**ITT TECHNICAL INSTITUTE**

**NT1210**

**Introduction to Networking**

**Onsite Course**

**GRADED ASSIGNMENTS**

# Graded Assignment Requirements

Retain all handouts issued in every unit, as well as any assignment, research, or lab documents you prepare as part of assignments and labs. Some may be used more than once in different units.

***NOTE: Always check with your instructor for specific due dates of assignments.***

# Graded Assignments

## Unit 1 Assignment 1: Computer Basics Review

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.
* Describe the differences between input and output devices.

Assignment Requirements

In the Chapter Review Activities at the end of Chapter 1 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions.
* Complete the List the Words inside Acronyms table.

Required Resources

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 1 Assignment 1.

## Unit 2 Assignment 1: Identifying Network Topologies

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Draw the four major physical network topologies: bus, star, ring, and mesh.

Assignment Requirements

Using the Topology Worksheet provided by the instructor, complete the topology name, logical characteristics, and physical characteristics for each topology diagram on the worksheet. Be sure to include the following information:

* Name each topology diagram.
* List the logical characteristics (if the diagram shows a logical topology).
* List the physical characteristics (all diagrams will have some type of physical topology associated with them).
* List three Internet sites where information can be found on network topologies (both physical and logical).

Required Resources

* Topology Worksheet (NT1210.U2.HO1)
* Internet access

Submission Requirements

Submit your responses on the Topology Worksheet at the beginning of the next class.

## Unit 2 Assignment 2: Computer Basics Review

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Define a computer network.
* Identify the primary needs for computer networks and network applications.
* Draw the four major physical network topologies: bus, star, ring, and mesh.

Assignment Requirements

Complete the following tasks using the Chapter Review Activities at the end of Chapter 2 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions.
* Complete the Define Key Terms table.

Required Resources

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

Submission Requirements

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 2 Assignment 2.

## Unit 3 Assignment 1: Networking Models Review

Course Objectives and Learning Outcomes

* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Differentiate between proprietary and nonproprietary protocols.
* Explain the use of IP addressing in data networks.

Assignment Requirements

Complete the following tasks using the Chapter Review Activities at the end of Chapter 3 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions.
* Complete the Define Key Terms table.

Required Resources

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

Submission Requirements

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 3 Assignment 1.

## Unit 4 Assignment 1: Physical Layer Network Concepts

Course Objectives and Learning Outcomes

* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Explain the fundamentals of electrical circuits.
* Identify different types of physical cabling.
* Identify wireless network communication needs.
* Distinguish among the different needs for wired and wireless networks.
* Classify Layer 2 networking components used in a typical LAN.
* Compare and contrast advantages and disadvantages of network media.
* Use basic troubleshooting techniques to ensure network connectivity at Layers 1 and 2.

Assignment Requirements

Complete the following tasks using the Chapter Review Activities at the end of Chapter 4 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions.
* Complete the Define Key Terms table.

Required Resources

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

Submission Requirements

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 4 Assignment 1.

## Unit 5 Assignment 1: Exploring LAN Switches

Course Objectives and Learning Outcomes

* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Define Ethernet LAN concepts.
* Evaluate the advantages and disadvantages of Ethernet technology in LANs.

Assignment Requirements

Using Internet sources located in the ITT Tech Virtual Library or other sites, find three models of LAN switches that would be appropriate for each of the following scenarios. Try to find switches from more than one manufacturer (e.g., Cisco, Juniper, Brocade, Netgear, etc.).

1. Home use for a family of four people who have broadband Internet access (e.g., DSL or cable)

|  |  |  |  |
| --- | --- | --- | --- |
| **Vendor/Manufacturer** | **Model No.** | **Price** | **Available from (website)** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. Home office of one person who must VPN into his/her home office daily

|  |  |  |  |
| --- | --- | --- | --- |
| **Vendor/Manufacturer** | **Model No.** | **Price** | **Available from (website)** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. Small business of 25 employees that uses subnets to divide its departments

|  |  |  |  |
| --- | --- | --- | --- |
| **Vendor/Manufacturer** | **Model No.** | **Price** | **Available from (website)** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. Medium-sized business of 500 employees that uses subnets to divide its departments, but some of the subnets must be able to communicate with each other

|  |  |  |  |
| --- | --- | --- | --- |
| **Vendor/Manufacturer** | **Model No.** | **Price** | **Available from (website)** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. Large enterprise of 5000 employees that uses a Class A address with subnets for each department and for each subdivision within each department (e.g., many subnets). Subdivisions must be able to communicate with each other; some departments need to communicate with each other. This company is located on a campus in several buildings.

|  |  |  |  |
| --- | --- | --- | --- |
| **Vendor/Manufacturer** | **Model No.** | **Price** | **Available from (website)** |
|  |  |  |  |
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Required Resources

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced or on this completed worksheet. Label your assignment Unit 5 Assignment 1. This assignment is due at the beginning of Unit 6.

## Unit 5 Assignment 2: Ethernet Local Area Networks Review

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Define Ethernet LAN concepts.
* Evaluate the advantages and disadvantages of Ethernet technology in LANs.
* Analyze the advantages of using Layer 2 devices to segment LANs.
* Troubleshoot wired LANs for connectivity and performance.

Assignment Requirements

In the Chapter Review Activities at the end of Chapter 5 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions
* Complete the Define Key Terms table

Required Resources

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 5 Assignment 1. This assignment is due at the beginning of Unit 6.

## Unit 6 Assignment 1: Wireless Ethernet Local Area Networks Review

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Identify devices required in wireless networks.
* Differentiate between Layer 1 and Layer 2 concepts in wireless networks.
* Analyze wireless standards.
* Design a basic small business wireless Ethernet network.
* Troubleshoot wireless LANs for connectivity and performance.

