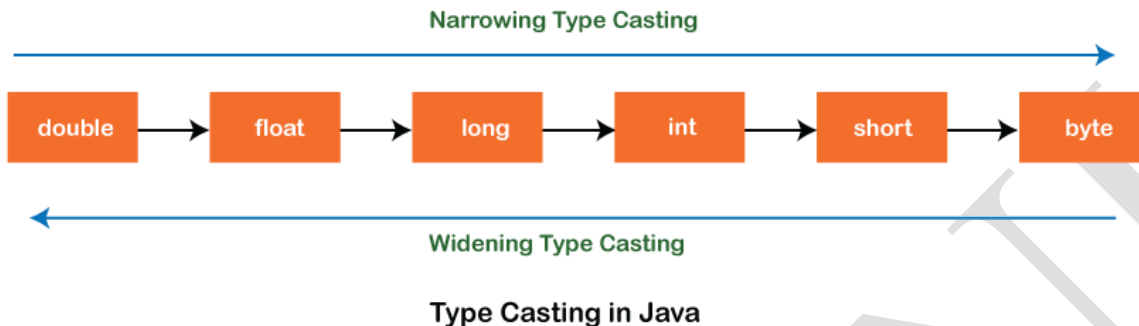# Type Casting in Java

In Java, **type casting** is a method or process that converts a data type into another data type in both ways manually and automatically. The automatic conversion is done by the compiler and manual conversion performed by the programmer.

Narrowing Type Casting

| double | → | float | → | long | → | int | → | short | → | byte |

Widening Type Casting

Type Casting in Java

Type casting

Convert a value from one data type to another data type is known as **type casting**.

Types of Type Casting

There are two types of type casting:

- o   Widening Type Casting
- o   Narrowing Type Casting

Widening Type Casting (Implicit Typecasting)

Converting a lower data type into a higher one is called **widening** type casting. It is also known as **implicit conversion** or **casting down**. It is done automatically. It is safe because there is no chance to lose data. It takes place when:

- o   Both data types must be compatible with each other.
- o   The target type must be larger than the source type.

   byte -> **short** -> **char** -> **int** -> **long** -> **float** -> **double** ->**boolean**
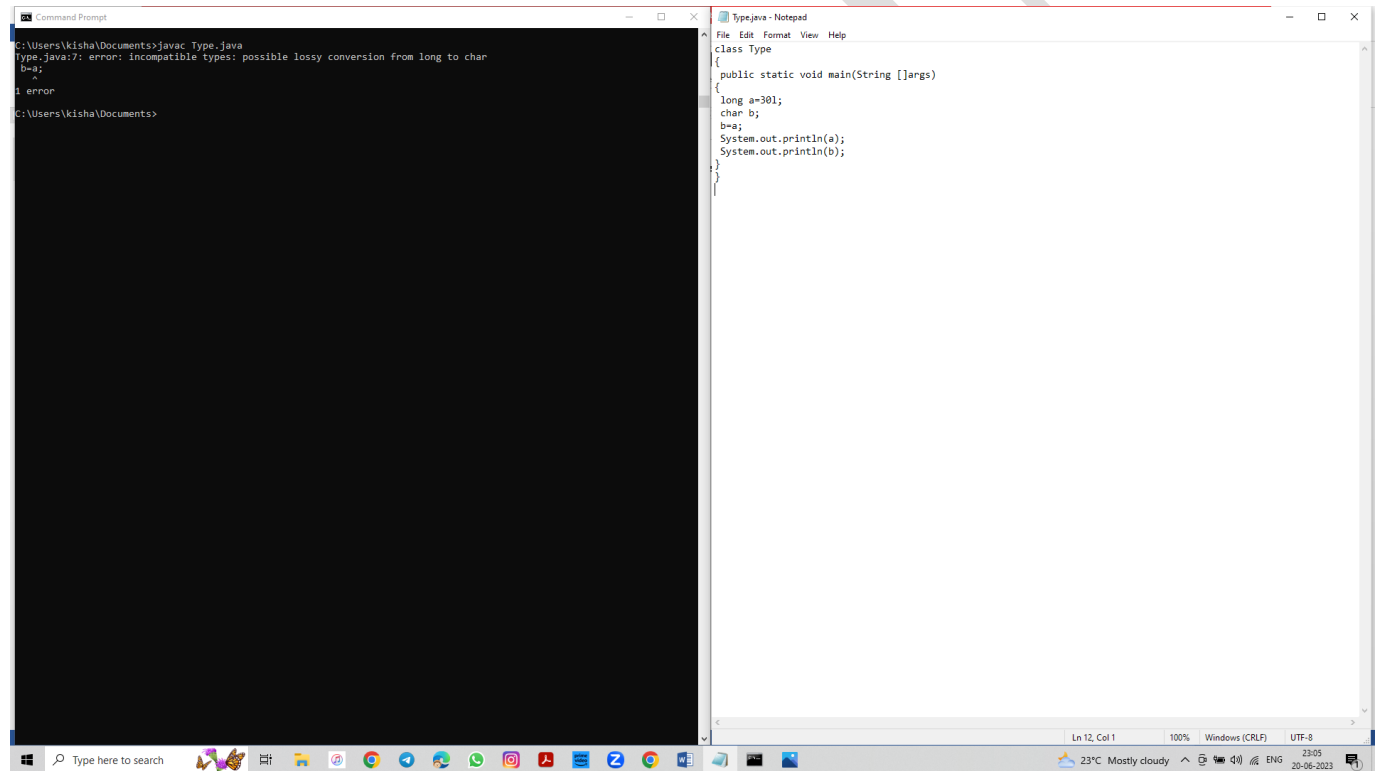
Narrowing Type Casting (Explicit Typecasting)

Converting a higher data type into a lower one is called **narrowing** type casting. It is also known as **explicit conversion** or **casting up**. It is done manually by the programmer. If we do not perform casting then the compiler reports a compile-time error.

   boolean ->double -> **float** -> **long** -> **int** -> **char** -> **short** -> **byte**

PROGRAM 1:

```
class Type
{
 public static void main(String []args)
 {
 long a=30l;
 char b;
 b=a;
 System.out.println(a);
 System.out.println(b);
 }
}
```
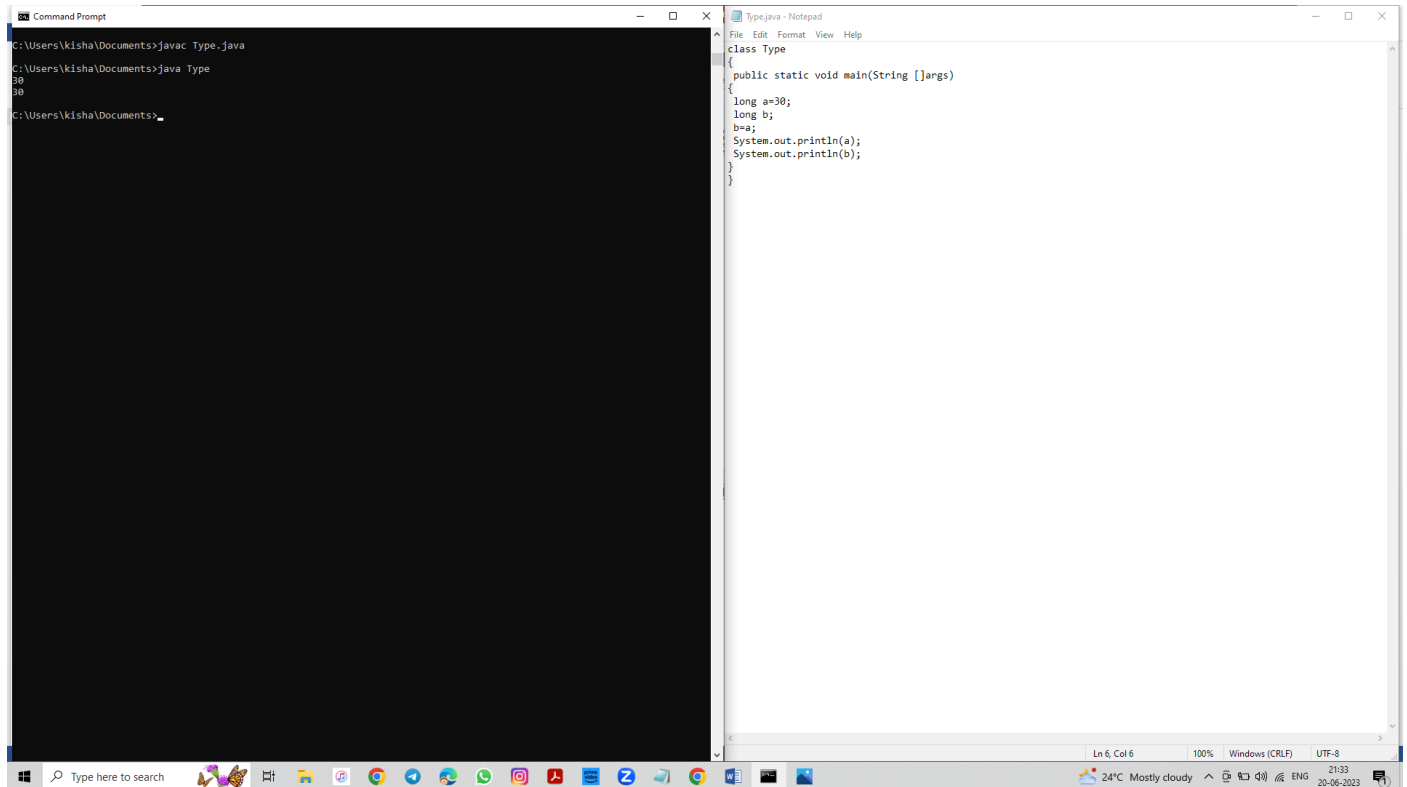

CONCLUSION: Explicit Typecasting.

PROGRAM 2

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

```java
long a=30l;

byte b;

b=a;

System.out.println(a);

System.out.println(b);

}

}
```


CONCLUSION: Explicit Typecasting.

PROGRAM 3:

```java
class Type

{

public static void main(String []args)

{

long a=30l;

short b;

b=a;

System.out.println(a);

System.out.println(b);

}
```

}

CONCLUSION: Explicit Typecasting.

