

Problem 1

Consider the following string of ASCII characters that were captured by *Wireshark* when the browser sent an HTTP GET message (i.e., this is the actual content of an HTTP GET message). The characters `<CR>``<LF>` are carriage-return and line-feed characters. Answer the following questions, indicating where in the HTTP GET message below you find the answer.

```
GET /classes/spring17/cs118/project-1.html HTTP/1.1<CR><LF>
Host: web.cs.ucla.edu<CR><LF>
Connection: keep-alive<CR><LF>
Upgrade-Insecure-Requests: 1<CR><LF>
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebKit/537.36 (KHTML,
like Gecko) Chrome/56.0.2924.87 Safari/537.36<CR><LF>
Accept:
text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8<CR><LF>
Referer: http://web.cs.ucla.edu/classes/spring17/cs118/homeworks.html<CR><LF>
Accept-Encoding: gzip, deflate, sdch<CR><LF>
Accept-Language: en-US,en;q=0.8,lv;q=0.6,ru;q=0.4<CR><LF>
If-None-Match: "5a17-54c4847c4f640-gzip"<CR><LF>
If-Modified-Since: Mon, 03 Apr 2017 19:36:49 GMT<CR><LF>
```

1. What is the **full** URL of the document requested by the browser?
2. What version of HTTP is the browser running?
3. What type of browser initiates this message? Why is the browser type needed in an HTTP request message?
4. What is the IP Address of the host on which the browser is running?

Write your solution to Problem 1 in this box

Problem 2

Alice and Bob are working remotely on a course project and are using `git` as the version control software.

1. Is it true that one must have GitHub/GitLab account to use `git`?
2. What is(are) the command(s) to initialize a local `git` repository?
3. Do Alice and Bob both must initialize local `git` repository? If no, what are the alternative?
4. Let's consider that Alice modified the file `server.cpp`:
 - (a) What `git` commands Alice needs to save modifications in the local `git` repository
 - (b) What `git` commands Alice needs to upload saved modifications to GitHub
 - (c) What `git` commands Bob needs to get Alice's changes and apply them to the local repository
5. Let's consider that both Alice and Bob modified the file `server.cpp` and Alice was first to successfully upload saved modifications (`commit`) to GitHub
 - (a) Can Bob upload his changes without any additional actions? If no, why?
 - (b) If actions needed, list `git` commands that Bob will need to use to share his modifications with Alice.

Write your solution to Problem 2 in this box

Problem 3

You will learn some basic usages of **Vagrant** and **Docker** in your projects.

1. What is Vagrant mainly used for?
2. What is Docker mainly used for?
3. List at least one difference between Vagrant's "box" and Docker's "container"?
4. List at least five commands you can use with Vagrant.
5. List at least five commands you can use with Docker.

Write your solution to Problem 3 in this box