | src | Practice | Demo | main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         char a='A';
7         long b;
8         b=a;//Error
9
10        System.out.println("Character data is: "+a);
11        System.out.println("Converting char data to long: "+b);
12    }
13
14 }
```

```
Console x
terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 9:41:14 pm - 9:41:15 pm) [pid: 42756]
Character data is: A
Converting char data to long: 65
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e char(2bytes) into larger datatype i.e long(8bytes) .

We can convert **char to long** by **Implicit Type Conversion**.

## char to float:



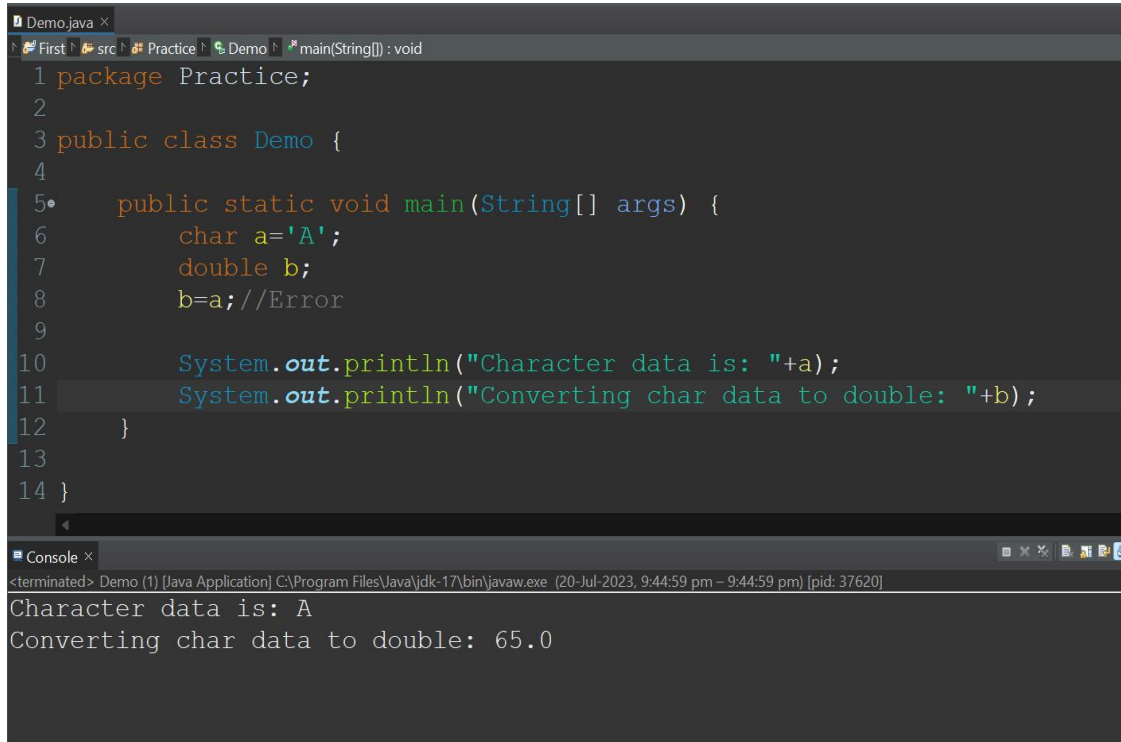
```
Demo.java x
First | src | Practice | Demo | main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         char a='A';
7         float b;
8         b=a;//Error
9
10        System.out.println("Character data is: "+a);
11        System.out.println("Converting char data to float: "+b);
12    }
13
14 }
```

```
Console x
terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 9:43:09 pm - 9:43:10 pm) [pid: 34564]
Character data is: A
Converting char data to float: 65.0
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e char(2bytes) into larger datatype i.e float(4bytes) .

We can convert **char to float** by **Implicit Type Conversion**.

## char to double:



```
Demo.java x
First src Practice Demo main(String[]): void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         char a='A';
7         double b;
8         b=a;//Error
9
10        System.out.println("Character data is: "+a);
11        System.out.println("Converting char data to double: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 9:44:59 pm - 9:44:59 pm) [pid: 37620]
Character data is: A
Converting char data to double: 65.0
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e char(2bytes) into larger datatype i.e double(8bytes) .

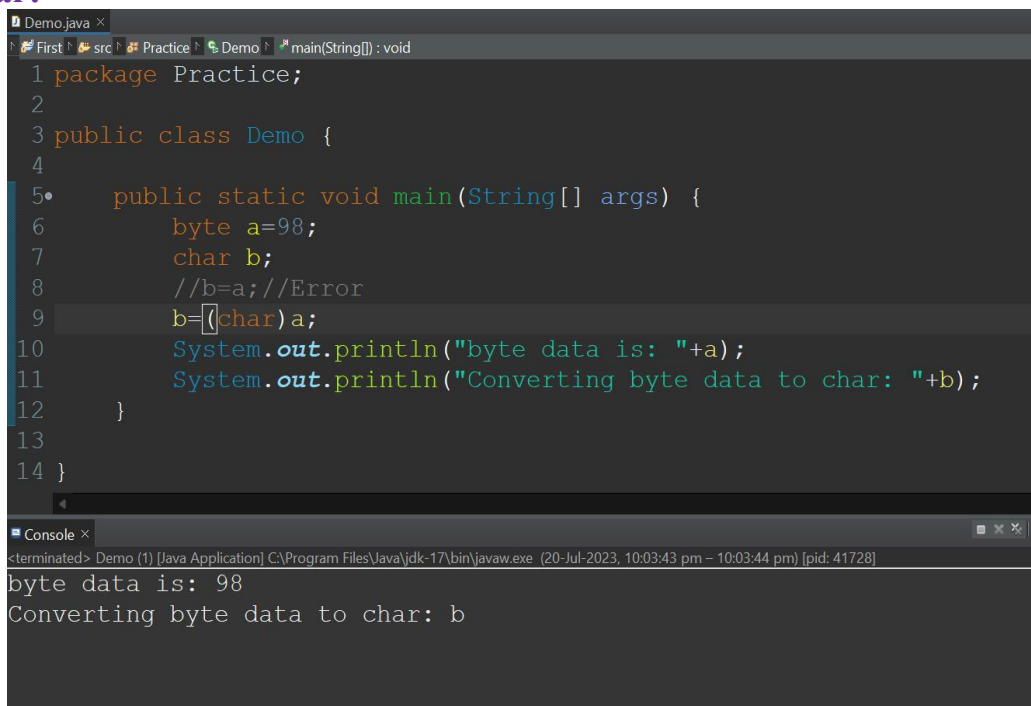
We can convert **char to double** by **Implicit Type Conversion**.

## char to boolean:

Conversion from **char to boolean** is **not possible**.

---

## byte to char:



```
Demo.java x
First src Practice Demo main(String[]): void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         byte a=98;
7         char b;
8         //b=a;//Error
9         b=(char)a;
10        System.out.println("byte data is: "+a);
11        System.out.println("Converting byte data to char: "+b);
12    }
13
14 }
```

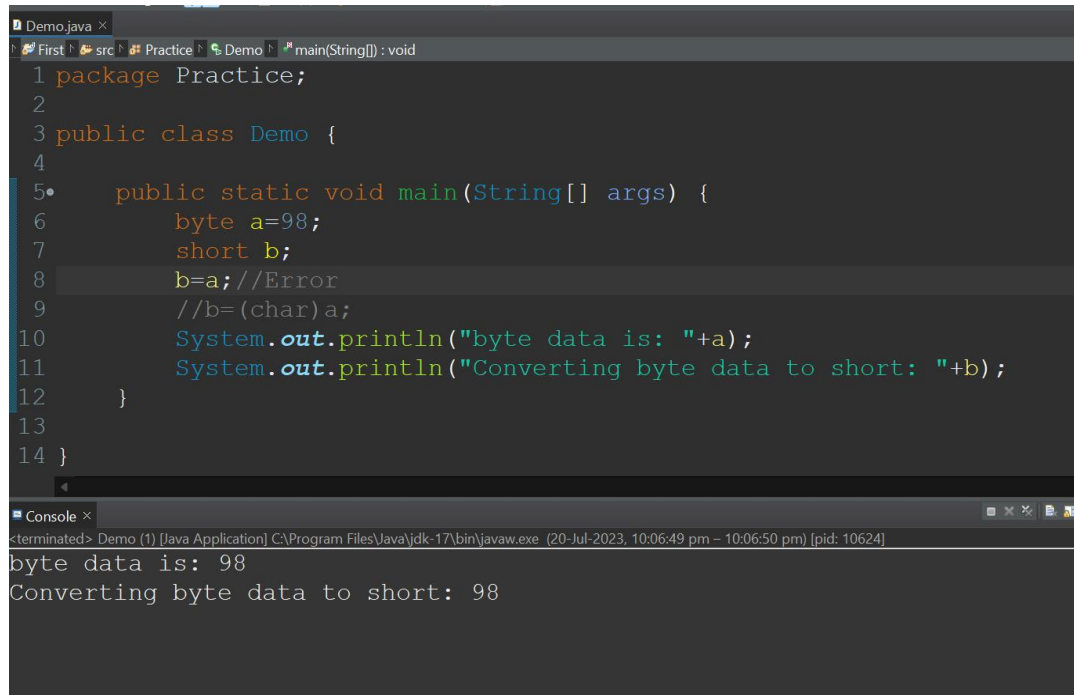
```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:03:43 pm - 10:03:44 pm) [pid: 41728]
byte data is: 98
Converting byte data to char: b
```

Error because cannot convert from **byte to char**  
So performed **Explicit Type Conversion**.

### byte to char:

No conversion is required from byte to byte because there is no point in converting to same datatype itself.

### byte to short:



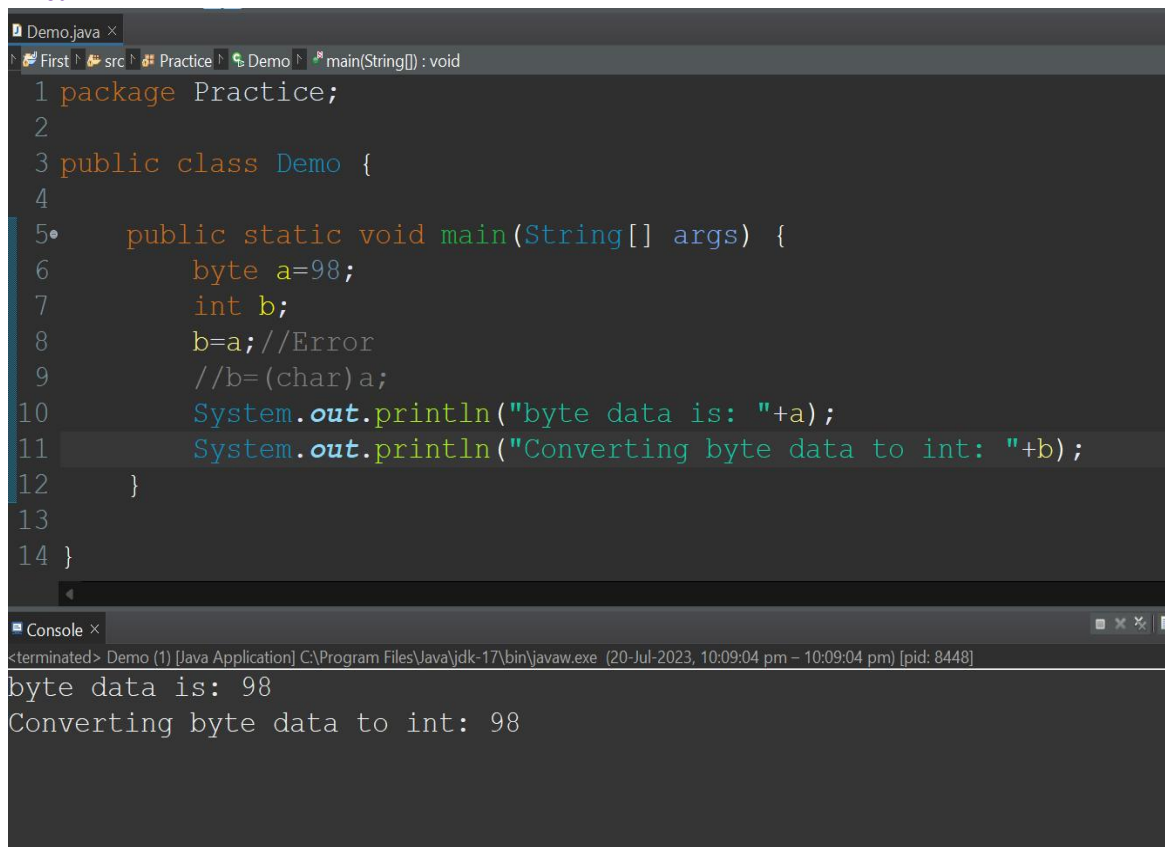
```
Demo.java x
First | src | Practice | Demo | main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         byte a=98;
7         short b;
8         b=a; //Error
9         //b=(char)a;
10        System.out.println("byte data is: "+a);
11        System.out.println("Converting byte data to short: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:06:49 pm - 10:06:50 pm) [pid: 10624]
byte data is: 98
Converting byte data to short: 98
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e byte(1bytes) into larger datatype i.e short(2ytes) .

We can convert byte to short by Implicit Type Conversion.

### byte to int:



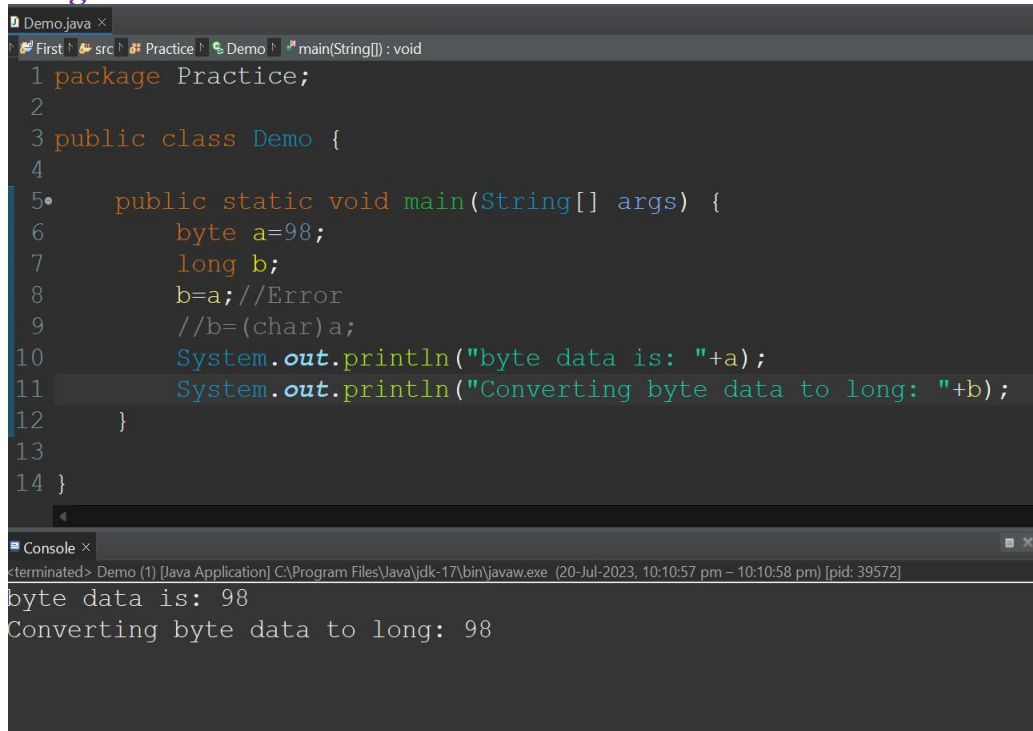
```
Demo.java x
First | src | Practice | Demo | main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         byte a=98;
7         int b;
8         b=a; //Error
9         //b=(char)a;
10        System.out.println("byte data is: "+a);
11        System.out.println("Converting byte data to int: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:09:04 pm - 10:09:04 pm) [pid: 8448]
byte data is: 98
Converting byte data to int: 98
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e byte(1bytes) into larger datatype i.e int(4bytes) .

