Chapter 16

Domain Name System (DNS)

Figure 16-1
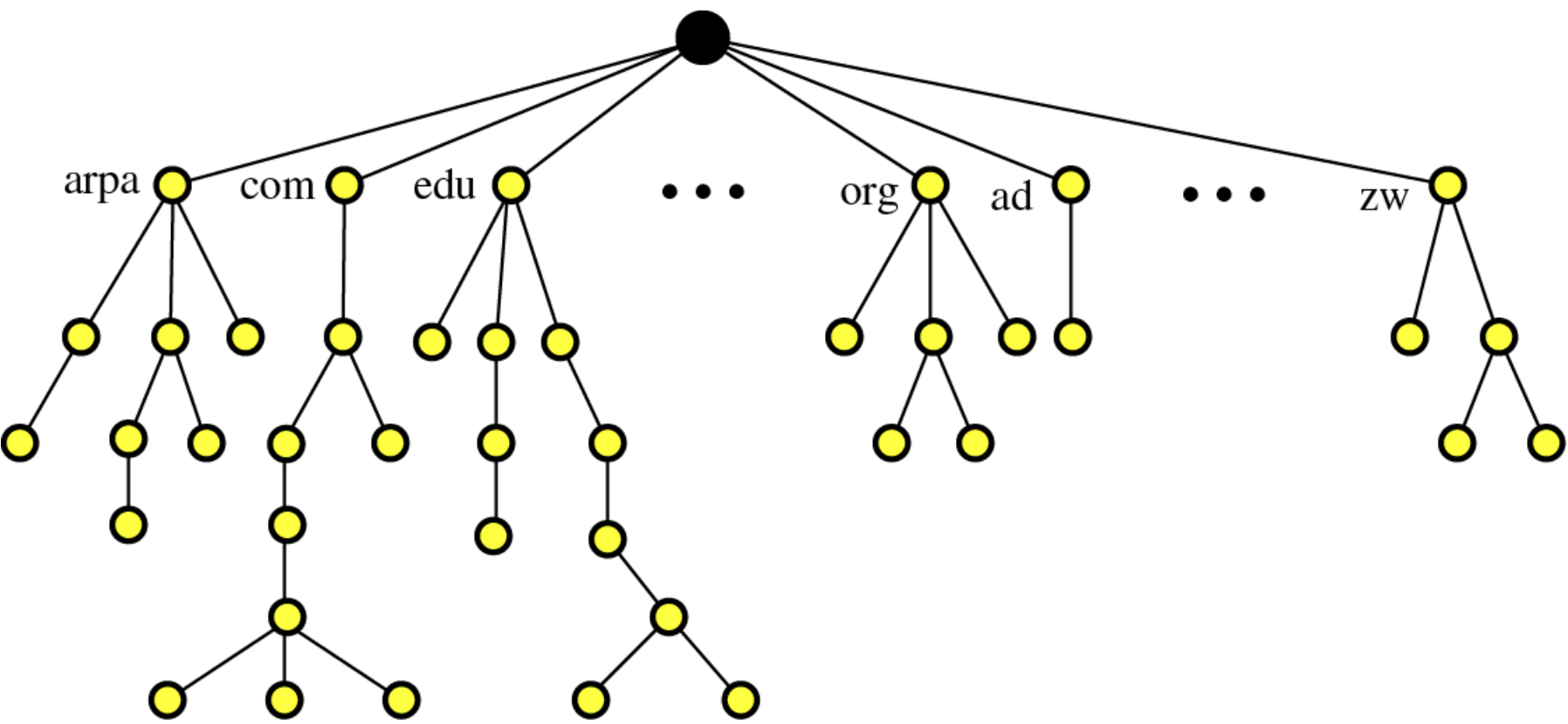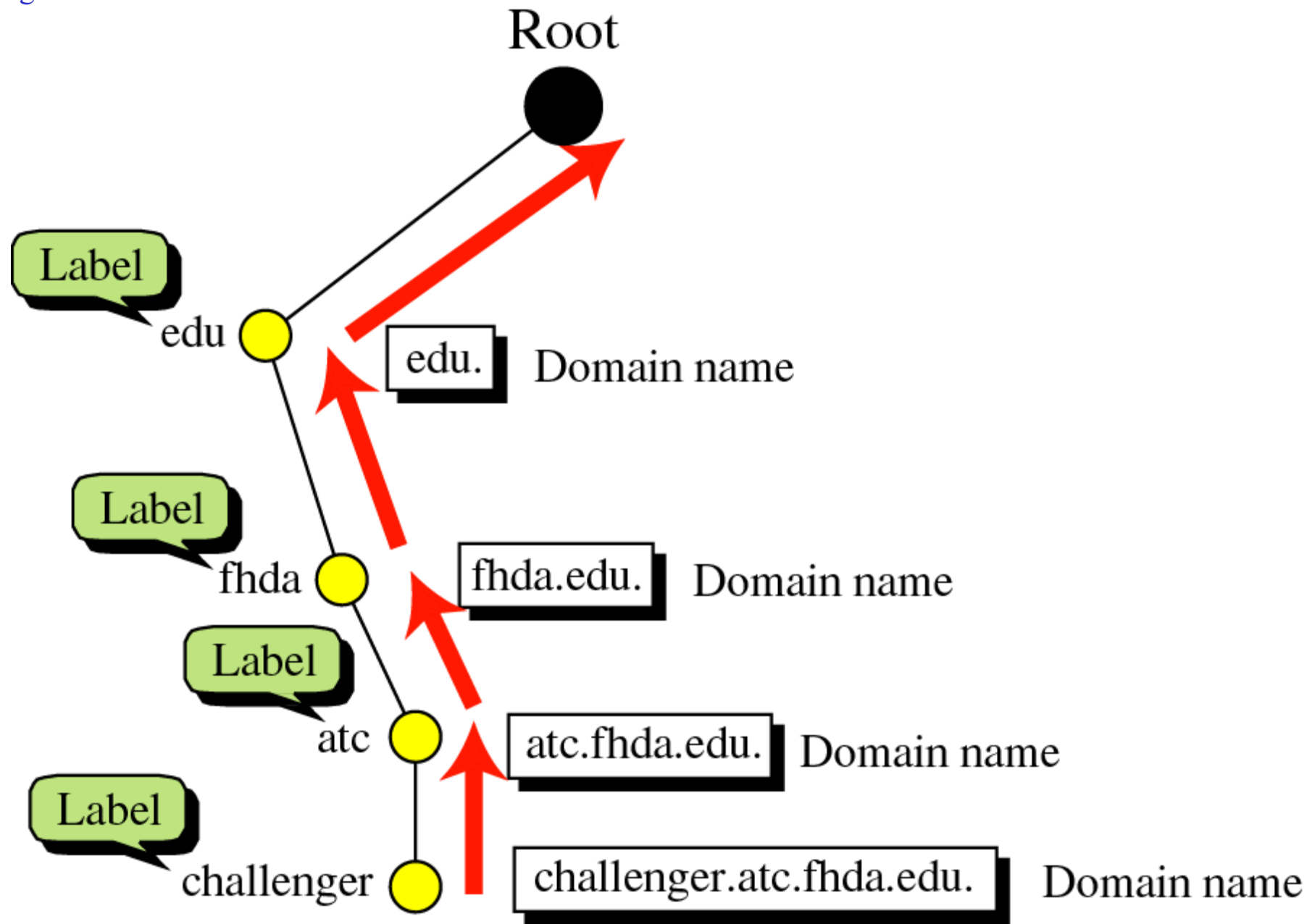
Figure 16-2

