**Chapter 1 Problems and Exercises Tips**

1. **“5G” is used in reference to both Wi-Fi networks and cellular services. Do some online research on what 5G means in the context of Wi-Fi networks and how this differs from 5G services from mobile network operators (MNOs) such as Verizon and T-Mobile. Create a professionally formatted Word document that clearly explains the difference between Wi-Fi 5G and 5G cellular services. Your document should be a minimum of 500 words in length and should include at least two online sources as references.**

**Tips for Success:** This exercise is used to ensure that you are not confused when you encounter 5G in the context of Wi-Fi and cellular services. Look for one or two substantive articles that discuss the 2.4 and 5 GHz frequency bands used in Wi-Fi networks. Provide details about data transfer rates of the 5 GHz band (relative to the 2.4 GHz band) and the factors that contribute to this. Also, describe some of the limitations and disadvantages of the 5 GHz band relative to the 2.4 GHz band. Also find one or more substantive articles that compare 4G and 5G cellular services. Provide details about 5G connection speeds and data transfer rates (relative to 4G) and the factors that contribute to this. Use an MLA or APA format for the articles that you use to develop your document. Make sure that it has the correct length and fully addresses all topics. Proofread your paper to ensure that it is free of spelling and syntax errors.

Your instructor may use a rubric like the following to evaluate your work.

|  |  |  |
| --- | --- | --- |
| **Criterion** | **Description** | **Points** |
| On time? | Is document submitted on or before its due date | 10 |
| Format | Is the document format professional? Does it have distinct sections for Wi-Fi 5G, 5G cellular, and References? | 5 |
| Length | At least 500 words? | 10 |
| References | Two or more? | 10 |
| Reference format | Do references conform to instructor specified format (e.g. MFA or APA) | 5 |
| Error Free? | Is document free of spelling errors, and format, grammatical, and syntax shortcomings? | 10 |
| Wi-Fi 5G | Is it clear that student knows that for Wi-Fi, that 5G references to the 5GHz frequency band? Are the 2.4 GHz and 6 GHz bands also mentioned | 30 |
| 5G cellular | Is it clear that student knowns that 5G cellular refers to fifth generation and is different from 4G cellular on several differences. | 30 |

1. **Do some online research comparing the specifications for the Wi-Fi 6 standard to what is expected to be included in the Wi-Fi 7 standard. Identify and briefly describe how/why Wi-Fi 7 technologies will improve Wi-Fi network performance and provide a better Wi-Fi user experience. Summarize what you learn in a professionally formatted Word document of at least 750 words, or a PowerPoint presentation with at least five slides. At least two online sources should be included as references in your research summary.**

**Tips for Success:** This exercise is designed to help you better understand how evolving standards contribute to network performance and user experience with networks. Look for two or substantive articles that compare the Wi-Fi 6 and Wi-Fi 7 standards. Provide details about data transfer rates for Wi-Fi 6 and Wi-Fi 7 technologies and the factors that contribute to this. Also, describe how the higher rates for Wi-Fi 7 are likely to translate into a better user experience and better support for user applications. Note that Wi-Fi 7 will be backward compatible and explain this means. Also note that all devices must support Wi-Fi 7 to realize its connection and performance capabilities. Use an MLA or APA format for the articles that you use to develop your document. Make sure that it has the correct length and fully addresses all topics. Proofread your paper to ensure that it is free of spelling and syntax errors.

Your instructor may use a rubric like the following to evaluate your work.

|  |  |  |
| --- | --- | --- |
| **Criterion** | **Description** | **Points** |
| On time? | Is document submitted on or before its due date | 10 |
| Format | Is the document format professional? Does it have distinct sections for Wi-Fi 6, Wi-Fi 7, and References? | 5 |
| Length | At least 750 words? | 10 |
| References | Two or more? | 10 |
| Reference format | Do references conform to instructor specified format (e.g. MFA or APA) | 5 |
| Error Free? | Is document free of spelling errors, and format, grammatical, and syntax shortcomings? | 10 |
| Wi-Fi 6 | Is it clear that student is familiar with the Wi-Fi 6 standard and several of its major specifications and capabilities? | 20 |
| 5G cellular | Is it clear that student is familiar with the Wi-Fi 7 standard and several of its specification advancements that will enable improved performance and a better user experience. | 40 |

1. **Section 1.5 identifies some of the major SSOs for networking standards. Do some online research to identify the type(s) of networking standards that each of these organizations is responsible for creating and revising and the types of technologies affected by their standards. Summarize your findings in a three-column table in a Word document or PowerPoint slide that identifies the SSO in the left column, identifies types of standards in the middle column, and identifies examples of specific networking standards created/revised by the SS0 in the right column.**

**Tips for Success:** Several SSOs are identified in Table 1-4 in Section 1.5 in the textbook. This exercise is designed to help you better understand the types of network standards that these SSOs oversee and the types of networks that the standards impact. You are encouraged to search online for examples of standards that have been developed and are revised by each SSO. Make sure that your table has the correct format and is filled in. Proofread your paper to ensure that it is free of spelling and syntax errors.

Here is an example of what might be included in the first row of your table.

|  |  |  |
| --- | --- | --- |
| **SSO** | **Types of Standards** | **Standard Examples** |
| American National Standards Institute | Vital computing and networking standards. ANSI often works in partnership with other SSOs on networking and IT standards. | ASCII (American Standard Code for Information Interchange); SCSI (Small Computer System Interface) |

1. **If you had to rank the technologies identified in Section 1.6 in terms of overall importance to the evolution of enterprise networks, what would your rankings look like? Provide justification for them. Summarize your rankings and justifications in a two-column table in a Word document or PowerPoint slide.**

**Tips for Success:** This exercise is designed to help you better understand some of the technologies that are shaping the evolution of enterprise networks. Sections 1.6.1 through sections 1.6.1 in Section 1.6 of the textbook identify six important technologies. You should read these carefully before developing your ranked list. Since your instructor is likely to place significant weight at the justification that you provide for your rankings, you are encouraged to provide an explanation that is four or more sentences in length for each technology. For your highest ranked technology, be sure to explain why you consider it more important than the others. For your lowest ranked technology, explain why you think it is least important. Proofread your table r to ensure that it is free of spelling and syntax errors.

Your instructor may use a rubric like the following to evaluate your work.

|  |  |  |
| --- | --- | --- |
| **Criterion** | **Description** | **Points** |
| On time? | Is document submitted on or before its due date | 10 |
| Format | Is a two (or three) column Word or PowerPoint slide table included. | 5 |
| Completeness | Are all six Section 1.6 technologies included in the table in a ranked order | 10 |
| Error Free? | Is document free of spelling errors, and format, grammatical, and syntax shortcomings? | 10 |
| Justification | Is compelling justification provided for the rank of each technology? | 65 |

1. **If you were to add another technology to Section 1.6, what technology would you add? Briefly explain why your selected technology should be included in the list of technologies that are shaping the evolution of enterprise networks.**

**Tips for Success:** This exercise is designed to help you better understand some of the technologies that are shaping the evolution of enterprise networks by basically asking “what else should be included in Section 1.6 of the textbook”. Consider doing some online research on emerging enterprise network technologies for ideas on what to include. It is okay to identify more than one additional technology (and are likely to be favorably evaluated for doing so) but you need to decide on just one that you think is as important of those in Section 1.6, and provide compelling justification for why you think so.