

Lab 3

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Exercise 1

Q1.

Content type: text/html

Size: 6966 bytes

Last Modified: Wed, 03 Aug 2016 07:17:13 GMT

Accept-Ranges indicate whether the server is allowed to accept range request or not.

Q2.

Content-type: text/HTML

Size: 6966 bytes

Q3.

GET /people.html HTTP/1.1

Host: www.vision.ucla.edu

Q4.

The same IP address may have multiple websites. The server can identify which web page should send according to addition host name.

Exercise 2

Q1.

It set a cookie. Because set-cookie has data.

Ucla do not set cookies.

Q2.

2 cookies. **Google.com** installed it.

Q3.

Vision.ucla.edu installed **4** cookies.

Maybe the browser set these cookies(?).

Exercise 3

Q1.

Both server and client running HTTP version 1.1.

Q2.

Accept-language: en-us

Q3.

IP address of the client: 192.168.1.102

Host: IP address 128.119.245.12 host name: gaia.cs.umass.edu

Q4.

HTTP/1.1 200 OK

Q5.

Client: Mozilla/5.0

Server: Apache/2.0.40 Red Hat Linux

Q6.

Last-modified: Tue, 23 Sep 2003 05:29:00 GMT

Date: Tue, 23 Sep 2003 05:29:50 GMT

'Date' is the time when the messages were originated.

'Last-modified' is the time when the server believes the variant was last modified.

Q7.

It's persistent connection. 'Connection' is keep-Alive.

Q8.

73 bytes

Q9.

<html>\n

Congratulations. You've downloaded the file lab2-1.html!\n

</html>\n

Exercise 4

Q1.

No

Q2.

Yes, the server return a line-based text data said "You've downloaded the file lab2-2.html".

Q3.

Yes, the HTTP header indicated it.

Q4.

Yes, it contains the date value – Tue, 23 Sep 2003 05:35:00 GMT.

Q5.

Status code: 304 Not Modified

Server did not return the file. Because the Last-Modified date did not comply with the inclusion of the IF-MODIFIED-SINCE filed.

Exercise 6

Q1.

UDP

Q2.

Query: Source Port: 3742 Destination Port: 53

Response: Source Port:53 Destination Port:3742

Q3.

Destination: 128.238.29.22. It same as default DNS server.

Q4.

1 question. Type A. It does not have answer.

Q5.

```

  ▾ Answers
    ▾ mit.edu: type NS, class IN, ns bitsy.mit.edu
      Name: mit.edu
      Type: NS (authoritative Name Server) (2)
      Class: IN (0x0001)
      Time to live: 20736
      Data length: 8
      Name Server: bitsy.mit.edu
    ▾ mit.edu: type NS, class IN, ns strawb.mit.edu
      Name: mit.edu
      Type: NS (authoritative Name Server) (2)
      Class: IN (0x0001)
      Time to live: 20736
      Data length: 9
      Name Server: strawb.mit.edu
    ▾ mit.edu: type NS, class IN, ns w20ns.mit.edu
      Name: mit.edu
      Type: NS (authoritative Name Server) (2)
      Class: IN (0x0001)
      Time to live: 20736
      Data length: 8
      Name Server: w20ns.mit.edu

  ▾ Additional records
    ▾ bitsy.mit.edu: type A, class IN, addr 18.72.0.3
      Name: bitsy.mit.edu
      Type: A (Host Address) (1)
      Class: IN (0x0001)
      Time to live: 20736
      Data length: 4
      Address: 18.72.0.3 (18.72.0.3)
    ▾ strawb.mit.edu: type A, class IN, addr 18.71.0.151
      Name: strawb.mit.edu
      Type: A (Host Address) (1)
      Class: IN (0x0001)
      Time to live: 20736
      Data length: 4
```

It don't have authority RRs.

Q6.

128.238.29.22 It's the same as the default local DNS server.

Q7.

Type: NS Class: IN

It does not contain any answer.