Figure 16-3

FQDN

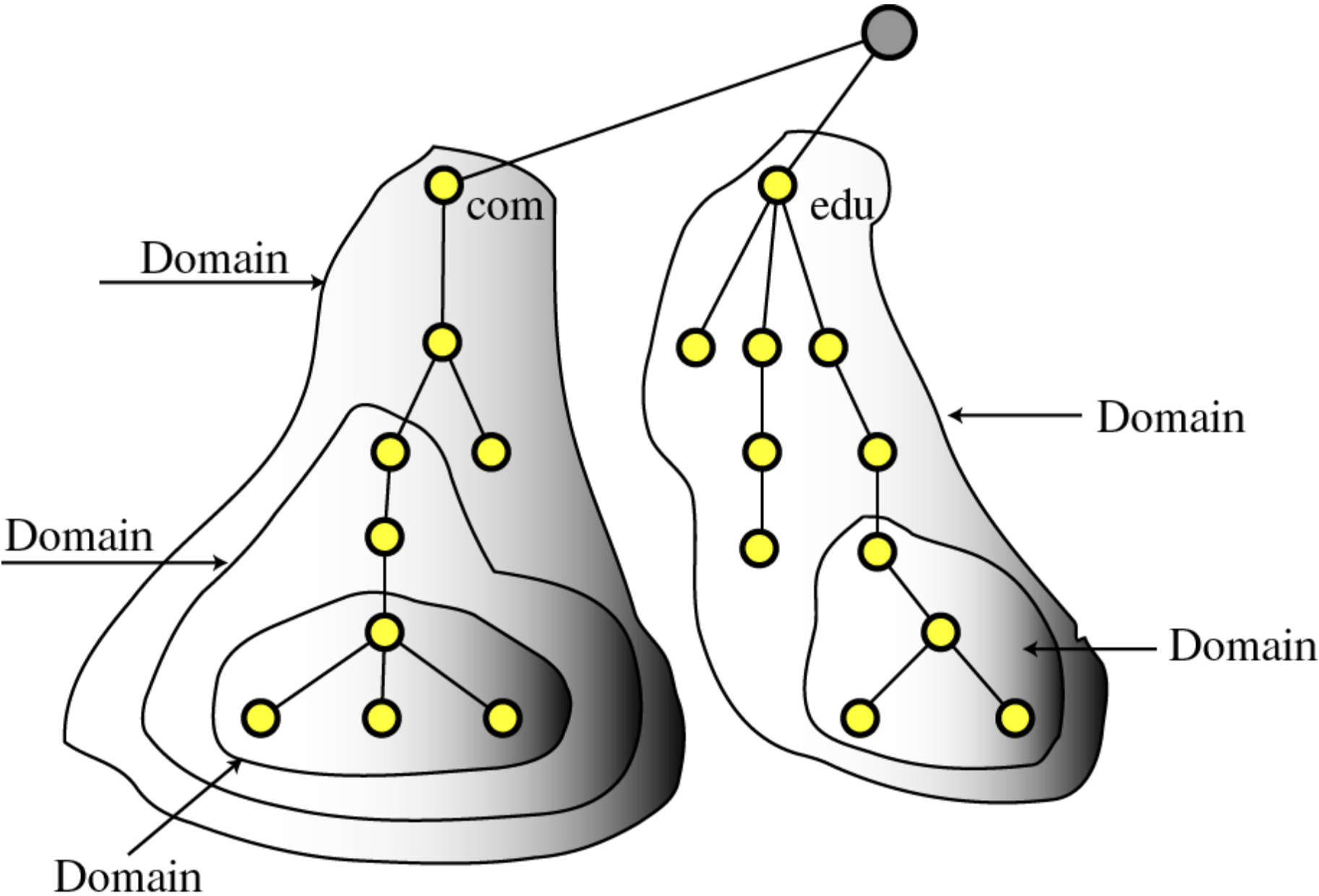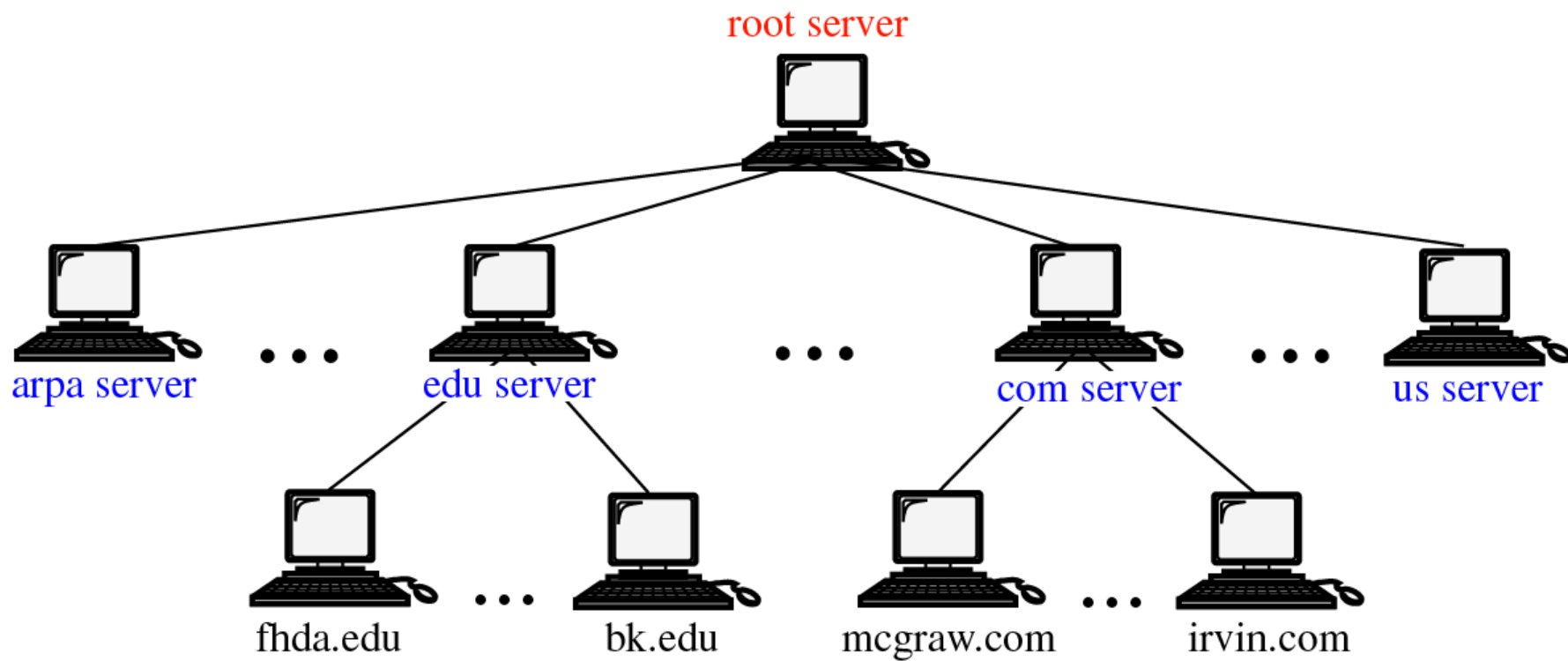| challenger.atc.fhda.edu. |
| cs.hmme.com. |
| www.funny.int. |

PQDN

| challenger.atc.fhda.edu |
| cs.hmme |
| www |

Figure 16-4

Figure 16-5

Figure 16-6

Figure 16-7

Figure 16-8

Root level

com edu gov int mil net org

fhda ...

atc ...

chal ...

chal.atc.fhda.edu.

