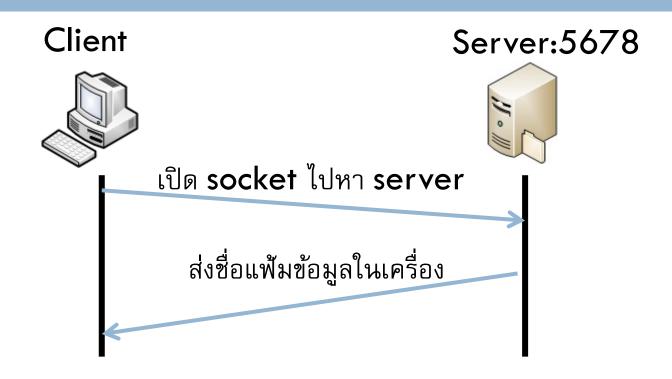
CLIENT/SERVER APPLICATION (FILE SERVER)

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Introduction

- □ Server/Client ของระบบแฟ้มข้อมูล โดยจะมีตัวอย่างการทำงานแบบ ง่ายๆ ของการทำงาน з อย่างคือ
 - List ดูรายชื่อแฟ้มข้อมูลที่เครื่อง server
 - Upload แฟ้มข้อมูล
 - Download แฟ้มข้อมูล

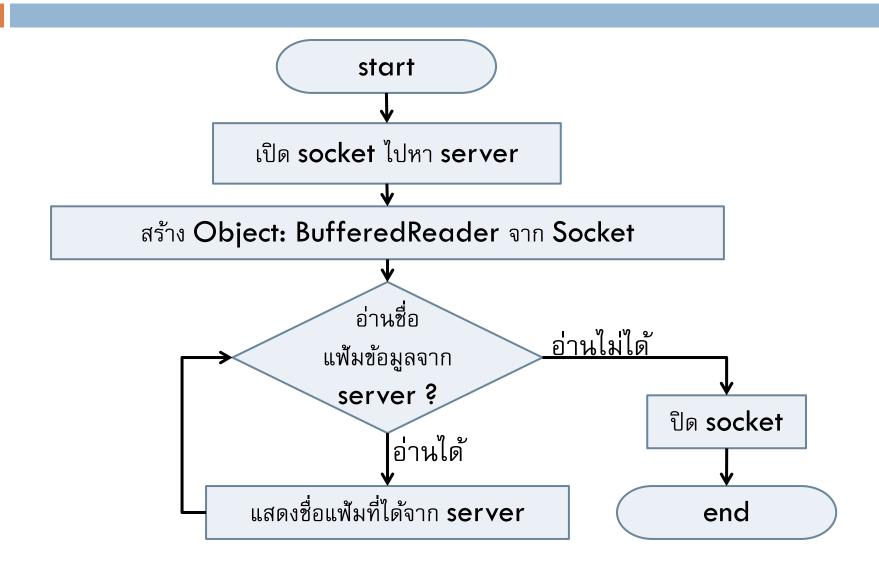
การดูรายชื่อของแฟ้มข้อมูลบน Server (LIST)



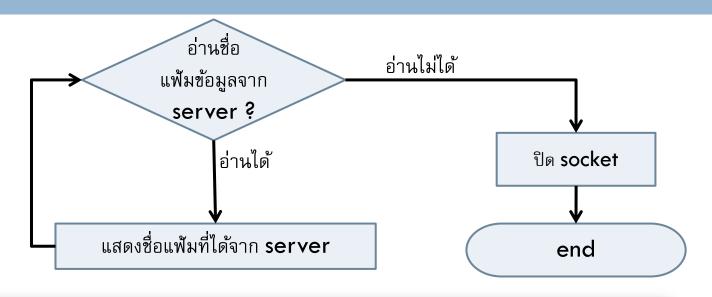
🗆 เตือนความจำ

□ ใน Java สามารถดูรายชื่อใน Directory ได้ด้วยการใช้เมธอด list() ของ Object File

Flow Chart: Client (LIST)



```
import java.io.*;
               start
                                               import java.net.*;
                                               public class FileList {
                                                    public static void main(String[] args)
        เปิด socket ไปหา server
                                       Socket s = new Socket("127.0.0.1", 5678);
สร้าง Object: BufferedReader จาก Socket
           InputStream in = s.getInputStream();
           OutputStream out = s.getOutputStream();
           BufferedReader br = new BufferedReader(new InputStreamReader(in));
```