Assignment Requirements

In the Chapter Review Activities at the end of Chapter 6 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions
* Complete the Define Key Terms table
* Complete the List the Words Inside Acronyms table

Required Resources

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 6 Assignment 1. This assignment is due at the beginning of Unit 7.

## Unit 7 Assignment 1: Wide Area Networks Review

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Differentiate among WAN technologies available from service providers.
* Evaluate how WAN devices function.
* Define and describe WAN protocols.
* Evaluate troubleshooting techniques for WAN connections.

Assignment Requirements

In the Chapter Review Activities at the end of Chapter 7 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions
* Complete the Define Key Terms table
* Complete the List the Words Inside Acronyms table

Required Resources

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 7 Assignment 1. This assignment is due at the beginning of Unit 8.

## Unit 8 Assignment 1: Calculating Subnets

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Explain basic security requirements for networks.
* Plan and design an IP network by applying subnetting skills.

Assignment Requirements

Complete Practice #1 and #2 on the following pages. Do NOT use a calculator for these practices. Refer to the links presented during the theory portion of class (provided below) and any research you can find in the ITT Tech Virtual Library or on the Internet.

Required Resources

* Ellis Methodology of Subnetting (EMS) Handout
* Odom textbook
* ITT Tech Virtual Library

Additional Resources

* Links presented during the theory portion of class
* Additional resources on subnetting:
  + Skullbox.net @ <http://www.skullbox.net/subnetcalculator.php>
  + The Art of the Subnet Cheat Sheet @ <http://www.quest4.org/ccna/subnet_cheat_sheet.htm>
  + Boson @ <http://www.boson.com/promo/guides/TCPIP-SUB.PDF> (very in-depth; includes practice exercises)

Submission Requirements:

Submit your responses either as a typed document, recreating the tables using Arial or Times New Roman 12-point font labeled Unit 8 Calculating Subnets Worksheet, OR on the following worksheet. Label your assignment Unit 8 Assignment 1. This assignment is due at the beginning of the next class.

## Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Practice #1

Given an **IP** **address and number of bits borrowed** (from the host for the subnet mask), find the following information.

Host Address \_\_\_\_\_**200.15.10.10**\_\_\_\_\_ Network Class \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SN Mask \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Network Address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bits Borrowed \_\_\_\_\_\_\_**3**\_\_\_\_\_\_\_\_\_\_\_\_ SNs Created \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Usable SNs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hosts per SN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Usable Hosts/SN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Subnet No.** | **Network ID** | **First Host IP** | **Last Host IP** | **Broadcast Address** |
| 0 |  |  |  |  |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |
| 6 |  |  |  |  |
| 7 |  |  |  |  |
| 8 |  |  |  |  |
| 9 |  |  |  |  |
| 10 |  |  |  |  |
| 11 |  |  |  |  |
| 12 |  |  |  |  |
| 13 |  |  |  |  |
| 14 |  |  |  |  |
| 15 |  |  |  |  |
| 16 |  |  |  |  |

## 

## Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Practice #2

Given an **address and subnet mask**, find the following information.

Host Address \_\_\_**152.14.16.18**\_\_\_\_\_\_\_ Network Class \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SN Mask \_\_\_**255.255.255.240**\_\_\_\_ Network Address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bits Borrowed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ SNs Created \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Usable SNs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hosts per SN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Usable Hosts/SN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Subnet No.** | **Network ID** | **First Host IP** | **Last Host IP** | **Broadcast Address** |
| 0 |  |  |  |  |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |
| 6 |  |  |  |  |
| 7 |  |  |  |  |
| 8 |  |  |  |  |
| 9 |  |  |  |  |
| 10 |  |  |  |  |
| 11 |  |  |  |  |
| 12 |  |  |  |  |
| 13 |  |  |  |  |
| 14 |  |  |  |  |
| 15 |  |  |  |  |
| 16 |  |  |  |  |

## Unit 8 Assignment 2: Networking Protocols Review

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Plan and design an IP network by applying subnetting skills.
* Explain the functionality of typical network protocols.
* Categorize TCP/IP protocols according to network model layers.
* Describe how TCP/IP addressing moves data packets through networks.

Assignment Requirements

In the Chapter Review Activities at the end of Chapter 8 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions.
* Complete the Define Key Terms table.

Required Resources

* Odom textbook
* Computer with word processing software
* Printer

Submission Requirements:

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 8 Assignment 2. This assignment is due at the beginning of the next class.

## Unit 9 Assignment 1: Internet Technologies Review

**Course Objectives and Learning Outcomes**

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Plan and design an IP network by applying subnetting skills.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Relate how different technologies are used to access the Internet.
* Define how IP routing is used in the Internet to move data from source to destination.
* Define classless routing.
* Evaluate the need for NAT, PAT, CIDR, and IPv6 in current networks.

**Assignment Requirements**

In the Chapter Review Activities at the end of Chapter 9 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions.
* Complete the Define Key Terms table.
* Complete the Words Inside Acronyms table.

**Required Resources**

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

**Submission Requirements:**

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 9 Assignment 1. This assignment will be due in Unit 10.

## Unit 10 Assignment 1: Transporting Data through Networks Review

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Use network tools to monitor protocols and traffic characteristics.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Define how data logically moves through networks.
* Compare and contrast TCP and UDP transportation techniques.

**Assignment Requirements**

In the Chapter Review Activities at the end of Chapter 10 in the Odom textbook (answers can be found in the textbook):

* Respond to the multiple-choice questions.
* Complete the Define Key Terms table.

Required Resources

* Odom textbook
* Computer with word processing software
* Internet access
* Printer

**Submission Requirements:**

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. Label your assignment Unit 10 Assignment 1. This assignment is due at the next class meeting.

**Unit 1 Research 1: Chapter 2 Mind Maps & Research Project**

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.
* Describe the differences between input and output devices.

