



Preview Assessment: Midterm

Name Midterm

Instructions You may use your notes, any books or articles, or the Internet in answering these questions. You should not speak with anyone about the questions. If you have a concern about a question, please send email to Prof. Astrachan

You have two attempts at this midterm. You might want to print the questions first, look things up, then come back to take the test.

Multiple Attempts This Test allows 2 attempts. This is attempt number 2.

Force Completion This Test can be saved and resumed later.

▼ Question Completion Status:

Question 1

1 points

[Save](#)

The IETF's mission can be found on this website: <http://www.ietf.org/about/mission.html> which states that the IETF's mission is, in part, "to make the Internet work better".

Which of the following is LEAST LIKELY to help the IETF realize its mission as explained on that page.

- The IETF is willing to listen to technically competent input from any source.
- The IETF uses an open process, all its documents, minutes, and mailing lists are freely available to anyone on the Internet.
- The 'F' in IETF represents "force", and the IETF protocols have the force of both the code of law and the code of software since the IETF standards are legally binding throughout the world.
- When the IETF takes responsibility for a protocol, it takes responsibility for all aspects of the protocol.

Question 2

1 points

[Save](#)

This Internet RFC (request for comments) was posted by the IETF on April 1, 2009

<http://tools.ietf.org/html/rfc5513>

In that document this paragraph appears (TLA means Three Letter Acronym):

Furthermore, it should be noted that we are rapidly approaching World Acronym Depletion (WAD). It has been estimated that, at the current rate of TLA allocation, we will run out by the end of September this year. This timescale could be worsened if there is the expected growth in demand for mobile acronyms, IP-TLAs, and TLA-on-demand. According to the definition provided in [Section 2](#), there are $36^{*}3 - 10^{*}3 = 45656$ TLAs in total. This number will so easily be depleted that we must institute some policy for conservation.

Which of the following is TRUE about this RFC?

- It's a joke, check the date it was posted.
- We have already reached WAD (World Acronym Depletion), all TLAs have been allocated.

- The document discusses BAD or *Binary Acronym Duplication* which could permit an acronym to serve two purposes rather than one, in the first two paragraphs.
- The document cannot be found on the Internet, once it is viewed it will disappear from the user's browser and will be unable to be found by Google or any other means.

Question 3**1 points**[Save](#)

IANA is the Internet Association Numbers Authority. Information about number allocation can be found here: <http://www.iana.org/numbers/>

Which of the following is NOT something for which IANA is responsible?

- Allocation of IPv4 addresses.
- Allocation of Autonomous System (AS) numbers, both 16- and 32-bit.
- Allocation of IPv6 addresses.
- Allocation of numbers for IETF protocol proposals.

Question 4**1 points**[Save](#)

The w3c, or World Wide Web Consortium describes itself here

<http://www.w3.org/Consortium/>

Which one of the following is NOT true regarding similarities between the w3c and the IETF?

- Both groups develop standards or protocols, one basically for the web (w3c) and one for the Internet (IETF).
- Both are international organizations with representation from members throughout the world.
- Tim Berners Lee is the currently the head of both organizations.
- Members in both groups are likely interested in both technology and, to a degree, policy.

Question 5**1 points**[Save](#)

Which ONE of the following is TRUE regarding the adoption of free software (where free is defined by the Free Software Foundation, e.g., at fsf.org) ?

- Free software is produced mostly by hobbyists rather than by experienced software developers and there are very few useful free software programs.
- Richard Stallman, the leader of the free software movement, doesn't particularly care whether his software is adopted or used, he develops it as an intellectual exercise.
- More people use Linux, which is a free software operating system, on their laptops than use the Apple Macintosh operating system.
- Free software is often purchased by businesses, e.g., Redhat Linux is sold to businesses, even though the businesses could get the source code without payment.

Question 6**1 points**[Save](#)

Eric Raymond, Linus Torvalds, and Richard Stallman are all involved with FOSS: Free and Open Source Software. Which ONE of the following is TRUE about them?

- The three have formed a company called Triwizards because superb software developers are often known as wizards (with the name paying homage to Harry Potter stories).
- All three of them work to promote both free and open source software to different communities, and they typically work together in these promotions.
- Each of them has written computer programs that have seen reasonably wide-spread adoption.
- Stallman and Torvalds are programmers whereas Raymond is a spokesman and advocate, but not a programmer.

Question 7**1 points**[Save](#)

Which **ONE** of the following is **NOT** true regarding the role of patents in software development?

- Some patents are filed and held as a defensive measure --- not to stop others from using the ideas, but to stop anyone else from patenting and preventing the ideas from being used.
- Although patents are required to be "non-obvious" and to respect related prior work; it is difficult for the patent office to be able to judge what "non-obvious" is and to know all related, prior work.
- Patents are not the only form of protection for software, both copyright and trade secret laws can be used to protect software intellectual property.
- Patents are sometimes preferred to copyrights because the protection provided by a patent lasts longer (in years) than the protection provided by copyright.

Question 8**1 points**[Save](#)

Which **ONE** of the following is **FALSE** regarding the role of copyleft licenses such as the GNU Public License (GPL) in protecting software.

- Copyleft licenses are "viral" in the sense that code protected by a copyleft license leads to more code protected by copyleft licenses -- if you use copylefted source code in your code, then your code is copylefted.
- Copyleft licenses can be voided by the original copyright holder on an ad-hoc, case-by-case basis, e.g., as was the case for DVD-Jon in developing deCSS (descrambling CSS software).
- Copyleft software is an interesting idea in theory, but also in practice. There is widespread use of copylefted software in industrial, academic, and non-profit sectors.
- Copyleft software exists outside of the scope of copyright law, the two methods of protecting software intellectual property are completely unrelated except that the names are similar.