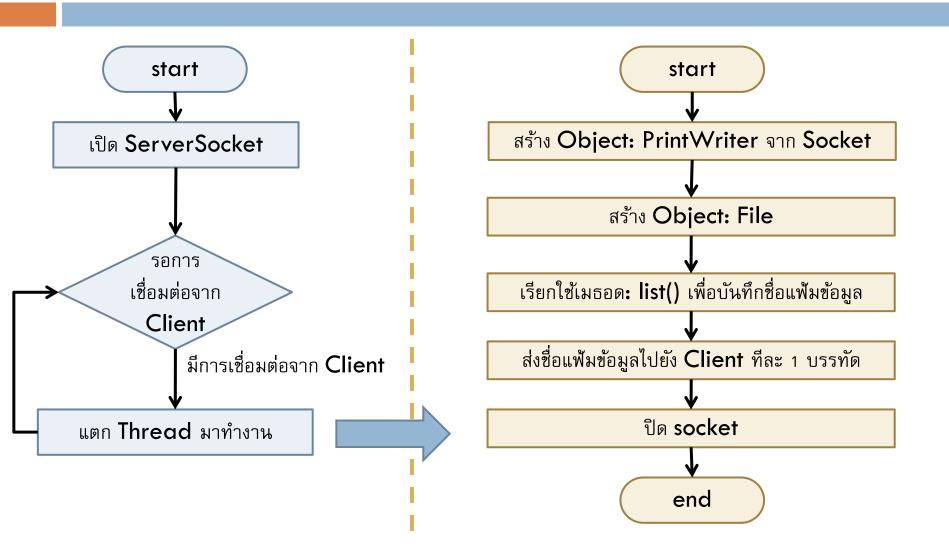


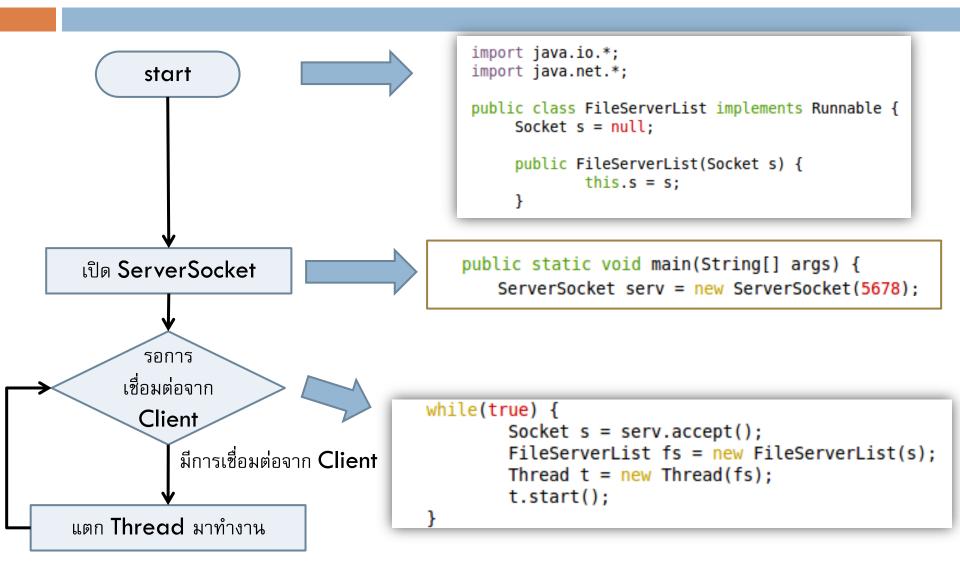
```
String filename;
while((filename = br.readLine()) != null) {
         System.out.println(filename);
}
in.close();
out.close();
s.close();
```

Source Code: FileList.java

```
import java.io.*;
import java.net.*;
public class FileList {
     public static void main(String[] args) {
             try {
                     Socket s = new Socket("127.0.0.1", 5678);
                     InputStream in = s.getInputStream();
                     OutputStream out = s.getOutputStream();
                     BufferedReader br = new BufferedReader(new InputStreamReader(in));
                     String filename;
                     while((filename = br.readLine()) != null) {
                             System.out.println(filename);
                     in.close();
                     out.close();
                     s.close();
             } catch(Exception e) { e.printStackTrace(); }
```

Flow Chart: Server (LIST)





```
public void run() {
                 start
                                                       InputStream in
                                                                      = s.getInputStream();
                                                       OutputStream out = s.getOutputStream();
สร้าง Object: PrintWriter จาก Socket
                                                       PrintWriter pw = new PrintWriter(out);
          สร้าง Object: File
                                                        File f = new File("./");
เรียกใช้เมธอด: list() เพื่อบันทึกชื่อแฟ้มข้อมูล
                                                         String[] filename = f.list();
                                                   for(int i = 0; i < filename.length; i++) {</pre>
                                                            pw.println(filename[i]);
ส่งชื่อแฟ้มข้อมูลไปยัง Client ทีละ 1 บรรทัด
                                                   pw.flush();
                                                        in.close();
                                                        out.close();
              ปิด socket
                                                        s.close();
                 end
```