PROGRAM 4:

```
class Type
{
 public static void main(String []args)
{
 long a=30l;
 int b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```
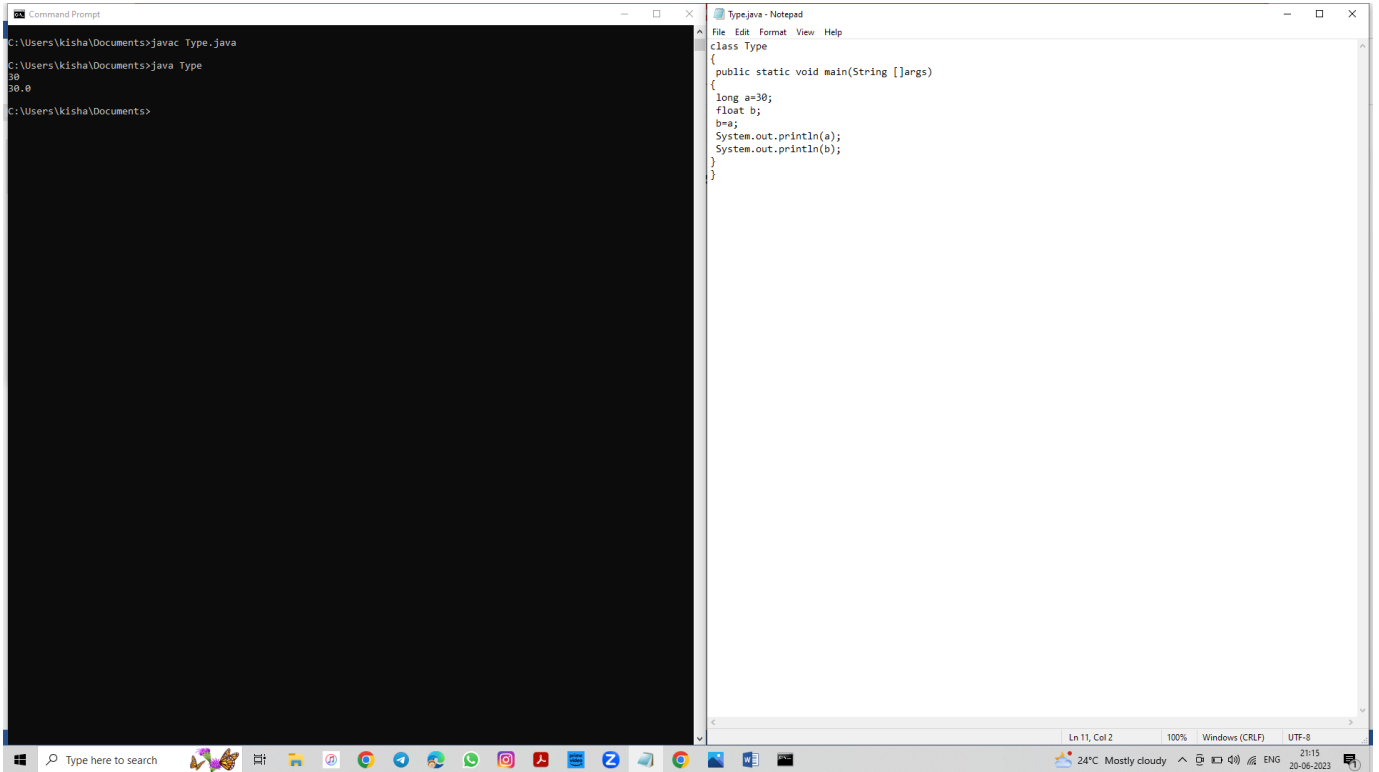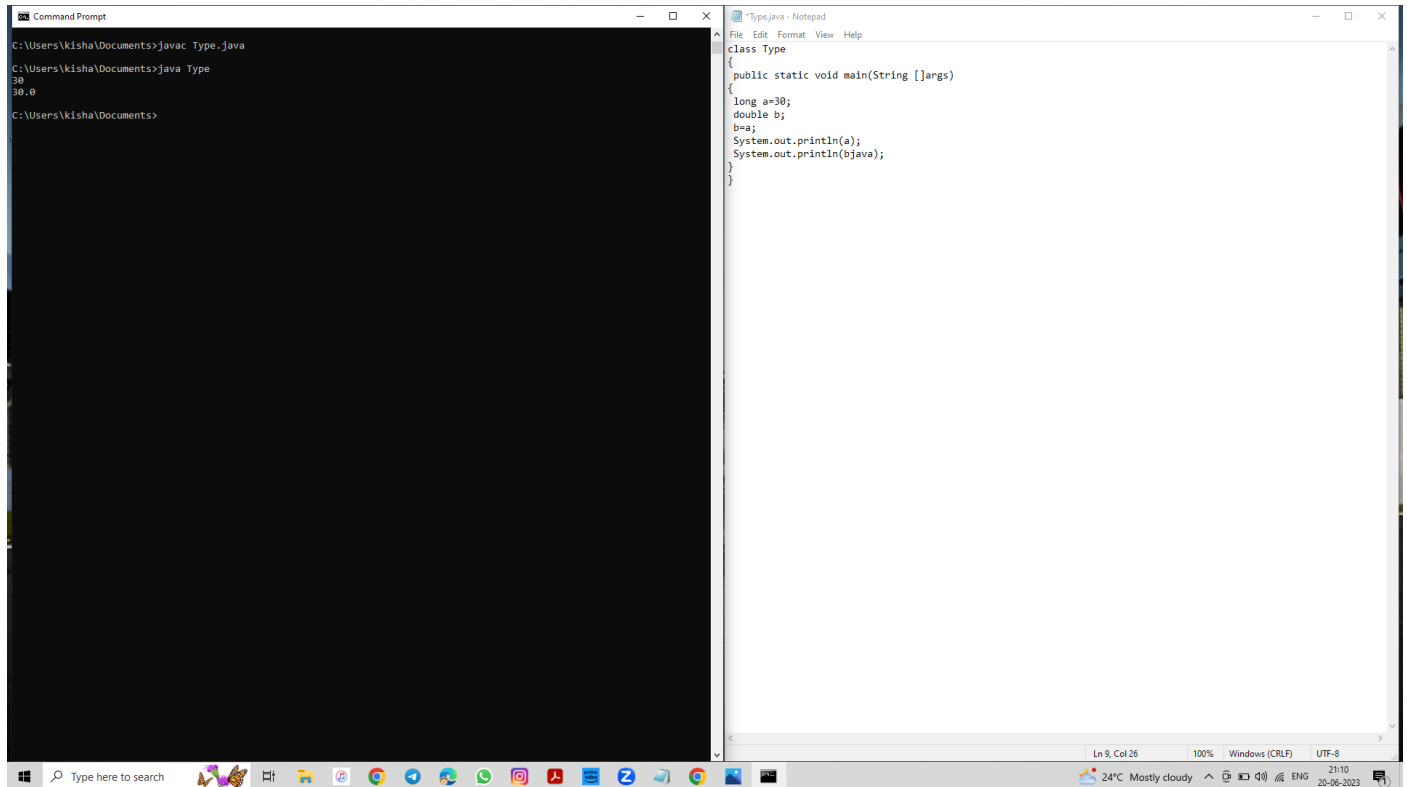
Command Prompt:
```
C:\Users\kisha\Documents>javac Type.java
Type.java:7: error: incompatible types: possible lossy conversion from long to int
 b=a;
   ^
1 error

C:\Users\kisha\Documents>
```

Type.java - Notepad:
```
class Type
{
 public static void main(String []args)
 {
 long a=30l;
 int b;
 b=a;
 System.out.println(a);
 System.out.println(b);
 }
}
```

CONCLUSION: Explicit Typecasting.

PROGRAM 5:

```
class Type

{

 public static void main(String []args)

 {

 long a=30;

 long b;

 b=a;

 System.out.println(a);

 System.out.println(b);

 }

 }
```
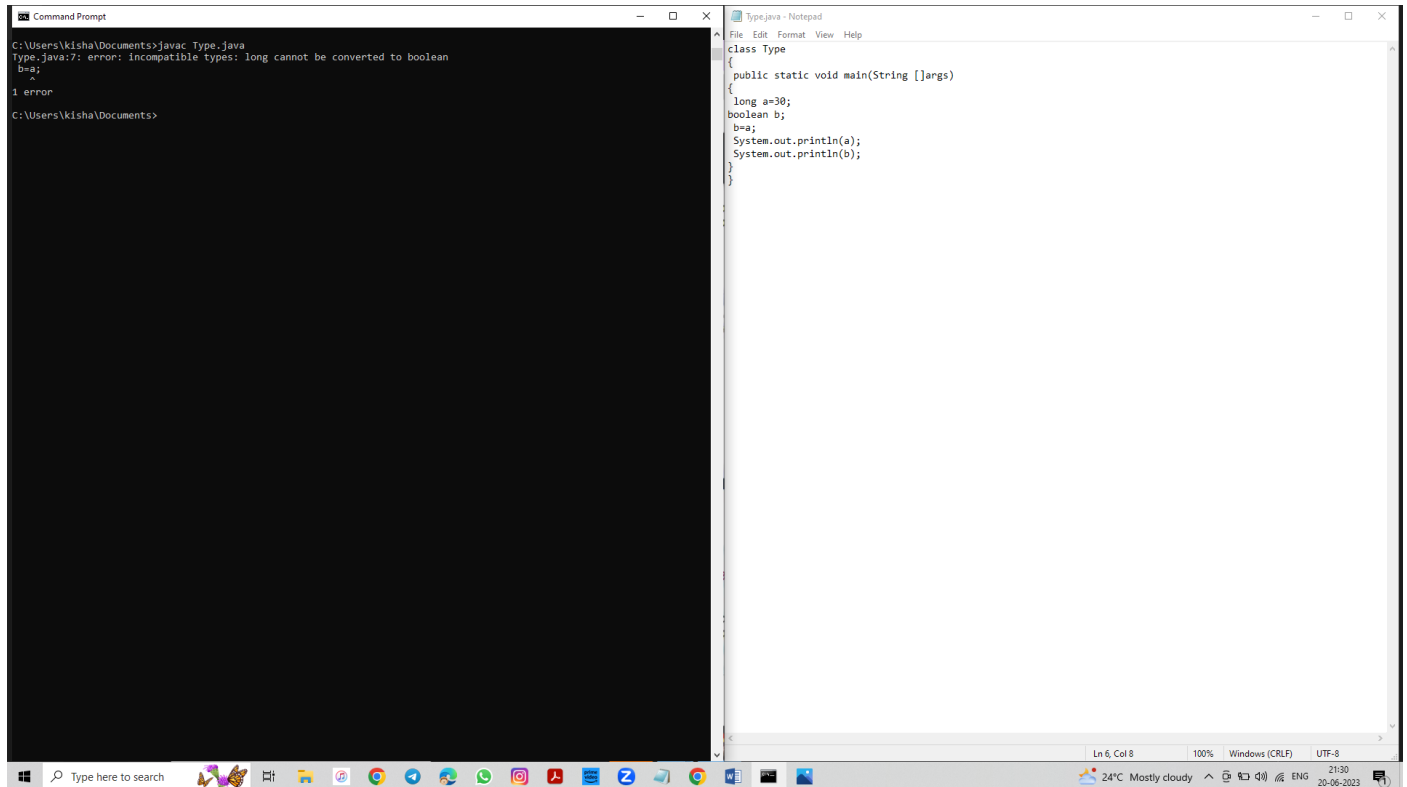
CONCLUSION: Implicit Typecasting.

PROGRAM 6:

```
class Type
{
 public static void main(String []args)
{
 long a=30;
 float b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```

CONCLUSION: Implicit Typecasting.