Assignment Requirements

To prepare you for the next class meeting, you will create mind maps of the reading assignments for Unit 2:

* Chapter 2 in the Odom textbook
* Chapter 2 in the Richardson lab manual

Part 1

Review the “Keys to Learning: Mind Maps” handout that your instructor gave you, and be sure to ask questions if you are not completely sure of what a mind map is or how to create one.

A good place to start your mind map is by looking at the section headings for topics and subtopics (the spokes coming from your central theme). You can also do more research on mind mapping on the ITT Tech Virtual Library and other Internet locations. There are several free mind map software programs available for download, if you’d like to use one instead of drawing your mind map by hand. Try one or two to see if you like them. If you’d rather not use mind-mapping software, you have the option of preparing your mind maps using a computer graphics program, drawing options in Word, or creating a free-hand drawn mind map on a piece of paper.

Part 2

In addition to the information from the textbook and lab manual that you put in your mind maps, include at least two (2) pieces of additional information that you find that supplements the information you learned from the course materials. Briefly summarize the information you found—do NOT just copy and paste it from a website. USE YOUR OWN WORDS. Be sure to completely cite the sources you find using APA style.

**Submission Requirements:**

Depending on what vehicle you use to develop your mind maps, submit them in a printed format. Add your research information (Part Two) as a Word document. Label both as Unit 1 Research Project 1.

**SAVE** all of your mind maps and research to build a portfolio of information on networking. You will turn in your weekly research projects, as well as a final compilation of all your projects at the end of the course for an ePortfolio grade. You can then post your completed Research Project as an example of your ability to research and organize information on your ePortfolio website provided by ITT.

Required Resources

* Keys to Learning: Mind Mapping handout
* Odom textbook
* Richardson lab manual
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

When submitting your mind map for grading, label it Unit 1 Research Project 1.

## Unit 2 Research Project 1: Chapter 3 Mind Maps

Course Objectives and Learning Outcomes (Unit 3)

* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Differentiate between proprietary and nonproprietary protocols.
* Explain the use of IP addressing in data networks.

Assignment Requirements

To prepare for the next class meeting, create mind maps of the reading assignments for Unit 3:

* Chapter 3 in the Odom textbook
* Chapter 3 in the Richardson lab manual

Review the handout from the first week of class (“Keys to Learning: Mind Mapping”) or the “Create Mind Maps” instructions in the Odom textbook.

Required Resources

* Keys to Learning: Mind Mapping handout
* Odom textbook
* Richardson lab manual
* Computer with word processing software
* Internet access
* Printer

Submission Requirements

When submitting your mind map for grading, label it Unit 2 Research Project 1.

## Unit 3 Research Project 1: Chapter 4 Mind Maps (Prep for Unit 4)

Course Objectives and Learning Outcomes

* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Explain the fundamentals of electrical circuits.
* Identify different types of physical cabling.
* Identify wireless network communication needs.
* Distinguish among the different needs for wired and wireless networks.
* Classify Layer 2 networking components used in a typical LAN.
* Compare and contrast advantages and disadvantages of network media.
* Use basic troubleshooting techniques to ensure network connectivity at Layers 1 and 2.

Assignment Requirements

To prepare for the next class meeting, create mind maps of the reading assignments for Unit 4:

* Chapter 4 in the Odom textbook
* Chapter 4 in the Richardson lab manual

Review the handout from the first week of class (“Keys to Learning: Mind Mapping”) or the “Create Mind Maps” instructions in the Odom textbook.

Required Resources

* Keys to Learning: Mind Mapping handout (NT1210.U1.HO2)
* Odom textbook
* Richardson lab manual
* Computer with word processing software
* Internet access
* Printer

Submission Requirements

When submitting your mind map for grading, label it Unit 3 Research Project 1.

## Unit 4 Research Project 1: Chapter 5 Mind Maps (Prep for Unit 5)

Course Objectives and Learning Outcomes

* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Define Ethernet LAN concepts.
* Evaluate the advantages and disadvantages of Ethernet technology in LANs.
* Analyze the advantages of using Layer 2 devices to segment LANs.
* Troubleshoot wired LANs for connectivity and performance.

Assignment Requirements

To prepare for the next class meeting, create mind maps of the reading assignments for Unit 5:

* Chapter 5 in the Odom textbook
* Chapter 5 in the Richardson lab manual

Review the handout from the first week of class (“Keys to Learning: Mind Mapping”) or the “Create Mind Maps” instructions in the Odom textbook.

Required Resources

* Keys to Learning: Mind Mapping handout (NT1210.U1.HO2)
* Odom textbook
* Richardson lab manual
* Computer with word processing software
* Internet access
* Printer

Submission Requirements

When submitting your mind map for grading, label it Unit 4 Research Project 1.

## Unit 5 Research Project 1: Chapter 6 Mind Maps

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Define Ethernet LAN concepts.
* Evaluate the advantages and disadvantages of Ethernet technology in LANs.
* Analyze the advantages of using Layer 2 devices to segment LANs.

Assignment Requirements

To prepare you for the next class meeting, create mind maps of the reading assignments for Unit 6:

* Chapter 6 in the Odom textbook
* Chapter 6 in the Richardson lab manual

Review the handout given out the first week of class (“Keys to Learning: Mind Mapping”) or the “Create Mind Maps” instructions in the Odom textbook.

Required Resources

* Keys to Learning: Mind Mapping handout (NT1210.U1.HO2)
* Odom textbook
* Richardson lab manual
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

When submitting your mind map for grading, label it Unit 5 Research Project 1. This assignment is due at the beginning of Unit 6.

## Unit 6 Research Project 1: Chapter 7 Mind Maps

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Differentiate among WAN technologies available from service providers.
* Evaluate how WAN devices function.
* Define and describe WAN protocols.
* Evaluate troubleshooting techniques for WAN connections.

