[CSE3027] Computer Network Project 1

2018044857 이 강 영

High-level description

```
<Request Msg>
GET / HTTP/1.1
Host: 192.168.35.48:4432
Connection: keep-alive
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, li
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image
Accept-Encoding: gzip, deflate
Accept-Language: ko-KR,ko;q=0.9,en-US;q=0.8,en;q=0.7


<Response Msg>
HTTP/1.1 200 OK
Content-Type: text/html
Content-Length: 399
```

HTTP_URL is accessible to "http://127.0.0.1:Port/abs_path", and [abs_path] is accessible to "test.html", "test.gif", "test.jpeg", "test.mp3", "test.pdf". If you leave [abs_path] empty and access it, client can automatically access the test.html file. And if you accessed the wrong file, server respond to the "404.html" fiel.

```
char *decisionContentType(char *path) {
  char *extent[] = {".html", ".gif", ".jpeg", ".mp3", ".pdf"};
  char *type[] = {"text/html", "image/gif", "image/jpeg", "audio/mp3", "application/pdf"};
  char *result;
  for(int i=0;i<5;i++) {
    if(strstr(path, extent[i]) != NULL) {
      result = (char *)malloc(strlen(type[i]) +1);
      strcpy(result, type[i]);
      break;
    }
  }
  return result;
}
```

decisionContentType() is a function that returns the content-type corresponding to the file in the parsing portion of the HTTP request message.

The difficulties in project

- Setsockopt – SO_REUSEADDR

```
int reuseAddress;
reuseAddress = 1;
setsockopt(sockfd, SOL_SOCKET, SO_REUSEADDR, (const char*)&reuseAddress, sizeof(reuseAddress));
```

There was a problem that the same port number was not assigned immediately after the process

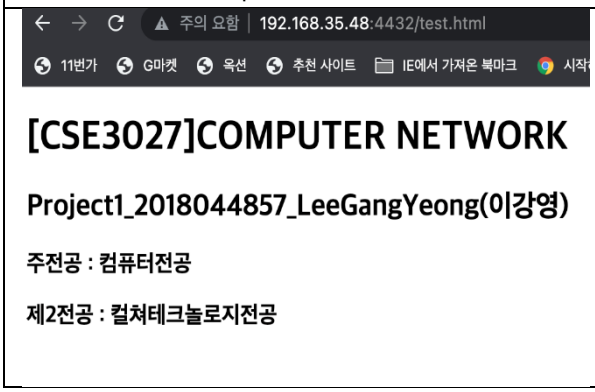
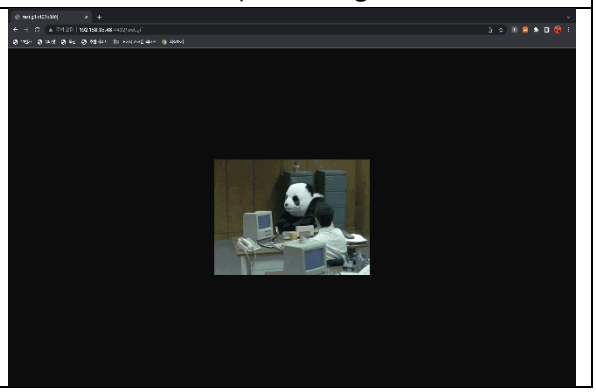
was terminated. Therefore, I added the SO_REUSEADDR option to the socket.

- strtok

```
char *startline = strtok(buffer, " "); //GET /test.html HTTP/1.1 [startline : GET]

if(startline !=NULL) {

  char *req_path = strtok(NULL, " ");
  char *path;
  if(strcmp(req_path, "/") == 0) {
    path = (char *)malloc(strlen("./test.html") + 1);
    strcpy(path, "./test.html");
  }
  else {
    path = (char *)malloc(strlen(req_path) + 1);
    sprintf(path, ".%s", req_path);
  }
```

It was difficult to read the HTTP request message from the server and check which file was requested. The strtok function could be used to store ./test.html in the variable path in "GET/test.html HTTP/1.1".

Sample outputs

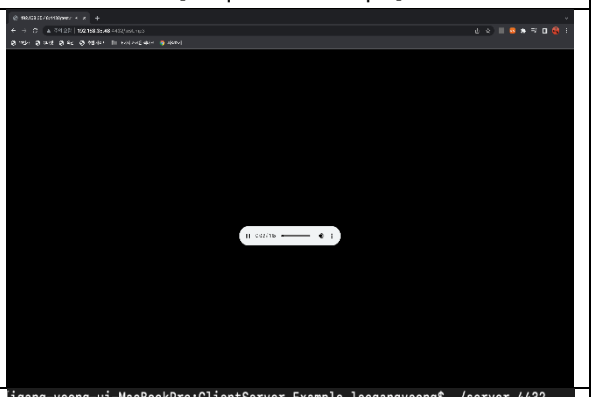
[Request test.html]	[Request test.gif]
	

```
igang-yeong-ui-MacBookPro:ClientServer_Example leegangyeong$ ./server 4432

<Request Message>
GET /test.html HTTP/1.1
Host: 192.168.35.48:4432
Connection: keep-alive
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36
 (KHTML, like Gecko) Chrome/99.0.4844.84 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image
/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Accept-Encoding: gzip, deflate
Accept-Language: ko-KR,ko;q=0.9,en-US;q=0.8,en;q=0.7


<Response Message>
HTTP/1.1 200 OK
Content-Type: text/html
Content-Length: 399
```

[Request test.jpeg]

```
igang-yeong-ui-MacBookPro:ClientServer_Example leegangyeong$ ./server 4432

<Request Message>
GET /test.gif HTTP/1.1
Host: 192.168.35.48:4432
Connection: keep-alive
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36
 (KHTML, like Gecko) Chrome/99.0.4844.84 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image
/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Accept-Encoding: gzip, deflate
Accept-Language: ko-KR,ko;q=0.9,en-US;q=0.8,en;q=0.7


<Response Message>
HTTP/1.1 200 OK
Content-Type: image/gif
Content-Length: 723457
```

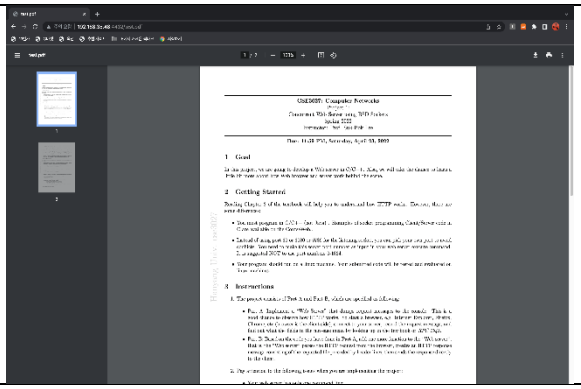
[Request test.mp3]



```
igang-yeong-ui-MacBookPro:ClientServer_Example leegangyeong$ ./server 4432

<Request Message>
GET /test.jpeg HTTP/1.1
Host: 192.168.35.48:4432
Connection: keep-alive
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36
 (KHTML, like Gecko) Chrome/99.0.4844.84 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image
/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Accept-Encoding: gzip, deflate
Accept-Language: ko-KR,ko;q=0.9,en-US;q=0.8,en;q=0.7


<Response Message>
HTTP/1.1 200 OK
Content-Type: image/jpeg
Content-Length: 96203
```

```
igang-yeong-ui-MacBookPro:ClientServer_Example leegangyeong$ ./server 4432

<Request Message>
GET /test.mp3 HTTP/1.1
Host: 192.168.35.48:4432
Connection: keep-alive
Cache-Control: max-age=0
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36
 (KHTML, like Gecko) Chrome/99.0.4844.84 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image
/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Accept-Encoding: gzip, deflate
Accept-Language: ko-KR,ko;q=0.9,en-US;q=0.8,en;q=0.7


<Response Message>
HTTP/1.1 200 OK
Content-Type: audio/mp3
Content-Length: 1200933
```

[Request test.pdf]



```
igang-yeong-ui-MacBookPro:ClientServer_Example leegangyeong$ ./server 4432

<Request Message>
GET /test.pdf HTTP/1.1
Host: 192.168.35.48:4432
Connection: keep-alive
Cache-Control: max-age=0
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36
 (KHTML, like Gecko) Chrome/99.0.4844.84 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image
/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Accept-Encoding: gzip, deflate
Accept-Language: ko-KR,ko;q=0.9,en-US;q=0.8,en;q=0.7


<Response Message>
HTTP/1.1 200 OK
Content-Type: application/pdf
Content-Length: 112177
```