Q8.

```

▼Answers
  ▼www.mit.edu: type A, class IN, addr 18.7.22.83
    Name: www.mit.edu
    Type: A (Host Address) (1)
    Class: IN (0x0001)
    Time to live: 60
    Data length: 4
    Address: 18.7.22.83
  ▼Authoritative nameservers
    ▼mit.edu: type NS, class IN, ns BITSY.mit.edu
      Name: mit.edu
      Type: NS (authoritative Name Server) (2)
      Class: IN (0x0001)
      Time to live: 21600
      Data length: 8
      Name Server: BITSY.mit.edu
    ▼mit.edu: type NS, class IN, ns STRAWB.mit.edu
      Name: mit.edu
      Type: NS (authoritative Name Server) (2)
      Class: IN (0x0001)
      Time to live: 21600
      Data length: 9
      Name Server: STRAWB.mit.edu
    ▼mit.edu: type NS, class IN, ns W20NS.mit.edu
      Name: mit.edu
      Type: NS (authoritative Name Server) (2)
      Class: IN (0x0001)
      Time to live: 21600
      Data length: 8
      Name Server: W20NS.mit.edu

▼Additional records
  ▼BITSY.mit.edu: type A, class IN, addr 18.72.0.3
    Name: BITSY.mit.edu
    Type: A (Host Address) (1)
    Class: IN (0x0001)
    Time to live: 21600
    Data length: 4
    Address: 18.72.0.3
  ▼STRAWB.mit.edu: type A, class IN, addr 18.71.0.151
    Name: STRAWB.mit.edu
    Type: A (Host Address) (1)
    Class: IN (0x0001)
    Time to live: 21600
    Data length: 4
    Address: 18.71.0.151
  ▼W20NS.mit.edu: type A, class IN, addr 18.70.0.160
    Name: W20NS.mit.edu
    Type: A (Host Address) (1)
    Class: IN (0x0001)
    Time to live: 21600
    Data length: 4
    Address: 18.70.0.160
```

MIT have three authoritative name servers which resolve domain names.

Q9.

It's different.

MIT use content delivery network. The proxy servers AKAMAIEDGE send the content of the webpage.

Exercise 7

Q1.

Query type is A.

Q2.

```
wagner % dig www.cse.unsw.edu.au

; <<>> DiG 9.7.3 <<>> www.cse.unsw.edu.au
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 55878
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 2, ADDITIONAL: 2

;; QUESTION SECTION:
;www.cse.unsw.edu.au.                IN      A

;; ANSWER SECTION:
www.cse.unsw.edu.au.    3600    IN      A      129.94.242.51

;; AUTHORITY SECTION:
cse.unsw.edu.au.        3600    IN      NS      beethoven.orchestra.cse.unsw.edu.au.
cse.unsw.edu.au.        3600    IN      NS      maestro.orchestra.cse.unsw.edu.au.

;; ADDITIONAL SECTION:
maestro.orchestra.cse.unsw.edu.au. 3600 IN A      129.94.242.33
beethoven.orchestra.cse.unsw.edu.au. 3600 IN A      129.94.242.2

;; Query time: 0 msec
;; SERVER: 129.94.242.2#53(129.94.242.2)
;; WHEN: Wed Aug 17 21:05:34 2016
;; MSG SIZE rcvd: 141
```

No canonical name. IP: 129.94.242.2 IP: 129.94.242.33

host aliasing are easier to remember. Canonical name for the server link to different IP address which distribute the load.

Q4.

```
wagner % /sbin/ifconfig
eth0      Link encap:Ethernet  HWaddr 00:50:56:8f:00:a9
          inet addr:129.94.242.19  Bcast:129.94.242.255  Mask:255.255.255.0
          inet6 addr: fe80::250:56ff:fe8f:a9/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:621926854 errors:0 dropped:26343 overruns:0 frame:0
          TX packets:625144264 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1716119886 (1.5 GiB)  TX bytes:2500728553 (2.3 GiB)

eth1      Link encap:Ethernet  HWaddr 00:50:56:8f:79:0a
          inet6 addr: fe80::250:56ff:fe8f:790a/64 Scope:Link
          inet6 addr: 2001:388:c:4193:129:94:242:19/64 Scope:Global
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1170400 errors:0 dropped:2154 overruns:0 frame:0
          TX packets:1134769 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:802853758 (765.6 MiB)  TX bytes:274665800 (261.9 MiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:2176037119 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2176037119 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:341221487083 (317.7 GiB)  TX bytes:341221487083 (317.7 GiB)

wagner % cat /etc/resolv.conf
domain orchestra.cse.unsw.EDU.AU.
nameserver 129.94.242.2
nameserver 129.94.242.45
nameserver 129.94.242.33
options rotate
search orchestra.cse.unsw.EDU.AU. cse.unsw.EDU.AU. unsw.EDU.AU.
```

IP address: 129.94.242.19

Nameserver:129.94.242.2

Q5.

```
weill % nslookup cse.unsw.edu.au
Server:      129.94.242.2
Address:     129.94.242.2#53

Name:   cse.unsw.edu.au
Address: 129.94.242.19
Name:   cse.unsw.edu.au
Address: 129.94.242.49
```