PROGRAM 7:

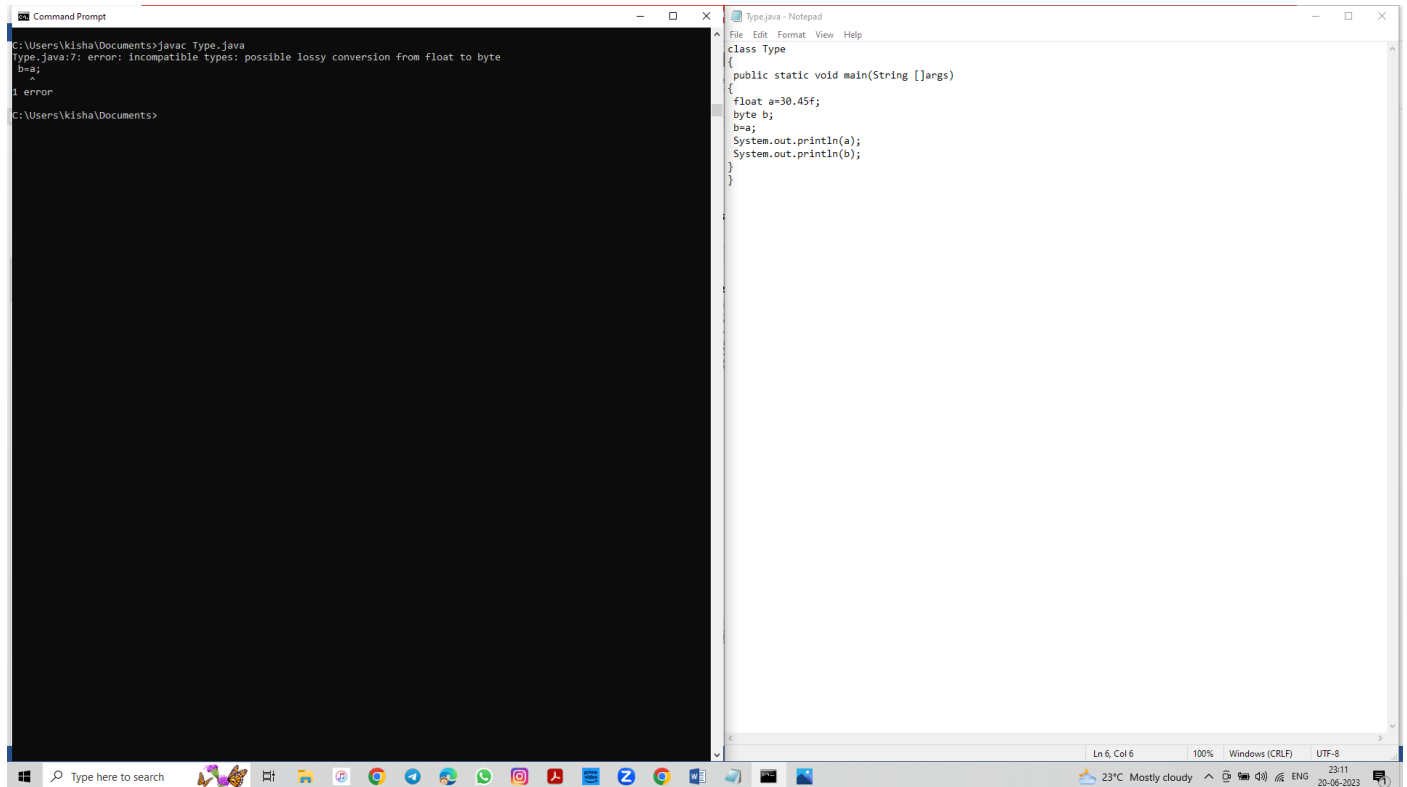```java
class Type
{
 public static void main(String []args)
{
 long a=30;
double b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```

**CONCLUSION:** Implicit Typecasting.

PROGRAM 8:

```
class Type
{
 public static void main(String []args)
{
 long a=30l;
boolean b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```
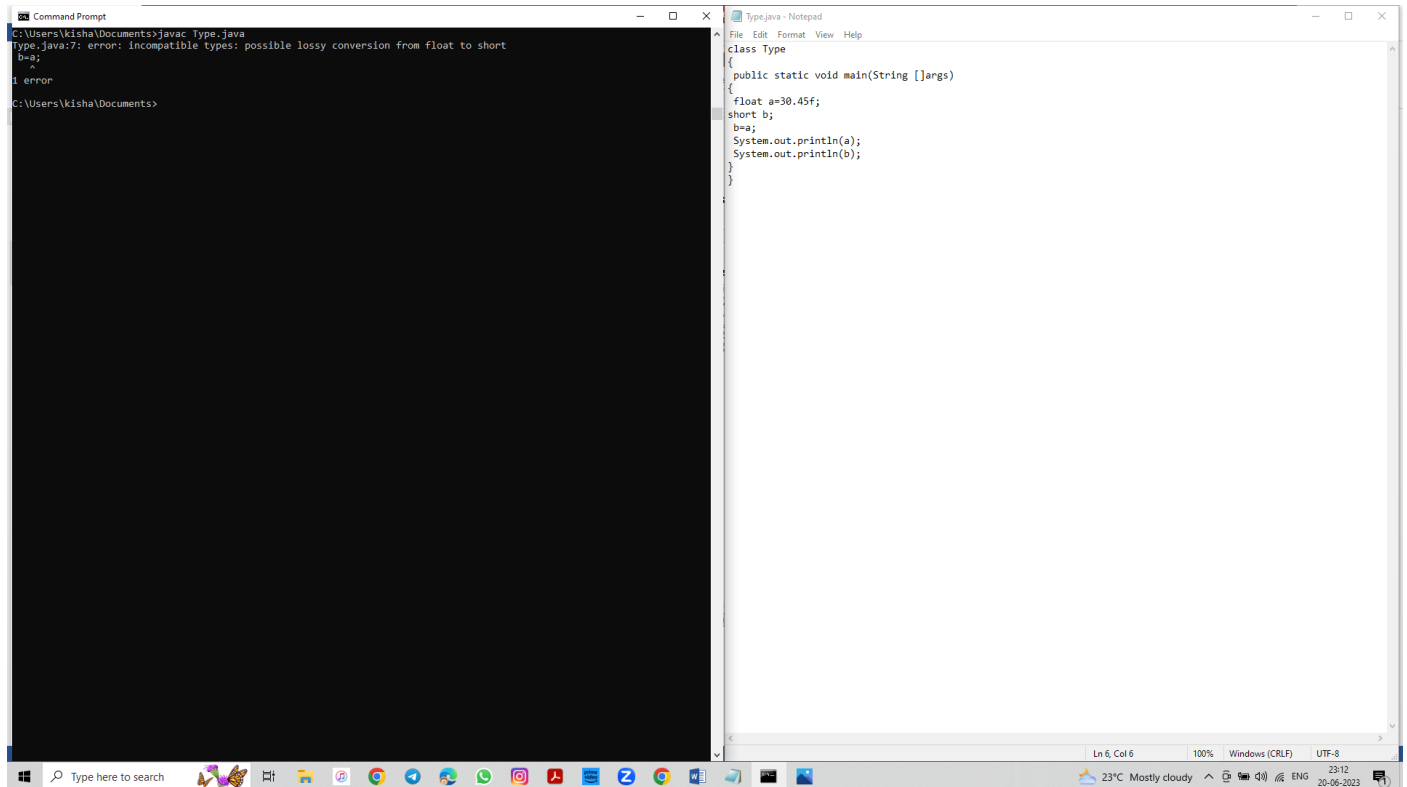
```
Command Prompt
C:\Users\kisha\Documents>javac Type.java
Type.java:7: error: incompatible types: long cannot be converted to boolean
 b=a;
   ^
1 error

C:\Users\kisha\Documents>
```

```
Type.java - Notepad
File Edit Format View Help
class Type
{
 public static void main(String []args)
{
 long a=30;
boolean b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```

CONCLUSION: Explicit Typecasting.

PROGRAM 9:

class Type

{

 public static void main(String []args)

{

 float a=30.45f;

 char b;

 b=a;

 System.out.println(a);

 System.out.println(b);

}

}

CONCLUSION: Explicit Typecasting.

PROGRAM 10:

```
class Type
{
 public static void main(String []args)
{
 float a=30.45f;
 byte b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```

CONCLUSION: Explicit Typecasting.

PROGRAM 11:

```
class Type
{
 public static void main(String []args)
{
 float a=30.45f;
short b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```
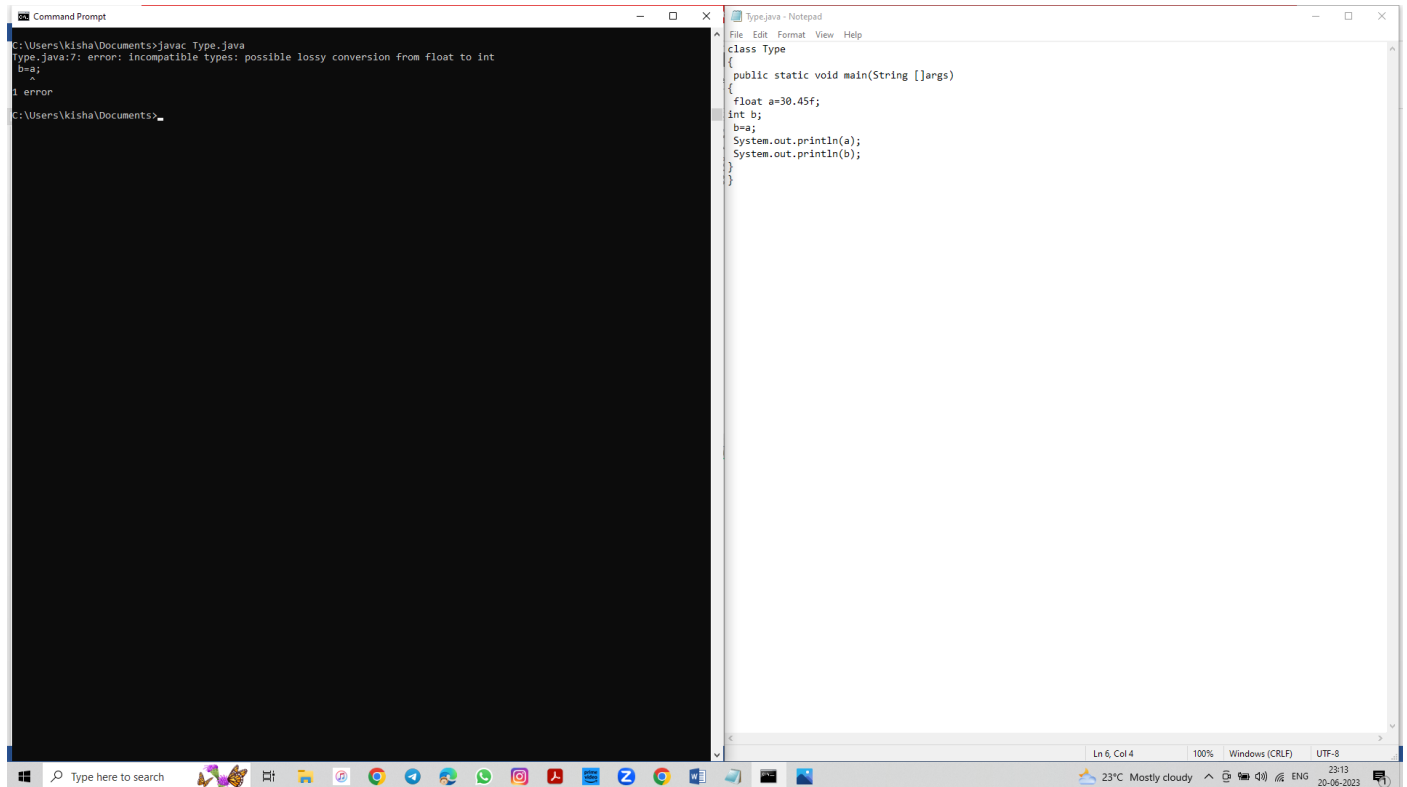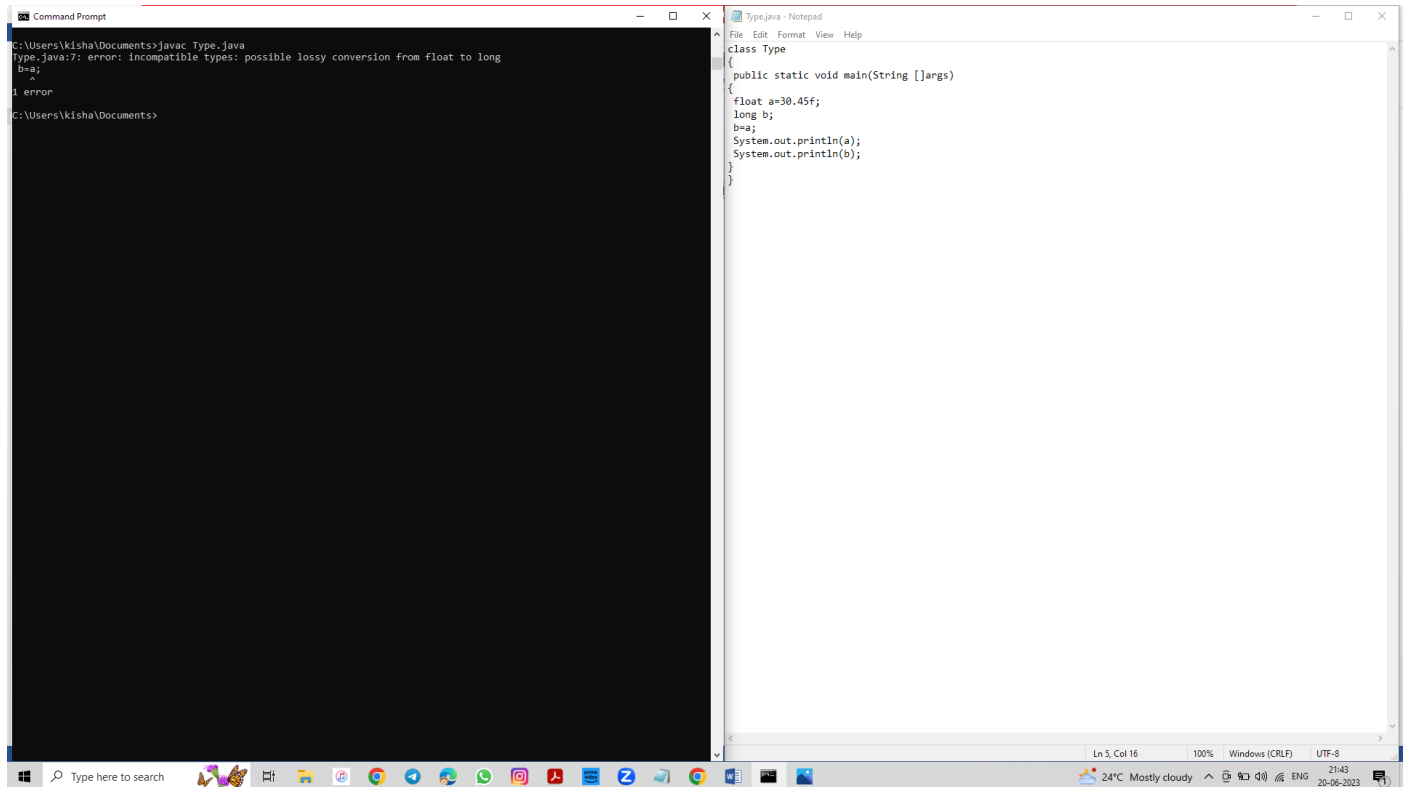
CONCLUSION: Explicit Typecasting.

PROGRAM 12:

```java
class Type
{
 public static void main(String []args)
{
 float a=30.45f;
int b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```
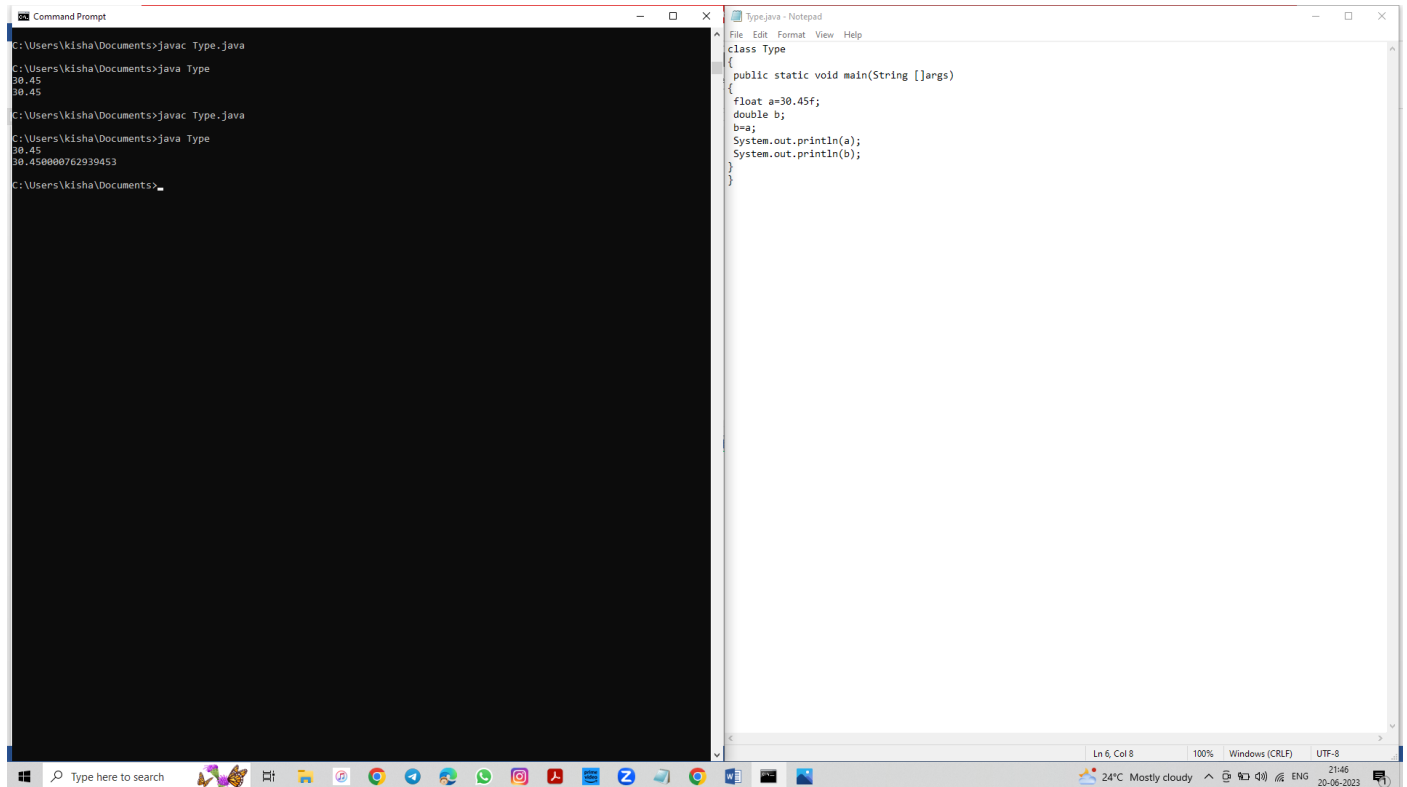
CONCLUSION: Explicit Typecasting.

PROGRAM 13:

```java
class Type
{
 public static void main(String []args)
 {
 float a=30.45f;
 long b;
 b=a;
 System.out.println(a);
 System.out.println(b);
 }
 }
```

CONCLUSION: Explicit Typecasting.

PROGRAM 14:

```java
class Type
{
 public static void main(String []args)
{
 float a=30.45f;
 float b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```

CONCLUSION: Implicit Typecasting.