Index to addresses

Generic domains

Figure 16-9

Root level

ae • • • fr • • • us • • • zw

ca

cup

anza

anza.cup.ca.us.

Index to addresses

Country domains

Figure 16-10

Root level

arpa

in-addr

132

34

45

121 → 121.45.34.132.in-addr.arpa.

Index to names
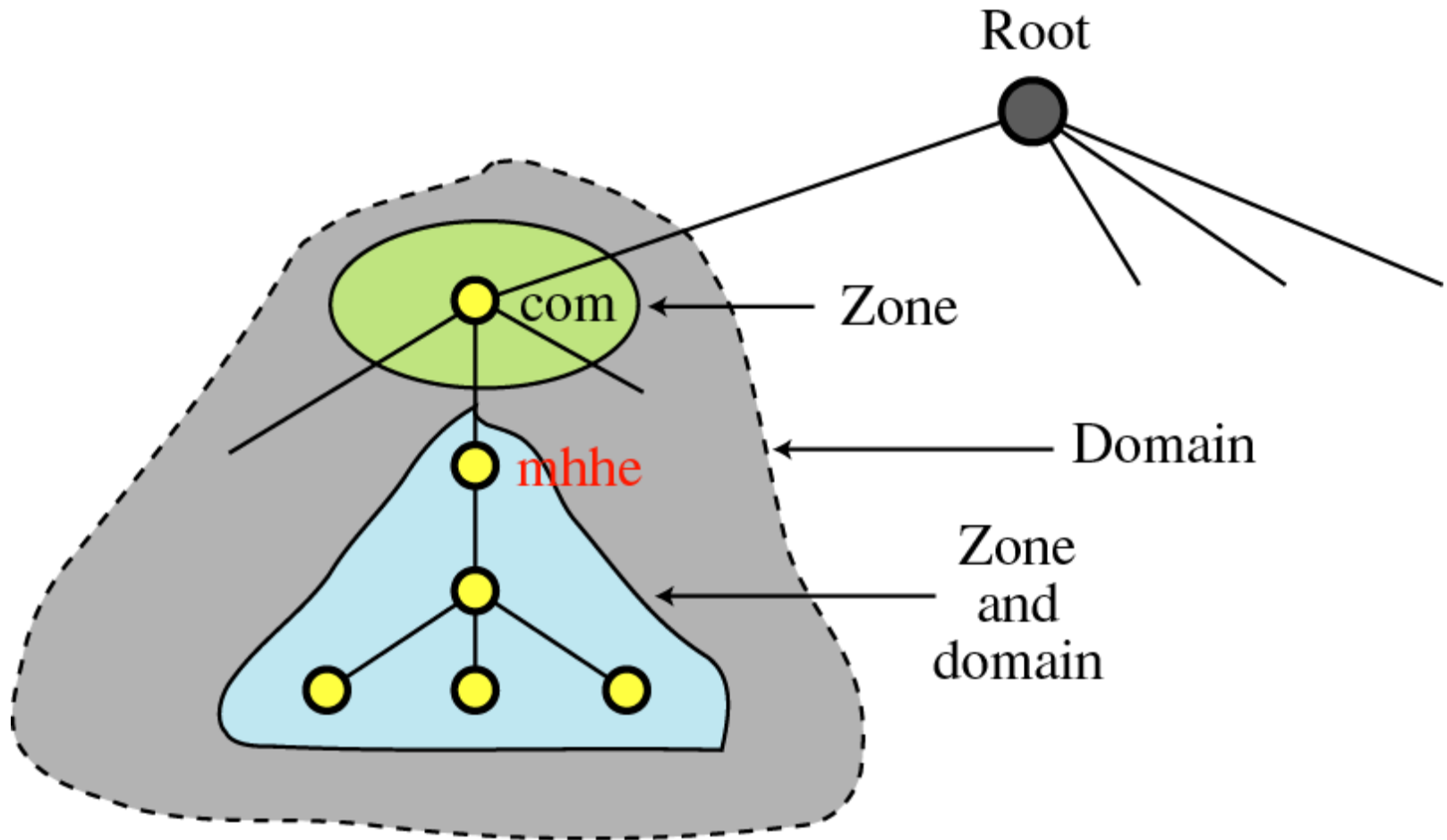
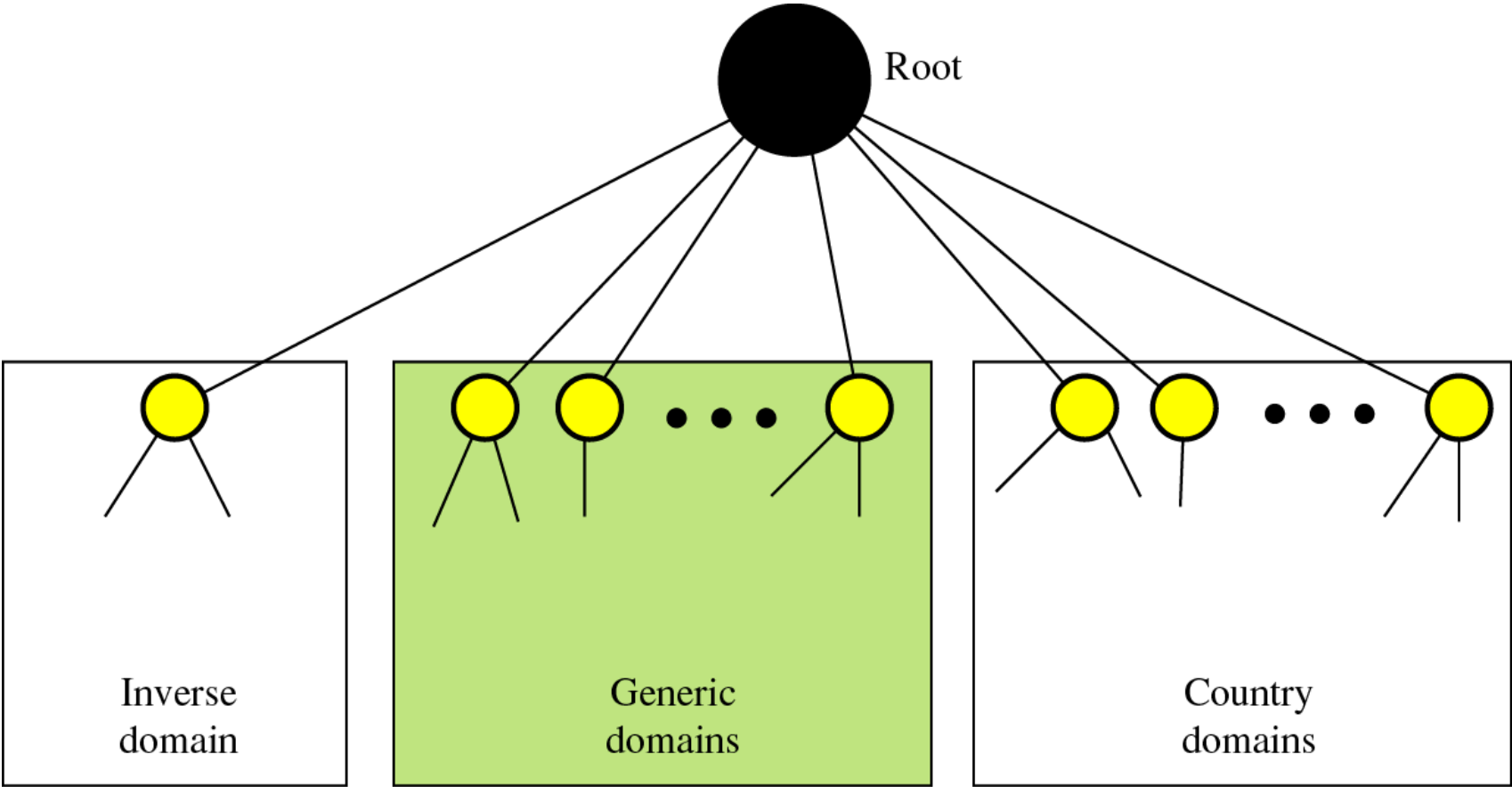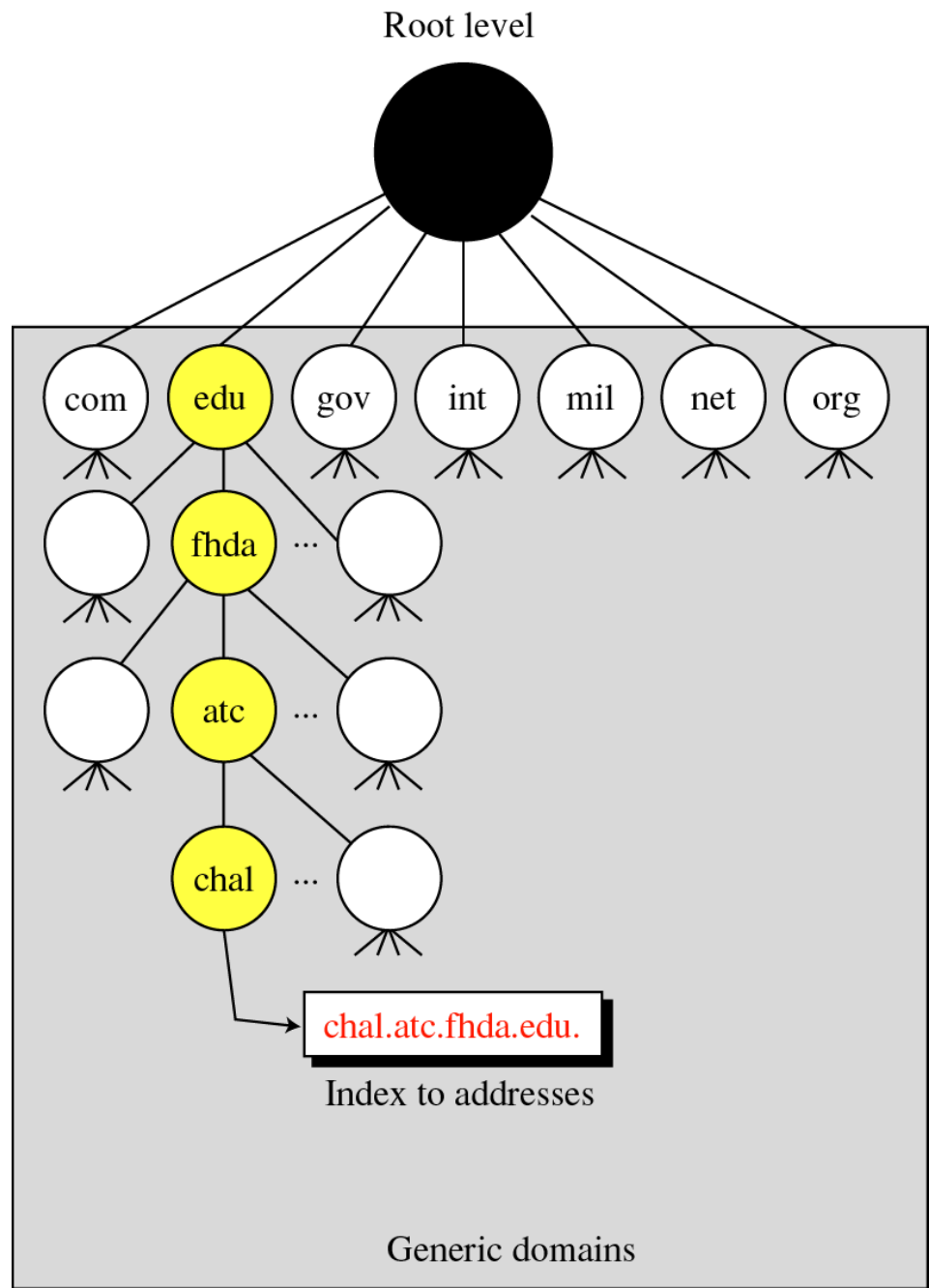