Question 9**1 points**[Save](#)

Which of the following is an important reason for the very slow adoption of IPv6 throughout the world? Choose more than one, but less than all.

- Very few members of the IETF advocate for IPv6 because it was developed by industry, outside of the IETF, unlike IPv4 which was developed by the IETF.
- IPv6 is an improvement on IPv4 in terms of the number of possible IP addresses, but the immense and recent profusion of devices that could have an IP address could make IPv6 obsolete and in need of change even before it is widely deployed.

- Widespread adoption of IPv6 will be very expensive in terms of replacing the large routers that connect parts of the Internet. Many small, personal computers on the market are ready to run IPv6 today.
- Claims that we will run out of IP addresses "very soon", have been made for many years, so it is difficult for many to believe that the end will actually happen in the next two or three years as forecast by technical groups.

Question 10**1 points**[Save](#)

An IPv4 address is called a "dotted quad" --- it consists of four parts, each of which is a number between (and including) 0 and 255. Which of the following is **FALSE** regarding IPv4 addresses.

- IPv4 addresses use 32 bits, so effectively there are roughly 4 billion addresses
- The range on the value of each quad/part in the dotted-quad format (0-255) is because $2^8 = 256$ and each quad is formed from eight bits.
- It's not possible in practice to use every possible IPv4 address because they are allocated in blocks and some blocks may go unused even if there is need in an area served by a different block
- IPv4 addresses are typically permanently tied to a domain name --- for example if the company with website www.coolstuff.com moves the site from California to New York the IP address will stay the same and DNS will take care of finding it.

Question 11**1 points**[Save](#)

If you try to connect to www.tsinghua.edu.cn which is the website for Tsinghua University in China, the connection from a machine in the US to the machine in China goes through 15-25 different routers. The last five routers all have an IP address that begin with the same 16-bit prefix: 211.151

Which of the following is MOST likely the reason for these routers to have the same prefix?

- The routers are part of the same Autonomous System (AS) in China, they share a common prefix.
- The Chinese government has enforced both cultural and IP conformity -- every machine in China shares the same 16-bit prefix because 16 is a power of two.
- Tshinghua University has more than 60,000 students and 2^{16} is 65,536.
- All countries share the same 16-bit prefix for the IP addresses in that country (if the country has more than 100 million people).

Question 12**1 points**[Save](#)

The value of 2^{10} is exactly (4 digits, no commas in the answer)

Question 13**1 points**[Save](#)

Windows 7, Microsoft's new operating system, can be deployed in either 32-bit or 64-bit versions. In a 32 bit version the machine will not be able to address more than roughly 4 billion memory locations because 2^{32} is about 4 billion and in the 32-bit version that's how many memory locations can be used. In the 64-bit version, 2^{64} memory locations can be used. About how many locations is this?

- About 8 billion

- About a million million or 10^{12} .
- About 16 billion.
- About 2^{64} which is about 10^{19} .

Question 14**1 points**[Save](#)

What domain name corresponds to the IP address 209.62.145.155 ?

- The US Naval Academy
- The NCAA (National Collegiate Athletic Association)
- MOOG: The next generation of flight controls
- It does not correspond to any domain.

Question 15**1 points**[Save](#)

Video sent over the Internet, especially streaming video, uses different protocols than those used for sending web pages or email messages. In particular, RTP and RTSP (Real-time Transport Protocol and Real-Time Streaming Protocol) are used to ensure fast and reasonable delivery of audio, video, and multi-media content over the Internet. Which ONE of the following is **FALSE** about these Internet protocols?

- Like many Internet protocols, these were developed by the IETF.
- Internet protocols carry the force of law --- ISPs and content providers like YouTube must follow them or risk extremely large fines and even jail time.
- Streaming audio or video can likely support the loss of some packets without the user experiencing a noticeable degradation in quality, but users don't want to wait and don't want jittery transmissions.
- The protocols were likely the result of the collaborative efforts of different individuals, companies, and other concerned developers and users of the Internet -- not just one company or industry deciding on how to do things.

Question 16**1 points**[Save](#)

Which **ONE** of the following is **FALSE** concerning the DMCA (Digital Millennium Copyright Act)?

- The DMCA was passed during the Clinton administration.
- The safe-harbor provisions of the DMCA have been influential in allowing YouTube, Blogs, and other web 2.0 entities to develop and flourish.
- The anti-circumvention features of the DMCA have had little effect in the academic and technical communities in discouraging research, innovation, and freedom.
- Copyright holders can legally ask for their material to be removed from a website if the holder hasn't given permission for the material to be posted because of the DMCA.

Question 17**1 points**[Save](#)

Richard Stallman thinks software should be free. But by free he means free as in free speech, not free as in free beer, i.e., software should respect and protect the user's freedom.

- True
- False

Question 18**1 points**[Save](#)

The copyright on the synopses you do in Compsci 82 is held by Prof. Astrachan because of an agreement you clicked on the first time you viewed the course web pages this semester.

- True
- False

Question 19**1 points**[Save](#)

The Internet is a network of networks.

- True
- False

Question 20**1 points**[Save](#)

Thomas Narten referred to the scaling of Internet routing as a possible "Tragedy of the Commons". Which of the following is the best description of this referral?

- When companies or groups want to add lots of addresses, they're concerned about themselves and not how this addition affects global routing tables used by everyone.
- The Internet is commonly used, but with IPv4 addresses running out, a tragedy is likely to develop in terms of Internet performance.
- Internet routing between Autonomous Systems (AS) is currently managed by the Border Gateway Protocol (BGP), but this protocol does not protect many common communications.
- The Internet is a common good, used by everyone. The health of common goods must be preserved or both society and commerce will suffer possibly severe and server consequences (the consequences will be hard, and will be applicable to both groups, individuals, and servers).

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