PROGRAM 15:
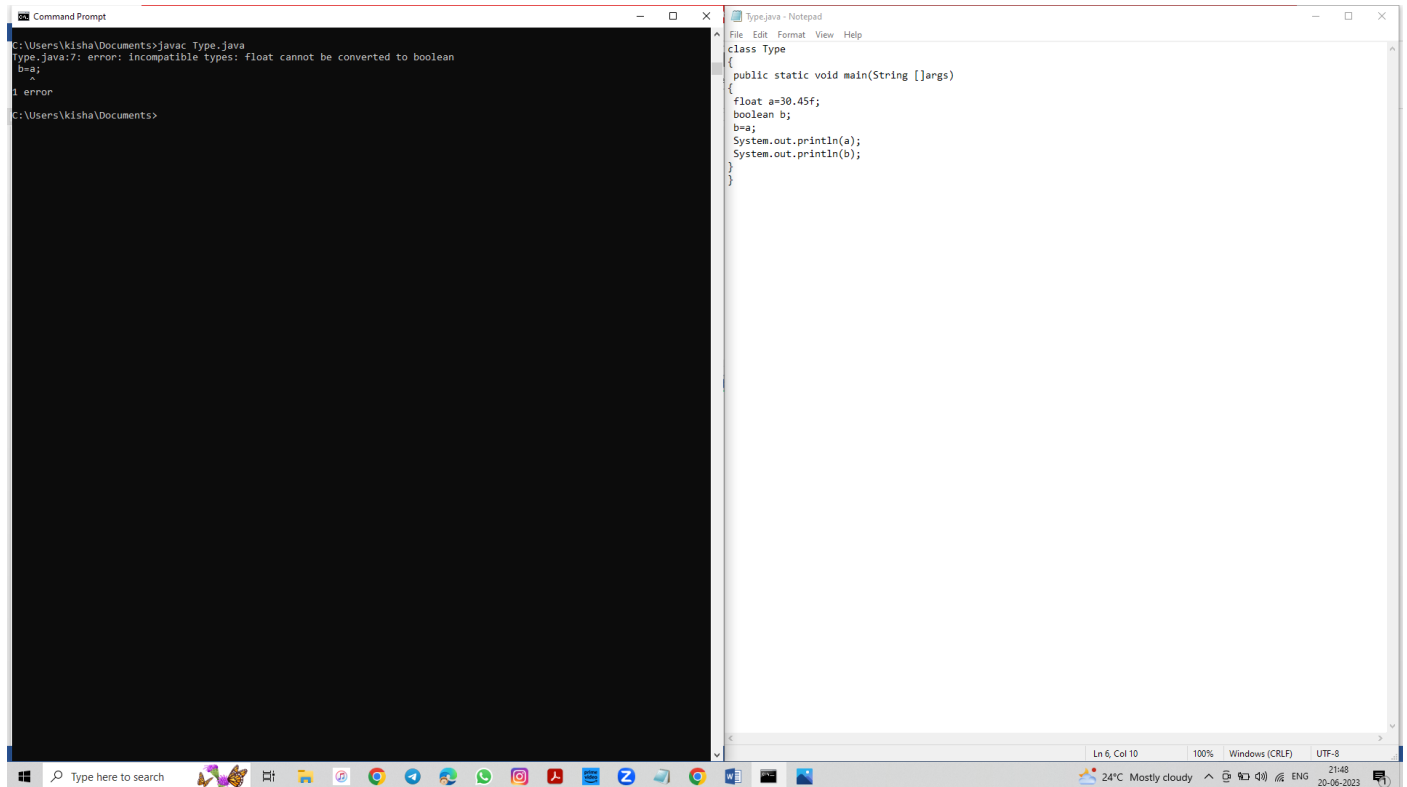
```
class Type
{
 public static void main(String []args)
{
float a=30.45f;
double b;
b=a;
System.out.println(a);
System.out.println(b);
}
}
```

```
C:\Users\kisha\Documents>javac Type.java

C:\Users\kisha\Documents>java Type
30.45
30.45

C:\Users\kisha\Documents>javac Type.java

C:\Users\kisha\Documents>java Type
30.45
30.450000762939453

C:\Users\kisha\Documents>
```

Type.java - Notepad
File Edit Format View Help

```
class Type
{
 public static void main(String []args)
 {
  float a=30.45f;
  double b;
  b=a;
  System.out.println(a);
  System.out.println(b);
 }
}
```

CONCLUSION: Implicit Typecasting.

PROGRAM 16:

```
class Type

{

 public static void main(String []args)

 {

 float a=30.45f;

 boolean b;

 b=a;

 System.out.println(a);

 System.out.println(b);

 }

 }
```

CONCLUSION: Explicit Typecasting.

PROGRAM 17:

```
class Type
{
 public static void main(String []args)
 {
 double a=30565.909999;
 char b;
 b=a;
 System.out.println(a);
 System.out.println(b);
 }
}
```

CONCLUSION: Explicit Typecasting.

PROGRAM 18:

```
class Type
{
 public static void main(String []args)
{
 double a=30565.909999;
 byte b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```

CONCLUSION: Explicit Typecasting.

PROGRAM 19:

```java
class Type
{
 public static void main(String []args)
 {
 double a=30565.909999;
 short b;
 b=a;
 System.out.println(a);
 System.out.println(b);
 }
}
```

CONCLUSION: Explicit Typecasting.

PROGRAM 20:

class Type

{

 public static void main(String []args)

{

 double a=30565.909999;

 int b;

 b=a;

 System.out.println(a);

 System.out.println(b);

}

}

CONCLUSION: Explicit Typecasting.

PROGRAM 21:

```java
class Type
{
 public static void main(String []args)
{
 double a=30565.909999;
 long b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```
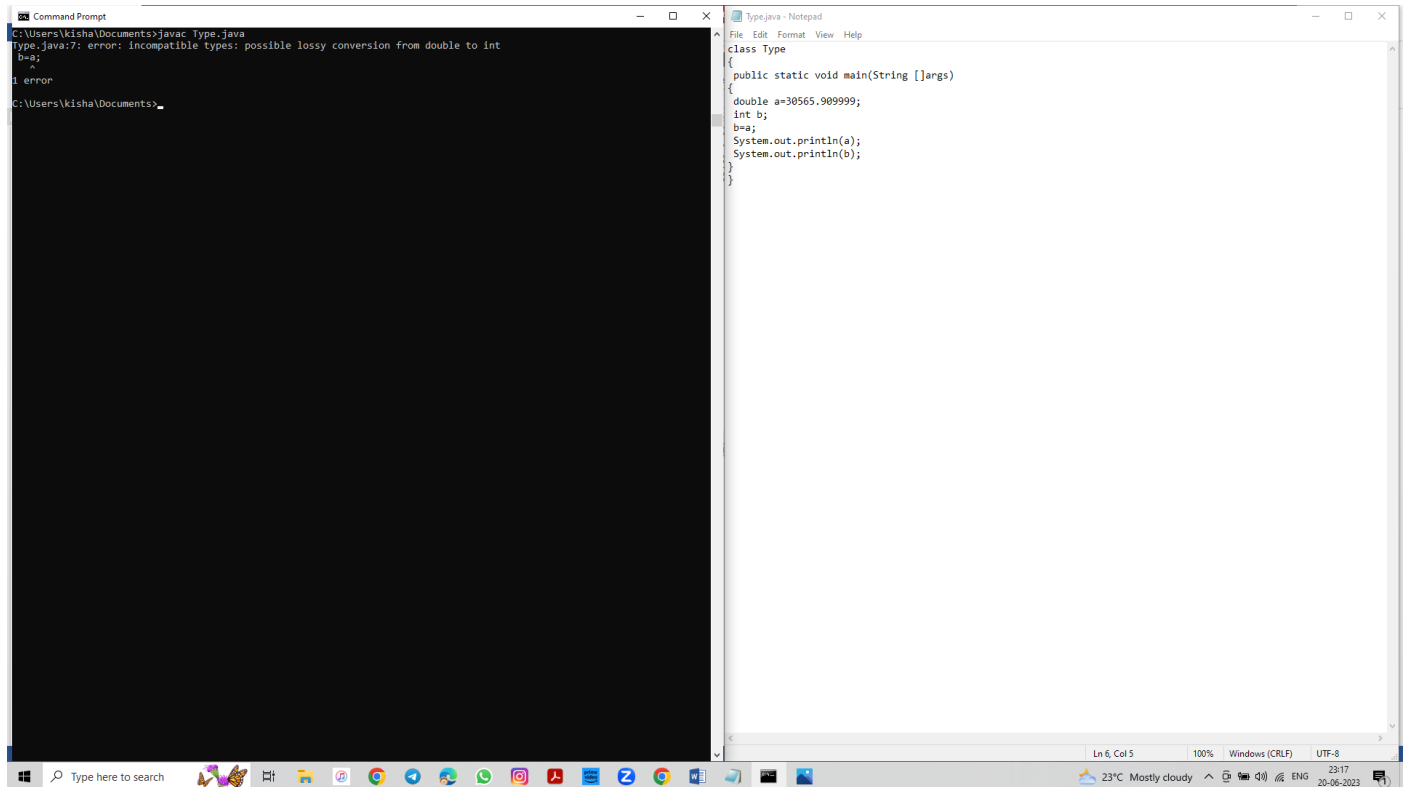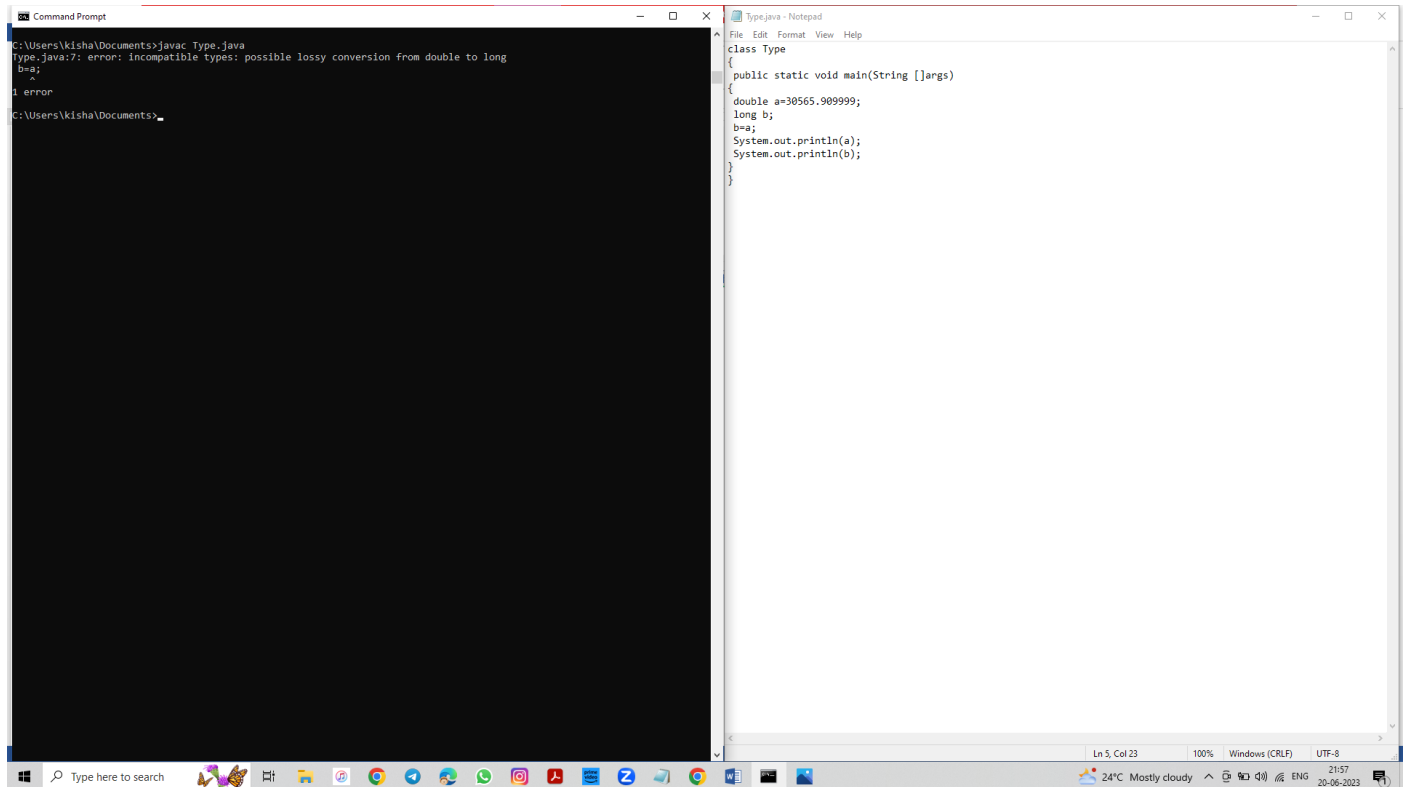
CONCLUSION: Explicit Typecasting.

