Ex0901

1. **Using a telnet client, e.g. Putty, request the Document "/" from www.google.at**
    Explain the result in a few words (i.e. not each line but some of them).
    Is there a difference whether you request "/" using HTTP/1.0 or HTTP/1.1?

HTTP/1.0:

```
marc@i7-1:~$ telnet www.google.at 80
Trying 173.194.116.215...
Connected to www.google.at.
Escape character is '^]'.
GET / HTTP/1.0
```

HTTP/1.0 302 Found ← **Statuscode**
Location: http://www.google.at/
gws_rd=cr&ei=weX5UsvkGIrc4wTE44CwBA
Cache-Control: **private** ← **Wie soll gecachet werden (zB bei Proxys)
– private: Seite darf bei Proxys nicht gecachet werden**
Content-Type: text/html; charset=UTF-8
Set-Cookie:
PREF=ID=10a2bce9dc9446e5:FF=0:TM=1392108993:LM=1392108993:S=1VjEhP
1zzW1xJ1Yh; expires=Thu, 11-Feb-2016 08:56:33 GMT; path=/;
domain=.google.com
Set-Cookie:
NID=67=RuGLTiU3Wv6MNuYTsKCwuSoIIE3LgjLBXa2rxNUeYJD4JvHvWRwa9lqwcVZ
PisgNJc4469GxcImsLai-qL90RZnnRjmD_JijCLEmn14-IDjWDcJe7O4JuZmzAeC9x
ude; expires=Wed, 13-Aug-2014 08:56:33 GMT; path=/;
domain=.google.com; HttpOnly ← **Cookie für Usertracking**
P3P: CP="This is not a P3P policy! See
http://www.google.com/support/accounts/bin/answer.py?
hl=en&answer=151657 for more info."
Date: Tue, 11 Feb 2014 08:56:33 GMT
Server: gws ← **Hier kann der Typ des Webserver und die Version
stehen, wird aus Sicherheitsgründen meist nicht angegeben**
Content-Length: 258
X-XSS-Protection: 1; mode=block
X-Frame-Options: SAMEORIGIN
Alternate-Protocol: 80:quic

```
<HTML><HEAD><meta http-equiv="content-type"
content="text/html;charset=utf-8">
<TITLE>302 Moved</TITLE></HEAD><BODY>
<H1>302 Moved</H1>
The document has moved
<A HREF="http://www.google.at/?
gws_rd=cr&amp;ei=weX5UsvkGIrc4wTE44CwBA">here</A>.
</BODY></HTML> ← 
```
Ausgeliefertes HTML-Dokument
Connection closed by foreign host.

HTTP/1.1:

```
marc@i7-1:~$ telnet www.google.at 80
```

```
Trying 173.194.116.215...
Connected to www.google.at.
Escape character is '^]'.
GET / HTTP/1.1

HTTP/1.1 302 Found
Location: http://www.google.at/?
gws_rd=cr&ei=-OX5Upn0HoTk4wSxsYHgCQ
Cache-Control: private
Content-Type: text/html; charset=UTF-8
Set-Cookie:
PREF=ID=b8a69e0ffeeb931a:FF=0:TM=1392109048:LM=1392109048:S=0VOkT3
QJ3QXBQ-_M; expires=Thu, 11-Feb-2016 08:57:28 GMT; path=/;
domain=.google.com
Set-Cookie:
NID=67=ZkKIGzbKOqY4sH_juRGZHDbXjrxUuj44FLkXOWsK_t62DrMO-oen2_Z6SgQ
NOhhGiAmqfF1_M0KbDz_DhiRcueRi3XDre7aukgBP37JXW76lX69s5_AGgLzcCnA7X
aoe; expires=Wed, 13-Aug-2014 08:57:28 GMT; path=/;
domain=.google.com; HttpOnly
P3P: CP="This is not a P3P policy! See
http://www.google.com/support/accounts/bin/answer.py?
hl=en&answer=151657 for more info."
Date: Tue, 11 Feb 2014 08:57:28 GMT
Server: gws
Content-Length: 258
X-XSS-Protection: 1; mode=block
X-Frame-Options: SAMEORIGIN
Alternate-Protocol: 80:quic

<HTML><HEAD><meta http-equiv="content-type"
content="text/html;charset=utf-8">
<TITLE>302 Moved</TITLE></HEAD><BODY>
<H1>302 Moved</H1>
The document has moved
<A HREF="http://www.google.at/?
gws_rd=cr&amp;ei=-OX5Upn0HoTk4wSxsYHgCQ">here</A>.
</BODY></HTML>
```