Source Code: FileServerList.java

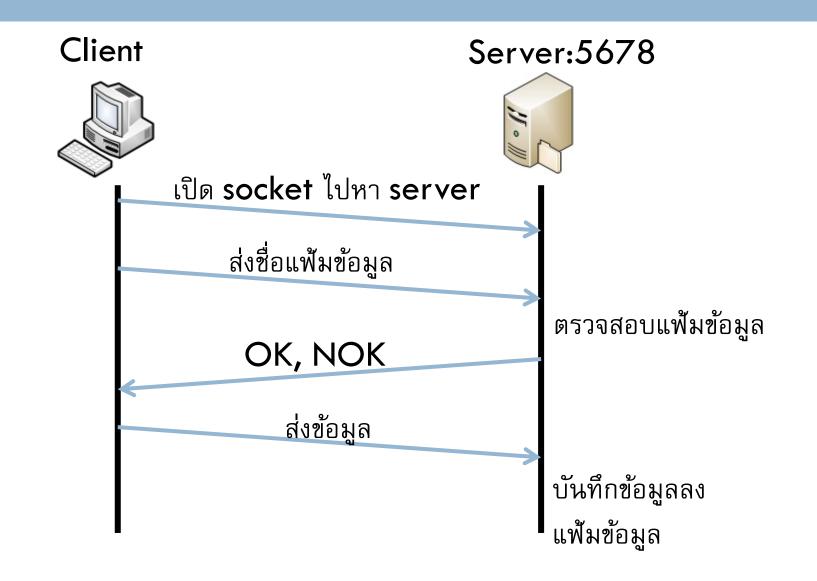
```
trv {
import java.io.*;
import java.net.*;
public class FileServerList implements Runnable {
     Socket s = null;
                                                         }
                                                     }
     public FileServerList(Socket s) {
             this.s = s:
     public void run() {
             try {
                     InputStream in = s.getInputStream();
                     OutputStream out = s.getOutputStream();
                     PrintWriter pw = new PrintWriter(out);
                     File f = new File("./");
                     String[] filename = f.list();
                     for(int i = 0; i < filename.length; i++) {</pre>
                             pw.println(filename[i]);
                     pw.flush();
                     in.close();
                     out.close();
                     s.close():
             } catch (Exception e) { e.printStackTrace(); }
```

```
public static void main(String[] args) {
    try {
        ServerSocket serv = new ServerSocket(5678);
        while(true) {
            Socket s = serv.accept();
            FileServerList fs = new FileServerList(s);
            Thread t = new Thread(fs);
            t.start();
        }
    } catch(Exception e) { e.printStackTrace(); }
}
```