We can convert **byte to int** by **Implicit Type Conversion**.

### byte to long:



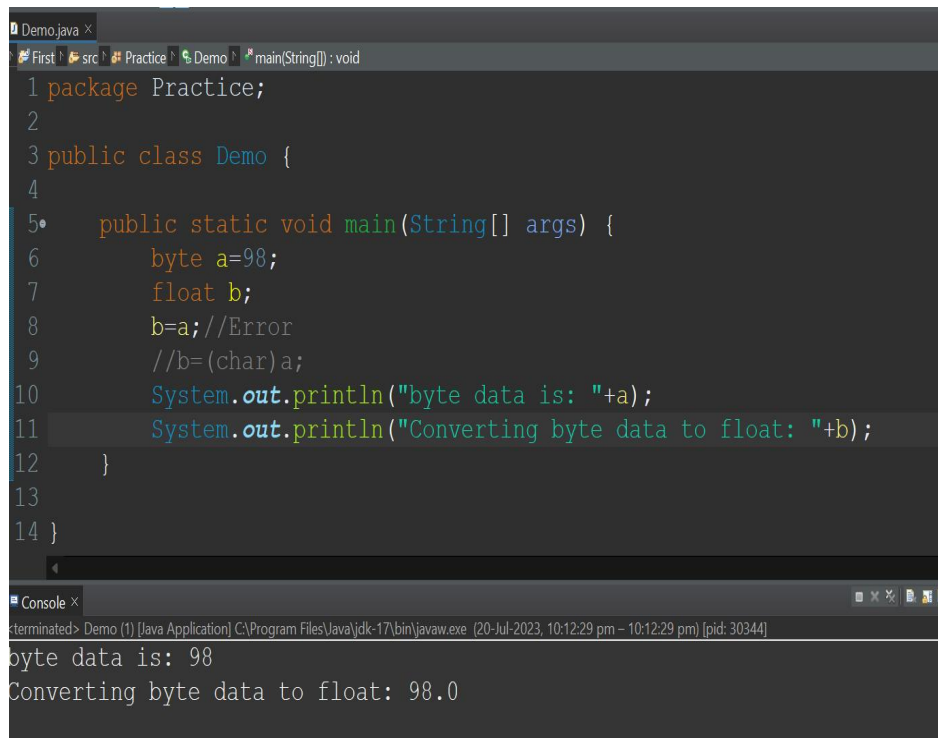
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         byte a=98;
7         long b;
8         b=a;//Error
9         //b=(char)a;
10        System.out.println("byte data is: "+a);
11        System.out.println("Converting byte data to long: "+b);
12    }
13
14 }
```

```
Console x
terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:10:57 pm - 10:10:58 pm) [pid: 39572]
byte data is: 98
Converting byte data to long: 98
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e byte(1bytes) into larger datatype i.e long(8bytes) .

We can convert **byte to long** by **Implicit Type Conversion**.

### byte to float:



```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         byte a=98;
7         float b;
8         b=a;//Error
9         //b=(char)a;
10        System.out.println("byte data is: "+a);
11        System.out.println("Converting byte data to float: "+b);
12    }
13
14 }
```

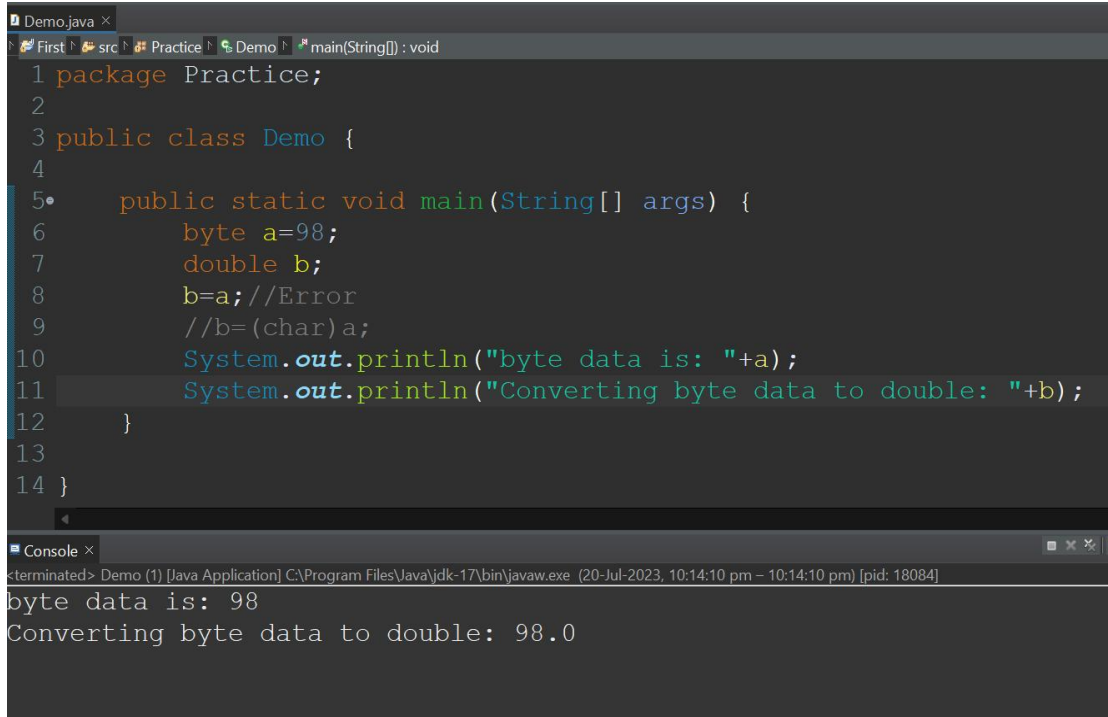
```
Console x
terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:12:29 pm - 10:12:29 pm) [pid: 30344]
byte data is: 98
Converting byte data to float: 98.0
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e byte(1bytes) into larger datatype i.e float(4bytes) .

We can convert **byte to float** by **Implicit Type Conversion**.



## byte to double:



```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         byte a=98;
7         double b;
8         b=a;//Error
9         //b=(char) a;
10        System.out.println("byte data is: "+a);
11        System.out.println("Converting byte data to double: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:14:10 pm - 10:14:10 pm) [pid: 18084]
byte data is: 98
Converting byte data to double: 98.0
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e byte(1bytes) into larger datatype i.e double(8bytes) .

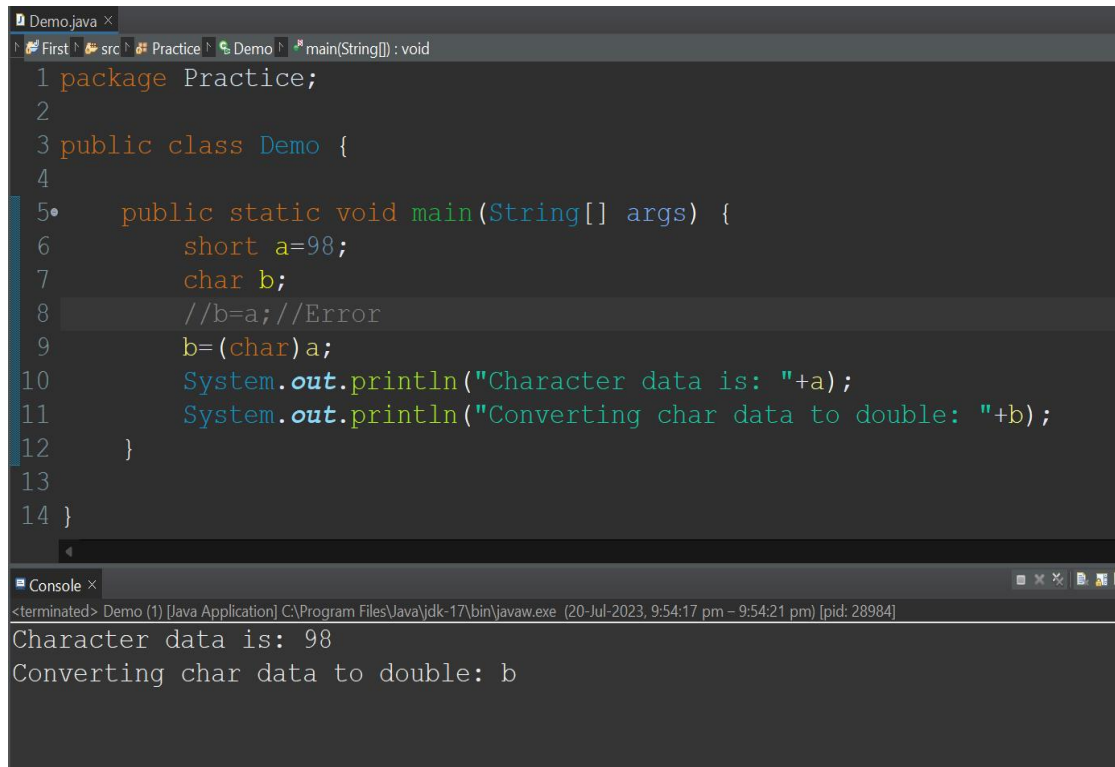
We can convert **byte to double** by **Implicit Type Conversion**.

## byte to boolean:

Conversion from **byte to boolean** is **not possible**.

---

## short to char:



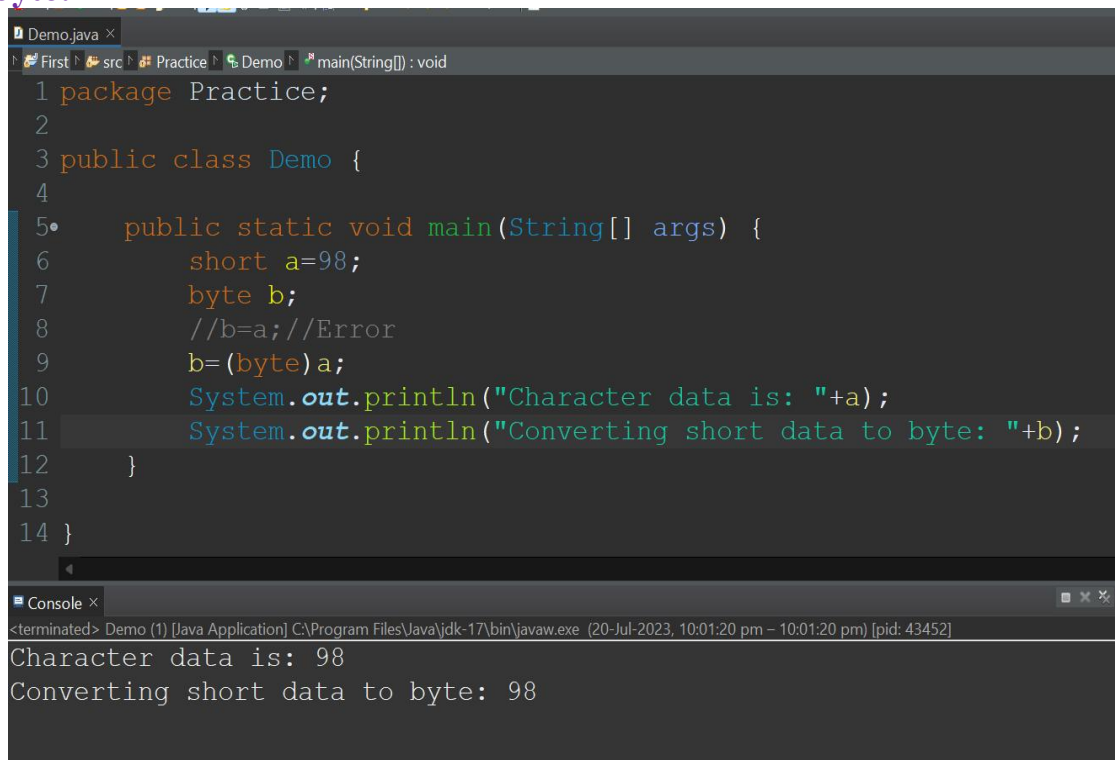
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         short a=98;
7         char b;
8         //b=a;//Error
9         b=(char) a;
10        System.out.println("Character data is: "+a);
11        System.out.println("Converting char data to double: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 9:54:17 pm - 9:54:21 pm) [pid: 28984]
Character data is: 98
Converting char data to double: b
```

Ofcourse the size of char and short occupies same memory space we cannot convert it because short is signed bit and character is unsigned bit there may be chance of losing signed data.

Error because cannot convert from **short to char**  
So performed **Explicit Type Conversion**.

### short to byte:



```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         short a=98;
7         byte b;
8         //b=a;//Error
9         b=(byte) a;
10        System.out.println("Character data is: "+a);
11        System.out.println("Converting short data to byte: "+b);
12    }
13
14 }
```

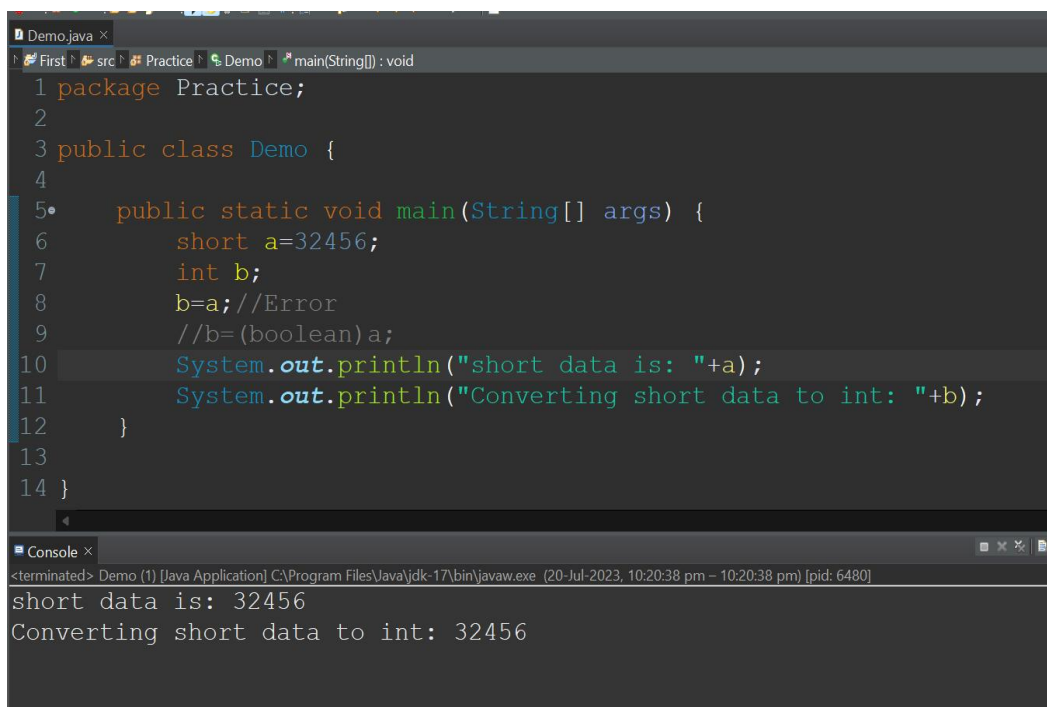
```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:01:20 pm - 10:01:20 pm) [pid: 43452]
Character data is: 98
Converting short data to byte: 98
```

Error because cannot convert from **short to byte**  
So performed **Explicit Type Conversion**.

### short to short:

**No conversion** is **required** from **short to short** because there is no point in converting to same datatype itself.

### short to int:



```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         short a=32456;
7         int b;
8         b=a;//Error
9         //b=(boolean) a;
10        System.out.println("short data is: "+a);
11        System.out.println("Converting short data to int: "+b);
12    }
13
14 }
```

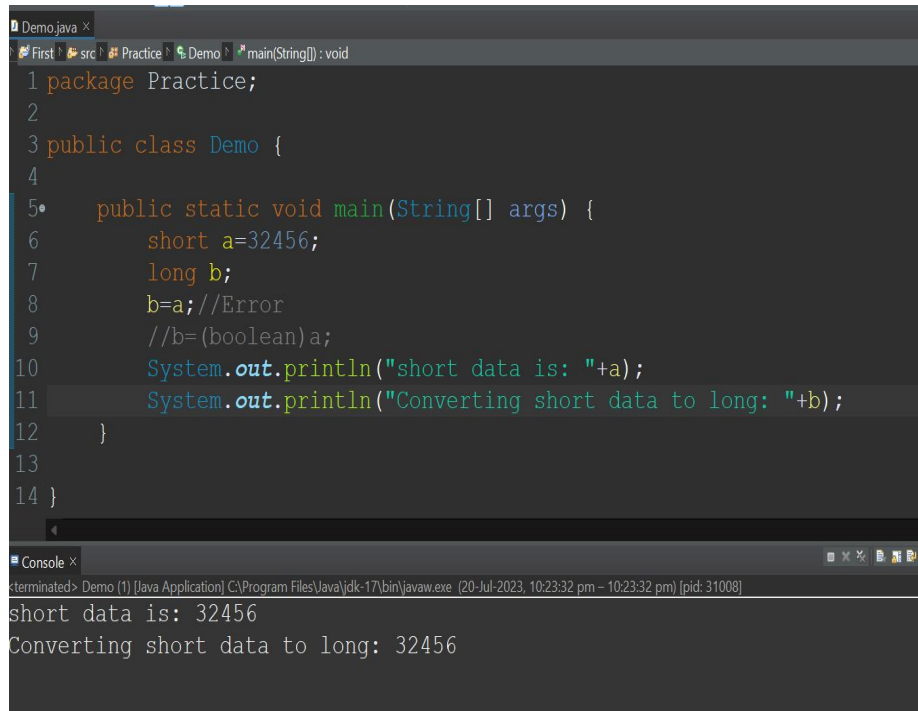
```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:20:38 pm - 10:20:38 pm) [pid: 6480]
short data is: 32456
Converting short data to int: 32456
```



Implicit conversion is possible because we are trying to fit data of smaller datatype i.e short(2bytes) into larger datatype i.e int(4bytes) .

We can convert **short to int** by **Implicit Type Conversion**.

### short to long:



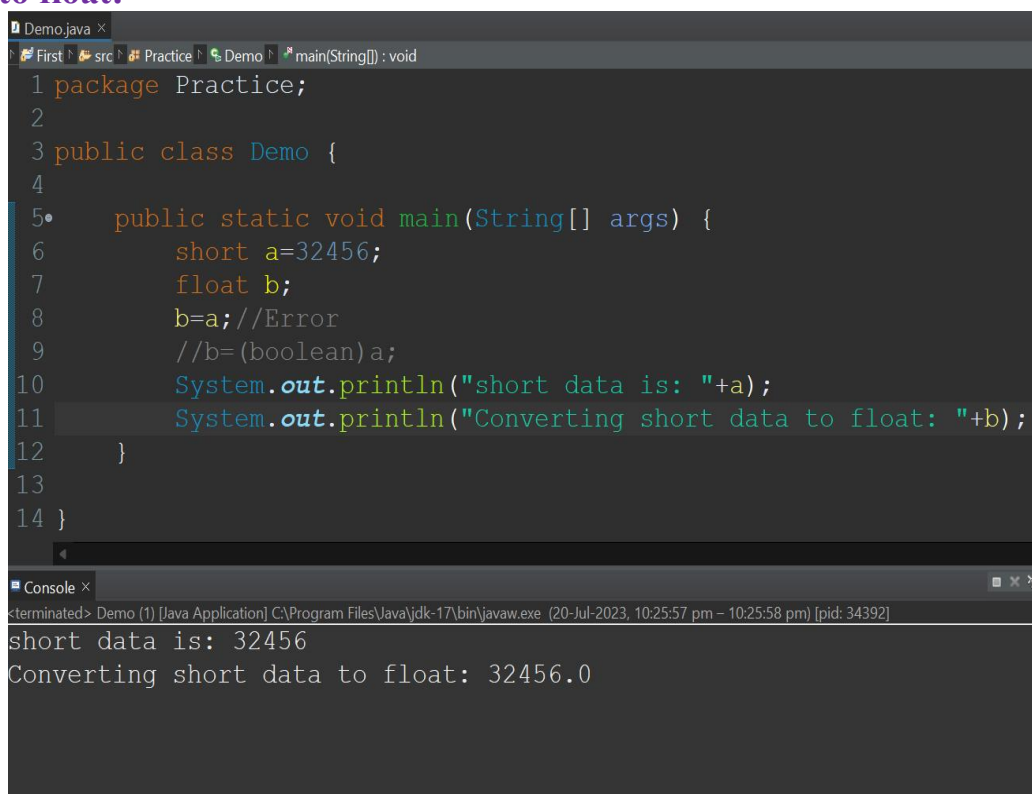
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         short a=32456;
7         long b;
8         b=a;//Error
9         //b=(boolean) a;
10        System.out.println("short data is: "+a);
11        System.out.println("Converting short data to long: "+b);
12    }
13
14 }
```

```
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:23:32 pm - 10:23:32 pm) [pid: 31008]
short data is: 32456
Converting short data to long: 32456
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e short(2bytes) into larger datatype i.e long(8bytes) .

We can convert **short to long** by **Implicit Type Conversion**.

### short to float:



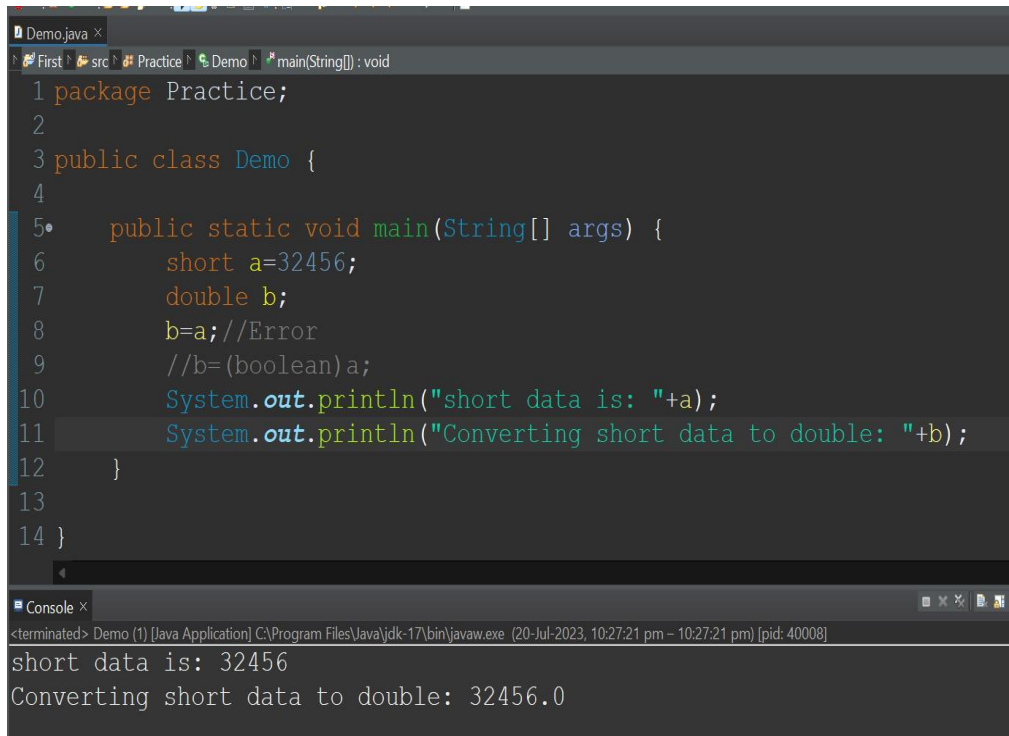
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         short a=32456;
7         float b;
8         b=a;//Error
9         //b=(boolean) a;
10        System.out.println("short data is: "+a);
11        System.out.println("Converting short data to float: "+b);
12    }
13
14 }
```

```
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:25:57 pm - 10:25:58 pm) [pid: 34392]
short data is: 32456
Converting short data to float: 32456.0
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e short(2bytes) into larger datatype i.e float(4bytes) .

We can convert **short to float** by **Implicit Type Conversion**.

### short to double:



```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         short a=32456;
7         double b;
8         b=a;//Error
9         //b=(boolean)a;
10        System.out.println("short data is: "+a);
11        System.out.println("Converting short data to double: "+b);
12    }
13
14 }

Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:27:21 pm - 10:27:21 pm) [pid: 40008]
short data is: 32456
Converting short data to double: 32456.0
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e short(2bytes) into larger datatype i.e double(8bytes) .

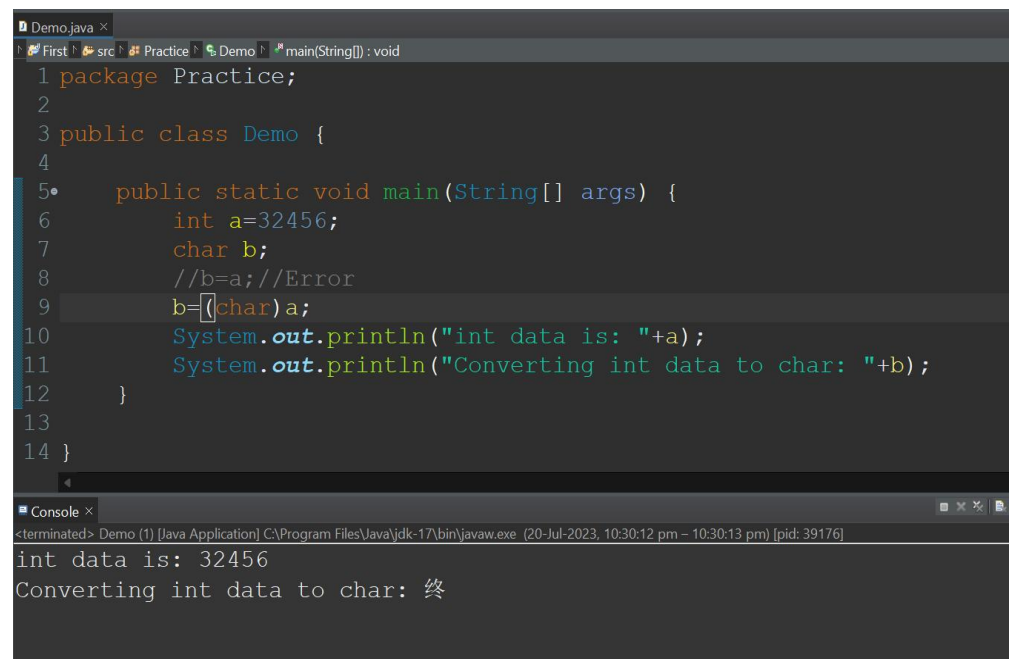
We can convert **short to double** by **Implicit Type Conversion**.

