More on Java I/O

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Byte Input/OutputStreams vs. Char Reader/Writers

OutputStream

- ByteArrayOutputStream
- FileOutputStream
- FilterOutputStream
  - BufferedOutputStream
  - PrintStream

Writer

- CharArrayWriter
- FilterWriter (abstract)
- BufferedWriter
- OutputStreamWriter
  - FileWriter
- PrintWriter

InputStream

- ByteArrayInputStream
- FileInputStream
- FilterInputStream
  - BufferedInputStream

Reader

- CharArrayReader
- FilterReader (abstract)
- BufferedReader
- InputStreamReader
  - FileReader

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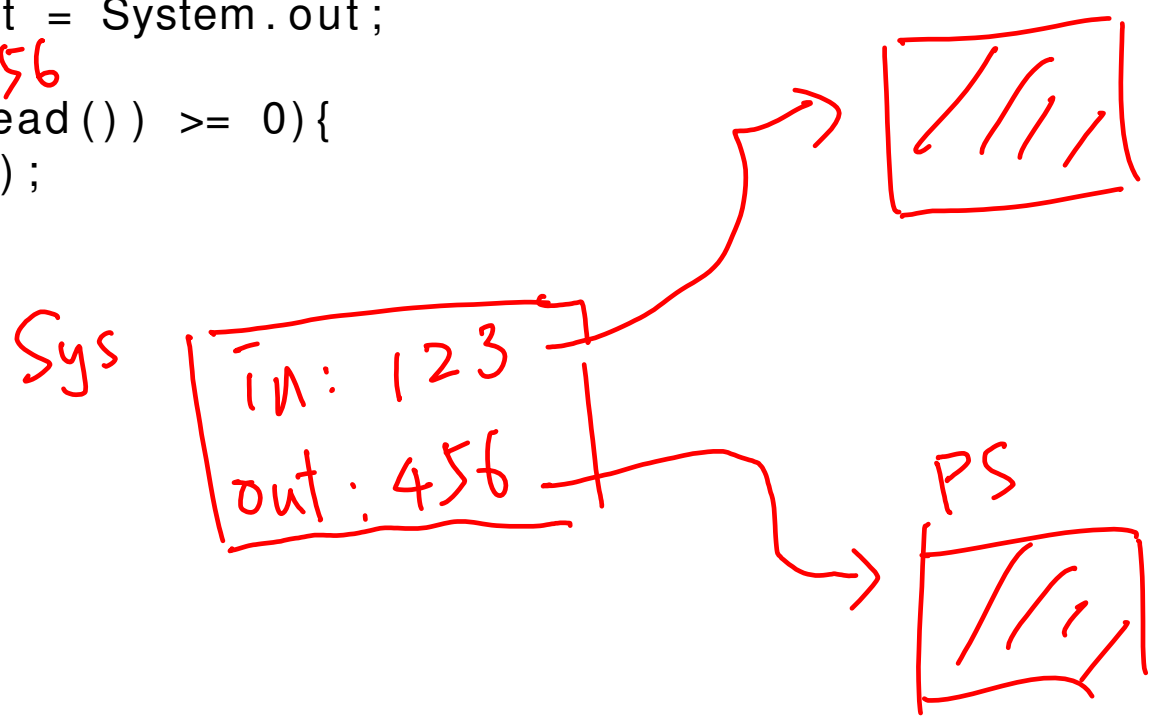
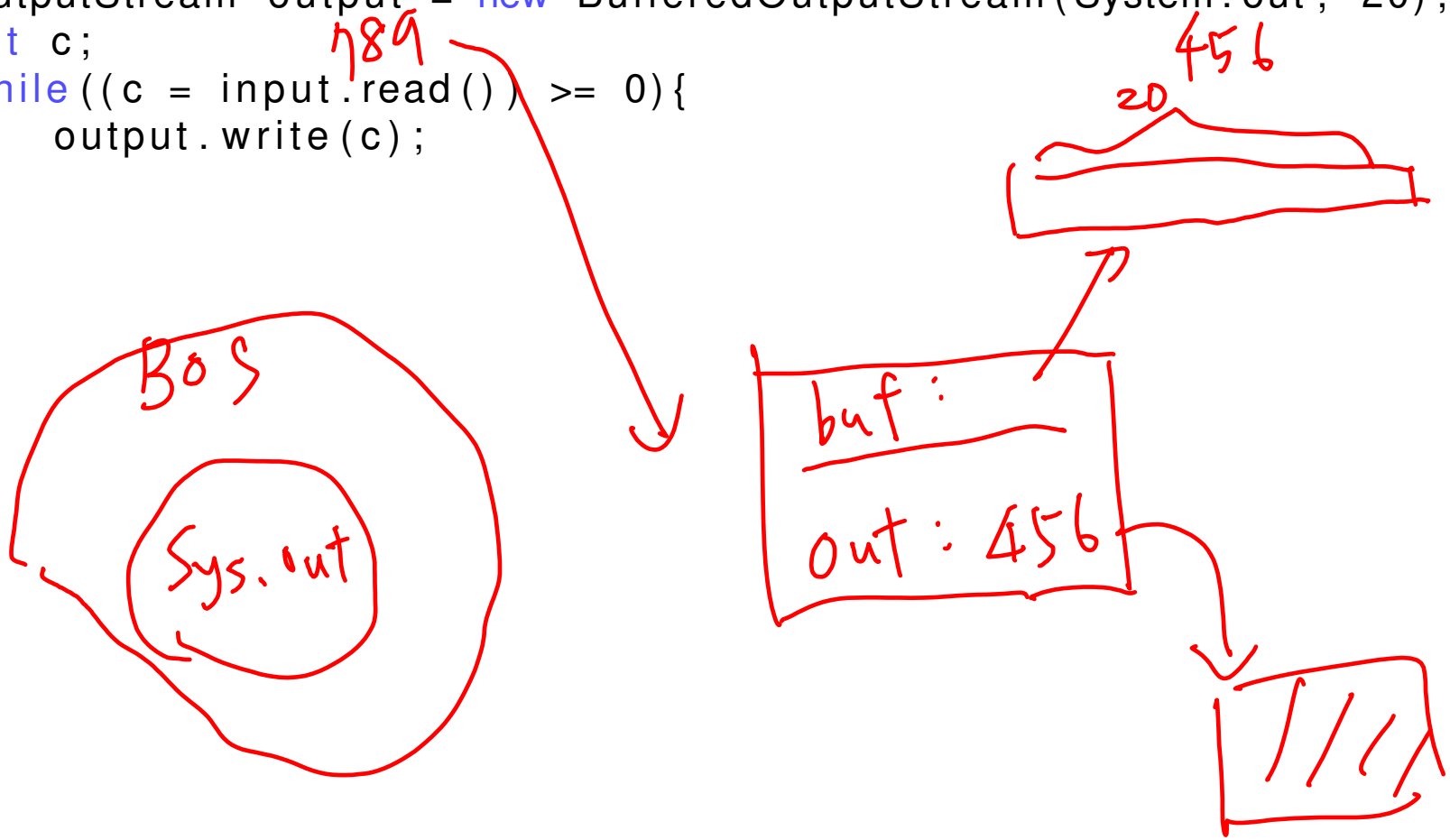
```java
import java.net.*;
import java.io.*;
import java.util.zip.*;

public class JavaIO{

    /* input from System.in
       echo the output to System.out
    */
    public static void demo1() throws IOException{
        InputStream input = System.in;
        OutputStream output = System.out;
        int c;
        while((c = input.read()) >= 0){
            output.write(c);
        }
    }
```



```java
/* input from System.in
   buffer the output and send it to System.out
*/
public static void demo2() throws IOException{
    InputStream input = System.in;
    OutputStream output = new BufferedOutputStream(System.out, 20);
    int c;
    while((c = input.read()) >= 0){
        output.write(c);
    }
}
```