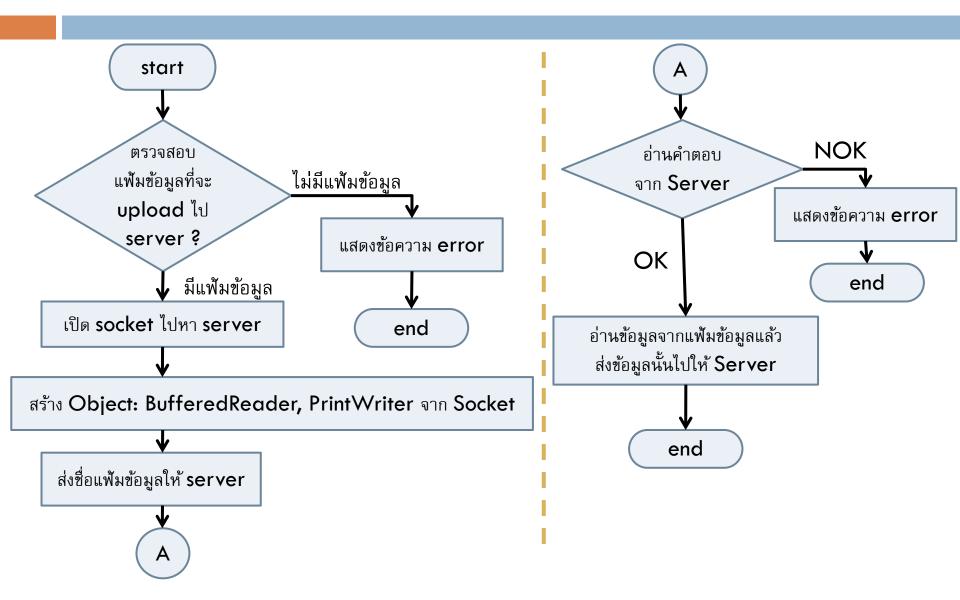
Client-Server Communication

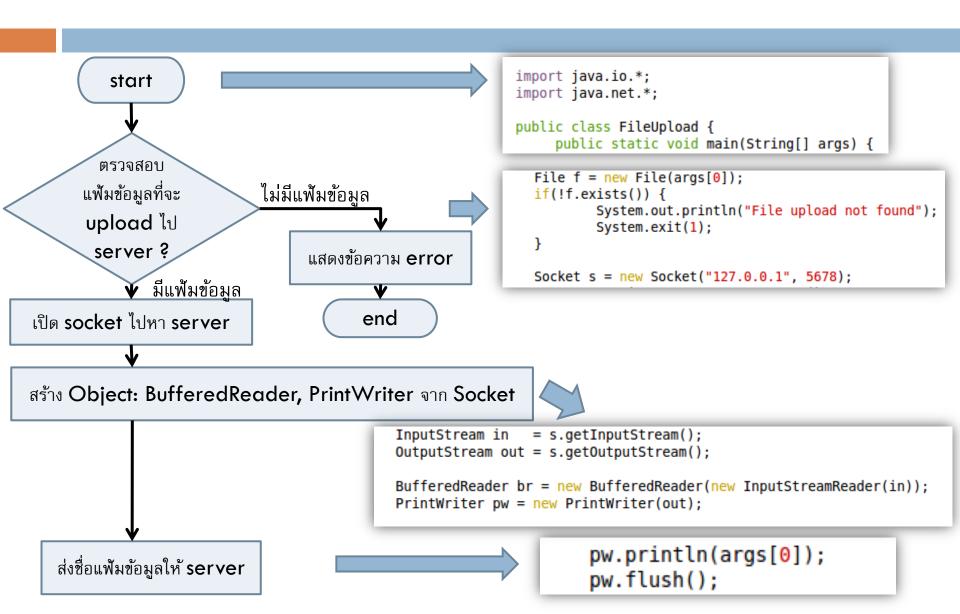
Client Server public void run() { try { try { InputStream in = s.getInputStream(); Socket s = new Socket("127.0.0.1", 5678);OutputStream out = s.getOutputStream(); InputStream in = s.getInputStream(); OutputStream out = s.getOutputStream(); PrintWriter pw = new PrintWriter(out); BufferedReader br = new BufferedReader(new InputStreamReader(in)); File f = new File("./"); String filename: String[] filename = f.list(); while((filename = br.readLine()) != null) { for(int i = 0; i < filename.length; <math>i++) { System.out.println(filename); pw.println(filename[i]); in.close(); pw.flush(); out.close(); in.close(); s.close(): out.close(); } catch(Exception e) { e.printStackTrace(); } s.close(): } catch (Exception e) { e.printStackTrace(); } }

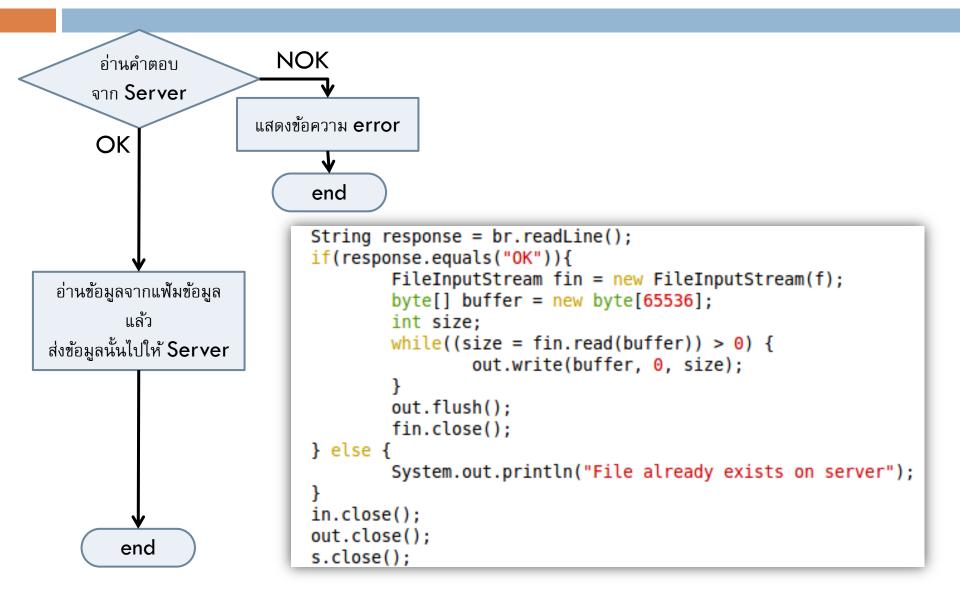
การ Upload แฟ้มข้อมูลเข้าสู่ Server



Flow Chart: Client (Upload)