### short to boolean:

Conversion from **short to boolean** is **not possible**.

---

### int to char:



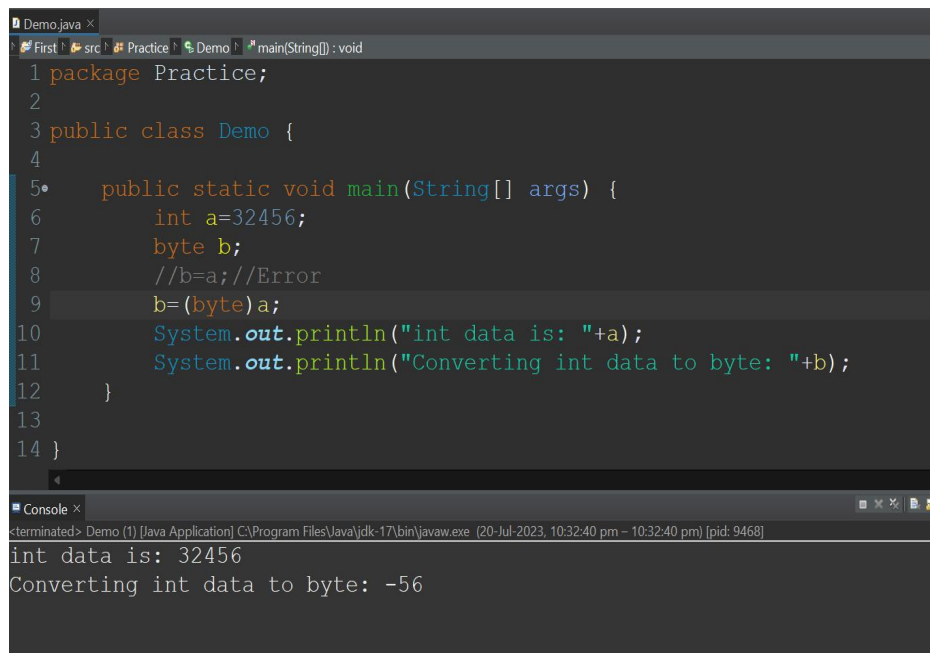
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         int a=32456;
7         char b;
8         //b=a;//Error
9         b=(char)a;
10        System.out.println("int data is: "+a);
11        System.out.println("Converting int data to char: "+b);
12    }
13
14 }

Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:30:12 pm - 10:30:13 pm) [pid: 39176]
int data is: 32456
Converting int data to char: 終
```

Error because cannot convert from **int to char**.

So performed **Explicit Type Conversion**.

**int to byte:**



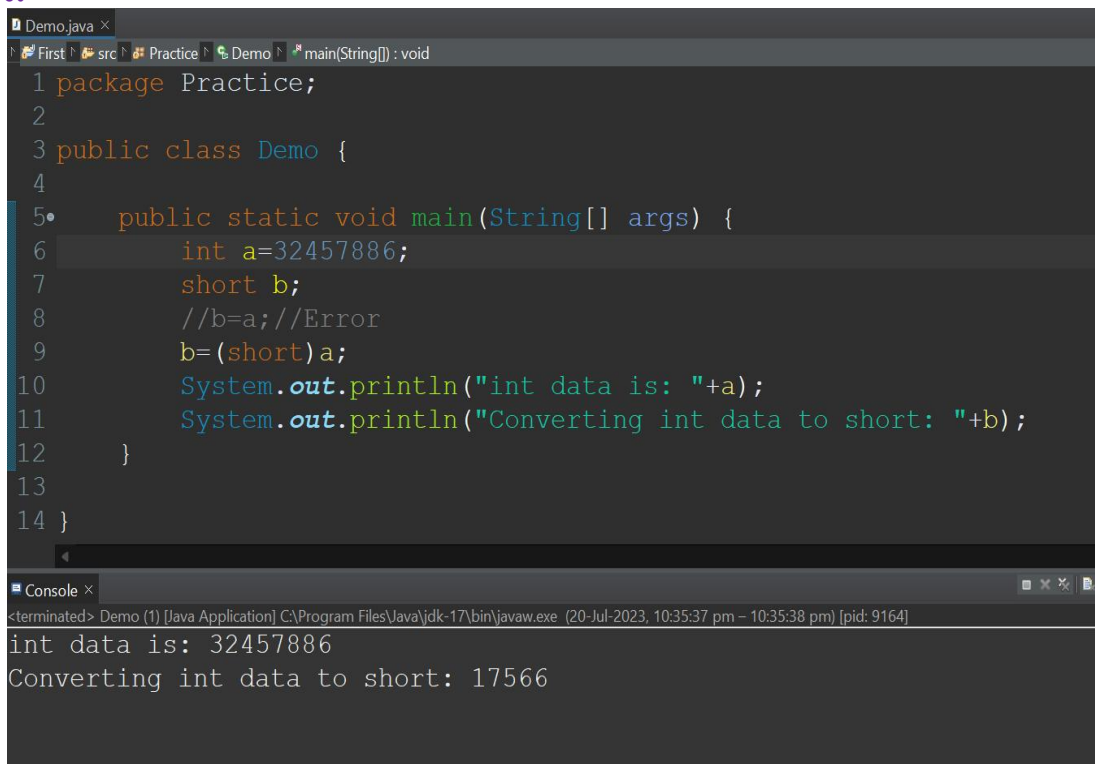
```
Demo.java ×
First | src | Practice | Demo | main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         int a=32456;
7         byte b;
8         //b=a;//Error
9         b=(byte)a;
10        System.out.println("int data is: "+a);
11        System.out.println("Converting int data to byte: "+b);
12    }
13
14 }
```

```
Console ×
terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:32:40 pm - 10:32:40 pm) [pid: 9468]
int data is: 32456
Converting int data to byte: -56
```

Error because cannot convert from **int to byte**.

So performed **Explicit Type Conversion**.

**int to short:**



```
Demo.java ×
First | src | Practice | Demo | main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         int a=32457886;
7         short b;
8         //b=a;//Error
9         b=(short)a;
10        System.out.println("int data is: "+a);
11        System.out.println("Converting int data to short: "+b);
12    }
13
14 }
```

```
Console ×
terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:35:37 pm - 10:35:38 pm) [pid: 9164]
int data is: 32457886
Converting int data to short: 17566
```

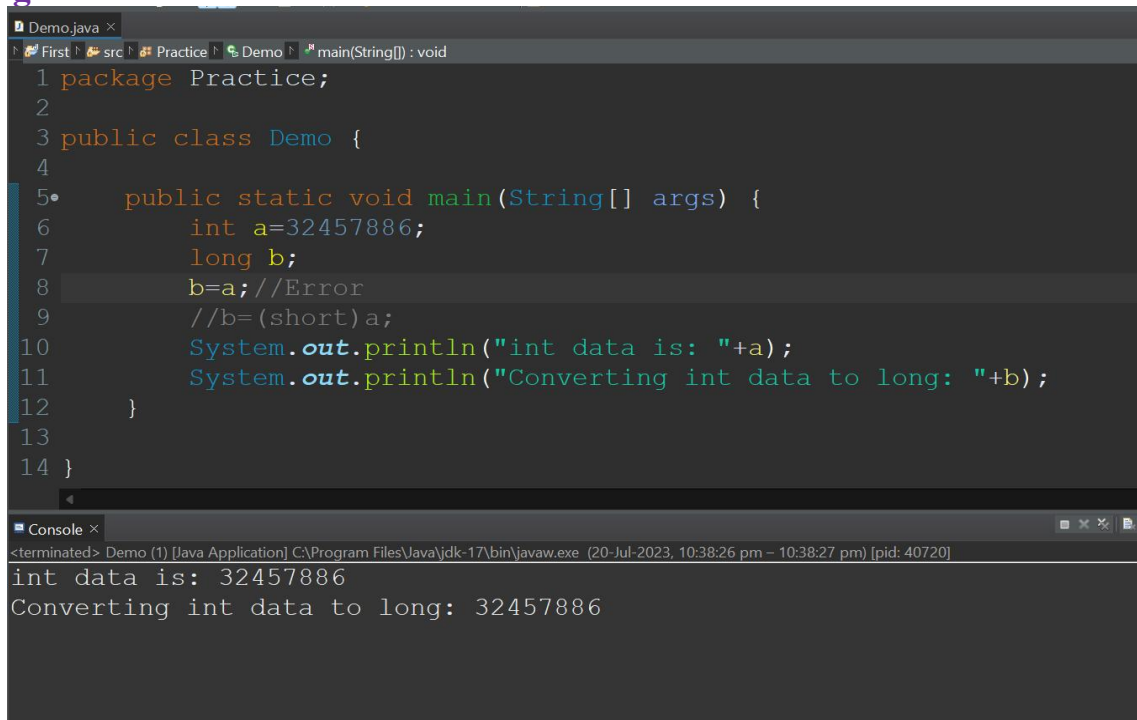
Error because cannot convert from **int to short**.

So performed **Explicit Type Conversion**.

### int to int:

**No conversion** is **required** from **int to int** because there is no point in converting to same datatype itself.

### int to long:



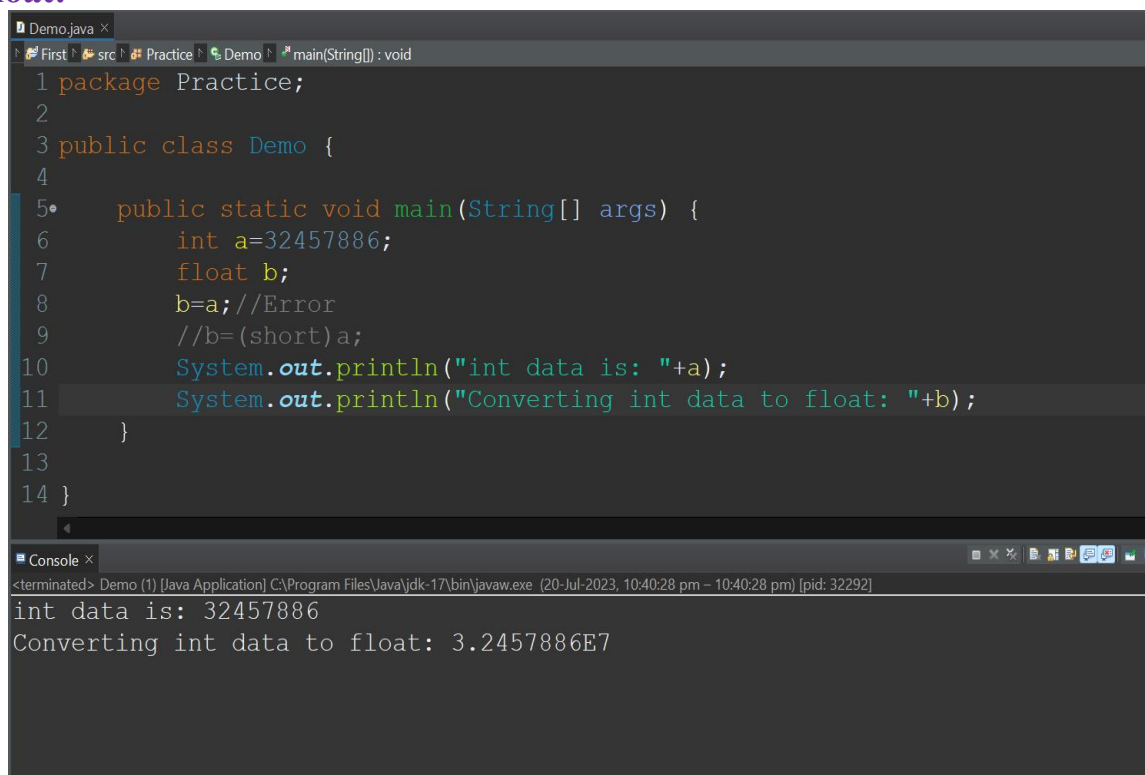
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         int a=32457886;
7         long b;
8         b=a;//Error
9         //b=(short)a;
10        System.out.println("int data is: "+a);
11        System.out.println("Converting int data to long: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:38:26 pm - 10:38:27 pm) [pid: 40720]
int data is: 32457886
Converting int data to long: 32457886
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e int(4bytes) into larger datatype i.e long(8bytes) .

We can convert **int to long** by **Implicit Type Conversion**.

### int to float:



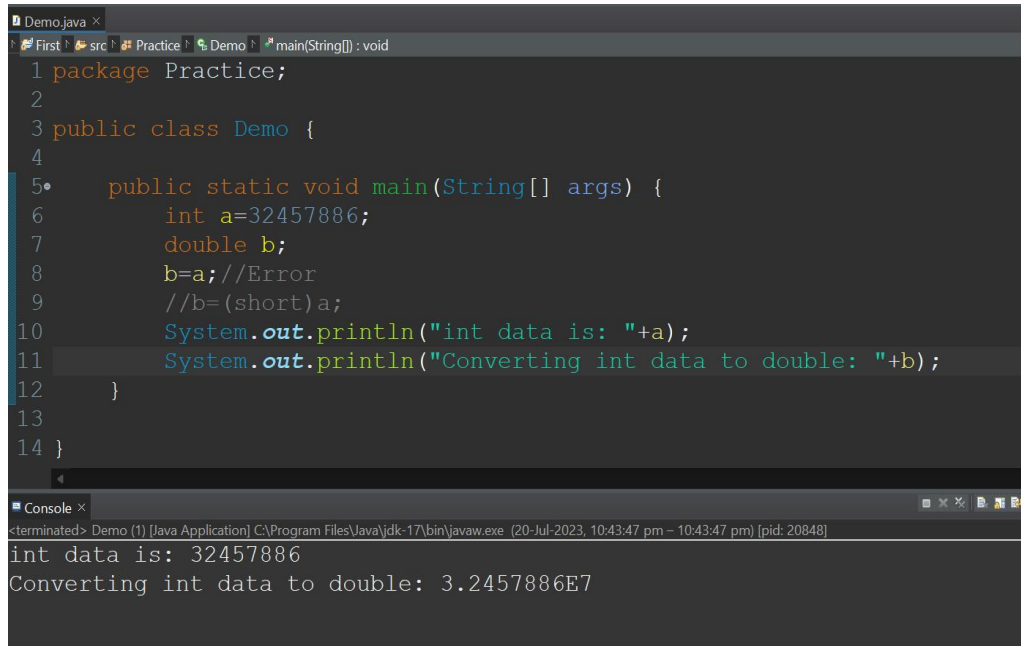
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         int a=32457886;
7         float b;
8         b=a;//Error
9         //b=(short)a;
10        System.out.println("int data is: "+a);
11        System.out.println("Converting int data to float: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:40:28 pm - 10:40:28 pm) [pid: 32292]
int data is: 32457886
Converting int data to float: 3.2457886E7
```

Implicit conversion is possible because we are trying to fit data of equal space occupying datatype I.e int(4bytes) and float(4 bytes)

We can convert **int to float** by **Implicit Type Conversion**.