PROGRAM 22:

```java
class Type
{
 public static void main(String []args)
 {
 double a=30565.909999;
 float b;
 b=a;
 System.out.println(a);
 System.out.println(b);
 }
}
```

CONCLUSION: Explicit Typecasting.

PROGRAM 23 :

```
class Type
{
 public static void main(String []args)
{
 double a=30565.909999;
 double b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```
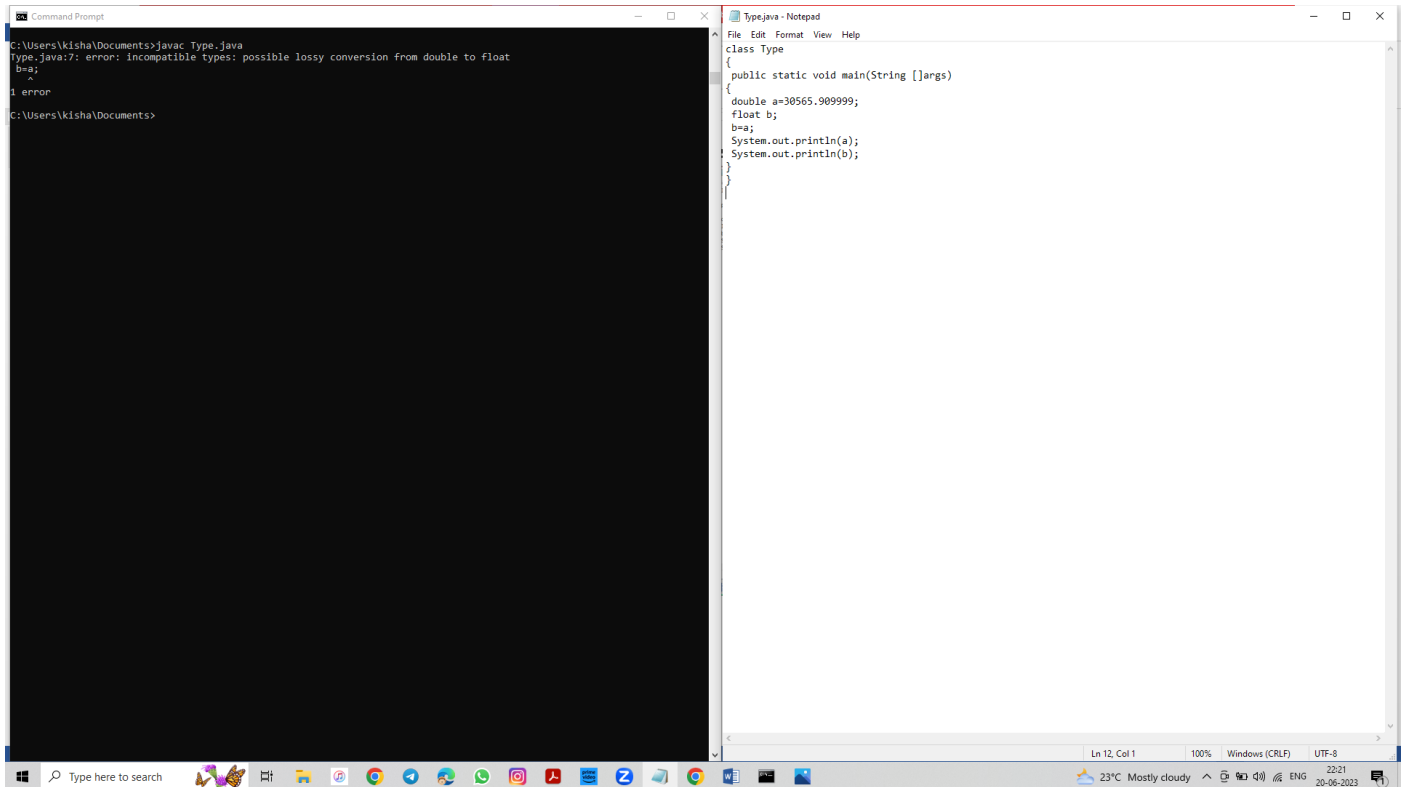
CONCLUSION: Implicit Typecasting.

PROGRAM 24:

```
class Type
{
 public static void main(String []args)
{
 double a=30565.909999;
 boolean b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
```
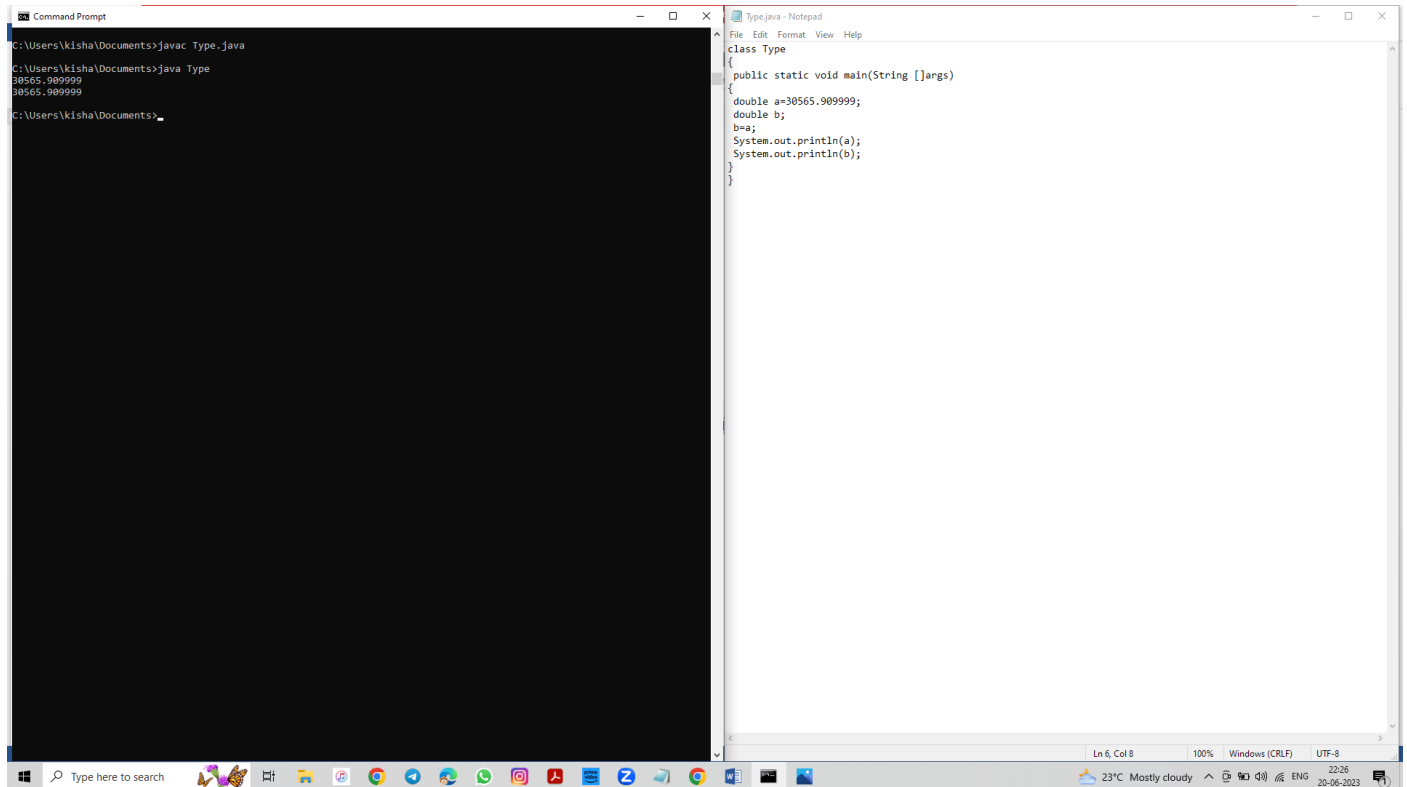
}

CONCLUSION: Explicit Typecasting.

PROGRAM 25:

class Type

{

 public static void main(String []args)

{

 boolean a=true;

 char b;

 b=a;

 System.out.println(a);

 System.out.println(b);

}

}

CONCLUSION: Explicit Typecasting.

PROGRAM 26:

```
class Type{
public static void main(String []args)
{
 boolean a=true;
 byte b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```
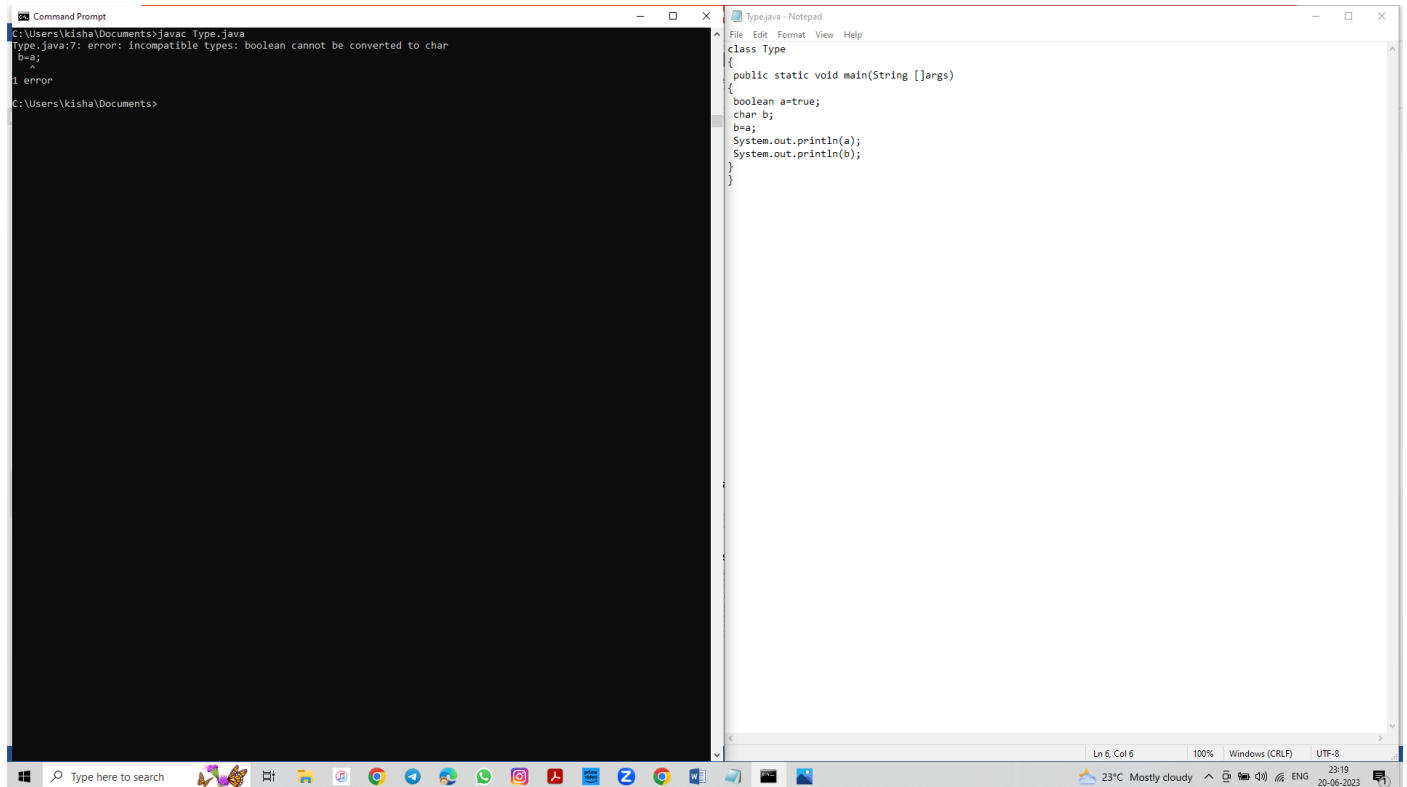
Command Prompt

```
C:\Users\kisha\Documents>javac Type.java
Type.java:7: error: incompatible types: boolean cannot be converted to byte
b=a;
  ^
1 error

C:\Users\kisha\Documents>
```