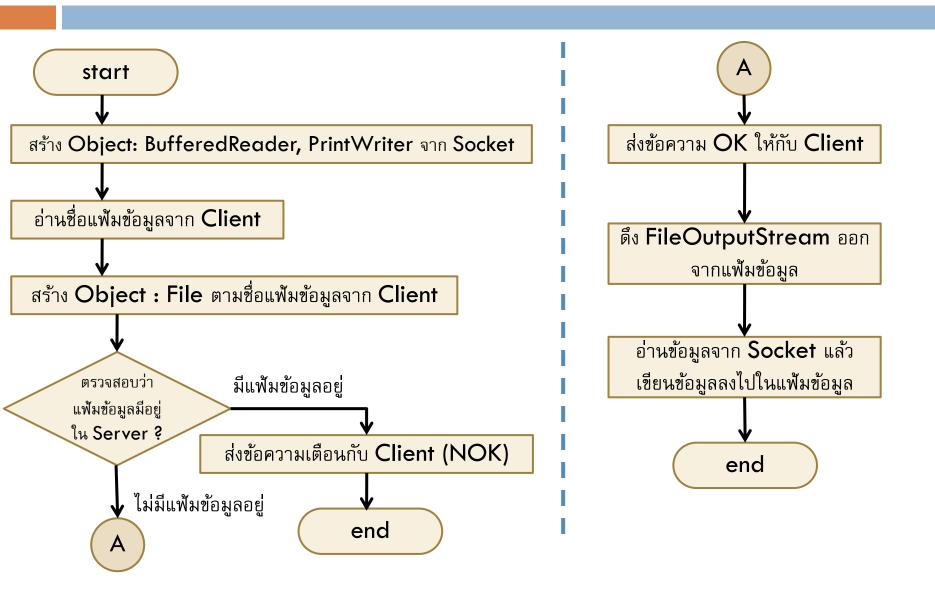




Source Code: FileUpload.java

```
import java.io.*;
import java.net.*;
public class FileUpload {
     public static void main(String[] args) {
             try {
                     File f = new File(args[0]);
                     if(!f.exists()) {
                             System.out.println("File upload not found");
                             System.exit(1):
                     }
                     Socket s = new Socket("127.0.0.1", 5678);
                     InputStream in = s.getInputStream();
                     OutputStream out = s.getOutputStream();
                     BufferedReader br = new BufferedReader(new InputStreamReader(in)):
                     PrintWriter pw = new PrintWriter(out);
                     pw.println(args[0]);
                     pw.flush();
                     String response = br.readLine();
                     if(response.equals("OK")){
                             FileInputStream fin = new FileInputStream(f);
                             byte[] buffer = new byte[65536];
                             int size:
                             while((size = fin.read(buffer)) > 0) {
                                     out.write(buffer, 0, size);
                             out.flush();
                             fin.close();
                     } else {
                             System.out.println("File already exists on server");
                     in.close():
                     out.close();
                     s.close();
             } catch(Exception e) { e.printStackTrace(); }
```

Flow Chart: Server (Upload)



```
start
                                                   public void run()
สร้าง Object: BufferedReader, PrintWriter จาก Socket
                                 = s.getInputStream();
                InputStream in
                OutputStream out = s.getOutputStream();
                BufferedReader br = new BufferedReader(new InputStreamReader(in));
                PrintWriter pw = new PrintWriter(out);
 อ่านชื่อแฟ้มข้อมูลจาก Client
                                         String filename = br.readLine();
                                                File f = new File(filename);
สร้าง Object : File ตามชื่อแฟ้มข้อมูลจาก Client
```