Assignment Requirements

To prepare you for the next class meeting, create mind maps of the reading assignments for Unit 7:

* Chapter 7 in the Odom textbook
* Chapter 7 in the Richardson lab manual

Review the handout given out the first week of class (“Keys to Learning: Mind Mapping”) or the “Create Mind Maps” instructions in the Odom textbook.

Required Resources

* Keys to Learning: Mind Mapping handout (NT1210.U1.HO2)
* Odom textbook
* Richardson lab manual
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

Part 1: Depending on what vehicle you use to develop your mind maps, submit them in a printed format. Part 2: Add your research information as a Word document.

Label both as Unit 6 Research Project 1. This assignment is due at the beginning of Unit 7.

Don’t forget to save your mind maps and research to continue building your Research Project ePortfolio project.

## Unit 7 Research Project 1: Chapter 8 Mind Maps

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Plan and design an IP network by applying subnetting skills.
* Explain the functionality of typical network protocols.
* Plan and design an IP network by applying subnetting skills.
* Categorize TCP/IP protocols according to network model layers.
* Describe how TCP/IP addressing moves data packets through networks.

Assignment Requirements

To prepare you for the next class meeting, create mind maps of the reading assignments for Unit 8:

* Chapter 8 in the Odom textbook
* Chapter 8 in the Richardson lab manual

Review the handout given out the first week of class (“Keys to Learning: Mind Mapping”) or the “Create Mind Maps” instructions in the Odom textbook.

Required Resources

* Keys to Learning: Mind Mapping handout (NT1210.U1.HO2)
* Odom textbook
* Richardson lab manual
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

Part 1: Depending on what vehicle you use to develop your mind maps, submit them in a printed format. Part 2: Add your research information as a Word document.

Label both as Unit 7 Research Project 1. This assignment is due at the beginning of Unit 8.

Don’t forget to save your mind maps and research to continue building your Research Project ePortfolio project.

## Unit 8 Research Project 1: Chapter 9 Mind Maps

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Plan and design an IP network by applying subnetting skills.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Relate how different technologies are used to access the Internet.
* Define how IP routing is used in the Internet to move data from source to destination.
* Define classless routing.
* Evaluate the need for NAT, PAT, CIDR, and IPv6 in current networks.

Assignment Requirements

To prepare you for the next class meeting, create mind maps of the reading assignments for Unit 9:

* Chapter 9 in the Odom textbook
* Chapter 9 in the Richardson lab manual

Review the handout given out the first week of class (“Keys to Learning: Mind Mapping”) or the “Create Mind Maps” instructions in the Odom textbook. Also to complete the research portion of this assignment, refer to Unit 1 Instruction on Research Project.

Required Resources

* Keys to Learning: Mind Mapping handout
* Odom textbook
* Richardson lab manual
* Computer with word processing software
* Internet access
* Printer

Submission Requirements:

Part 1: Depending on what vehicle you use to develop your mind maps, submit them in a printed format. Part 2: Add your research information as a Word document. Label both as Unit 8 Research Project 1. (Refer to Unit 1 Instruction on Research Project.)

***Don’t forget to save your mind maps and research to continue building your Research Project ePortfolio project.***

Unit 9 Research 1: Network Design, Part 1

**Course Objectives and Learning Outcomes**

* Show competency in all outcomes for this course.

**Assignment Requirements**

Now it is time for you to put your networking knowledge to work. Read through the Network Design: Kamazon.kom Network Upgrade information and make sure you understand the customer’s requirements. Your instructor will act as Kamazon’s representative, so if you have questions or need clarification on any part of the bid requirements, be sure to ask him/her.

Notice the list of deliverables toward the end of the information. Part 1 includes deliverables 1-4.

**Required Resources**

* Computer with drawing, word processing, spreadsheet, and presentation software
* Internet access
* Printer

**Submission Requirements:**

Deliverables 1, 2, 3, and 4 will be due in Unit 10 (unless otherwise noted by your instructor). See the specific requirements for these deliverables in the following bid information.

Network Design: Kamazon.kom Network Upgrade

**Customer Requirements:**

Your company is bidding on performing the network upgrade for Kamazon.kom, a Web retailer of ink books, audio books, and gourmet coffees and teas based in Wichita, Kansas. Kamazon wants to upgrade its existing 10Mbps LAN to at least 1Gbps. The only part of the company that has already been upgraded is the Web Sales & Support department. It was upgraded last year to 1Gbps fiber to all the servers that support the company’s growing business. Kamazon has left it up to bidders to decide whether to use wired or wireless devices and installations in the upgrade.

Kamazon has not stipulated any budget for this project, but it will look closely at all the bids that are submitted for costs, so expenses for equipment, labor, and other areas of the project are important.

Kamazon wants to be assured that whoever does its upgrade uses existing networking standards, so when the network needs to be upgraded again, it will be a smooth process. It also wants to make sure that at least 10% overage is included in the bid for future proofing.

Besides needing a physical network upgrade, Kamazon also needs a logical upgrade. Its present use of its private IP address scheme is not working very well. At this time, the company is using several class C private addresses (192.168.x.x). They have requested the bidders to include a section in their bids outlining a new subnetting design that divides the company’s users into manageable, logical, and useful units.

Base your company’s suggestions for the customer’s upgrade on the following pieces of information.

Basic Company Information:

* 3 floors in an 8-floor office building
* 179 employees
* 7 departments:
  + Human Resources 10 employees
  + Accounting & Finance 14 employees
  + Marketing 37 employees
  + Research & Development 23 employees
  + Web Sales & Support 55 employees
  + Management 20 employees
  + IT 20 employees

Other Information:

* Each department needs its own network/subnet.
* The management offices are located in an area of the building that has been designated a historic landmark, so it cannot be changed (no holes drilled in the walls or floors for cable drops).
* All other departments are located on floors that are entirely occupied by Kamazon. There are no permanent walls, and drop ceilings have been installed on these floors, so there are sufficient areas for cables to be installed without damaging any existing structures.
* Existing hubs need to be replaced with LAN switches.
* The company uses a national company as its WAN provider and pays for sufficient bandwidth to support its Web presence, so you do not have to include any WAN upgrades as part of your bid.

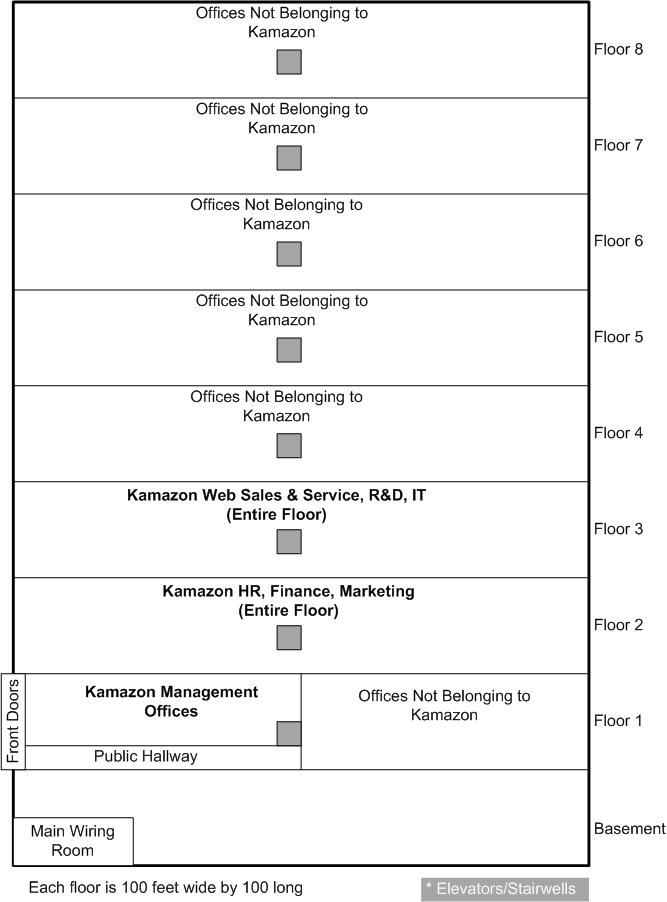
Building Layout:

See the attached building plan. Each floor is 100 feet wide by 100 feet long. Only Floor 1 has any interior walls; the other floors are open spaces (except where the elevators and stairs are located). Restrooms are located beside the elevators and stairs.

The management offices on Floor 1 are 80 wide feet x 50 feet long.

All telephone and ISP services for all customers in the building are located in the basement in the main wiring room. Kamazon’s primary router and aggregating switch are also located in this wiring room.

Building Plan



Bid Requirements/Deliverables:

1. Drawings showing a map of cable runs and placement of wiring rooms for networking devices FOR EACH FLOOR made in MS Visio or another graphic drawing program.
2. Excel spreadsheet listing supplies and equipment with prices.
3. Excel spreadsheet listing installation labor costs, as well as any other labor costs you feel are appropriate to the bid.
4. Documentation in Word or Excel showing your proposed subnetting scheme.
5. Presentation using PowerPoint or other presentation software to be given to the customer.
6. Written report to be given to the customer that details your bid plan (this includes a copy of your presentation slides and a compilation of deliverables 1-4 neatly bound in a binder/report folder).

Part 1:

Deliverables 1, 2, 3, and 4 will be due in Unit 10 (unless otherwise noted by your instructor).

Part 2:

Deliverables 5 and 6 (presentation and report) will be due in Unit 11 (unless otherwise noted by your instructor).

## Unit 10 Research 1: Network Design, Part 2

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Use network tools to monitor protocols and traffic characteristics.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Show competency in all outcomes for this course.

Assignment Requirements

Now it is time for you to put your networking knowledge to work. Read through the Network Design: Kamazon.kom Network Upgrade information presented in the Unit 9 Research 1: Network Design, Part 1 assignment. Remember that you are preparing your bid for your customer, Kamazon.kom. Your instructor is acting as Kamazon’s representative, so if you have questions or need clarification on any part of the bid requirements, be sure to ask him/her.

Notice the list of deliverables toward the end of the information. Part 2 includes Deliverables 5 and 6.

Required Resources

* Computer with drawing, word processing, spreadsheet, and presentation software
* Internet access
* Printer

Submission Requirements:

Deliverables 5 and 6 (Part 2) will be due in Unit 11 (unless otherwise noted by your instructor). See the specific requirements for these deliverables in Unit 9 Research 1: Network Design, Part 1 information. You will give your presentation during the next class meeting, and your written report is also due then.

## Unit 11: Network Design Presentation

Course Objectives and Learning Outcomes

* Show competency in all outcomes for this course.

Assignment Requirements

You will present your network design to your customer, Kamazon.kom. Your fellow students and your instructor will act as the customer representatives. As you present, they will complete the Network Design Presentation Evaluation form (team or individual).

If you received the Research Project Network Design as a team assignment, you also will complete the Team Evaluation form, rating each member of your team.

Both the Network Design Presentation Evaluation and Team Evaluation forms are used as part of your grade for Part 2 of the Research Project Network Design.

Required Resources

* Computer with presentation software

Submission Requirements:

You will give your presentation, which is Deliverable 5 of the Network Design, Part 2 assignment, to the class. You also will turn in your written report (Deliverable 6) to your instructor at the end of your presentation.

# Laboratory Assignments

## Unit 1 Lab 1.1: Reading Binary

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.

Required Setup and Resources

* Richardson lab manual
* NT1210 Virtual Machine
* Computer with word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Create a Word document named Unit 1 Labs xx (where xx are your initials) for your answers and screenshots you do in this lab. Be sure to put your name, course and section number, and the date on your document. Also, be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced.

**Unit 1 Lab 1.2: Binary Math and Logic**

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.

Required Setup and Resources

* Richardson lab manual
* NT1210 Virtual Machine
* Computer with word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 1 Labs xx (where xx are your initials) that you started in Unit 1 Lab 1.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced.

**Unit 1 Lab 1.3: Bit and Byte Structure**

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.

Required Setup and Resources

* Richardson lab manual
* NT1210 Virtual Machine
* Computer with word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 1 Labs xx (where xx are your initials) that you started in Unit 1 Lab 1.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced.

**Unit 1 Lab 1.4: ASCII**

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.

Required Setup and Resources

* Richardson lab manual
* NT1210 Virtual Machine
* Computer with word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 1 Labs xx (where xx are your initials) that you started in Unit 1 Lab 1.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced at the next class meeting.

**Unit 1 Lab 1.5: Creating a File System**

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 1 Labs xx (where xx are your initials) that you started in Unit 1 Lab 1.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced.

**Unit 1 Lab 1.6: Gathering System Information**

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 1 Labs xx (where xx are your initials) that you started in Unit 1 Lab 1.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced.

**Unit 1 Lab 2.4: Command Line Interface**

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 1 Labs xx (where xx are your initials) that you started in Unit 1 Lab 1.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced.

**Unit 1 Lab 3.5: Sharing Network Resources**

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Describe how digital devices store data.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 1 Labs xx (where xx are your initials) that you started in Unit 1 Lab 1.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced.

## Unit 2 Lab 6.3: WLAN Router Configuration

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Define a computer network.
* Identify the primary needs for computer networks and network applications.

Required Setup and Resources

* Computer lab
* Richardson lab manual
* Word processing software
* Printer
* Configuring and Connecting to the Lab Wireless LAN handout (NT1210.U2.HO2)
* Checking Your Network Connection Worksheet (NT1210.U2.HO3)
* USB wireless NIC

Recommended Procedures

Follow the instructions in the **Configuring and Connecting to the Lab Wireless LAN** handout and the Richardson lab manual for Lab 6.3. In the lab manual, just answer the questions in the 6.3 Review section.

Deliverables

After completing the LAN connection, answer the questions on the worksheet titled **Checking Your Network Connection**. Create a Word document named **Unit 2 Labs xx** (where xx are your initials) for your answers and screenshots in this lab/worksheet and any subsequent ones for this unit. Be sure to put your name, course and section number, and the date on your document. Also, be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 2 Lab 6.3) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 2 Lab 2.1: Connecting Computers

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Define a computer network.
* Identify the primary needs for computer networks and network applications.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 2.1. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named **Unit 2 Labs xx** (where xx are your initials), which you started in Unit 2 Lab 6.3. Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 2 Lab 2.1) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 2 Lab 2.2: Network Drives

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Define a computer network.
* Identify the primary needs for computer networks and network applications.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 2.2. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named **Unit 2 Labs xx** (where xx are your initials), which you started in Unit 2 Lab 6.3. Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 2 Lab 2.2) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 2 Lab 2.3: Network Types and Topologies

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Define a computer network.
* Identify the primary needs for computer networks and network applications.
* Draw the four major physical network topologies: bus, star, ring, and mesh.

Required Setup and Resources

* Richardson lab manual
* Computer
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 2.3. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named **Unit 2 Labs xx** (where xx are your initials), which you started in Unit 2 Lab 6.3. Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 2 Lab 2.3) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 3 Lab 3.1: Network Reference Models

Course Objectives and Learning Outcomes

* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 3.1. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in a Word document named **Unit 3 Labs xx** (where xx are your initials). Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 3 Lab 3.1) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 3 Lab 3.2: The OSI Reference Model

Course Objectives and Learning Outcomes

* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 3.2. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named **Unit 3 Labs xx** (where xx are your initials), which you started in Unit 3 Lab 3.1. Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 3 Lab 3.2) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 3 Lab 3.3: The TCP/IP Model

Course Objectives and Learning Outcomes

* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 3.3. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named **Unit 3 Labs xx** (where xx are your initials), which you started in Unit 3 Lab 3.1. Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 3 Lab 3.3) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 3 Lab 3.4: Data Link Connections

Course Objectives and Learning Outcomes

* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 3.4. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named **Unit 3 Labs xx** (where xx are your initials), which you started in Unit 3 Lab 3.1. Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 3 Lab 3.4) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 4 Lab 4.1: Copper Cabling

Course Objectives and Learning Outcomes

* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Identify different types of physical cabling.
* Distinguish among the different needs for wired and wireless networks.
* Compare and contrast advantages and disadvantages of network media.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 4.1. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in a Word document named **Unit 4 Labs xx** (where xx are your initials). Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 4 Lab 4.1) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 4 Lab 4.2: Data Link Connections

Course Objectives and Learning Outcomes

* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Identify different types of physical cabling.
* Distinguish among the different needs for wired and wireless networks.
* Compare and contrast advantages and disadvantages of network media.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 4.2. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named **Unit 4 Labs xx** (where xx are your initials), which you started in Unit 4 Lab 4.1. Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 4 Lab 4.2) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 4 Lab 4.3: Cabling Exploration

Course Objectives and Learning Outcomes

* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Identify different types of physical cabling.
* Identify wireless network communication needs.
* Distinguish among the different needs for wired and wireless networks.
* Classify Layer 2 networking components used in a typical LAN.
* Compare and contrast advantages and disadvantages of network media.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 4.3. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named **Unit 4 Labs xx** (where xx are your initials), which you started in Unit 4 Lab 4.1. Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 4 Lab 4.3) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 4 Lab 4.4: Cable Troubleshooting

Course Objectives and Learning Outcomes

* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Classify Layer 2 networking components used in a typical LAN.
* Use basic troubleshooting techniques to ensure network connectivity at Layers 1 and 2.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 4.4. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named **Unit 4 Labs xx** (where xx are your initials), which you started in Unit 4 Lab 4.1. Be sure to label each set of answers and/or screenshots with the lab number (e.g., Unit 4 Lab 4.4) so your instructor can grade your lab easily.

Submit your responses using Arial or Times New Roman 12-point font, double-spaced.

## Unit 5 Lab 5.1: LAN Standards

Course Objectives and Learning Outcomes

* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Define Ethernet LAN concepts.
* Evaluate the advantages and disadvantages of Ethernet technology in LANs.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 5 Labs xx (where xx are your initials). Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the beginning of Unit 6.

## Unit 5 Lab 5.2: MAC and IP Addresses

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Analyze the advantages of using Layer 2 devices to segment LANs.
* Troubleshoot wired LANs for connectivity and performance.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 5 Labs xx (where xx are your initials) that you started in Unit 5 Lab 5.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of this class.

## Unit 5 Lab 5.3: Finding Network Settings

Course Objectives and Learning Outcomes

* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Analyze the advantages of using Layer 2 devices to segment LANs.
* Troubleshoot wired LANs for connectivity and performance.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 5 Labs xx (where xx are your initials) that you started in Unit 5 Lab 5.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the end of this class.

## Unit 5 Lab 5.4: Basic Network Troubleshooting

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Analyze the advantages of using Layer 2 devices to segment LANs.
* Troubleshoot wired LANs for connectivity and performance.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 5 Labs xx (where xx are your initials) that you started in Unit 5 Lab 5.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the end of this class.

## Unit 6 Lab 6.1: Wireless Broadcast Domains

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Identify devices required in wireless networks.
* Differentiate between Layer 1 and Layer 2 concepts in wireless networks.
* Design a basic small business wireless Ethernet network.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in a Word document named Unit 6 Labs xx (where xx are your initials). Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the end of this class.

## Unit 6 Lab 6.2: Identifying WLANs

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Identify devices required in wireless networks.
* Analyze wireless standards.
* Design a basic small business wireless Ethernet network.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 6 Labs xx (where xx are your initials) that you started in Unit 6 Lab 6.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of this class.

## Unit 6 Lab 6.4: WLAN Placement

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Identify devices required in wireless networks.
* Differentiate between Layer 1 and Layer 2 concepts in wireless networks.
* Analyze wireless standards.
* Design a basic small business wireless Ethernet network.
* Troubleshoot wireless LANs for connectivity and performance.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 6 Labs xx (where xx are your initials) that you started in Unit 6 Lab 6.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the end of this class.

## Unit 6 Lab 6.5: WLAN Security

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Install a network (wired or wireless), applying all necessary configurations to enable desired connectivity and controls.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Analyze wireless standards.
* Design a basic small business wireless Ethernet network.
* Troubleshoot wireless LANs for connectivity and performance.

Required Setup and Resources

* Computer
* Access to the Internet
* Word processing software
* Printer

Recommended Procedures

Using information from your notes from the lecture portion of this unit, the ITT Tech Virtual Library, and other Internet sites, write a short one- to two-page paper discussing the security concerns for wireless LANs. Be sure to include information on:

* At least three wireless encryption types currently available
* The pros and cons of the three encryption types (which are stronger; which are weaker; which would be appropriate for home use, for business use, etc.)
* Security features other than encryption that can be used on wireless LANs
* The future of security measures for wireless LANs

Deliverables

Hand this lab in as a separate document from your responses from the labs from the lab manual.

Submit your paper as a typed document using Arial or Times New Roman 12-point font, double-spaced, named Unit 6 Lab 6.xx (where xx are your initials). This assignment is due at the end of this class.

## Unit 7 Lab 7.1: Distance Considerations

Course Objectives and Learning Outcomes

* Identify the classifications of networks and how they are applied to various types of enterprises.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Differentiate among WAN technologies available from service providers.
* Evaluate troubleshooting techniques for WAN connections.

Required Setup and Resources

* Richardson lab manual
* Computer
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in a Word document named Unit 7 Labs xx (where xx are your initials). Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the end of this class.

## Unit 7 Lab 7.2: WAN Connections

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Differentiate among WAN technologies available from service providers.
* Evaluate how WAN devices function.

Required Setup and Resources

* Richardson lab manual
* Computer
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 7 Labs xx (where xx are your initials) that you started in Lab 7.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the end of this class.

## Unit 7 Lab 7.3: Communication Paths

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Differentiate among WAN technologies available from service providers.
* Define and describe WAN protocols.

Required Setup and Resources

* Richardson lab manual
* Computer
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 7 Labs xx (where xx are your initials) that you started in Lab 7.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the end of this class.

## Unit 7 Lab 2.5: Linux *man* Pages

Course Objectives and Learning Outcomes

* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Evaluate troubleshooting techniques for WAN connections.

Required Setup and Resources

* Richardson lab manual
* Computer
* Linux Virtual Machine
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 7 Labs xx (where xx are your initials) that you started in Lab 7.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the end of this class.

## Unit 7 Lab 7.4: Linux Networking

Course Objectives and Learning Outcomes

* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Use network tools to monitor protocols and traffic characteristics.
* Use preferred techniques and necessary tools to troubleshoot common network problems.
* Evaluate troubleshooting techniques for WAN connections.

Required Setup and Resources

* Richardson lab manual
* Computer
* Linux Virtual Machine
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 7 Labs xx (where xx are your initials) that you started in Lab 7.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due at the end of this class.

## Unit 8 Lab 8.1: IP Addressing and Classes

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Explain basic security requirements for networks.
* Plan and design an IP network by applying subnetting skills.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in a Word document named Unit 8 Labs xx (where xx are your initials). Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of this class period.

## Unit 8 Lab 8.2: Assigning Static IP Addresses

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Explain basic security requirements for networks.
* Plan and design an IP network by applying subnetting skills.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 8 Labs xx (where xx are your initials) that you started in Unit 8 Lab 8.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of this class period.

## Unit 8 Lab 8.3: Routing Tables

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Use network tools to monitor protocols and traffic characteristics.
* Plan and design an IP network by applying subnetting skills.
* Describe how TCP/IP addressing moves data packets through networks.

Required Setup and Resources

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 8 Labs xx (where xx are your initials) that you started in Unit 8 Lab 8.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of this class period.

## Unit 8 Lab 8.4: SOHO Planning

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Explain the functionality and use of typical network protocols.
* Plan and design an IP network by applying subnetting skills.
* Describe how TCP/IP addressing moves data packets through networks.

Required Setup and Resources

* Computer
* NT1210 Virtual Machine
* Access to the Internet
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for this lab. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 8 Labs xx (where xx are your initials) that you started in Unit 8 Lab 8.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of this class period.

## Unit 9 Lab 9.1: Broadband Internet

**Course Objectives and Learning Outcomes**

* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Relate how different technologies are used to access the Internet.

**Required Setup and Resources**

* Richardson lab manual
* Computer
* Word processing software
* Printer

**Recommended Procedures**

Follow the instructions in the Richardson lab manual for Lab 9.1. Be sure to answer the questions for each part of the lab.

**Deliverables**

Include your responses from this lab in a Word document named Unit 9 Labs xx (where xx are your initials). Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of class today.

## Unit 9 Lab 9.2: Networks and Subnets

**Course Objectives and Learning Outcomes**

* Identify the major needs and major stakeholders for computer networks and network applications.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Explain basic security requirements for networks.
* Plan and design an IP network by applying subnetting skills.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Define how IP routing is used in the Internet to move data from source to destination.

**Required Setup and Resources**

* Richardson lab manual
* Computer
* Word processing software
* Printer

**Recommended Procedures**

Follow the instructions in the Richardson lab manual for Lab 9.2. Be sure to answer the questions for each part of the lab.

**Deliverables**

Include your responses from this lab in the Word document named Unit 9 Labs xx (where xx are your initials) that you started in Lab 9.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of class today.

## Unit 9 Lab 9.3: Internet Protocol version 6 (IPv6)

**Course Objectives and Learning Outcomes**

* Identify the major needs and major stakeholders for computer networks and network applications.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Explain basic security requirements for networks.
* Plan and design an IP network by applying subnetting skills.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Evaluate the need for NAT, PAT, CIDR, and IPv6 in current networks.

**Required Setup and Resources**

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

**Recommended Procedures**

Follow the instructions in the Richardson lab manual for Lab 9.3. Be sure to answer the questions for each part of the lab.

**Deliverables**

Include your responses from this lab in the Word document named Unit 9 Labs xx (where xx are your initials) that you started in Lab 9.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of class today.

## Unit 9 Lab 9.4: Configuring an FTP Service

**Course Objectives and Learning Outcomes**

* Identify the classifications of networks and how they are applied to various types of enterprises.
* Explain the functionality and use of typical network protocols.
* Analyze network components and their primary functions in a typical data network from both logical and physical perspectives.
* Differentiate among major types of LAN and WAN technologies and specifications and determine how each is used in a data network.
* Explain basic security requirements for networks.
* Use network tools to monitor protocols and traffic characteristics.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Relate how different technologies are used to access the Internet.

**Required Setup and Resources**

* Richardson lab manual
* Computer
* NT1210 Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

**Recommended Procedures**

Follow the instructions in the Richardson lab manual for Lab 9.4. Be sure to answer the questions for each part of the lab.

**Deliverables**

Include your responses from this lab in the Word document named Unit 9 Labs xx (where xx are your initials) that you started in Lab 9.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This assignment is due by the end of class today.

## Unit 10 Lab 10.1: Transport Layer Networking Protocols

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Use network tools to monitor protocols and traffic characteristics.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Define how data logically moves through networks.

Required Setup and Resources

* Richardson lab manual
* Computer
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 10.1. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in a Word document named Unit 10 Labs xx (where xx are your initials). Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This lab is due by the end of class.

## Unit 10 Lab 10.2: Common Network Ports

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Use network tools to monitor protocols and traffic characteristics.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Define how data logically moves through networks.

Required Setup and Resources

* Richardson lab manual
* Computer
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 10.2. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 10 Labs xx (where xx are your initials) that you started in Unit 10 Lab 10.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This lab is due by the end of class.

## Unit 10 Lab 10.3: Network Management

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Use network tools to monitor protocols and traffic characteristics.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Define how data logically moves through networks.

Required Setup and Resources

* Richardson lab manual
* Computer
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for lab 10.3. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 10 Labs xx (where xx are your initials) that you started in Unit 10 Lab 10.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This lab is due by the end of class.

## Unit 10 Lab 10.4: Analyzing Protocols in Packet Capture

Course Objectives and Learning Outcomes

* Identify the major needs and major stakeholders for computer networks and network applications.
* Compare and contrast the OSI and TCP/IP models and their applications to actual networks.
* Explain the functionality and use of typical network protocols.
* Use network tools to monitor protocols and traffic characteristics.
* Assess a typical group of devices networked to another group of devices through the Internet, identifying and explaining all major components and their respective functions.
* Define how data logically moves through networks.

Required Setup and Resources

* Richardson lab manual
* Computer
* Intro to Networking Virtual Machine
* Access to the lab wireless network
* Word processing software
* Printer

Recommended Procedures

Follow the instructions in the Richardson lab manual for Lab 10.4. Be sure to answer the questions for each part of the lab.

Deliverables

Include your responses from this lab in the Word document named Unit 10 Labs xx (where xx are your initials) that you started in Unit 10 Lab 10.1. Be sure to label each set of answers and/or screenshots with the Exercise number (e.g., Exercise 1.1.1) so your instructor can grade your lab easily.

Submit your responses as a typed document using Arial or Times New Roman 12-point font, double-spaced. This lab is due by the end of class.