Type.java - Notepad

File Edit Format View Help

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

Ln 6, Col 6   100%   Windows (CRLF)   UTF-8

CONCLUSION: Explicit Typecasting.

PROGRAM 27:

class Type

{

 public static void main(String []args)

{

 boolean a=true;

 short b;

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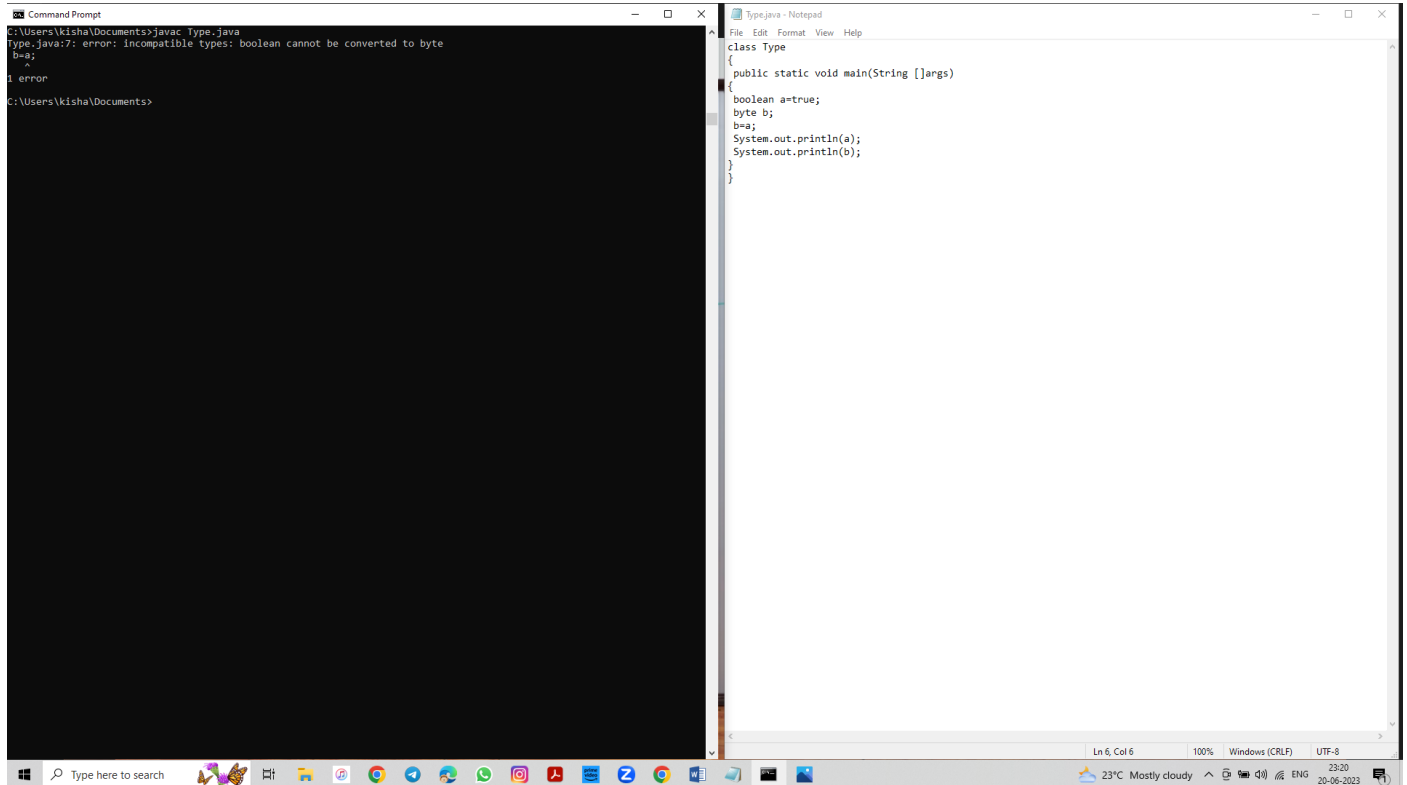
 System.out.println(a);

 System.out.println(b);

}

```
}
```



```
C:\Users\kisha\Documents>javac Type.java
Type.java:7: error: incompatible types: boolean cannot be converted to short
b=a;
  ^
1 error

C:\Users\kisha\Documents>
```
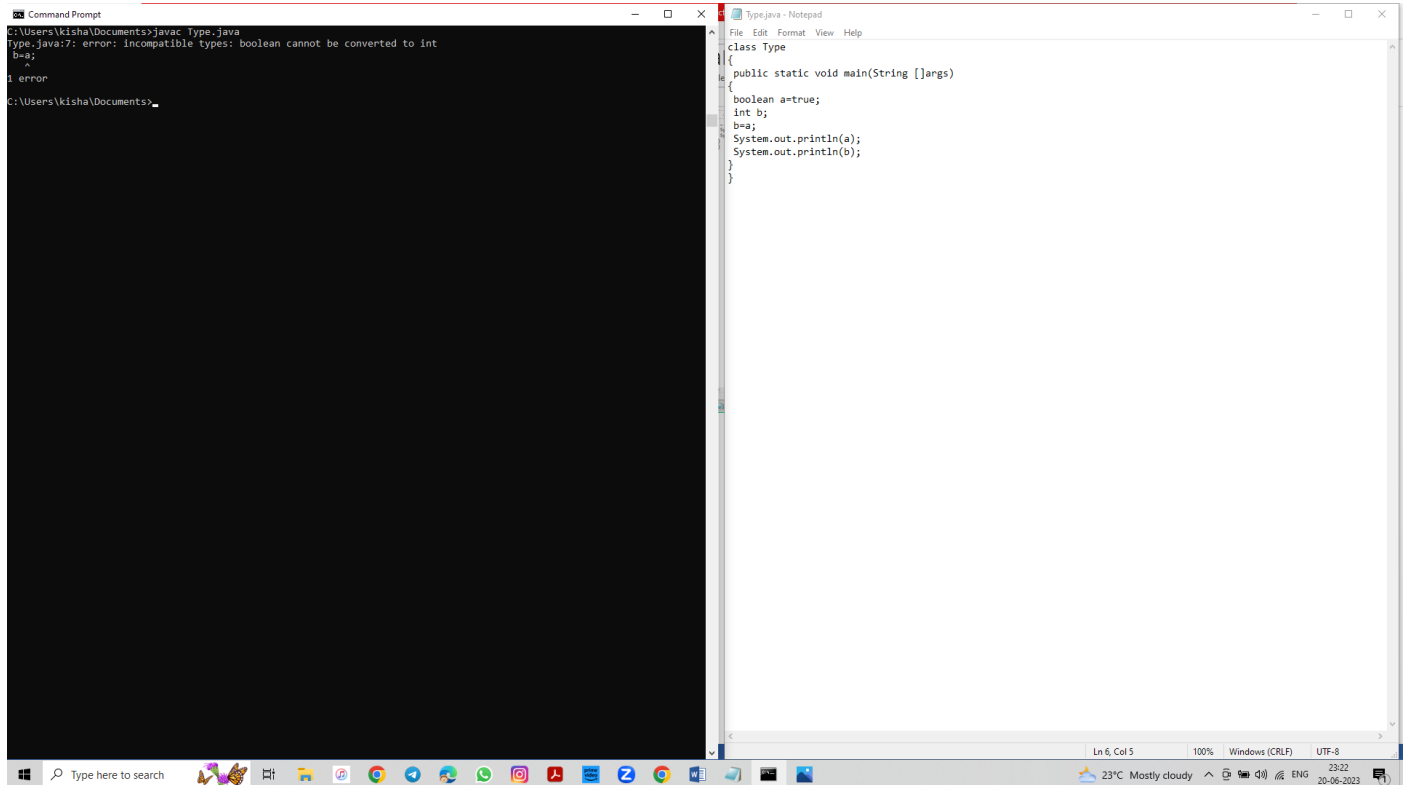
```
class Type
{
 public static void main(String []args)
 {
  boolean a=true;
  short b;
  b=a;
  System.out.println(a);
  System.out.println(b);
 }
}
```

CONCLUSION: Explicit Typecasting.