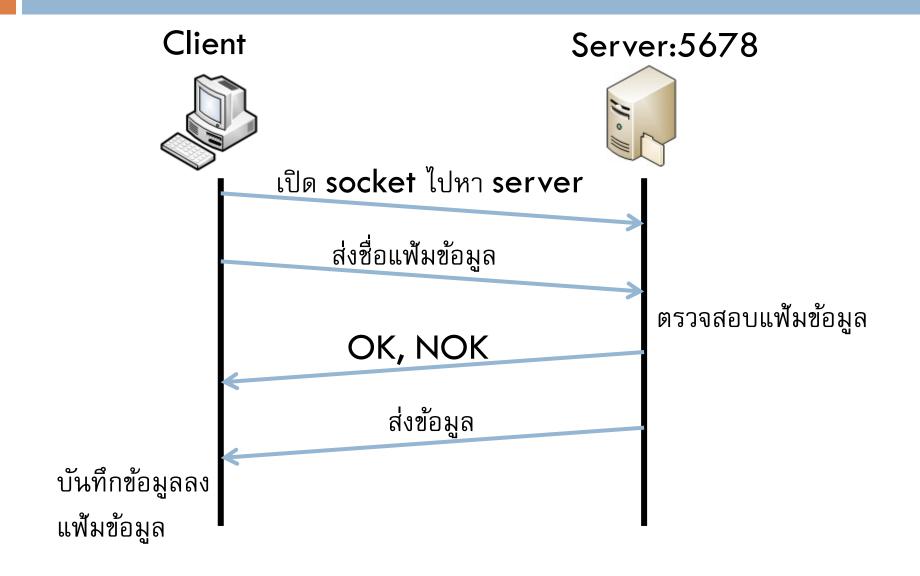
```
ตรวจสอบว่า
                      มีแฟ้มข้อมูลอยู่
                                                            if(f.exists()) {
     แฟ้มข้อมูลมีอยู่
                                                                       pw.println("NOK");
     ใน Server ?
                     ส่งข้อความเตือนกับ Client (NOK)
                                                                       pw.flush();
         🕽 ไม่มีแฟ้มข้อมูลอยู่
                                  end
ส่งข้อความ OK ให้กับ Client
                                } else {
                                         pw.println("OK");
ดึง FileOutputStream ออก
                                         pw.flush();
       จากแฟ้มข้อมูล
                                         FileOutputStream fout = new FileOutputStream(f);
                                         byte[] b = \text{new byte}[65536];
 อ่านข้อมูลจาก Socket แล้ว
                                         int size:
                                         while((size = in.read(b)) > 0) {
 เขียนข้อมูลลงไปในแฟ้มข้อมูล
                                                  fout.write(b, 0, size);
                                         fout.flush();
          end
                                         fout.close();
```

Source Code: FileServerUpload.java

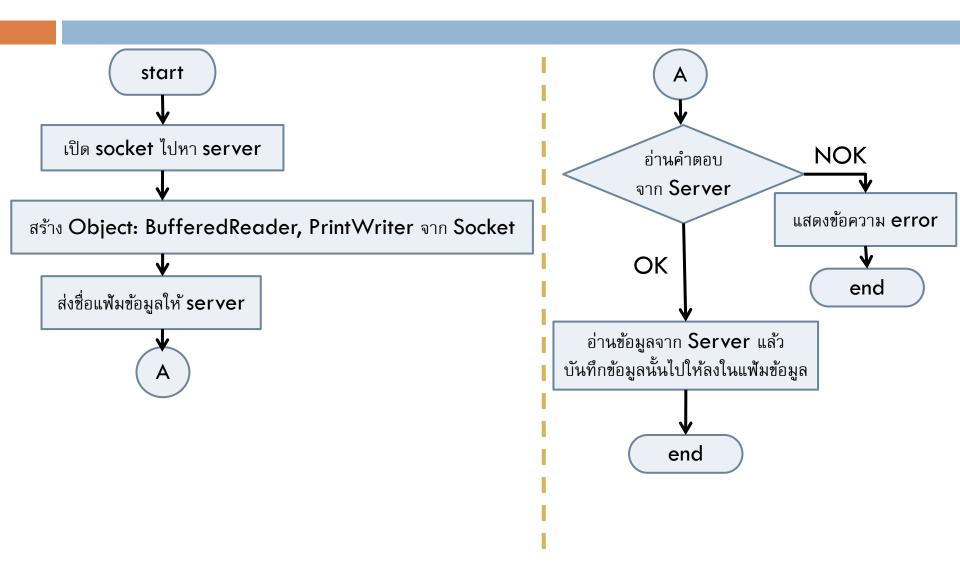
```
import java.io.*;
                                                                      public static void main(String[] args) {
import java.net.*;
                                                                             try {
                                                                                     ServerSocket serv = new ServerSocket(5678);
public class FileServerUpload implements Runnable {
                                                                                     while(true) {
     Socket s = null:
                                                                                            Socket s = serv.accept():
                                                                                            FileServerUpload fs = new FileServerUpload(s);
     public FileServerUpload(Socket s) {
                                                                                            Thread t = new Thread(fs);
             this.s = s;
                                                                                            t.start();
                                                                             } catch(Exception e) { e.printStackTrace(); }
     public void run() {
             try {
                     InputStream in = s.getInputStream();
                     OutputStream out = s.getOutputStream();
                     BufferedReader br = new BufferedReader(new InputStreamReader(in)):
                     PrintWriter pw = new PrintWriter(out);
                     String filename = br.readLine();
                     File f = new File(filename);
                     if(f.exists()) {
                              pw.println("NOK");
                              pw.flush();
                     } else {
                              pw.println("OK");
                              pw.flush();
                              FileOutputStream fout = new FileOutputStream(f);
                              byte[] b = \text{new byte}[65536];
                              int size;
                              while((size = in.read(b)) > 0) {
                                      fout.write(b, 0, size);
                              fout.flush():
                              fout.close():
                     in.close():
                     out.close();
                     s.close();
             } catch (Exception e) { e.printStackTrace(); }
```