### int to double:



```
Demo.java x
First src Practice Demo main(String[]): void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         int a=32457886;
7         double b;
8         b=a;//Error
9         //b=(short)a;
10        System.out.println("int data is: "+a);
11        System.out.println("Converting int data to double: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:43:47 pm - 10:43:47 pm) [pid: 20848]
int data is: 32457886
Converting int data to double: 3.2457886E7
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e int(4bytes) into larger datatype i.e double(8bytes) .

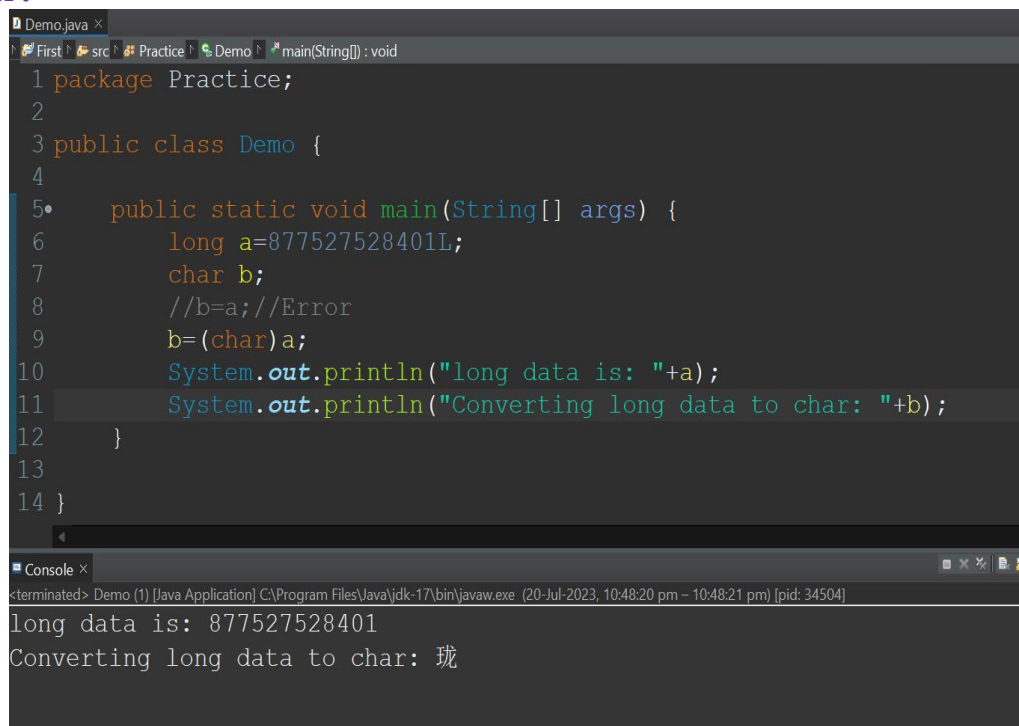
We can convert **int to double** by **Implicit Type Conversion**.

### int to boolean:

Conversion from **int to boolean** is **not possible**.

---

### long to char:



```
Demo.java x
First src Practice Demo main(String[]): void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         long a=877527528401L;
7         char b;
8         //b=a;//Error
9         b=(char)a;
10        System.out.println("long data is: "+a);
11        System.out.println("Converting long data to char: "+b);
12    }
13
14 }
```

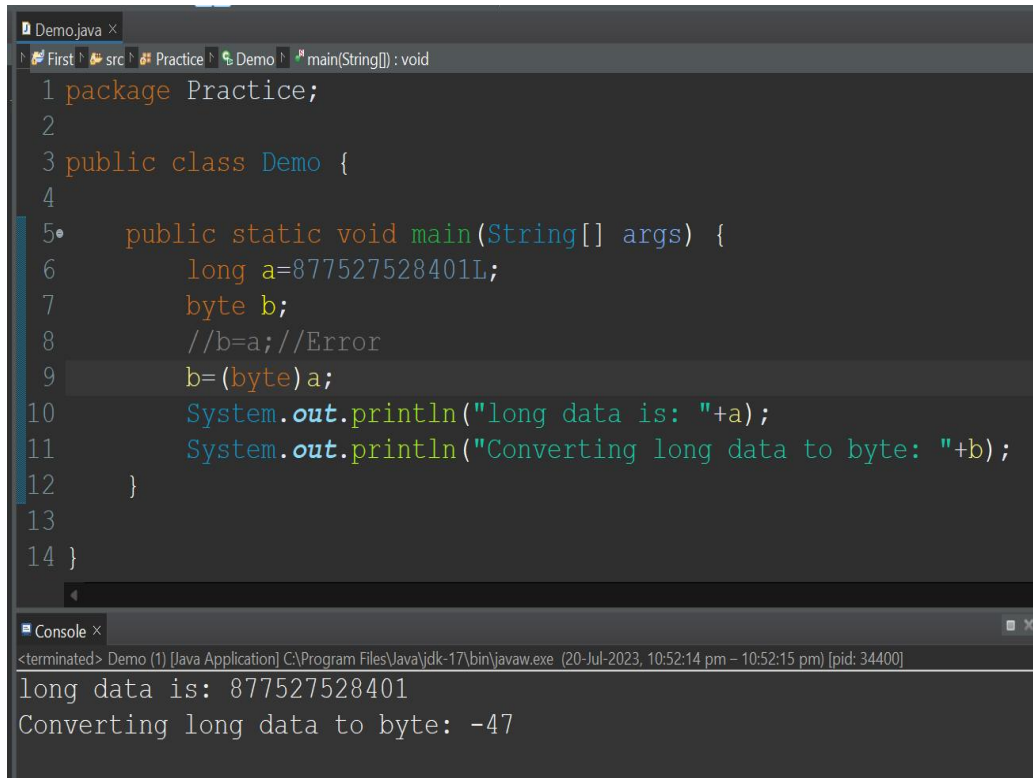
```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:48:20 pm - 10:48:21 pm) [pid: 34504]
long data is: 877527528401
Converting long data to char: 珑
```



Error because cannot convert from long to char.

So performed Explicit Type Conversion.

long to byte:



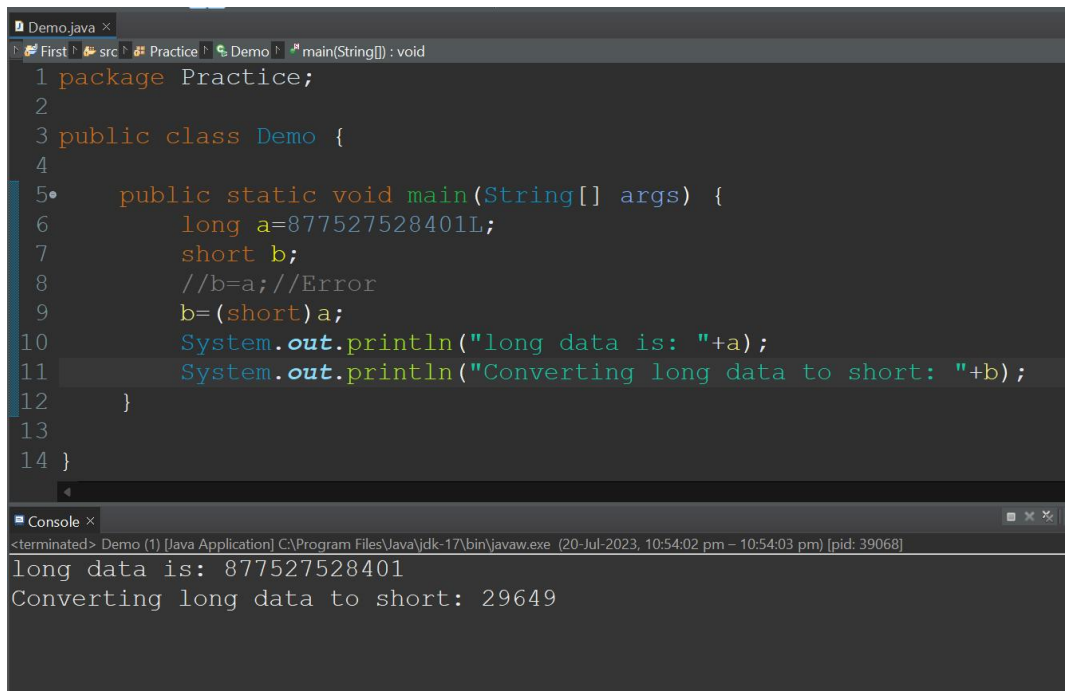
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         long a=877527528401L;
7         byte b;
8         //b=a;//Error
9         b=(byte)a;
10        System.out.println("long data is: "+a);
11        System.out.println("Converting long data to byte: "+b);
12    }
13
14 }
```

```
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:52:14 pm - 10:52:15 pm) [pid: 34400]
long data is: 877527528401
Converting long data to byte: -47
```

Error because cannot convert from long to byte

So performed Explicit Type Conversion.

long to short:



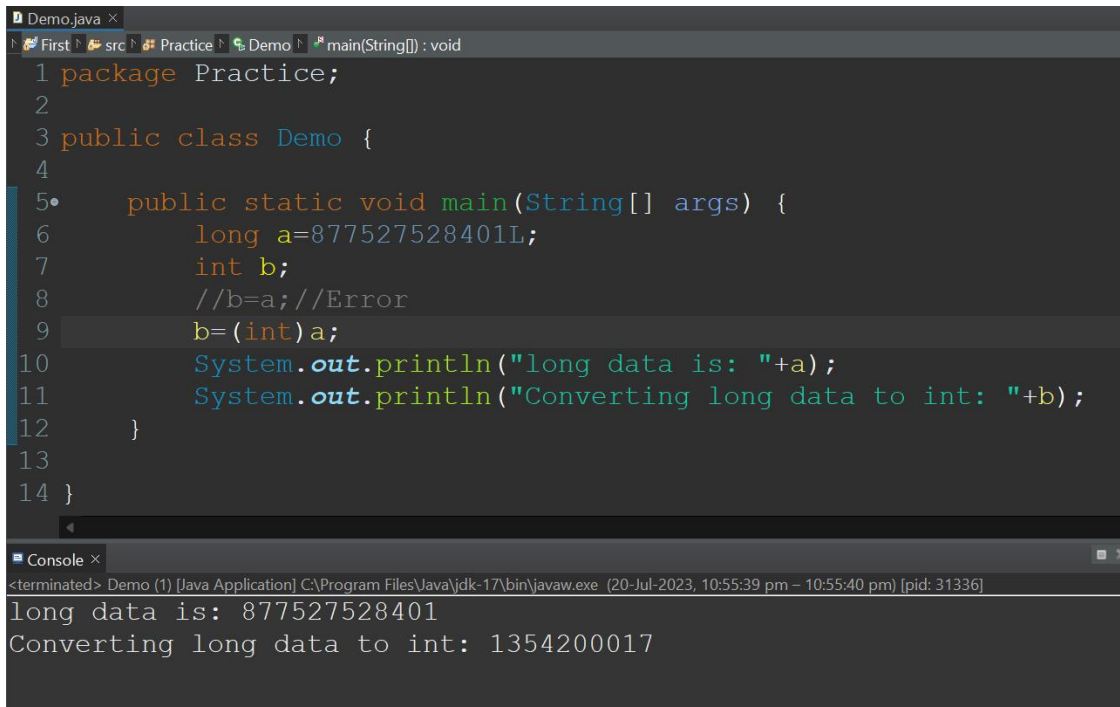
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         long a=877527528401L;
7         short b;
8         //b=a;//Error
9         b=(short)a;
10        System.out.println("long data is: "+a);
11        System.out.println("Converting long data to short: "+b);
12    }
13
14 }
```

```
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:54:02 pm - 10:54:03 pm) [pid: 39068]
long data is: 877527528401
Converting long data to short: 29649
```

Error because cannot convert from long to short

So performed Explicit Type Conversion.

## long to int:



```
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         long a=877527528401L;
7         int b;
8         //b=a; //Error
9         b=(int)a;
10        System.out.println("long data is: "+a);
11        System.out.println("Converting long data to int: "+b);
12    }
13
14 }
```

Console output:

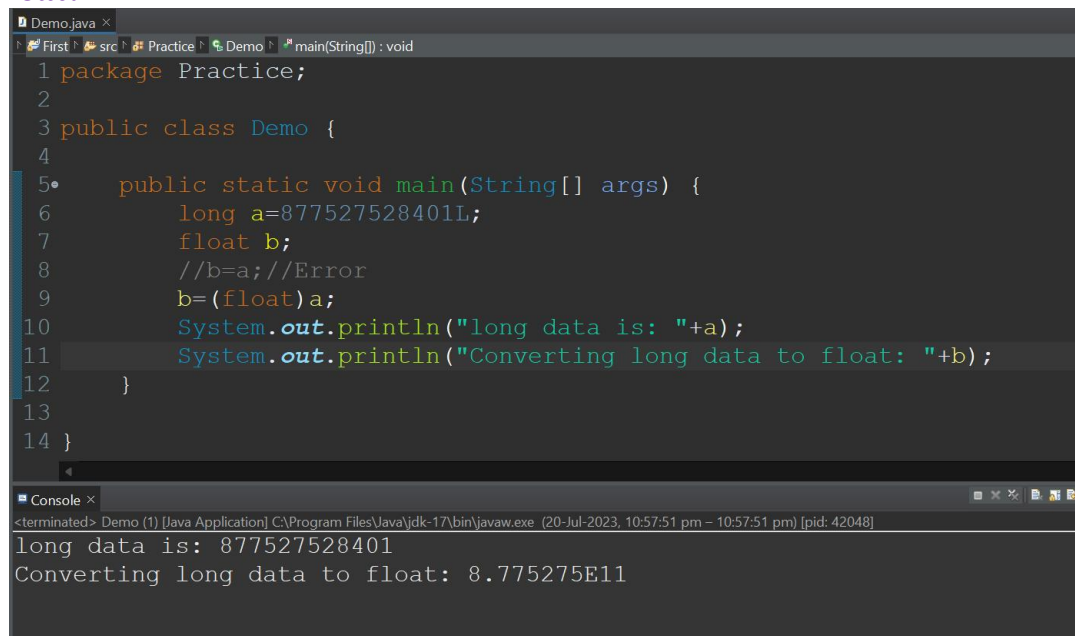
```
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:55:39 pm - 10:55:40 pm) [pid: 31336]
long data is: 877527528401
Converting long data to int: 1354200017
```

Error because cannot convert from **long to int**  
So performed **Explicit Type Conversion**.

## long to long:

**No conversion** is **required** from **long to long** because there is no point in converting to same datatype itself.

## long to float:



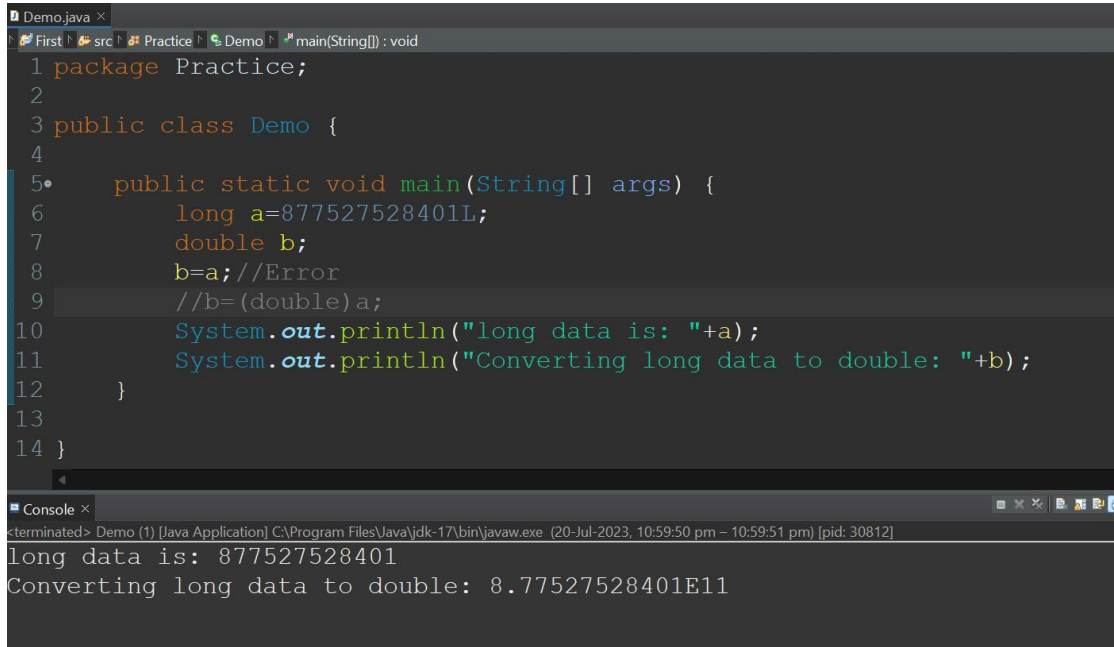
```
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         long a=877527528401L;
7         float b;
8         //b=a; //Error
9         b=(float)a;
10        System.out.println("long data is: "+a);
11        System.out.println("Converting long data to float: "+b);
12    }
13
14 }
```

Console output:

```
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:57:51 pm - 10:57:51 pm) [pid: 42048]
long data is: 877527528401
Converting long data to float: 8.775275E11
```

Error because cannot convert from **long to float**  
So performed **Explicit Type Conversion**.

## long to double:



```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         long a=877527528401L;
7         double b;
8         b=a;//Error
9         //b=(double)a;
10        System.out.println("long data is: "+a);
11        System.out.println("Converting long data to double: "+b);
12    }
13
14 }
```

```
Console x
terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 10:59:50 pm - 10:59:51 pm) [pid: 30812]
long data is: 877527528401
Converting long data to double: 8.77527528401E11
```

Implicit conversion is possible because we are trying to fit data of equal space occupying datatype I.e long(8bytes) and double(8 bytes)

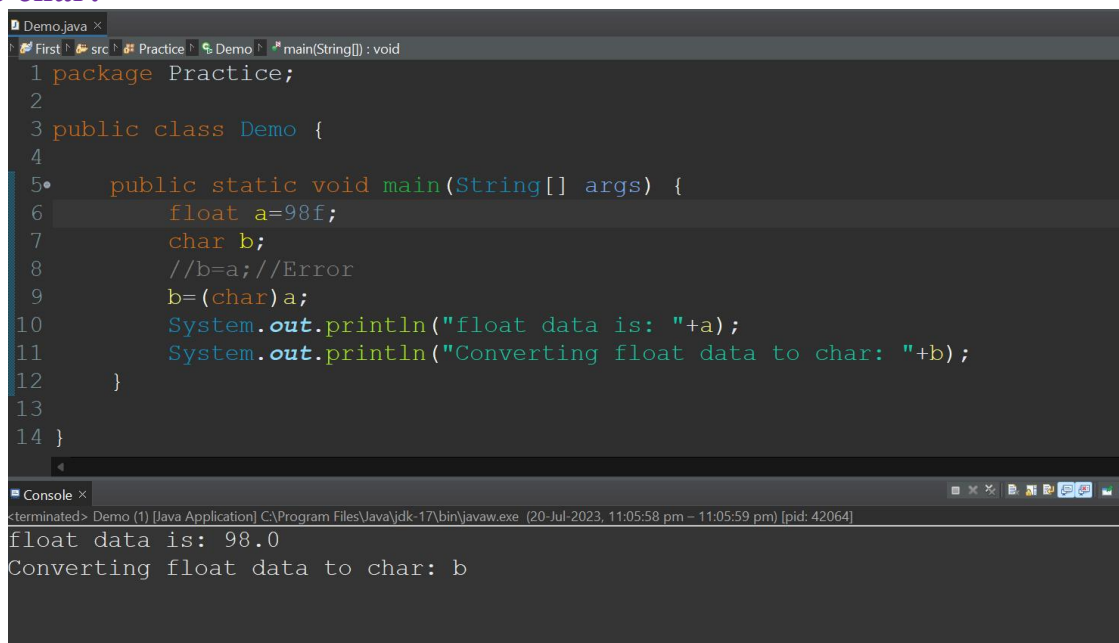
We can convert **long to double** by **Implicit Type Conversion**.

## long to boolean:

Conversion from **long to boolean** is **not possible**.

---

## float to char:



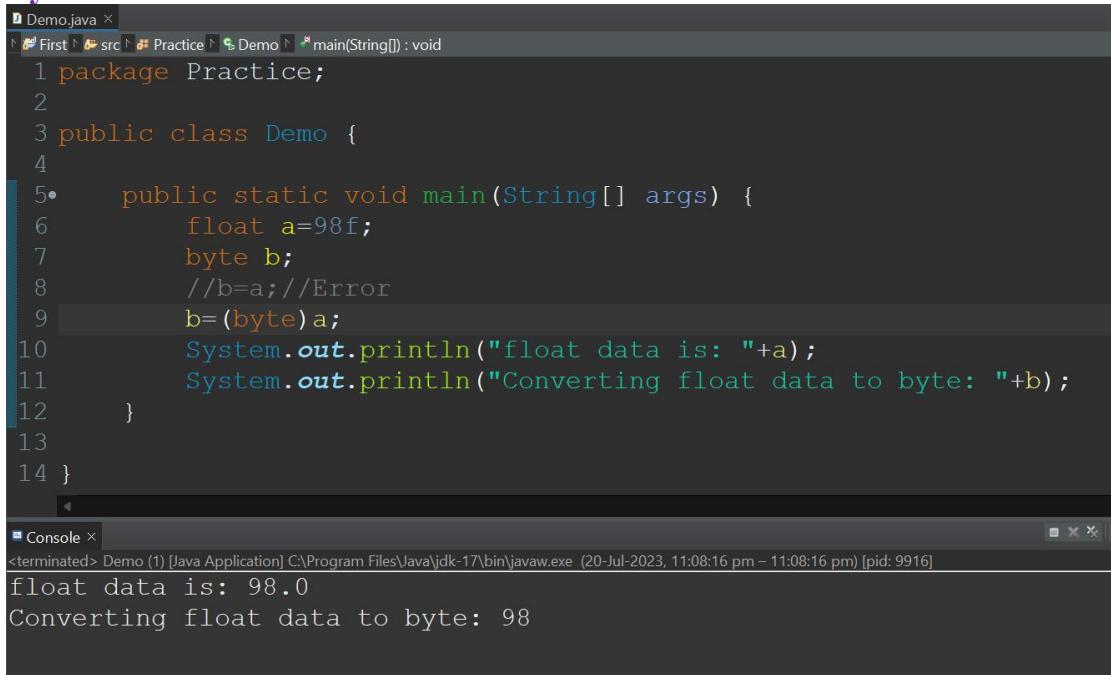
```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         float a=98f;
7         char b;
8         //b=a;//Error
9         b=(char)a;
10        System.out.println("float data is: "+a);
11        System.out.println("Converting float data to char: "+b);
12    }
13
14 }
```

```
Console x
terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:05:58 pm - 11:05:59 pm) [pid: 42064]
float data is: 98.0
Converting float data to char: b
```

Error because cannot convert from **float to char**

So performed **Explicit Type Conversion**.

## float to byte:

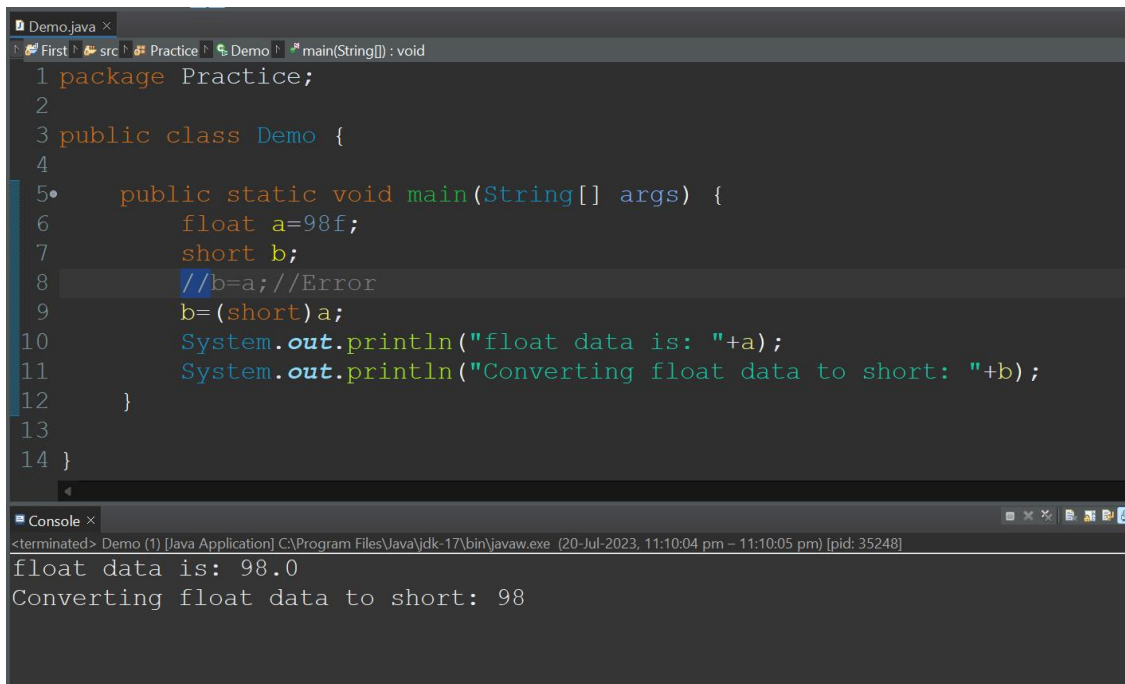