HTTP/1.1 mit Host:

```
marc@i7-1:~$ telnet www.google.at 80
Trying 173.194.116.215...
Connected to www.google.at.
Escape character is '^]'.
GET / HTTP/1.1
Host: www.google.at

HTTP/1.1 200 OK
Date: Tue, 11 Feb 2014 09:00:41 GMT
Expires: -1
Cache-Control: private, max-age=0
Content-Type: text/html; charset=ISO-8859-1
Set-Cookie:
```

```
PREF=ID=a05e33afbc9200b0:FF=0:TM=1392109241:LM=1392109241:S=HCq07x
m$
Set-Cookie:
NID=67=YgdtCkTmz58JywtNpLSoB9E_I9nrDgXvxQn26PKHm6uaEoO7wGapmb9fVuV
-$
P3P: CP="This is not a P3P policy! See
http://www.google.com/support/accounts/b$
Server: gws
X-XSS-Protection: 1; mode=block
X-Frame-Options: SAMEORIGIN
Alternate-Protocol: 80:quic
Transfer-Encoding: chunked

8000
<!doctype html><html itemscope=""
itemtype="http://schema.org/WebPage"><hea$
window.google={kEI:"ueb5UpD7LePf4QSsmoHAAg",getEI:function(a)
{for(var b;a&&$
new
Image,f=google.lc,e=google.li,g="";d.onerror=d.onload=d.onabort=fu
nctio$
(function()
{google.sn="webhp";google.timers={};google.startTick=function(a,$
try{}catch(d){}})();
.
.
.
google.timers.load.t.prt=e=(new Date).getTim$
</script></body></html>
0
```

Bei HTTP/1.0 wird die Verbindung vom Server automatisch nach ausliefern des Dokuments geschlossen. Bei HTTP/1.1 bleibt die Verbindung bestehen. Sowohl bei HTTP/1.0 als auch bei HTTP/1.1 ohne Host meldet sich der Server mit dem Statuscode 302 – die Ressource steht unter der im Location Header angegebenen Adresse bereit. Bei HTTP/1.1 meldet sich der Server mit dem Statuscode 200 – Anfrage wurde erfolgreich bearbeitet und Ergebnis wird ausgeliefert.

2. **Find a popular web site which uses round-robin DNS. List a few of there IPs they are using.**

```
marc@i7-1:~$ nslookup

> www.google.at
Server:         127.0.1.1
Address:  127.0.1.1#53

Non-authoritative answer:
Name:     www.google.at
Address: 173.194.113.63
Name:     www.google.at
Address: 173.194.113.55
```

```
Name:      www.google.at
Address: 173.194.113.56

> www.orf.at
Server:          127.0.1.1
Address:  127.0.1.1#53

Non-authoritative answer:
Name:      www.orf.at
Address: 194.232.104.142
Name:       www.orf.at
Address: 194.232.104.141
Name:       www.orf.at
Address: 194.232.104.140
Name:       www.orf.at
Address: 194.232.104.139

> www.amd.com
Server:          127.0.1.1
Address:  127.0.1.1#53

Non-authoritative answer:
www.amd.com     canonical name = www.amd.com.edgesuite.net.
www.amd.com.edgesuite.net    canonical name = a1726.b.akamai.net.
Name:     a1726.b.akamai.net
Address: 2.20.182.240
Name:     a1726.b.akamai.net
Address: 2.20.182.17
```

3. **Try to find out details regarding load balancing of a popular site. I.e. how does Google do it, etc.**

Wikipedia: http://en.wikipedia.org/wiki/Wikipedia#Hardware_operations_and_support

4. **Why do persistent connections generally improve performance compared to nonpersistent connections?**

Overhead durch ständigen Verbindungsaufbau und -abbau (zB TCP) wird minimiert.

5. **With web pages being already highly personalized one could argue that web caches are obsolete. Yet, they are still used and yield a performance gain. Explain why.**

Für das Ausliefern von statischen Content, in einen Content Delivery Network um Kopien nahe beim User zu haben, als reverse proxy für load balancing

6. **There are, in principle, 3 different techniques for redirecting clients to servers: TCP handoff, DNS-based redirection and HTTP-based redirection. What are the main advantages/disadvantages of each technique?**

No.	Category name	HTTP-based	TCP	DNS-based
1.	Redirection transparency	*	*****	****
2.	Level of integration	*****	*****	*****
3.	Scalability	****	**	*****
4.	Deployment	*****	*	****
5.	Redirection granularity	*****	***	***
6.	Client loc. identification	*****	*****	***
7.	Multiple response	*	*	*****