}

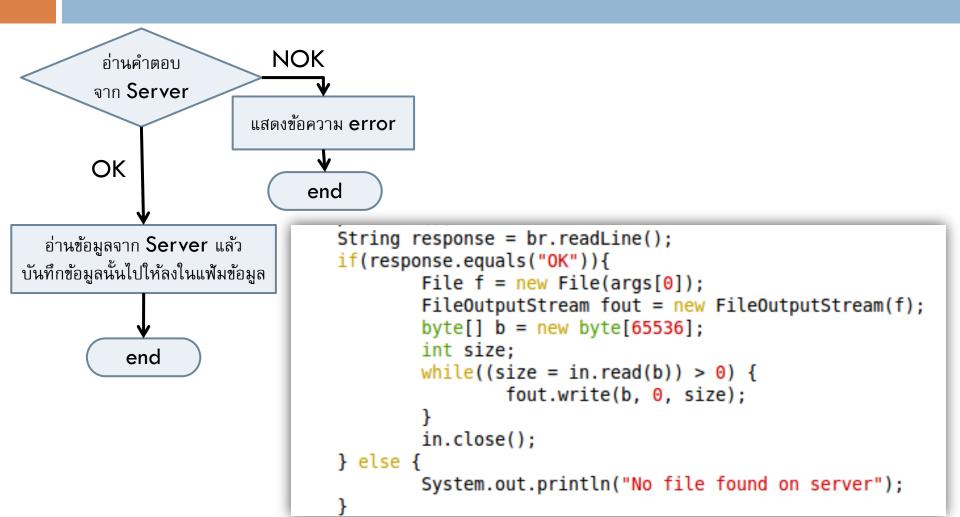
การ Download แฟ้มข้อมูลจาก Server



Flow Chart: Client (Download)



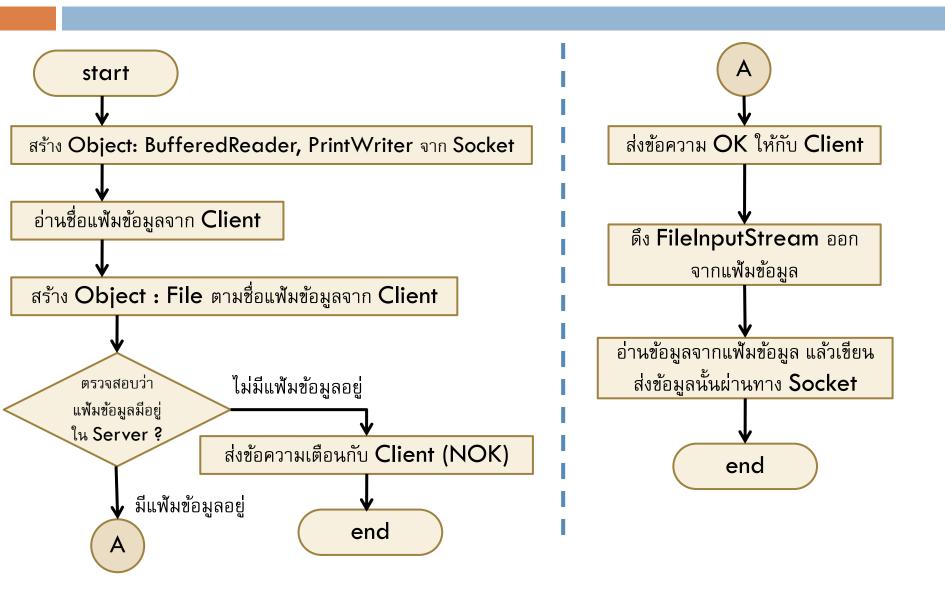
```
import java.io.*;
                                      import java.net.*;
           start
                                       public class FileDownload {
                                            public static void main(String[] args) {
   เปิด socket ไปหา server
                                        Socket s = new Socket("127.0.0.1", 5678);
สร้าง Object: BufferedReader, PrintWriter จาก Socket
                         InputStream in = s.getInputStream();
                         OutputStream out = s.getOutputStream();
                         BufferedReader br = new BufferedReader(new InputStreamReader(in));
                         PrintWriter pw = new PrintWriter(out);
                                          pw.println(args[0]);
  ส่งชื่อแฟ้มข้อมูลให้ server
                                          pw.flush();
```



