I   Warmup

1. [4 points]: Which of the following is true about Address Resolution Protocol (ARP) and learning bridges?

(Circle ALL that apply)

A. A learning bridge maintains state that maps IP addresses to hardware (MAC) addresses.

B. A learning bridge maintains state that maps IP addresses to MAC addresses.

C. A host's ARP table maintains state that maps IP addresses to hardware (MAC) addresses.

D. A host's ARP table maintains state that maps hardware addresses to IP addresses.

2. [4 points]: Which of the following is true about DNS?

(Circle ALL that apply)

A. A query for an `A` record may return multiple IP addresses in the response.

B. A query for an `NS` record may return multiple IP addresses in the response.

C. A query for a `MX` record may return multiple IP addresses in the response.

D. A short TTL on an `A` record reply may run the risk of increasing traffic at the root nameserver.

E. None of the above.

3. [2 points]: Which of the following most accurately describes the *most common* uses for eBGP, iBGP, and IGP?

(Circle the BEST answer)

A. eBGP is used between ASes for external destinations, iBGP is used within an AS for external destinations, and IGP is used within an AS for destinations within an AS.

B. eBGP is used within an AS for external destinations, iBGP is used between ASes for external destinations, and IGP is used within an AS for internal destinations.

C. eBGP is used between ASes for external destinations, iBGP is used within an AS for internal destinations, and IGP is used within an AS for external destinations.

D. None of the above

Name:

II Potpourri

4. [4 points]: Explain the difference between a link-state routing protocol an a distance vector protocol.

(Answer legibly in the space below.)

5. [4 points]: Consider the graph below, which shows a cumulative distribution function (CDF) of the DNS response times for DNS lookup latencies for three data traces: (1) two different traces at a resolver at MIT in Cambridge, MA; (2) one trace at a resolver in Korea (`kaist`). [1]

  A. Which resolver has more queries that take more than a second to resolve?

  B. Why might the two traces have different latency distributions? (In other words, why might one resolver take longer to resolve queries than another?) There are several possible reasons; give one. (*Hint:* Think about geography.)

(Answer legibly in the space below.)

---
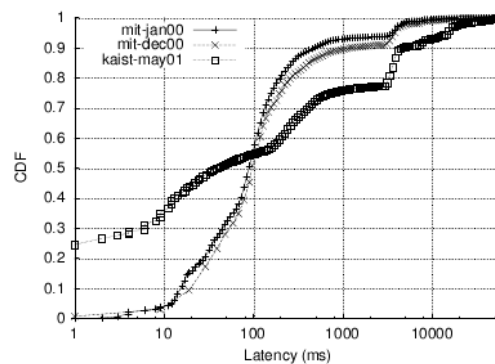
[1]In case you don't know, the way to read a CDF is as follows: a point (x, y) means that for that distribution, the fraction y of the points in that distribution have value x or smaller. For example, slightly more than 30% of the queries in the `kaist` trace had a lookup latency of 10ms or less.

Name: