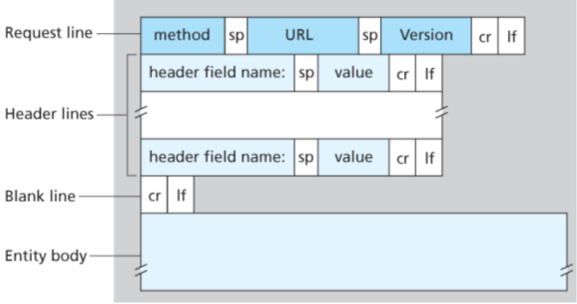
Lab 4 – HTTP Connection Simulation

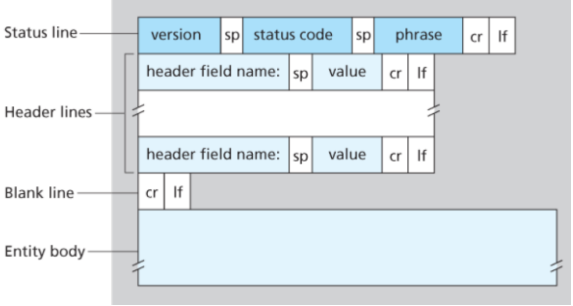
A server available in www.students.com/marks/index.html, maintains a database of student marks. On entering the register number of a student in the page, the list of courses taken by the student is sent by the server to the client who has requested for the student marks. The marks secured by the student in each course is available as an individual object in www.students.com/marks/<register-number>/<course-code>. Simulate the HTTP protocol for the transfer of messages between the client and the server for fetching the marks of a student using each of the following types of connections:

1. non-persistent (TCP connection opens and closes for transfer of each object)
2. persistent (TCP connection remains open until all objects are transferred)

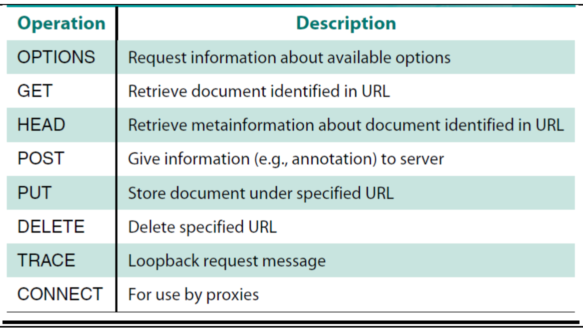
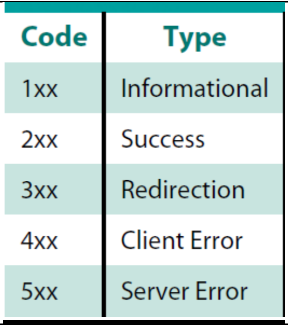
Compare the time taken by each type of connection for fetching all the marks of a student.

Note:

<table>
<tr><th></th><th><b>HTTP Request</b></th><th><b>HTTP Response</b></th></tr>
<tr><td>Message Format</td><td>


</td><td>


</td></tr>
<tr><td>Sample Message</td><td>GET /somedir/page.html HTTP/1.1
Host: www.someschool.edu
Connection: close
User-agent: Mozilla/5.0
Accept-language: fr</td><td>HTTP/1.1 200 OK
Connection: close
Date: Tue, 18 Aug 2015 15:44:04 GMT
Server: Apache/2.2.3 (CentOS)
Last-Modified: Tue, 18 Aug 2015 15:11:03 GMT
Content-Length: 6821
Content-Type: text/html

(data data data data data ...)</td></tr>
<tr><td>Other Information</td><td>

<table>
<tr><th>Operation</th><th>Description</th></tr>
<tr><td>OPTIONS</td><td>Request information about available options</td></tr>
<tr><td>GET</td><td>Retrieve document identified in URL</td></tr>
<tr><td>HEAD</td><td>Retrieve metainformation about document identified in URL</td></tr>
<tr><td>POST</td><td>Give information (e.g., annotation) to server</td></tr>
<tr><td>PUT</td><td>Store document under specified URL</td></tr>
<tr><td>DELETE</td><td>Delete specified URL</td></tr>
<tr><td>TRACE</td><td>Loopback request message</td></tr>
<tr><td>CONNECT</td><td>For use by proxies</td></tr>
</table>
</td><td>

<table>
<tr><th>Code</th><th>Type</th></tr>
<tr><td>1xx</td><td>Informational</td></tr>
<tr><td>2xx</td><td>Success</td></tr>
<tr><td>3xx</td><td>Redirection</td></tr>
<tr><td>4xx</td><td>Client Error</td></tr>
<tr><td>5xx</td><td>Server Error</td></tr>
</table>
</td></tr>
</table>

Code to determine the time taken:

```
// Headers to be included: time.h
clock_t tStart = clock();
/* CODE for which the time taken for execution is to be determined*/
double t=(double)(clock() - tStart) / CLOCKS_PER_SEC;
printf("Time taken (in seconds) : %f", t);
```