**Question 1:**

**What are some of the physical media that internet can run over?**

Internet can run over twisted-pair copper wire and thin coaxial cable, which are the most used methods, but it also runs over thick coaxial and fiber optic.

https://rb.gy/ljf1cj

**Question 2:**

**Read the DNS SRV RFC, RFC 2782. What is the purpose of the SRV record?**

The purpose of RFC 2782 is to specify “an Internet standards track protocol for the Internet community.” It specifically describes a “DNS RR which specifies the location of the server(s) for a specific protocol and domain.” This SRV would allow for using multiple servers under one domain name. This would make moving services around hosts much easier, and to designate some hosts as backups for a primary server.

https://tools.ietf.org/html/rfc2782

**Question 3:**

**Is it possible for an application to enjoy reliable data transfer even when the application runs over UDP? If so, how?**

UDP is unreliable because it allows for packet loss. Unlike TCP, it doesn’t check for all packets received, and this will consequently lead to packet loss eventually. However, since the question specifically asks for an application, we can use the application to make UDP reliable. UDP is more lightweight than TCP, so it’s used more often. It’s then made more reliable at the application level by adding connection handling, sequencing, acknowledgement, and flow control.

<https://iopscience.iop.org/article/10.1088/1748-0221/15/09/T09005/pdf#:~:text=A%20%3A%20User%20Datagram%20Protocol%20(UDP,and%20packet%20losses%20can%20occur>.

<https://networkengineering.stackexchange.com/questions/16809/how-to-make-udp-reliable#:~:text=UDP%20by%20itself%20isn't,a%20good%20example%20of%20that.&text=While%20UDP%20is%20not%20reliable,add%20reliability%20at%20application%20level>.

**Question 4:**

**We made a distinction between the forwarding function and the routing function performed in the network layer. What are the key differences between routing and forwarding?**

Routing usually refers to how a packet is addressed and pathed to be sent from its source to the destination over the internet. It technically forwards packets at layer 3. Forwarding is the action of transferring the packet from one input link to an output link. It helps send the packets through its hops. I suppose, technically, routing is a type of forwarding.

<https://networkengineering.stackexchange.com/questions/33615/difference-between-routing-forwarding-switching>

<https://www.quora.com/What-are-the-difference-between-forwarding-and-routing#:~:text=Forwarding%20refers%20to%20the%20router,take%20from%20source%20to%20destination>.

**Question 5:**

**How big is the MAC address space? The IPv4 address space? The IPv6 address space?**

In the widely used current MAC address space, there are 248 possible addresses, which means about 281 trillion addresses. The IEEE has recommended upgrading to the EUI-64, which is a 64-bit space.

The IPv4 (232) and IPv6 (2128) allow for large numbers as well. IPv4 contains about 4 billion addresses, and IPv6 contains about 3.4 x 1038 spaces (I’m not sure what very large number that is).

<https://en.wikipedia.org/wiki/MAC_address#:~:text=The%20original%20IEEE%20802%20MAC,281%20trillion)%20possible%20MAC%20addresses>.

https://www.ripe.net/about-us/press-centre/understanding-ip-addressing#:~:text=Both%20IPv4%20and%20IPv6%20addresses,size%2C%20containing%20340%2C282%2C366%2C920%2C938%2C463%2C463%2C374%2C607%2C431%2C768%2C211%2C456%20IPv6%20addresses.

**Question 6:**

I found myself constantly forgetting about this class. This is due in part to it being my only course not on Canvas, but also because there were multiple weeks where we didn’t do anything. I would suggest maybe doing one assignment a week and cleaning up the LMS page so that it’s easier to find assignments when they are due (it seems like there’s a lot of extraneous stuff on there).

I would have liked to do more programming assignments as well. I love learning how my programs can interact with the outside world, so I very much appreciated the (knock-off) Arduino assignment and the Python programming assignments. As a final suggestion: prepare the students more for the programming assignments and make them do at least some of the programming instead of giving just giving them the full code. I think this would make the CS students happy because of programming and CIS or more IT focused students happy as well.

To put a fine point on it, my suggestions are:

* Regular Assignment Due Dates
* Cleaner LMS Page
* More Focused Homework