Source Code: FileDownload.java

```
import java.io.*;
import java.net.*;
public class FileDownload {
     public static void main(String[] args) {
             try {
                     Socket s = new Socket("127.0.0.1", 5678);
                     InputStream in = s.getInputStream();
                     OutputStream out = s.getOutputStream();
                     BufferedReader br = new BufferedReader(new InputStreamReader(in));
                     PrintWriter pw = new PrintWriter(out);
                     pw.println(args[0]);
                     pw.flush();
                     String response = br.readLine();
                     if(response.equals("OK")){
                             File f = new File(args[0]);
                             FileOutputStream fout = new FileOutputStream(f);
                             byte[] b = new byte[65536];
                             int size;
                             while((size = in.read(b)) > 0) {
                                     fout.write(b, 0, size);
                             in.close();
                     } else {
                             System.out.println("No file found on server");
                     s.close();
             } catch(Exception e) { e.printStackTrace(); }
```

Flow Chart: Server (Download)



```
start
                                                   public void run()
สร้าง Object: BufferedReader, PrintWriter จาก Socket
                                 = s.getInputStream();
                InputStream in
                OutputStream out = s.getOutputStream();
                BufferedReader br = new BufferedReader(new InputStreamReader(in));
                PrintWriter pw = new PrintWriter(out);
 อ่านชื่อแฟ้มข้อมูลจาก Client
                                         String filename = br.readLine();
                                                File f = new File(filename);
สร้าง Object : File ตามชื่อแฟ้มข้อมูลจาก Client
```

```
ตรวจสอบว่า
                    ไม่มีแฟ้มข้อมูลอยู่
                                                          if(f.exists()) {
    แฟ้มข้อมูลมีอยู่
                                                                    pw.println("NOK");
    ใน Server ?
                    ส่งข้อความเตือนกับ Client (NOK)
                                                                    pw.flush();
        🗘 มีแฟ้มข้อมูลอยู่
                                 end
ส่งข้อความ OK ให้กับ Client
                               } else {
                                        pw.println("OK");
ดึง FileInputStream ออก
                                        pw.flush();
      จากแฟ้มข้อมูล
                                        FileInputStream fin = new FileInputStream(f);
                                        byte[] buffer = new byte[65536];
อ่านข้อมูลจากแฟ้มข้อมูล แล้ว
                                        int size;
  เขียนส่งข้อมูลนั้นผ่านทาง
                                        while((size = fin.read(buffer)) > 0) {
                                                  out.write(buffer, 0, size);
        Socket
                                        out.flush();
         end
```

Source Code: FileServerDownload.java

```
import java.io.*;
                                                                   public static void main(String[] args) {
import java.net.*;
                                                                            try {
                                                                                    ServerSocket serv = new ServerSocket(5678):
public class FileServerDownload implements Runnable {
                                                                                    while(true) {
    Socket s = null;
                                                                                            Socket s = serv.accept();
                                                                                            FileServerDownload fs = new FileServerDownload(s);
    public FileServerDownload(Socket s) {
                                                                                            Thread t = new Thread(fs);
            this.s = s;
                                                                                            t.start():
                                                                           } catch(Exception e) { e.printStackTrace(); }
    public void run() {
            try {
                     InputStream in = s.getInputStream();
                     OutputStream out = s.getOutputStream();
                     BufferedReader br = new BufferedReader(new InputStreamReader(in));
                     PrintWriter pw = new PrintWriter(out);
                     String filename = br.readLine();
                     File f = new File(filename);
                     if(!f.exists()) {
                             pw.println("NOK");
                             pw.flush();
                     } else {
                             pw.println("OK");
                             pw.flush();
                             FileInputStream fin = new FileInputStream(f);
                             byte[] buffer = new byte[65536];
                             int size:
                             while((size = fin.read(buffer)) > 0) {
                                     out.write(buffer, 0, size);
                             out.flush();
                     out.close();
                     s.close();
            } catch (Exception e) { e.printStackTrace(); }
```