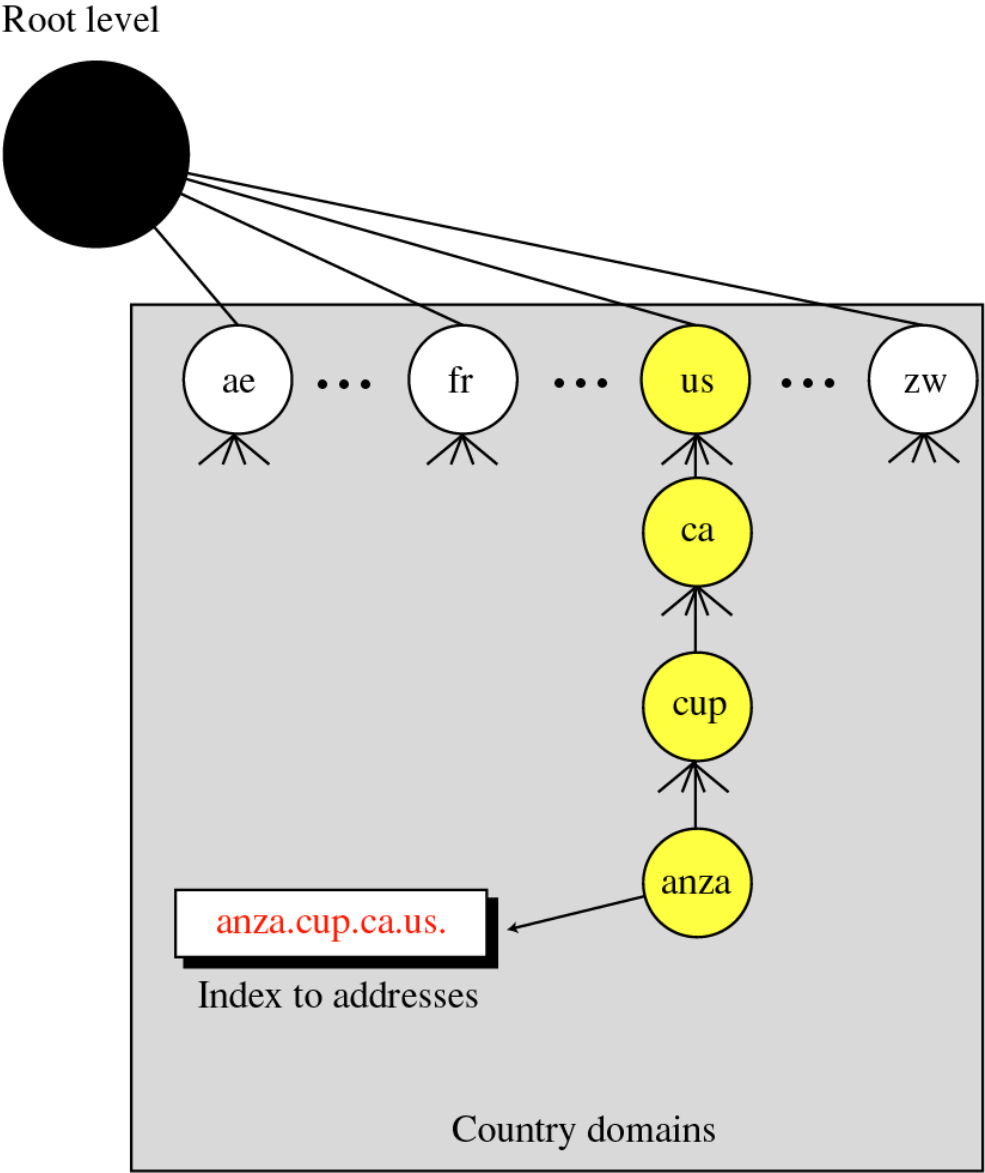Inverse domain
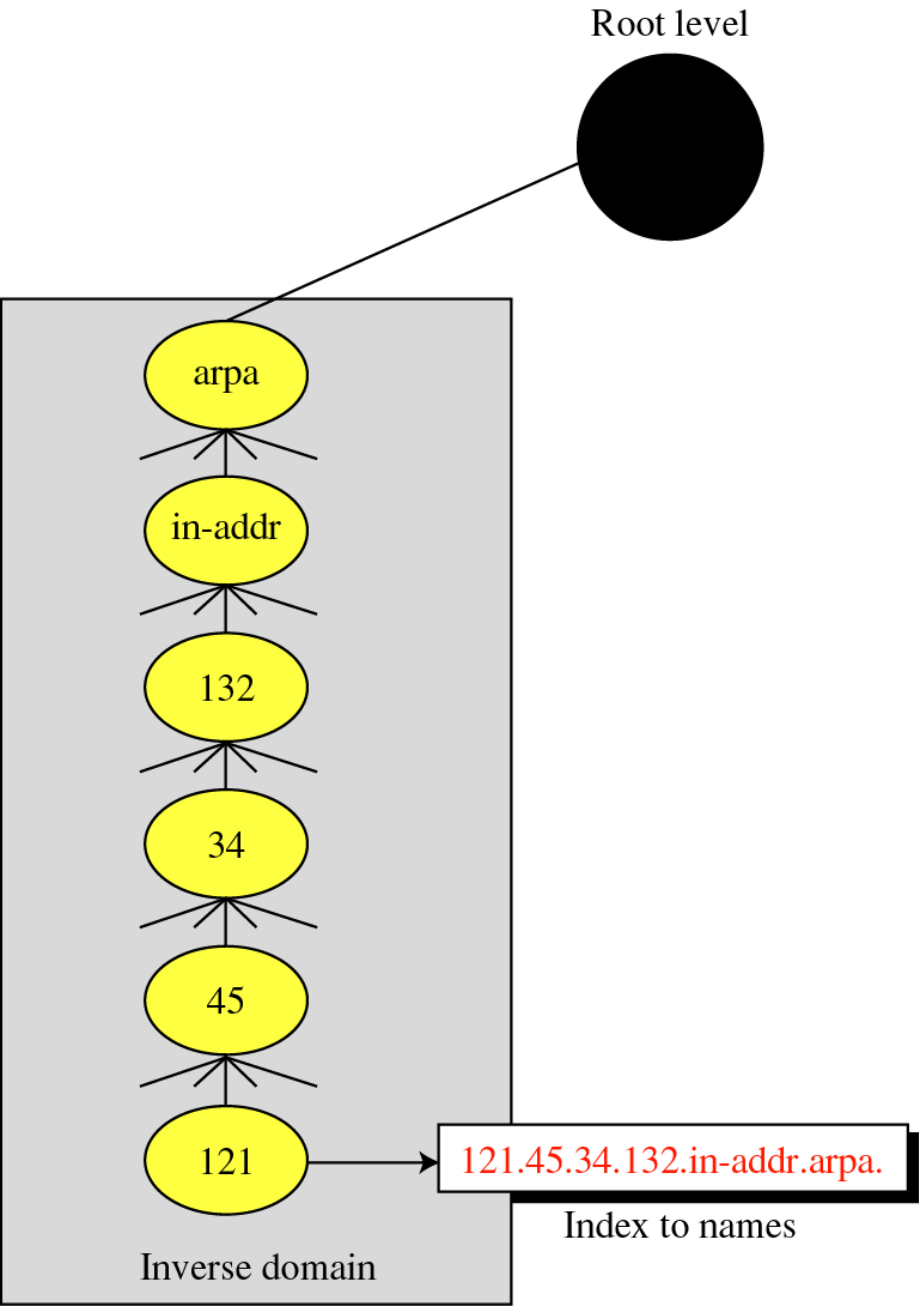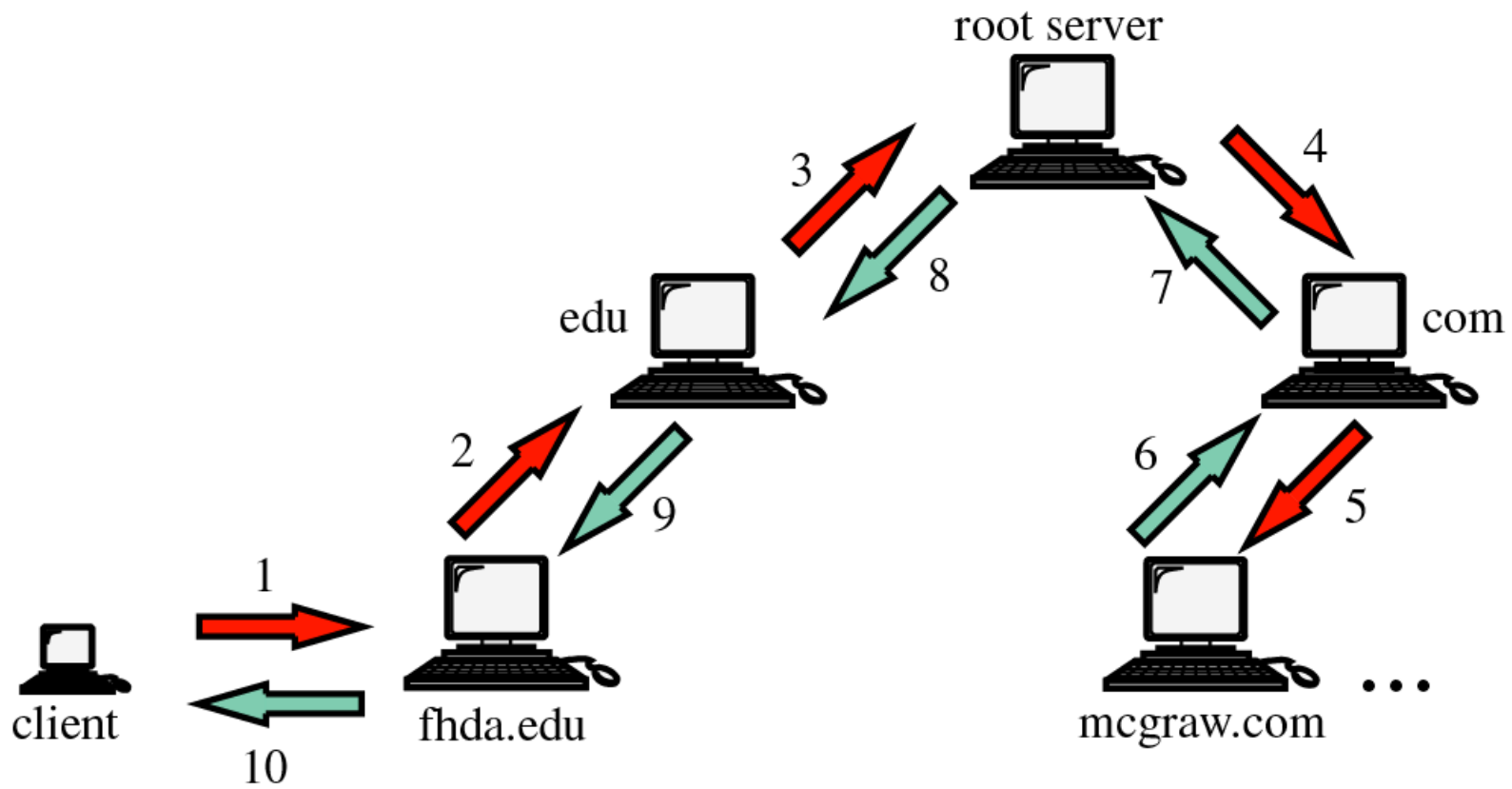
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Figure 16-11

Figure 16-12

Figure 16-13

Figure 16-14

Header

Question section

a. Query

Header

Question section

Answer section

Authoritative section

Additional section

b. Response
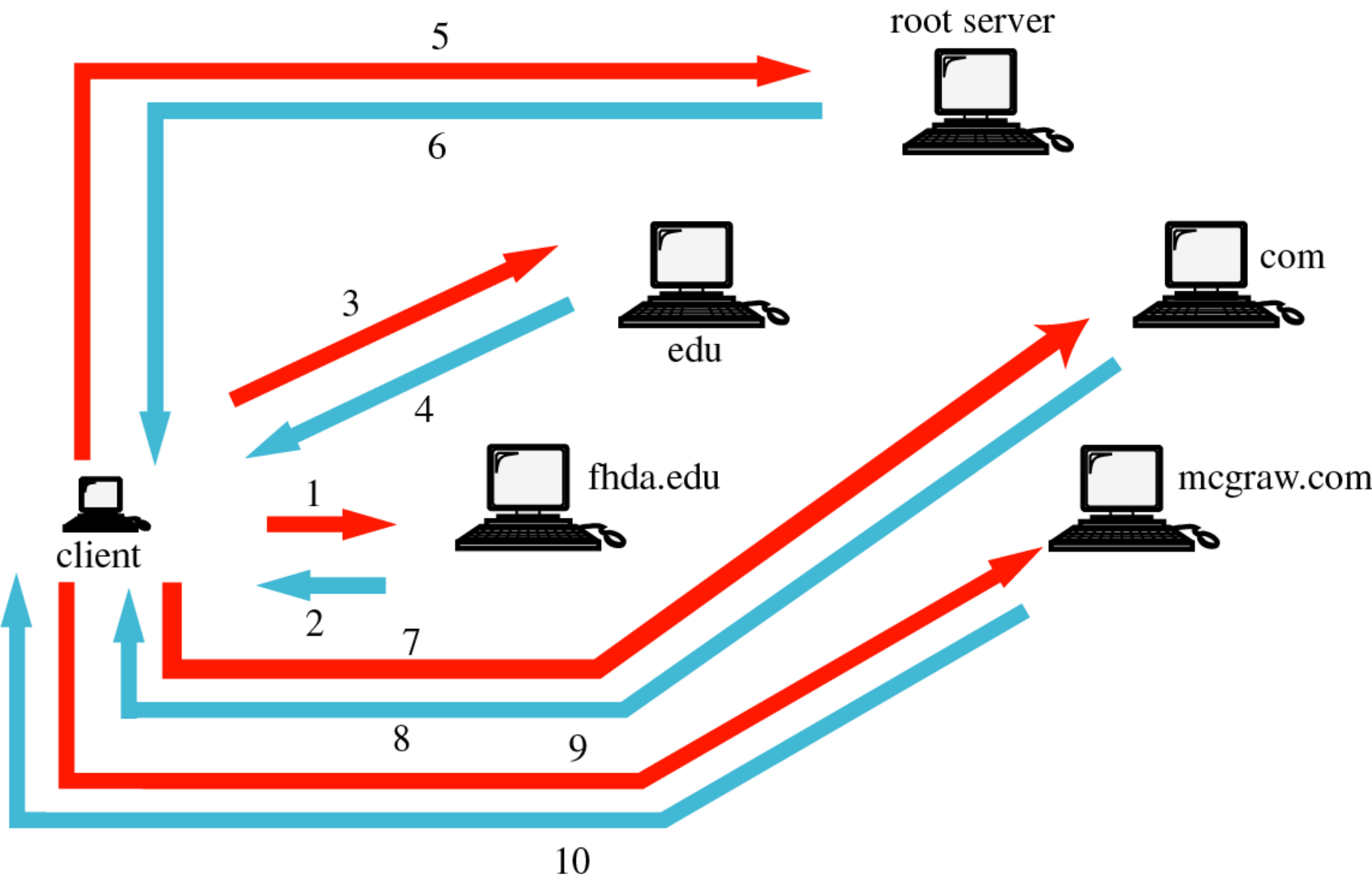
Figure 16-15

Identification	Flags
Number of question records	Number of answer records (All 0s in query message)
Number of authoritative records (All 0s in query message)	Number of additional records (All 0s in query message)

Figure 16-16

| QR | OpCode | | | AA | TC | RD | RA | Three 0s | | rCode | |

Figure 16-17
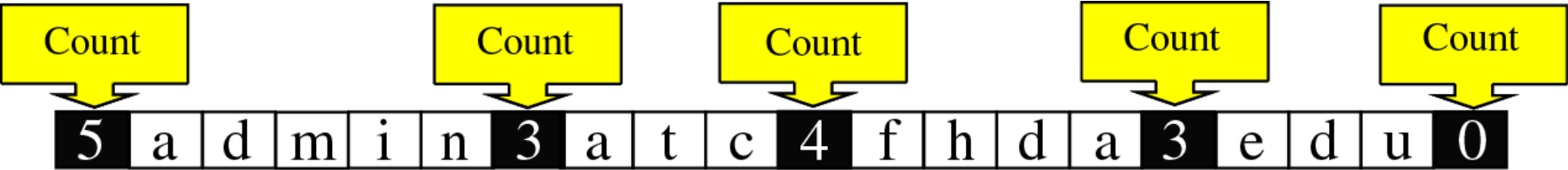
Figure 16-18

Figure 16-19
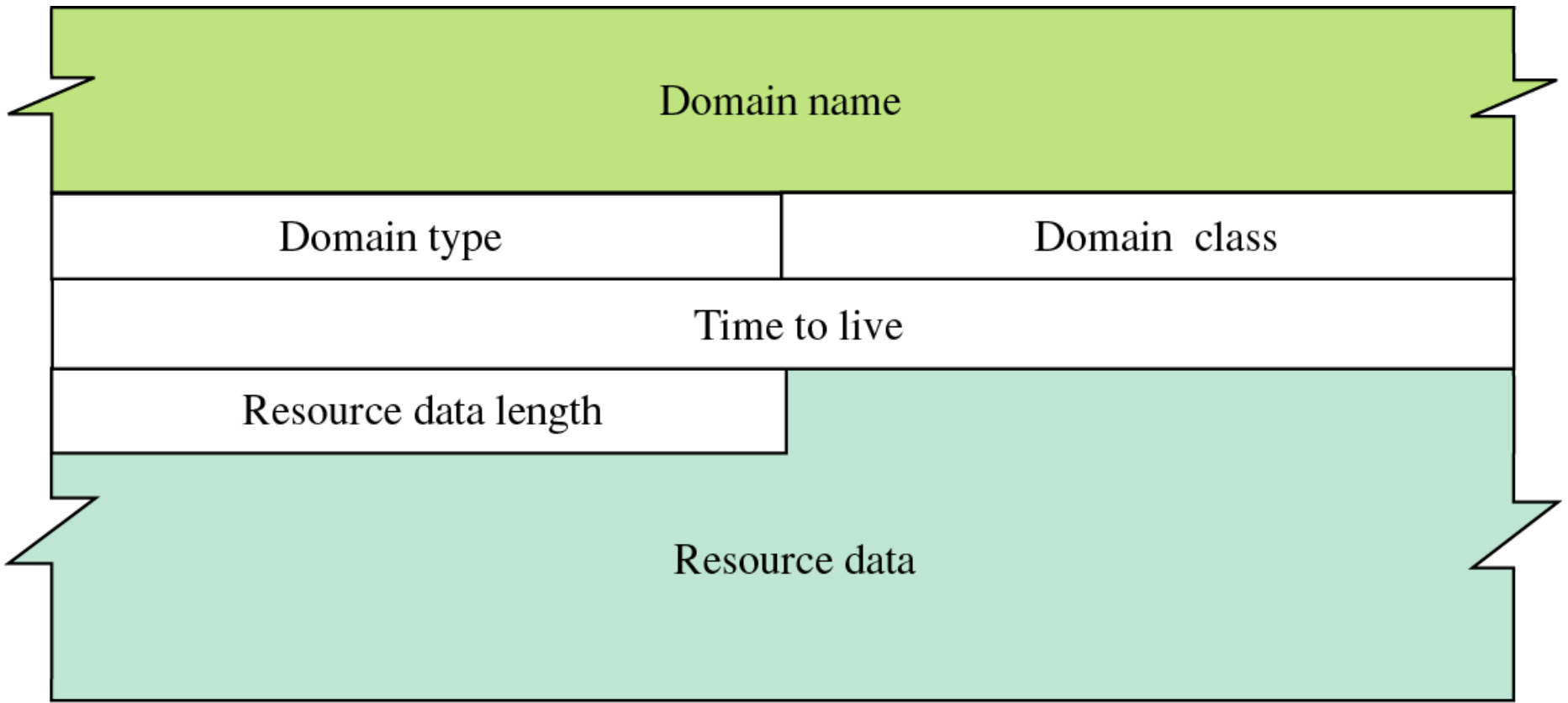
Figure 16-20
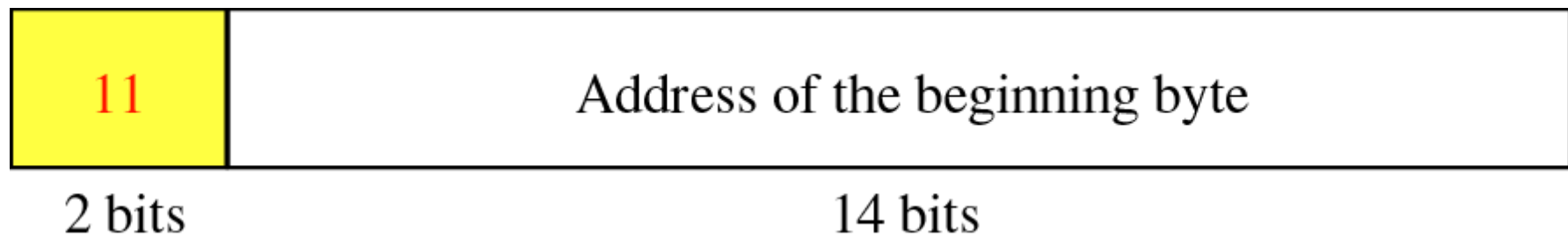
Figure 16-21

