Network Privacy

Milestone 8 – CSCI 435 – Spring 2025

*Please be sure that you complete all pages of this worksheet. Some sections may begin on new pages, so you may need to scroll past any blank space.*

*As you read the background material, fill in the answers to the following questions inside the provided boxes (1x1 tables). You do* ***not*** *need to write complete sentences for questions that ask for a short answer. Paragraph or bullet form is acceptable for questions that require an explanation or description.*

1. A \_\_\_\_\_\_ is formed by a combination of hardware and software that allows messages to be exchanged between systems.

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2. A network \_\_\_\_\_\_\_\_\_ defines the way that two computers will talk to each other, providing rules for the hardware and software layers to exchange messages.

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3. What is a protocol stack?

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4. What is the lowest layer in the OSI Model (the one that deals with physical signals)?

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5. What layer of the OSI Model splits data into frames?

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6. What two-word term refers to a part of a network in which all the devices are connected to the same shared physical layer?

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7. At what layer of the OSI Model is routing performed?

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8. What is the PDU of layer 3 of the OSI Model?

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9. At what layer of the OSI Model does the Transmission Control Protocol operate?

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10. What layer of the OSI Model is the top layer?

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11. Suppose that you purchase a router at a store, and it has a2:3b:10:2c:fe:54 printed on a sticker on the outside. What kind of network-related address is this?

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12. What kind of network address (including the version) is 192.168.1.1?

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13. What kind of network address (including the version) is ::1?

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14. True or False? MAC addresses can be used to identify people.

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15. How are the first 3 octets of a MAC address normally determined?

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16. Does Europe consider an IP address to be a type of personal data?

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17. An \_\_\_\_\_\_\_\_ is created when several independent networks are joined together.

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18. The \_\_\_\_\_\_\_ is a giant collection of networks across the globe that have been joined together.

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19. What is the term for a program or computer that makes requests over a network?

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20. At what layer of the OSI Model does HTTP operate?

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21. HTTPS means that HTTP is operating using \_\_\_\_\_\_\_\_\_\_\_ (3 words or 1 acronym) encryption.

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22. What are the two primary HTTP methods used by browsers?

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23. According to RFC 2324, which was published on April 1, 1998, an HTTP request to brew coffee using a teapot should return a “418 I’m a teapot” response. The 418 is an example of an HTTP response \_\_\_\_.

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24. In HTTP, both requests and responses can have a \_\_\_\_\_\_\_\_\_\_\_\_ and a body.

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25. True or False? The Internet and the World Wide Web are two names for the same thing.

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26. At what layer of the OSI Model does the WWW operate?

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27. Hypertext is text that contains \_\_\_\_\_\_\_\_ that can be followed to access other documents.

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28. What 3-word term (or acronym) provides a way to label resources on the WWW?

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29. What 3-word term (or acronym) provides both identification of a resource on the WWW and its location?

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30. What kind of client application do we normally use with the WWW?

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31. In order to host \_\_\_\_\_\_\_\_ content, a Web server simply needs to read the content from a file on disk and transmit it over HTTP.

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32. A Web \_\_\_\_\_\_\_\_\_ is built using dynamic content and works like a computer program would.

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33. What is the 3-word term (or acronym) for a company that provides Internet access?

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34. An ISP can both \_\_\_\_\_ and \_\_\_\_ everything.

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35. True or False? The FTC has found that ISPs can have misleading and deceptive privacy policies.

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36. Which U.S. president signed a Congressional Review Act bill into law to prevent the FCC from regulating the sale of personal data by ISPs?

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37. True or False? Many ISPs voluntarily maintain records associating IP addresses with individual subscribers.

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38. True or False? Every website has a unique IP address that is not shared with any other site.

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39. To prevent your ISP from easily knowing which websites you visit, you change your router or computer settings to use DNS server 8.8.8.8 (which is also bad, since it’s run by Google, but that’s another story). What two-word technique can your ISP implement to cause you to use their server instead of Google’s?

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40. What system (3 words or 1 acronym) can be enabled in LibreWolf (or other Firefox derivatives) to hide DNS queries from the ISP?

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41. True or False? An observer can determine what website a person is visiting over HTTPS if they can intercept the SNI exchange if either the browser or site doesn’t support ECH.

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42. According to the *Hitchhiker’s Guide to the Galaxy*, it is always important to know where your \_\_\_\_ is.

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43. True or False? Americans typically have many choices of ISPs and can shop based upon their privacy and service preferences.

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44. What kind of (usually) paid service (3 words or 1 acronym) enables Internet activities to be hidden from an ISP?

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45. A VPN creates an encrypted \_\_\_\_\_\_\_\_\_\_\_ between the user and the VPN service.

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46. True or False? A VPN service provider can threaten user privacy as much as an ISP.

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47. True or False? There is meaningful competition among VPN providers.

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48. What are 3 dishonest tactics used by VPN providers?

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49. True or False? Using a VPN service makes you anonymous online.

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50. When shopping for a VPN service, you find a list of the “best 10 VPN services” for the current year. Can you trust this list? Why or why not?

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51. Your favorite YouTube channel recommends NordVPN. Is this an honest recommendation?

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52. True or False? If a VPN service provider claims to have “no logs,” then you can be sure that they haven’t logged your activities.

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53. Should you sign up for a VPN service that asks for your email address?

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54. What company from the reading claims to have traffic flow data that covers 90% of the Internet?

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55. What two-word term refers to analyzing traffic flows and performing statistics to determine which devices are exchanging data?

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56. What privacy-oriented system is designed to provide anonymity (even if imperfect sometimes) when using the Internet?

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57. What is the two-word term for the third relay in a Tor connection that removes the last layer of encryption and sends the original message to its final destination on the Internet?

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58. What two-word term refers to wrapping a message in multiple layers of encryption and removing one layer at a time to obscure both the origin and destination of the message?

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59. What two-word term refers to a single website that can only be accessed using Tor?

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60. What two-word term refers to a whole set of websites that can only be accessed using special tools like Tor?

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61. What is the two-word term for a cyberattack in which an entity gains control of multiple Tor relays in an effort to compromise the identity of Tor users?

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62. What term (3 words or 1 acronym) does the FBI use as a euphemism for a piece of malware that it delivers to the target of an investigation?

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63. True or False? Using Tor keeps you safe from cyberattacks.

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64. True or False? It is a good idea to download the Tor Browser for Windows.

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65. What live Linux distribution runs from a USB stick and allows Tor to be used safely?

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*Please continue to the next page*.

# Submission

*When you have completed this worksheet, export it to PDF format. Upload the PDF file as your Moodle submission for this milestone.*