**Midterm**

CS 380
Fall 2005
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1 How can one physical network (e.g., a lab of heterogeneous ethernet-connected computers) support multiple incompatible network software architectures?

2 Why is the Internet network architecture often referred to as TCP/IP?

3 What is the main difference between the Transmission Control Protocol (TCP) and the User Datagram Protocol (UDP)?

4 In the Domain Name Service (DNS) protocol, a standard reply from a DNS server has four sections containing resource records (RRs). What is the purpose of the RRs in each of the following sections?

a) Question Section
b) Answer Section
c) Authority Section
d) Additional Section

5 When would a web browser make each of the following HTTP requests?

a) `GET`
b) `HEAD`
c) `POST`

6 Three aspects of information security in a network architecture are authentication, privacy and authorization.

a) What is authentication in networking?
b) What is privacy in networking?
c) What is authorization in networking?
d) Which of the application layer protocols discussed in class always require some form of authentication?
e) Which of the application layer protocols discussed in class always provide privacy?

7 Consider the following commands executed in the Cal Poly Pomona Intranet:

```
% ls -ld hash
-rw-rwx---   1 carich   css-admin      18 Oct 25 19:05 hash

% dcecp -c group list css-admin -simple
carich
raheja

% dcecp -c group list css -simple
eyyoo
krjohnson
mabuising
mrgalabova

% acl_edit hash -l
# SEC_ACL for hash:
# Default cell = /.../intranet.csupomona.edu
mask_obj:rwxci-
user_obj:rw-c--
user:masrinivas:rw--id  #effective:rw--i-
group_obj:rw-c--
group:css:r---i-
other_obj:------
any_other:------
```

a) Give the username of every user authorized to read the file `hash`.

b) Give the username of every user authorized to write the file `hash`.

c) Give the username of every user authorized to execute the file `hash`.

d) Which permissions granted in the access control list (ACL) can be revoked without affecting access to the file `hash`.

8 Consider the following SMTP conversation over a TCP connection:

```
220 sparky.intranet.csupomona.edu ESMTP Postfix
EHLO [192.168.0.3]
250-sparky.intranet.csupomona.edu
250-PIPELINING
250-SIZE 15728640
250-ETRN
250-AUTH PLAIN LOGIN DIGEST-MD5 CRAM-MD5
250 8BITMIME
RSET
250 Ok
MAIL FROM:<jmo@csupomona.edu>
250 Ok
RCPT TO:<masrinivas@csupomona.edu>
250 Ok
DATA
354 End data with <CR><LF>.<CR><LF>
Date: Tue, 25 Oct 2005 18:34:04 -0700 (PDT)
From: "Dr. Craig A. Rich" <carich@csupomona.edu>
To: "CS 380 Section 1" <cs38001@csupomona.edu>
Subject: CS 380 Midterm
Message-ID: <Pine.OSX.4.58.0510251833140.667@jazz.local>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

Good luck on the midterm exam.
.
250 Ok: queued as 5D92C14A82
QUIT
221 Bye
```

a) To what user was the message actually sent?

b) From what user was the message actually sent?

c) How many lines of the conversation were sent by the SMTP server?

d) How many lines of the conversation constitute the message content (a.k.a. mail data)?

e) How many lines of the conversation constitute the message headers?

f) Was the connection initiated by the SMTP client or server?