PROGRAM 28:

class Type

{

 public static void main(String []args)

{

 boolean a=true;

 int b;

 b=a;

 System.out.println(a);

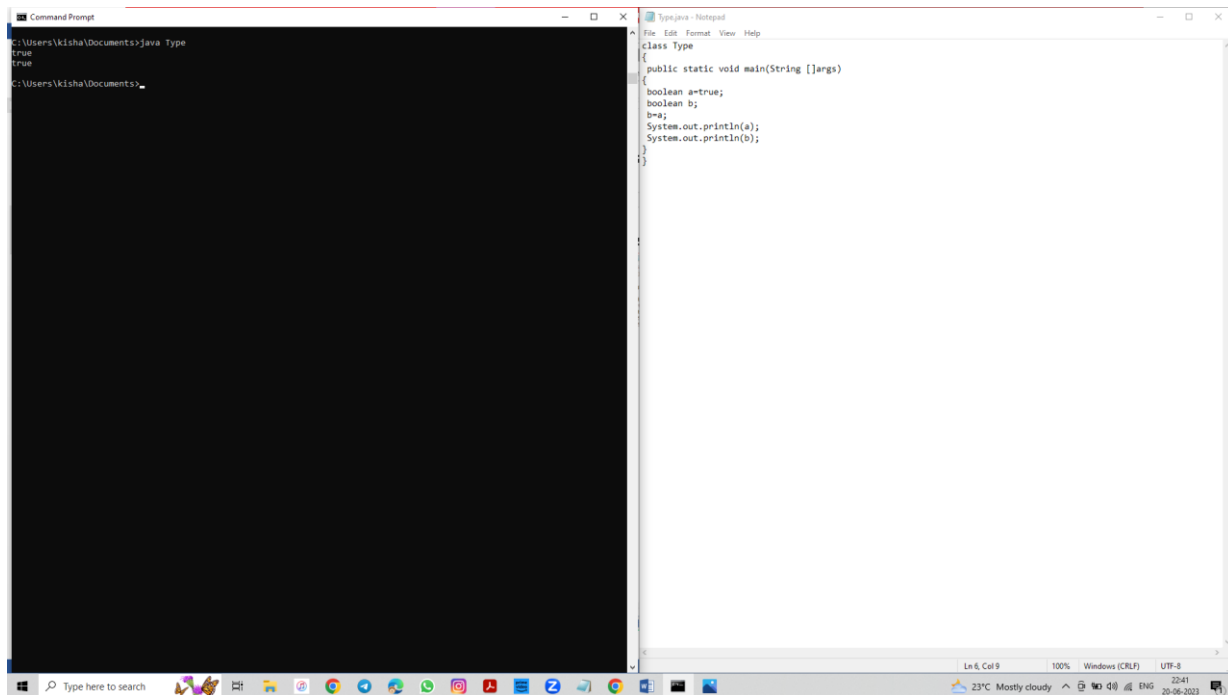 System.out.println(b);

 }

 }

CONCLUSION: Explicit Typecasting.

PROGRAM 29:

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

Implicit Typecasting.

Implicit Typecasting.

CONCLUSION: Implicit Typecasting.

PROGRAM 30:

```
class Type
{
 public static void main(String []args)
{
 boolean a=true;
 long b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
```

}
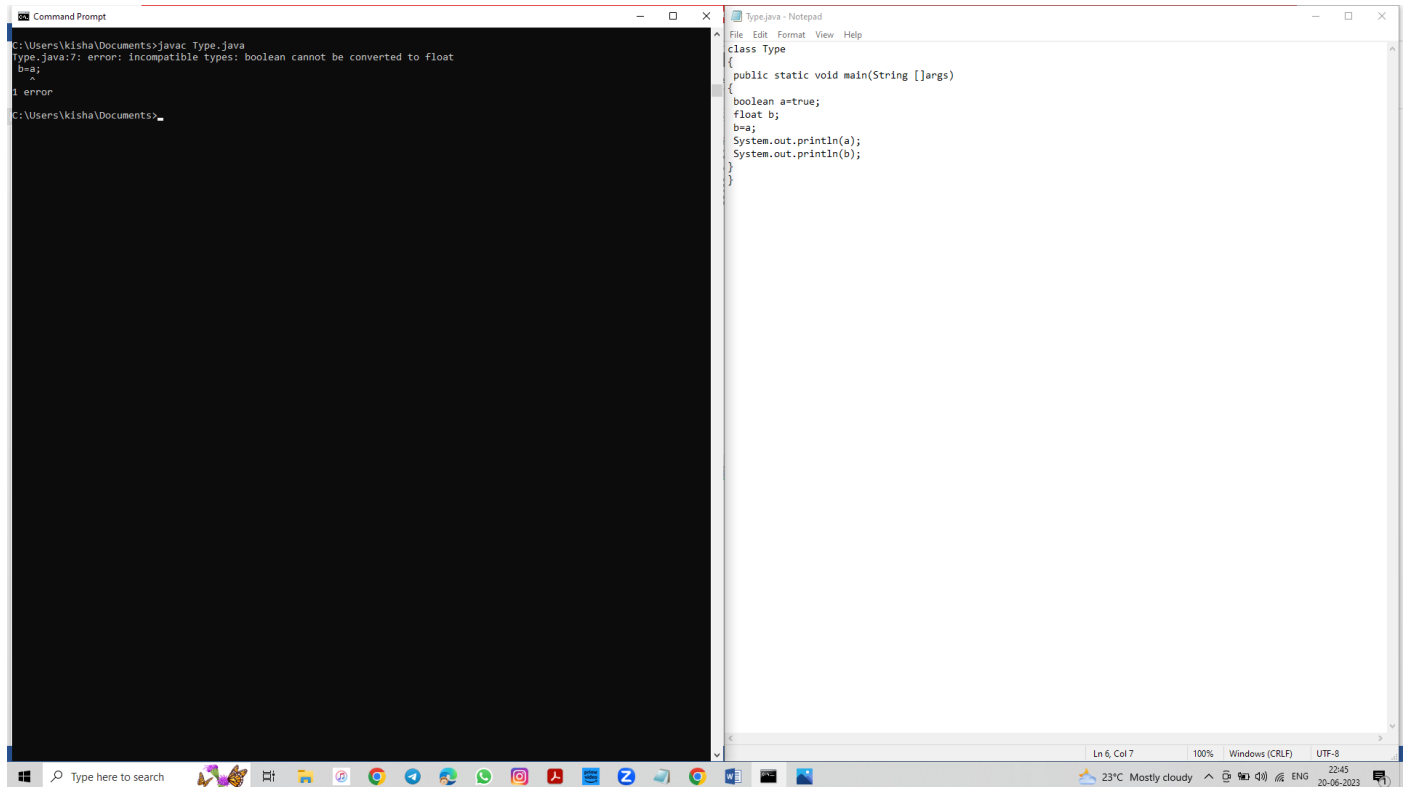

CONCLUSION: Explicit Typecasting.

PROGRAM 31:

```java
class Type
{
 public static void main(String []args)
{
 boolean a=true;
 float b;
 b=a;
 System.out.println(a);
 System.out.println(b);
}
}
```
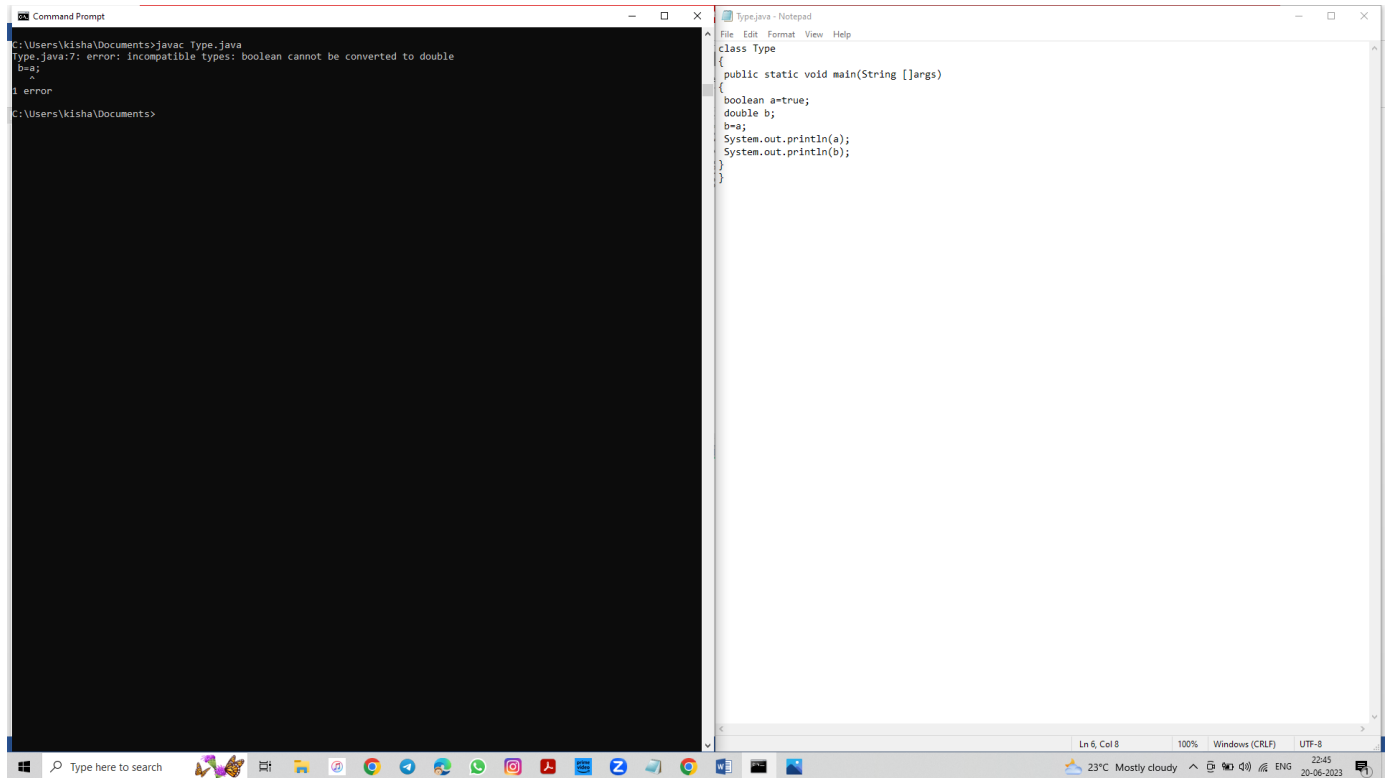
Command Prompt

```
C:\Users\kisha\Documents>javac Type.java
Type.java:7: error: incompatible types: boolean cannot be converted to float
b=a;
  ^
1 error

C:\Users\kisha\Documents>
```

Type.java - Notepad

File Edit Format View Help

```
class Type
{
 public static void main(String []args)
 {
 boolean a=true;
  float b;
  b=a;
  System.out.println(a);
  System.out.println(b);
 }
}
```

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CONCLUSION: Explicit Typecasting.

PROGRAM 32:

class Type

{

 public static void main(String []args)

{

 boolean a=true;

 double b;

 b=a;

 System.out.println(a);

 System.out.println(b);

}

}

Command Prompt:

```
C:\Users\kisha\Documents>javac Type.java
Type.java:7: error: incompatible types: boolean cannot be converted to double
  b=a;
    ^
1 error

C:\Users\kisha\Documents>
```

Type.java - Notepad:

```java
class Type
{
  public static void main(String []args)
  {
  boolean a=true;
  double b;
  b=a;
  System.out.println(a);
  System.out.println(b);
  }
}
```

CONCLUSION: Explicit Typecasting.