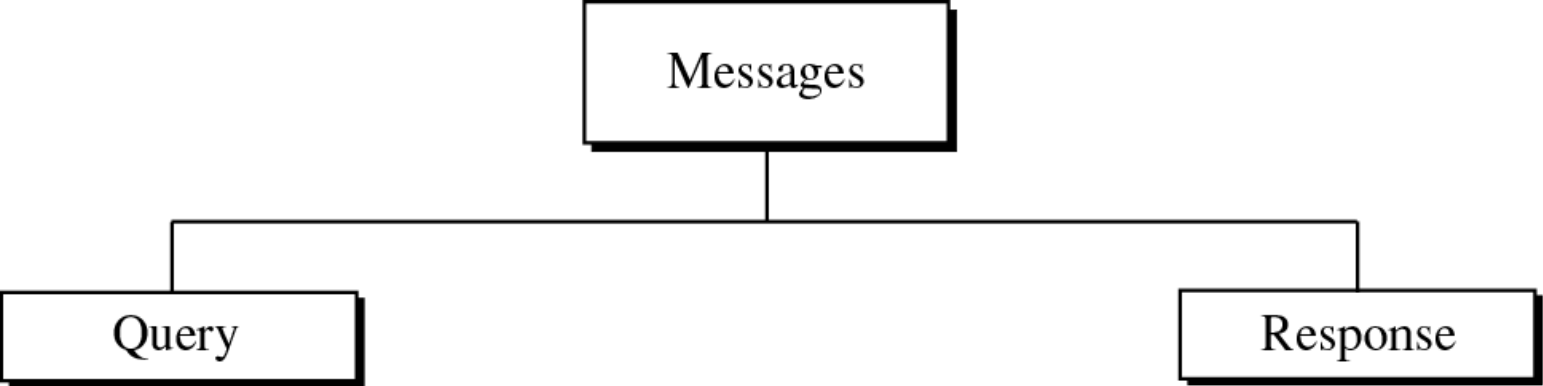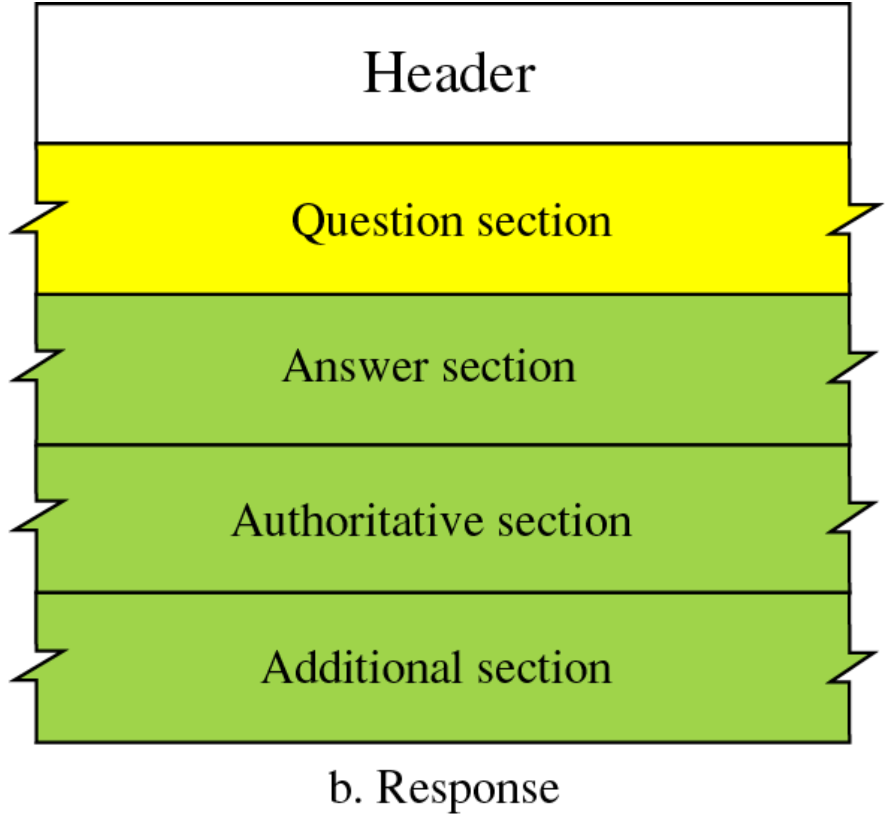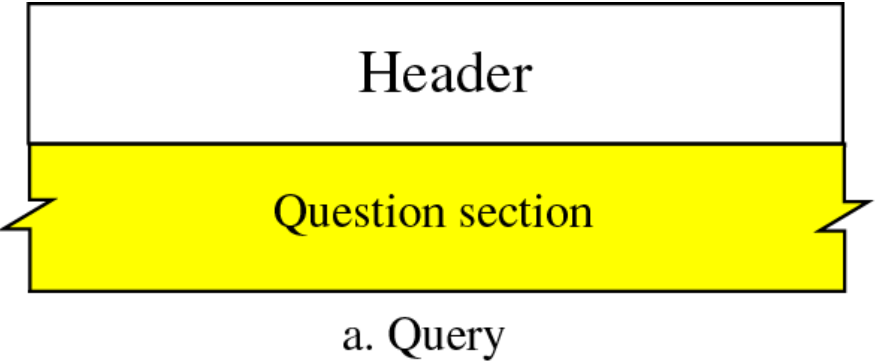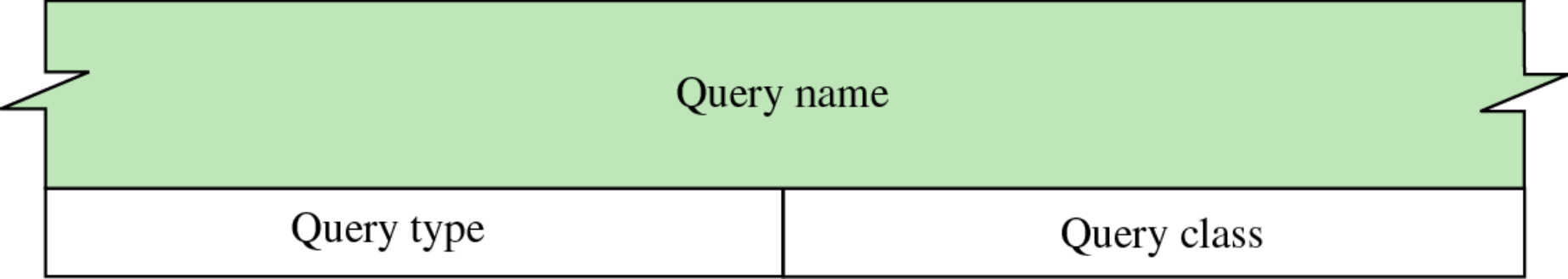| 0x1333	0x0100
1	0
0	0

4	'c'	'h'	'a'
'l'	4	'f'	'h'
'd'	'a'	3	'e'
'd'	'u'	0	Continued on next line

1	1

Figure 16-22

0x1333			0x8180	
1			1	
0			0	
4	'c'	'h'	'a'	
'l'	4	'f'	'h'	
'd'	'a'	3	'e'	
'd'	'u'	0	Continued on next line	
1	1		0xC0	
0x0C	1		Continued on next line	
1	12000		Continued on next line	
	4		153	
18	8	105		

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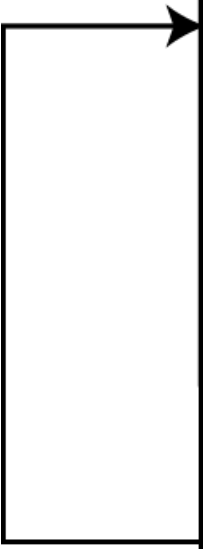
Figure 16-23

0x1200		0x0900	
1		0	
0		0	
1	'9'	1	'7'
1	'2'	3	'1'
'5'	'3'	7	'i'
'n'	'-'	'a'	'd'
'd'	'r'	4	'a'
'r'	'p'	'a'	0
12		1	

Figure 16-24

0x1200		0x8D80	
1		1	
0		0	
1	'9'	1	'7'
1	'2'	3	'1'
'5'	'3'	7	'i'
'n'	'-'	'a'	'd'
'd'	'r'	4	'a'
'r'	'p'	'a'	0
12		1	
0xC00C		12	
1		Continued on next line	
24000		10	
4	'm'	'h'	'h'
'e'	3	'c'	'o'
'm'	0		