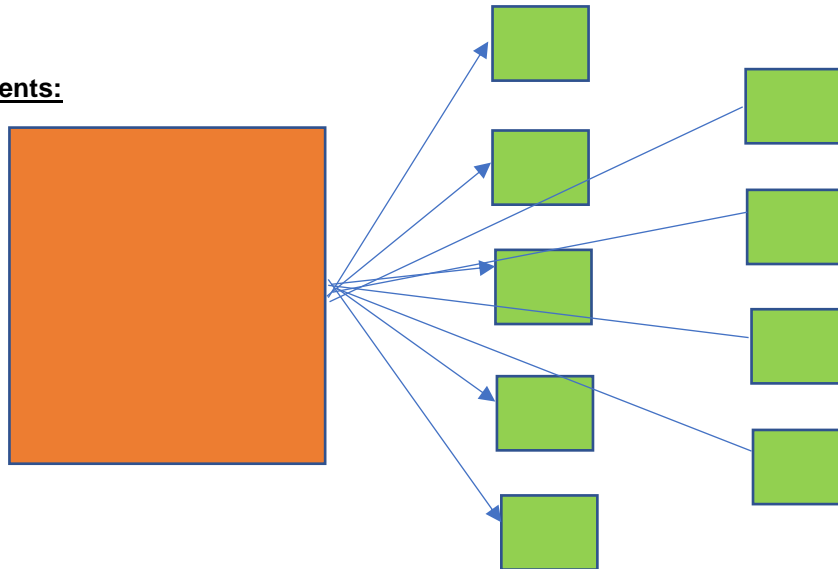


### Server Components:

Green - Client

Orange - Server



### General Server:

1. Open Connections on a Particular Port. If port number is not given, the Server is opened on Port 8080 (works in Eclipse).
2. Open any Tab on Mozilla and type a file to run against. An example ogg file is given, here.

Request URL: `http://localhost:8080/file_example_OGG_1280_11_4mg.ogg`

Request method: GET

Status code: **200** OK ⓘ

Version: HTTP/1.1

Referrer Policy: no-referrer-when-downgrade

Filter headers

#### ▼ Response headers (0 B)

- ⓘ Connection: Keep-Alive
- ⓘ Content-Length: 11446489
- ⓘ Content-Type: video/ogg
- ⓘ Date: Sun Apr 21 12:32:16 EDT 2019
- ⓘ Last-Modified: Wed, 3 Apr 2019 11:23:15 EDT
- ⓘ Server: ON

#### ▼ Request headers (0 B)

- ⓘ Accept: text/html,application/xhtml+xml,application/xml;q=0.9,\*/\*;q=0.8
- ⓘ Accept-Encoding: gzip, deflate
- ⓘ Accept-Language: en-US,en;q=0.5
- ⓘ Connection: keep-alive
- ⓘ Host: localhost:8080
- ⓘ Upgrade-Insecure-Requests: 1
- ⓘ User-Agent: Mozilla/5.0 (Windows NT 10.0; ...) Gecko/20100101 Firefox/66.0

3. The minute a file is opened, a thread is started for the client. This client runs parallelly along with all other threads in the system where in the services are taken care of.

4. For some reason, file seeking only occurs once. That is, when you click once to get to some new part of the video it works. However any subsequent clicks to get to another part of the video do not work.
5. Final Idle CPU Percentage much less than 10 percent.
6. Range Requests working from 0 (Start of File) to any number of bytes.

### 404 File Not Found:



OOPSie - Page Not Found - Read assignment once again

Sorry, but the page you were trying to view does not exist.

### 206 Partial Request:

Request URL: `http://localhost:8080/file_example_OGG_1280_11_4mg.ogg -i -H "Range: bytes=0-9000000"`  
 Request method: GET  
 Remote address: `[::1]:8080`  
 Status code: **206** Partial Content ⓘ  
 Version: HTTP/1.1  
 Referrer Policy: no-referrer-when-downgrade

Filter headers

#### ▼ Response headers (171 B)

Content-Length: 9000001  
 Content-Range: bytes=0-9000000/11446489  
 Content-Type: video/ogg  
 Date: Sun Apr 21 22:32:44 EDT 2019  
 Server: ON

#### ▼ Request headers (399 B)

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,\*/\*;q=0.8  
 Accept-Encoding: gzip, deflate  
 Accept-Language: en-US,en;q=0.5  
 Connection: keep-alive  
 Host: localhost:8080  
 Upgrade-Insecure-Requests: 1  
 User-Agent: Mozilla/5.0 (Windows NT 10.0; ...) Gecko/20100101 Firefox/66.0

### Things Implemented that are not given in Assignment Page:

- a) Pretty Printing of Data for 200 OK.
- b) Pretty Printing of Data for 404 Not Found.
- c) HTTP/1.1 501 NOT IMPLEMENTED, if it is not a GET or a HEAD Request.

#### Steps to Run:

1. Get to the folder containing the Main Java File. This will be <folder\_path>.
2. Type “ant clean”.

```
E:\Coursework\18741 - Computer Networks\Project_3>ant clean
Buildfile: E:\Coursework\18741 - Computer Networks\Project_3\build.xml

clean:
    [delete] Deleting directory E:\Coursework\18741 - Computer Networks\Project_3\bin

BUILD SUCCESSFUL
Total time: 0 seconds
```

3. Type “ant build”.

```
E:\Coursework\18741 - Computer Networks\Project_3>ant build
Buildfile: E:\Coursework\18741 - Computer Networks\Project_3\build.xml

build-subprojects:

init:
    [mkdir] Created dir: E:\Coursework\18741 - Computer Networks\Project_3\bin
    [copy] Copying 3 files to E:\Coursework\18741 - Computer Networks\Project_3\bin

build-project:
    [echo] Project_3: E:\Coursework\18741 - Computer Networks\Project_3\build.xml
    [javac] Compiling 3 source files to E:\Coursework\18741 - Computer Networks\Project_3\bin

build:

BUILD SUCCESSFUL
Total time: 0 seconds
```








4. Type “ant vodserver -Darg=<port\_number>”. If there is no argument given, then port number is 8080.

```
E:\Coursework\18741 - Computer Networks\Project_3>ant vodserver -Darg=4001
Buildfile: E:\Coursework\18741 - Computer Networks\Project_3\build.xml

vodserver:
    [java] The Port number for connecting is : 4001
    [java] Server started.
    [java]
    [java] Listening for connections on port : 4001 ...
    [java]
```

#### File Structure:

The Images, HTML Files and other files are placed in the “Content” folder (note the capital C). If you would like to keep your files, then please place it in a Content folder and place the folder right outside the src folder in the Folder Path.

 .settings	21-04-2019 20:53	File folder	
 bin	21-04-2019 20:56	File folder	
 Content	21-04-2019 20:53	File folder	
 src	21-04-2019 20:53	File folder	
 .classpath	02-04-2019 14:11	CLASSPATH File	1 KB
 .project	02-04-2019 14:11	PROJECT File	1 KB
 build	21-04-2019 20:51	XML Document	3 KB

## Benchmarking:

```
D:\Apache Bench\Apache24\bin>ab -n 5000 -c 5000 http://localhost:8080/a.jpg
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking localhost (be patient)
Completed 500 requests
Completed 1000 requests
Completed 1500 requests
Completed 2000 requests
Completed 2500 requests
Completed 3000 requests
Completed 3500 requests
Completed 4000 requests
Completed 4500 requests
Completed 5000 requests
Finished 5000 requests


Server Software:      ON
Server Hostname:      localhost
Server Port:          8080


Document Path:        /a.jpg
Document Length:      32898 bytes


Concurrency Level:    5000
Time taken for tests:  40.521 seconds
Complete requests:    5000
Failed requests:       0
Total transferred:    165360000 bytes
HTML transferred:     164490000 bytes
Requests per second:  123.39 [#/sec] (mean)
Time per request:     40521.337 [ms] (mean)
Time per request:     8.104 [ms] (mean, across all concurrent requests)
Transfer rate:        3985.17 [Kbytes/sec] received


Connection Times (ms)
      min   mean[+/-sd] median   max
Connect:    0      8  62.8      0   535
Processing: 668  20686 11535.7  20736  40260
Waiting:    7  20208 11590.7  20265  39876
Total:      668  20694 11535.6  20736  40260


Percentage of the requests served within a certain time (ms)
 50%  20736
 66%  27153
```

## Troubleshooting:

a) The file folders in the Code are as follows:

```
static final String DEFAULT_FILE = "src/index.html";

static final String FILE_NOT_FOUND = "src/404.html";

static final String METHOD_NOT_SUPPORTED = "src/not_supported.html";
```

Make sure that you are using the same folder structure. If your OS does not support this file structure, please make the necessary changes.

- b) The File folders in buildfile are also on same lines. This will also have to be changed/modified to suit your needs.