Nameserver: 129.94.252.2

IP:129.94.242.19/49

typeA

Q6.

```
weill % nslookup unsw.edu.au
Server:      129.94.242.2
Address:     129.94.242.2#53

Non-authoritative answer:
Name:   unsw.edu.au
Address: 202.58.60.194
```

Nameserver is 129.94.242.2

IP address:202.58.60.194

Type A

Q7.

```
weill % dig 149.171.158.109

; <<>> DiG 9.7.3 <<>> 149.171.158.109
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 55484
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 0

;; QUESTION SECTION:
;149.171.158.109.                IN      A

;; AUTHORITY SECTION:
.                10800   IN      SOA      a.root-servers.net. nstld.veri
sign-grs.com. 2016082100 1800 900 604800 86400

;; Query time: 57 msec
;; SERVER: 129.94.242.2#53(129.94.242.2)
;; WHEN: Sun Aug 21 21:43:25 2016
;; MSG SIZE rcvd: 108
```

It's 129.94.242.2

Type A

Q8.

```
weill % dig yahoo.com MX

; <<>> DiG 9.7.3 <<>> yahoo.com MX
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 21891
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 6, ADDITIONAL: 10

;; QUESTION SECTION:
;yahoo.com.                IN      MX

;; ANSWER SECTION:
yahoo.com.                 156     IN      MX      1 mta5.am0.yahoodns.net.
yahoo.com.                 156     IN      MX      1 mta6.am0.yahoodns.net.
yahoo.com.                 156     IN      MX      1 mta7.am0.yahoodns.net.
```

Yes, I got the AUTHORITY ANSWER.

First query the authority servers which is respond for the yahoo.com, and this servers return the mx record for the query.

Q9.

```
weill % dig unsw.edu.au MX

; <<>> DiG 9.7.3 <<>> unsw.edu.au MX
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 17394
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 3, ADDITIONAL: 7

;; QUESTION SECTION:
;unsw.edu.au.              IN      MX

;; ANSWER SECTION:
unsw.edu.au.              300     IN      MX      10 smtp.unsw.edu.au.

;; AUTHORITY SECTION:
unsw.edu.au.              1690    IN      NS      ns3.unsw.edu.au.
unsw.edu.au.              1690    IN      NS      ns1.unsw.edu.au.
unsw.edu.au.              1690    IN      NS      ns2.unsw.edu.au.

;; ADDITIONAL SECTION:
smtp.unsw.edu.au.         2940    IN      A        149.171.193.32
ns1.unsw.edu.au.          1698    IN      A        129.94.0.192
```

It's smtp.unsw.edu.au

Q10.

```
weill % dig au
; <<>> DiG 9.7.3 <<>> au
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 1294
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 0

;; QUESTION SECTION:
;au.                                IN      A

;; AUTHORITY SECTION:
au.                                10800    IN      SOA      a.au. dns.audns.net.au. 201511
5408 86400 900 1209600 43200

;; Query time: 8 msec
;; SERVER: 129.94.242.2#53(129.94.242.2)
;; WHEN: Sun Aug 21 22:16:07 2016
;; MSG SIZE rcvd: 72
```

```
weill % dig edu.au
; <<>> DiG 9.7.3 <<>> edu.au
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 13327
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 0

;; QUESTION SECTION:
;edu.au.                            IN      A

;; AUTHORITY SECTION:
edu.au.                            900      IN      SOA      w.au. support.ausregistry.com.
au. 1471763177 1800 300 1814400 1800

;; Query time: 7 msec
;; SERVER: 129.94.242.2#53(129.94.242.2)
;; WHEN: Sun Aug 21 22:16:49 2016
;; MSG SIZE rcvd: 86
```

```
; <<>> DiG 9.7.3 <<>> unsw.edu.au
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 16088
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 3, ADDITIONAL: 6

;; QUESTION SECTION:
;unsw.edu.au.                       IN      A

;; ANSWER SECTION:
unsw.edu.au.                       6367     IN      A          202.58.60.194
;; QUESTION SECTION:
;cse.unsw.edu.au.                   IN      A

;; ANSWER SECTION:
cse.unsw.edu.au.                   3600     IN      A          129.94.242.19
cse.unsw.edu.au.                   3600     IN      A          129.94.242.49
```

Through 4 servers

Q12.

One machine could have several IP address or name.

For example several virtual machine in the same physical machine.

Q13.

NO

Q14.

.aaa	.med	.tab
.aarp	.media	.taipei
.abarth	.meet	.talk
.abb	.melbourne	.taobao
.abbott		.target
.abbvie	.meme	.tatamotors
.abc	.memorial	.tatar
.able	.men	.tattoo
.abogado	.menu	.tax
.abudhabi	.meo	.taxi
	.metlife	