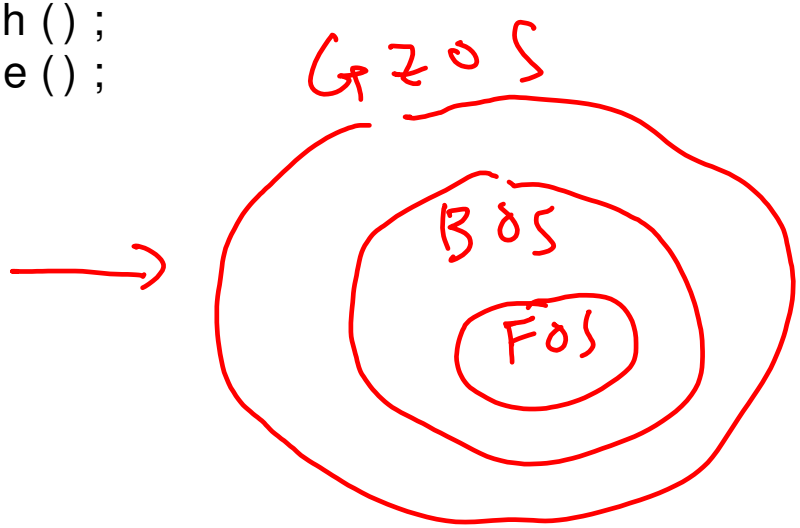


```
/* input from System.in
   buffer the output and send it to a file
*/
public static void demo3() throws IOException{
    InputStream input = System.in;
    OutputStream output =
        new BufferedOutputStream(new FileOutputStream("echo.out"),
            20);
    int c;
    while((c = input.read()) >= 0){
        output.write(c);
        System.out.write(c);
    }
}
```

```java
/* input from System.in
   print the raw ASCII code in integer, buffer the output, and
       send it to a file
*/
public static void demo4() throws IOException{
    InputStream input = System.in;
    OutputStream output =
        new PrintStream(
            new BufferedOutputStream(new
                FileOutputStream("echo.out"), 20));
    int c;
    while((c = input.read()) >= 0){
        ((PrintStream)output).print(c);
        System.out.print(c);
    }
}
```

'9' '0'

```java
/* input from System.in
   zip it, buffer the output and send the result to a file
*/
public static void demo5() throws IOException{
    InputStream input = System.in;
    OutputStream output =
        new GZIPOutputStream(
            new BufferedOutputStream(new
                FileOutputStream("echo.gz"), 20));
    int c;
    while((c = input.read()) >= 0){
        output.write(c);
        System.out.write(c);
    }
    output.flush();
    output.close();
}
```



```java
/* input from a telnet socket
   output to System.out
*/
public static void demo6() throws IOException{
    String hostname = "ptt2.cc";
    int port = 23;
    Socket connectionSock = new Socket(hostname, port);

    InputStream input = connectionSock.getInputStream();
    OutputStream output = System.out;

    int c;
    while((c = input.read()) >= 0){
        output.write(c);
    }
}
```

```java
/* input from a BIG5-char-based wrap of telnet socket
   output to a UTF8-char-based wrap of System.out
*/
public static void demo7() throws IOException{
    String hostname = "ptt2.cc";
    int port = 23;
    Socket connectionSock = new Socket(hostname, port);

    Reader input = new InputStreamReader(
      connectionSock.getInputStream(), "BIG5");
    Writer output = new OutputStreamWriter(System.out);

    int c;
    while((c = input.read()) >= 0){
        output.write(c);
        output.flush();
    }
}
```

```
    /* output (the representation of) an instance to a ByteArray
       input from the same ByteArray to "clone" the instance back
    */
    public static void demo8()
      throws IOException, ClassNotFoundException{
        Integer i = new Integer(3);
        ByteArrayOutputStream bytes = new ByteArrayOutputStream();
        ObjectOutputStream output = new ObjectOutputStream(bytes);
        output.writeObject(i);
        output.flush();
        ObjectInputStream input = new ObjectInputStream(new
            ByteArrayInputStream(bytes.toByteArray()));
        Object j;
        j = input.readObject();
        System.out.println(i);
        System.out.println(j);
        System.out.println(i.equals(j));
    }
    public static void main(String[] argv)
      throws IOException, ClassNotFoundException{
        demo8();
    }
}
```