```
Demo.java x
First | src | Practice | Demo | main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         float a=98f;
7         byte b;
8         //b=a;//Error
9         b=(byte)a;
10        System.out.println("float data is: "+a);
11        System.out.println("Converting float data to byte: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:08:16 pm - 11:08:16 pm) [pid: 9916]
float data is: 98.0
Converting float data to byte: 98
```

Error because cannot convert from float to byte  
So performed Explicit Type Conversion.

## float to short:

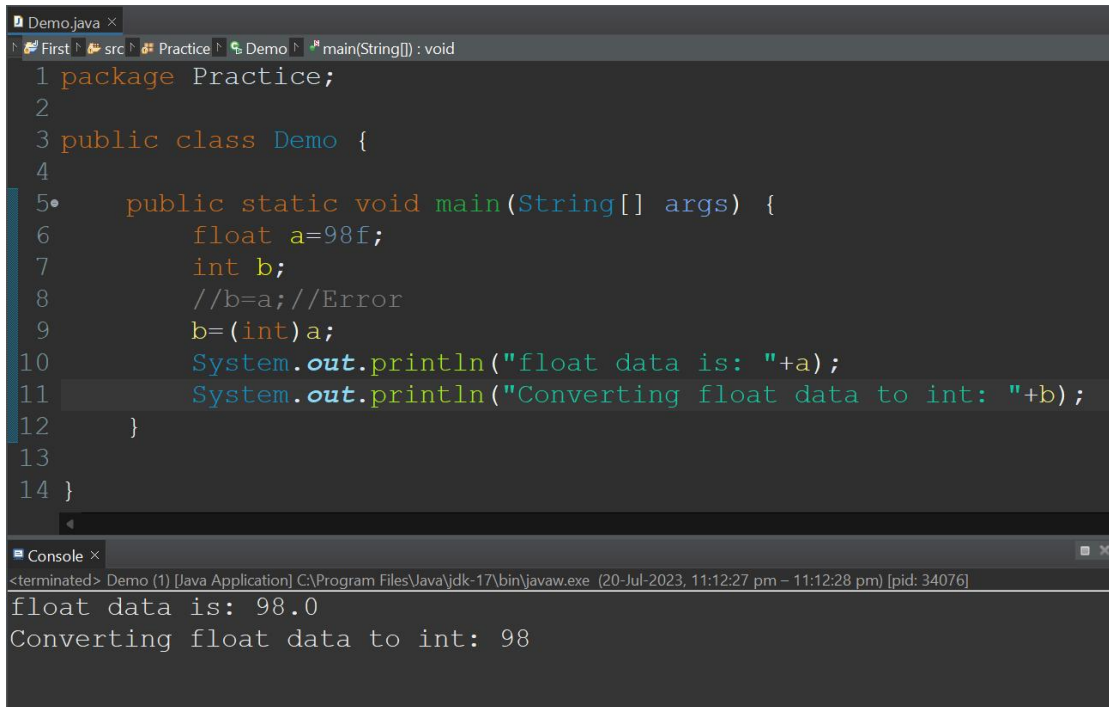


```
Demo.java x
First | src | Practice | Demo | main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         float a=98f;
7         short b;
8         //b=a;//Error
9         b=(short)a;
10        System.out.println("float data is: "+a);
11        System.out.println("Converting float data to short: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:10:04 pm - 11:10:05 pm) [pid: 35248]
float data is: 98.0
Converting float data to short: 98
```

Error because cannot convert from float to short  
So performed Explicit Type Conversion.

## float to int:



```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         float a=98f;
7         int b;
8         //b=a;//Error
9         b=(int)a;
10        System.out.println("float data is: "+a);
11        System.out.println("Converting float data to int: "+b);
12    }
13
14 }
```

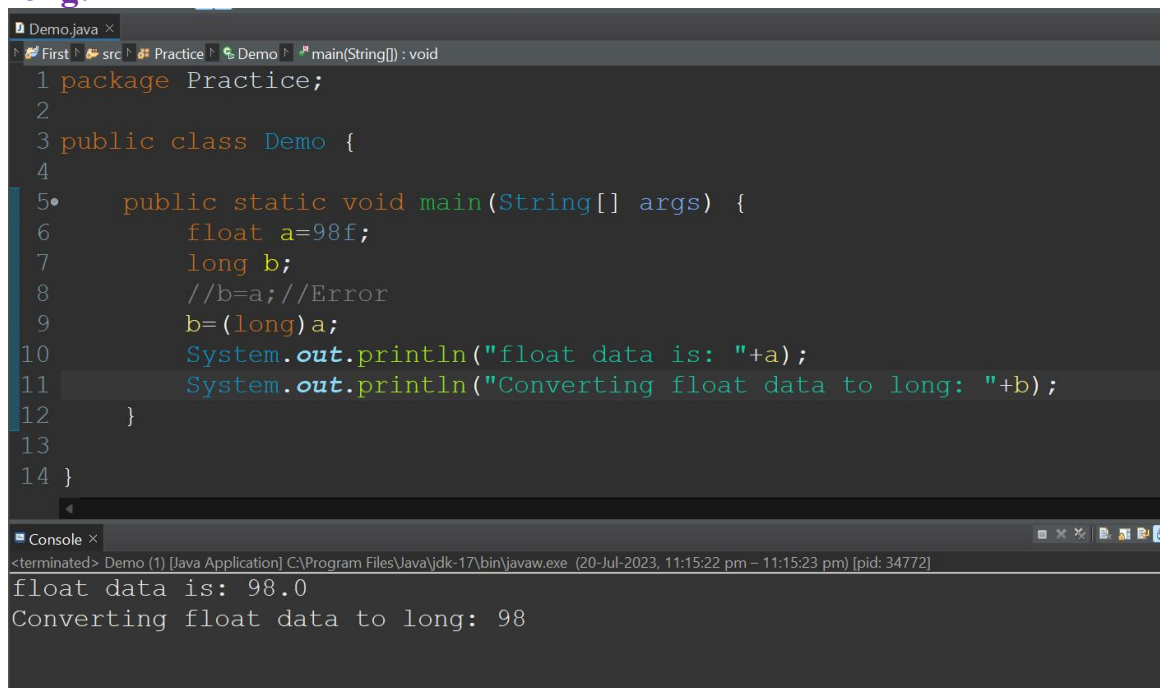
```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:12:27 pm - 11:12:28 pm) [pid: 34076]
float data is: 98.0
Converting float data to int: 98
```

Error because cannot convert from float to int

So performed Explicit Type Conversion.

Because there may be chance of losing fractional part of data

## float to long:



```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         float a=98f;
7         long b;
8         //b=a;//Error
9         b=(long)a;
10        System.out.println("float data is: "+a);
11        System.out.println("Converting float data to long: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:15:22 pm - 11:15:23 pm) [pid: 34772]
float data is: 98.0
Converting float data to long: 98
```

Error because cannot convert from float to long

So performed Explicit Type Conversion.

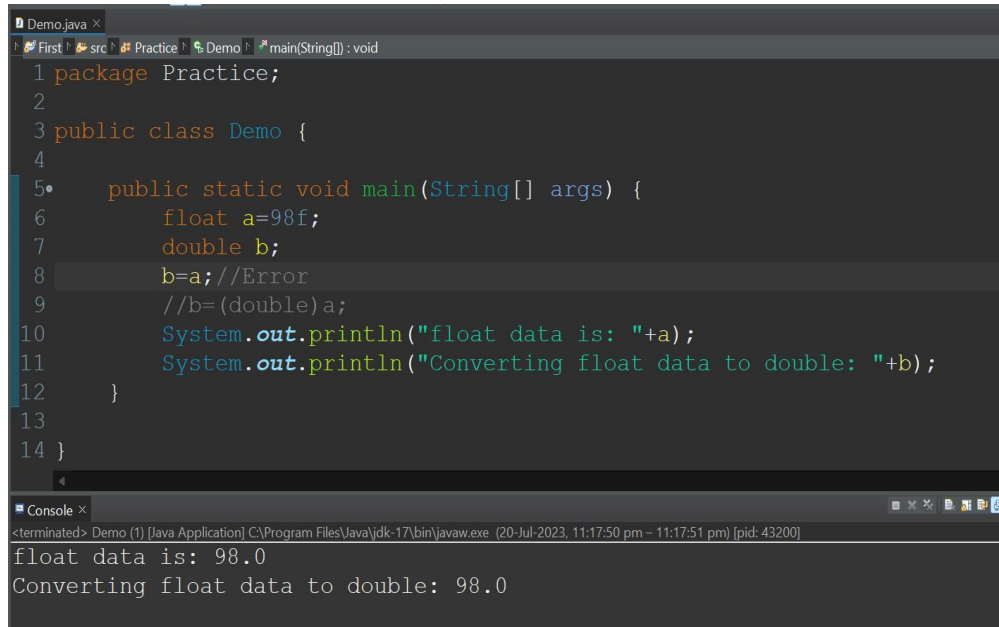
Because there may be chance of losing fractional part of data



### float to float:

**No conversion** is **required** from **float to float** because there is no point in converting to same datatype itself.

### float to double:



```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         float a=98f;
7         double b;
8         b=a;//Error
9         //b=(double)a;
10        System.out.println("float data is: "+a);
11        System.out.println("Converting float data to double: "+b);
12    }
13
14 }

Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:17:50 pm – 11:17:51 pm) [pid: 43200]
float data is: 98.0
Converting float data to double: 98.0
```

Implicit conversion is possible because we are trying to fit data of smaller datatype i.e float(4bytes) into larger datatype i.e double(8bytes) .

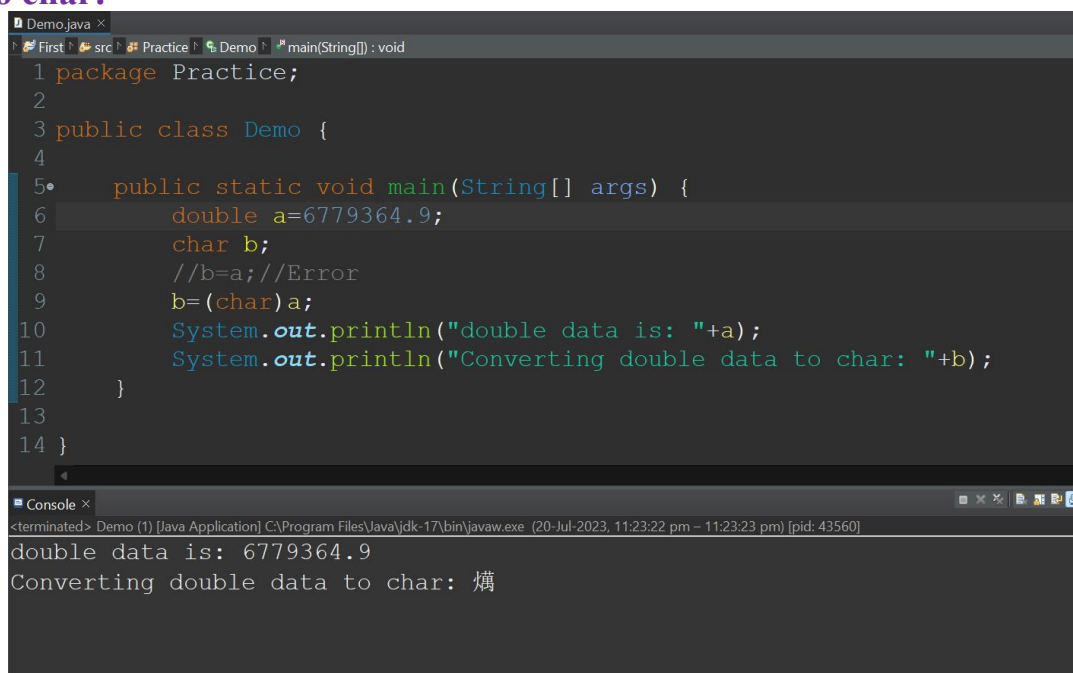
We can convert **float to double** by **Implicit Type Conversion**.

### float to boolean:

Conversion from **float to boolean** is **not possible**.

---

### double to char:

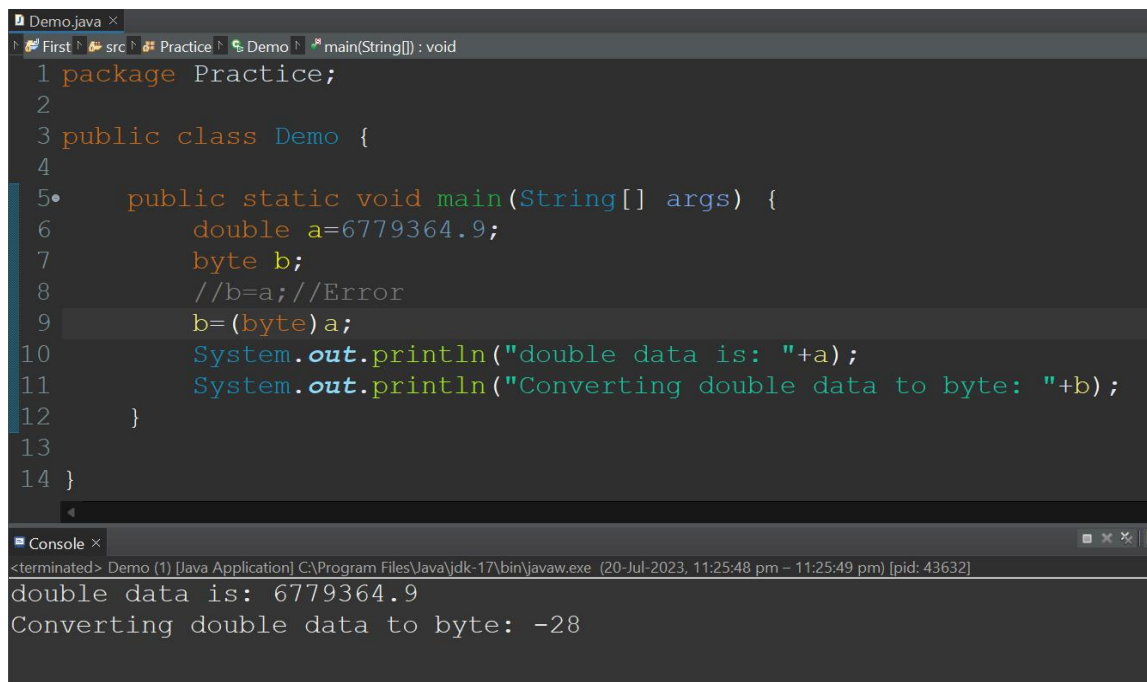


```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         double a=6779364.9;
7         char b;
8         //b=a;//Error
9         b=(char)a;
10        System.out.println("double data is: "+a);
11        System.out.println("Converting double data to char: "+b);
12    }
13
14 }

Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:23:22 pm – 11:23:23 pm) [pid: 43560]
double data is: 6779364.9
Converting double data to char: 爠
```

Error because cannot convert from **double to char**  
So performed **Explicit Type Conversion**.

### double to byte:

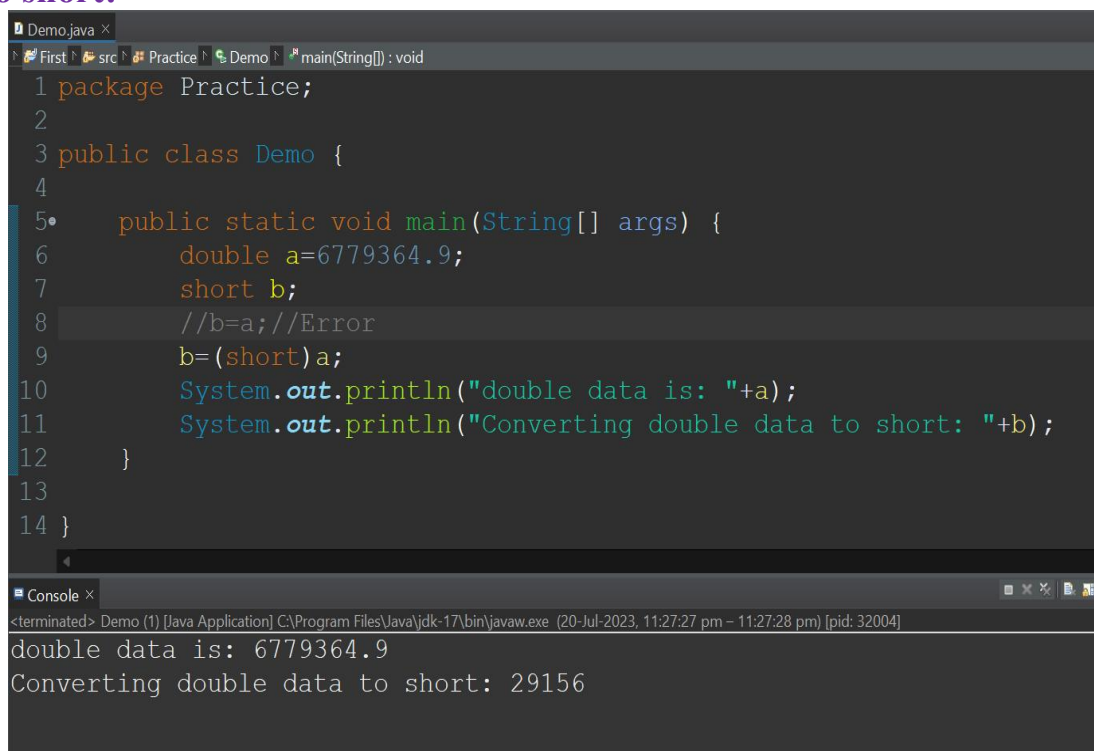


```
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         double a=6779364.9;
7         byte b;
8         //b=a;//Error
9         b=(byte)a;
10        System.out.println("double data is: "+a);
11        System.out.println("Converting double data to byte: "+b);
12    }
13
14 }
```

<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:25:48 pm - 11:25:49 pm) [pid: 43632]  
double data is: 6779364.9  
Converting double data to byte: -28

Error because cannot convert from **double to byte**  
So performed **Explicit Type Conversion**.

### double to short:

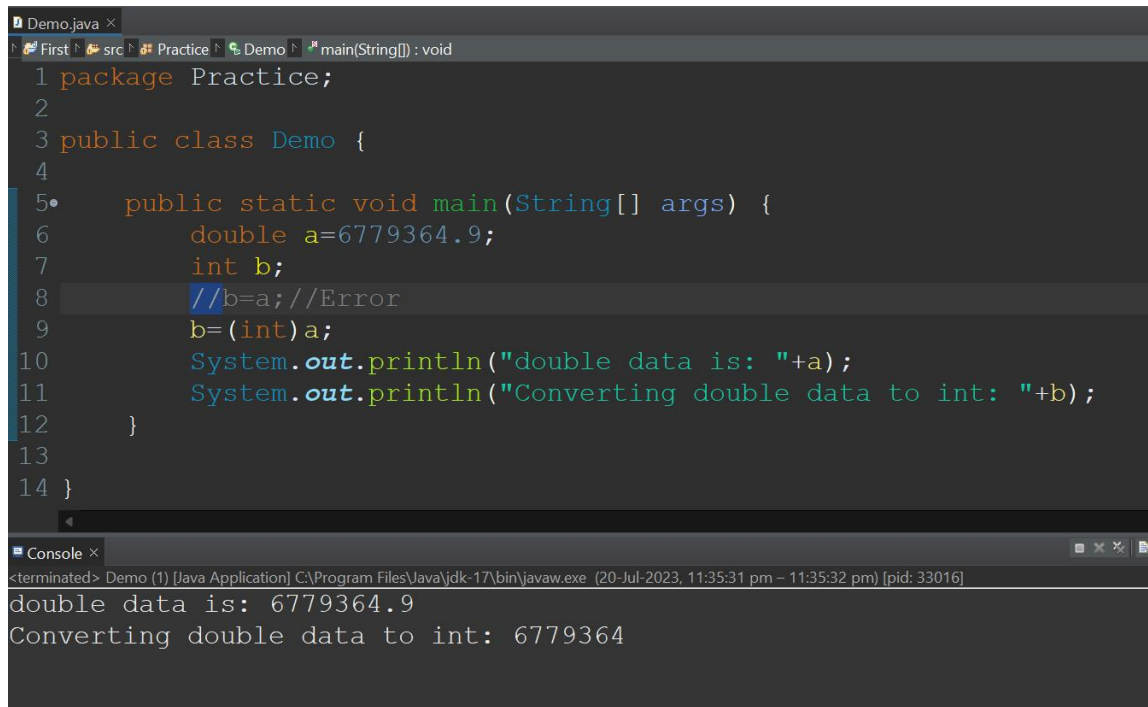


```
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         double a=6779364.9;
7         short b;
8         //b=a;//Error
9         b=(short)a;
10        System.out.println("double data is: "+a);
11        System.out.println("Converting double data to short: "+b);
12    }
13
14 }
```

<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:27:27 pm - 11:27:28 pm) [pid: 32004]  
double data is: 6779364.9  
Converting double data to short: 29156

Error because cannot convert from **double to short**  
So performed **Explicit Type Conversion**.

## double to int:

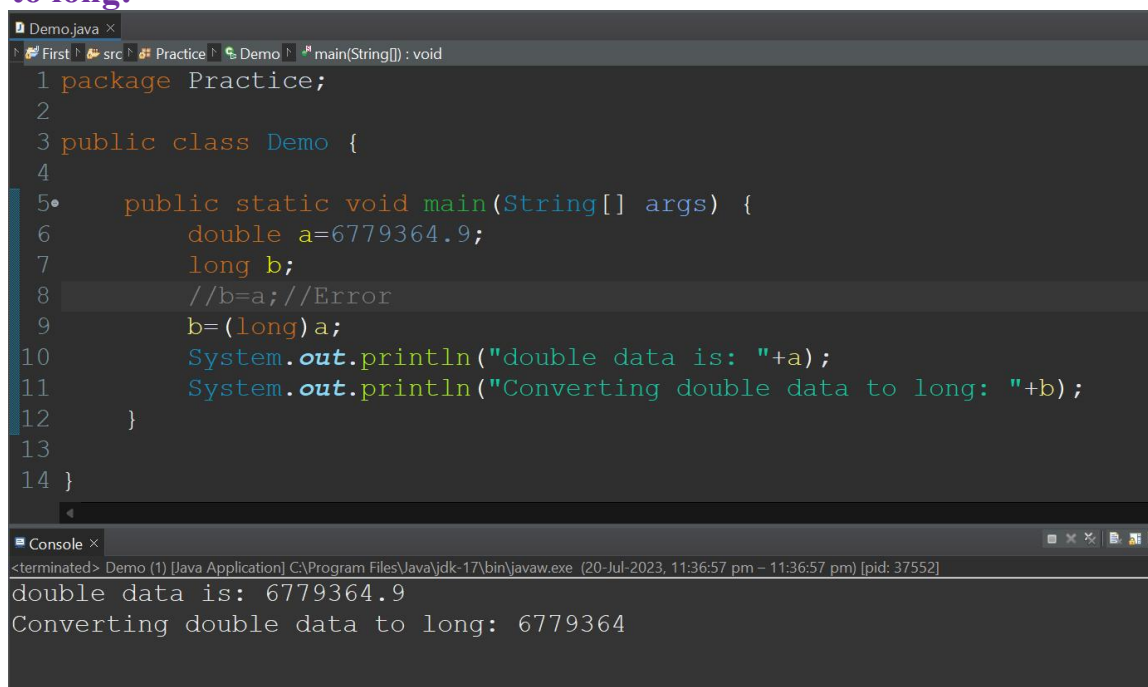


```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         double a=6779364.9;
7         int b;
8         //b=a;//Error
9         b=(int)a;
10        System.out.println("double data is: "+a);
11        System.out.println("Converting double data to int: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:35:31 pm - 11:35:32 pm) [pid: 33016]
double data is: 6779364.9
Converting double data to int: 6779364
```

Error because cannot convert from **double to int**  
So performed **Explicit Type Conversion**.

## double to long:

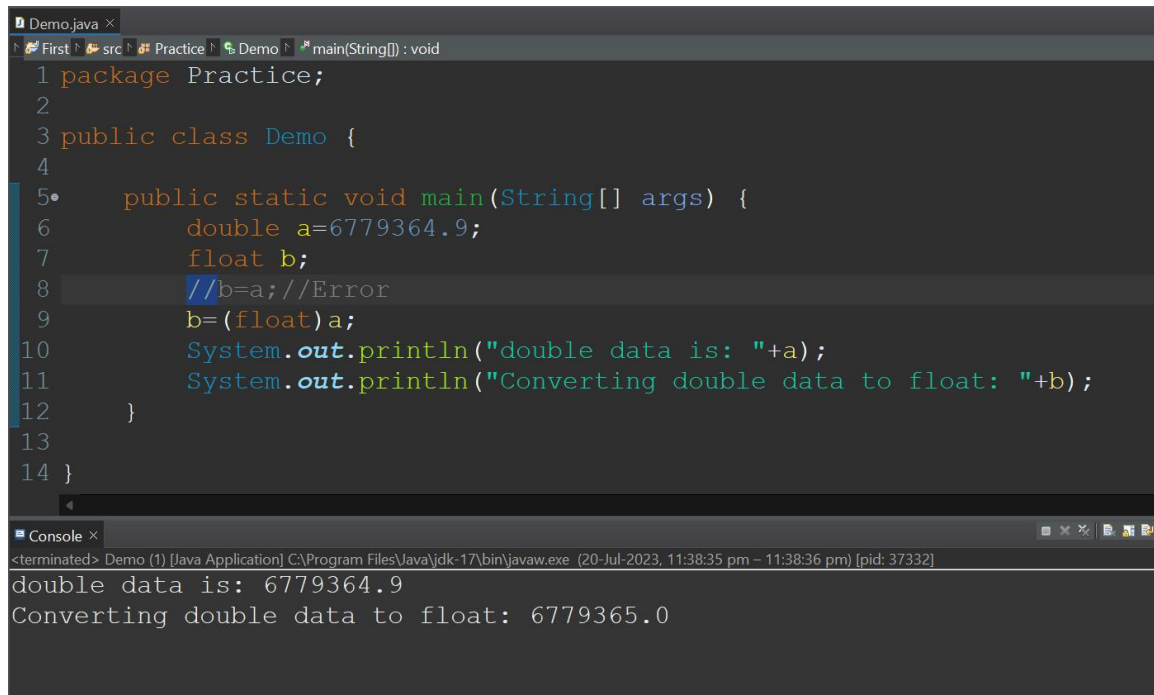


```
Demo.java x
First src Practice Demo main(String[]) : void
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         double a=6779364.9;
7         long b;
8         //b=a;//Error
9         b=(long)a;
10        System.out.println("double data is: "+a);
11        System.out.println("Converting double data to long: "+b);
12    }
13
14 }
```

```
Console x
<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:36:57 pm - 11:36:57 pm) [pid: 37552]
double data is: 6779364.9
Converting double data to long: 6779364
```

Error because cannot convert from **double to long**  
So performed **Explicit Type Conversion**.

## double to float:



```
1 package Practice;
2
3 public class Demo {
4
5     public static void main(String[] args) {
6         double a=6779364.9;
7         float b;
8         //b=a; //Error
9         b=(float)a;
10        System.out.println("double data is: "+a);
11        System.out.println("Converting double data to float: "+b);
12    }
13
14 }
```

<terminated> Demo (1) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (20-Jul-2023, 11:38:35 pm - 11:38:36 pm) [pid: 37332]  
double data is: 6779364.9  
Converting double data to float: 6779365.0

Error because cannot convert from **double to float**

So performed **Explicit Type Conversion**.

## double to double:

**No conversion** is **required** from **double to double** because there is no point in converting to same datatype itself.

## float to boolean:

Conversion from **double to boolean** is **not possible**.

---

## boolean data type:

**Conversion of data of any datatype to boolean is not possible.**

Finally the conclusion from the assignment is:

	char	byte	short	int	long	float	double	boolean
char	NCR	EC	EC	IC	IC	IC	IC	✗
byte	EC	NCR	IC	IC	IC	IC	IC	✗
short	EC	EC	NCR	IC	IC	IC	IC	✗
int	EC	EC	EC	NCR	IC	IC	IC	✗
long	EC	EC	EC	EC	NCR	EC	IC	✗
float	EC	EC	EC	EC	EC	NCR	IC	✗
double	EC	EC	EC	EC	EC	EC	NCR	✗
boolean	✗	✗	✗	✗	✗	✗	✗	NCR

✗ --> Not Possible  
 EC --> Explicit conversion  
 NCR --> No Conversion Required  
 IC --> Implicit Conversion

### Type conversion graph:

