Arkansas CTE

Web Design II: Grades 10, 11, 12

Adopted 2007

Internet Business Foundations: Information Technology and the Internet

1.1 Define terminology

1. Prepare a list of terms with definitions 1.1.1

1.2 Identify job roles in the IT industry, including the responsibilities, tasks and skills they require

1. Examine individual job roles within the IT industry and the IT profession as a whole 1.2.1

1.3 Identify the infrastructure required to access the Internet, including hardware and software components

1. Compare and contrast the client and a server 1.3.1
2. Explain Internet history and define current protocols, including: IPv4, IPv6, and related protocols 1.3.2
3. Classify hardware and software connection devices and their uses, including: various types of modems such as analog, ISDN/ADSL, and cable 1.3.3

1.4 Define important Internet communications protocols and their roles in delivering basic Internet services

1. Explain the purpose of remote access protocols, including: Point-to-Point, Point-to-Point Protocol over Ethernet 1.4.1
2. Relate various types of Internet bandwidth technologies (link types), including: T and E carriers, fractional T and E lines, command DSL/ADSL and cable speeds 1.4.2
3. Map protocols to specific business services (e.g., SMTP, IMP, and POP# to e-mail; HTTP and HTTPS to Web browsers; FTP to file transfer: NNTP to news servers) 1.4.3

1.5 Identify the basic principles of the Domain Name System (DNS)

1. Explain the purpose and structure of the Domain Name System (DNS) 1.5.1
2. Classify Internet domain names, including: top-level or original domains (edu, com, net, gov, org), country-level domains (uk, ch, tv) and newer domains (biz, info) 1.5.2

Internet Business Foundations: Web Browsing

2.1 Define terminology

1. Prepare a list of terms with definitions 2.1.1

2.2 Identify the functions of Web browsers, and use them to access the World Wide Web and other computer resources

1. Analyze a URL/URI, its functions and browsers, and use them to components, and the different types of URLs (relative and absolute) 2.2.1
2. Navigate between and within Web sites and use multiple browser windows 2.2.2
3. Differentiate between pop-up and pop-under windows 2.2.3
4. Illustrate the function of Secure Sockets Layer, Transport Layer Security, and other encryption methods in securing communication for various protocols (e.g., FTP/FTPS, HTTP/HTTPS, IMP/IMPS, POP3/POP3S) 2.2.4
5. Relate the following from a business standpoint: intranet, extranet, Internet, webinar 2.2.5
6. Configure common browser preferences, including: fonts, home pages, Bookmarks/Favorites, history, browser, cache, image loading, security settings 2.2.6
7. Discover the concept of caching and its implications, including: client caching, cleaning out client-side cache, Web page update settings in browsers 2.2.7

Internet Business Foundations: Multimedia on the Web

3.1 Define terminology

1. Prepare a list of terms with definitions 3.1.1

3.2 Identify file formats

1. Illustrate document and multimedia file formats, including PDF, RTF, PostScript 3.2.1

3.3 Identify plug-ins and their file name extensions

1. Examine common plug-ins, add-ons, and viewers (e.g., Adobe Acrobat, Macromedia Flash and Shockwave, RealNetworks RealPlayer, Windows Media Player, Apple QuickTime) and identify their common file name extensions 3.3.1

Internet Business Foundations: Database and Web Search Engines

4.1 Define terminology

1. Prepare a list of terms with definitions 4.1.1

4.2 Use different types of Web search engines effectively

1. Conduct searches using Boolean operators and keywords 4.2.1
2. Distinguish among search engines and information portals 4.2.2
3. Illustrate unexpected Web search results 4.2.3
4. Explain the meta search engines and spiders ranking techniques 4.2.4
5. Evaluate Internet resources and verify factuality 4.2.5

4.3 Recognize essential database concepts

1. Distinguish between relational and non-relation database 4.3.1
2. Examine common relational database concepts, including: table, row, record, column, field, data value, join 4.3.2
3. Analyze relationships between tables, including: one-to-one, one-to-many, many-to-many 4.3.3
4. Explain the purpose of SQL in querying databases 4.3.4

Internet Business Foundations: E-Mail

5.1 Define terminology

1. Prepare a list of terms with definitions 5.1.1

5.2 Show how to use mail clients to send simple messages and files to other Internet users

1. Configure an e-mail client to send and receive e-mail, including: SMTP, POP3, IMAP, Web-based e-mail support 5.2.1
2. Compare MIME, S/MIME and PGP/GPG 5.2.2
3. Examine e-mail components (e.g., signature, blindcopy, attachment, forwarding, reply, automatic reply) 5.2.3
4. Demonstrate client-side filters to combat SPAM 5.2.4
5. Identify ways that e-mail is used in the workplace (e.g., e-mail thread, e-mail etiquette) 5.2.5
6. Examine ways that wireless devices interface with network devices using physical and network interfaces, and protocols such as Wireless Application Protocol 5.2.6

Internet Business Foundations: Internet Services and Tools

6.1 Define terminology

1. Prepare a list of terms with definitions 6.1.1

6.2 Define additional networking and Internet services

1. Relate use and purpose of newsgroups 6.2.1
2. Relate use and purpose of FTP 6.2.2
3. Compare and contrast Concurrent Versions System (CVS) and Virtual Network Computing (VNC) 6.2.3
4. Relate use and purpose of LDAP 6.2.4
5. Demonstrate how to manage files using common compression software and techniques (e.g., zip/WinZip, gzip, bzip2, RAR, compress) 6.2.5

Internet Business Foundations: Internet Security

7.1 Define terminology

1. Prepare a list of terms with definitions 7.1.1

7.2 Identify security issues related to Internet clients (e.g., Web browsers, e-mail, instant messaging) in the workplace, including: certificates, malware, illicit servers, viruses

1. Analyze the three major types of encryption 7.2.1
2. Compare ways that authentication, digital certificates, encryption and firewalls provide Web security 7.2.2
3. Compare a computer virus, worm, and spyware and explain how to protect your computer from attacks 7.2.3
4. Explain the functions of patches and updates to client software and associated problems, including desktop security, virus protection, encryption levels, Web browsers, e-mail clients 7.2.4
5. Explain security-related ethical and privacy issues faced by IT professionals 7.2.5
6. Relate basic copyright issues 7.2.6

Internet Business Foundations: IT Project Management

8.1 Define terminology

1. Prepare a list of terms with definitions 8.1.1

8.2 Relate project management concepts and terms to the IT profession

1. Classify the components of the project triangle 8.2.1
2. Outline the project life cycle and phases 8.2.2
3. Relate IT-based concerns to organizational policies and rules, and identify rights and responsibilities of IT workers 8.2.3
4. Use the concept of Return on Investment (ROI) to justify IT-based expenses in relation to a budget 8.2.4

Networking Technology Foundations: Introduction to Networking

1.1 Define terminology

1. Prepare a list of terms with definitions 1.1.1

1.2 Demonstrate knowledge of basic data communications components

1. Illustrate basic network topologies (e.g., basic data communications ring, mesh) 1.2.1
2. Analyze the Open Systems Interconnection reference model (OSI/RM) in terms of packet creation 1.2.2
3. Explain the nature, purpose and operation essentials of Transmission Control Protocol/Internet Protocol (TCP/IP) 1.2.3
4. Compare local area network (LAN) and wide area network (WAN) 1.2.4
5. Classify the core network components and how they relate to each other, including: routers, network access points (NAPs), backbone networks, hub, switch 1.2.5
6. Distinguish among common cable types used in networking (e.g., CAT5, CAT6, crossover) 1.2.6
7. Compare Ethernet and Token Ring 1.2.7
8. Examine common TCP/IP network parameters, including: IP addresses (static versus DHCP), subnet mask, default gateway, DNS information 1.2.8

1.3 Discuss configuring and troubleshooting wireless networks

1. Illustrate connecting wireless networks to standard wired LANs 1.3.1
2. Explain security issues with wireless networks 1.3.2

Networking Technology Foundations: TCP/IP Suite and Internet Addressing

2.1 Define terminology

1. Prepare a list of terms with definitions 2.1.1

2.2 Identify the relationship between IP addresses and domain names, including: assignment of IP addresses with in a subnet

1. Explain IP addressing and the concept of IP addresses and domain uniqueness, including IP address, subnet names, including: assignment of mask IP addresses with in a subnet 2.2.1
2. Show how IP address classes are used on the Internet and determine valid IP addresses 2.2.2
3. Determine default subnet masks and describe the ANDing process 2.2.3
4. Examine common TCP/IP network parameters, including: IP addresses (static versus DHCP), subnet mask, default gateway, DNS information 2.2.4
5. Explain basic IPv6 concepts 2.2.5

2.3 Identify common performance including: analysis, diagnosis

1. Evaluate issues to consider when issues affecting Internet clients, troubleshooting IP-enabled systems, including: DNS/name resolution, correct default gateway and subnet mask, hosts file configuration, DHCP versus static IP configuration 2.3.1
2. Select when to use various diagnostic tools for troubleshooting and resolving Internet problems, including: ping, winipcfg, ipconfig, route, arp, traceroute, netstat, network analyzers (packet sniffers) 2.3.2

Networking Technology Foundations: Internetworking Servers

3.1 Define terminology

1. Prepare a list of terms with definitions 3.1.1

3.2 Identify the functions and components of network servers commonly used on the Internet

1. Distinguish between network servers 3.2.1
2. Relate the functions and features of common Internet-based services, and identify protocols used by each, including: file, print, HTTP, proxy, caching, mail, mailing list, instant messaging, media, DNS, FTP, news, certificate, directory, catalog, fax, transaction, mirrored, UNIX 3.2.2

Networking Technology Foundations: Hardware & Operating System Maintenance

4.1 Define terminology

1. Prepare a list of terms with definitions 4.1.1

4.2 Identify basic hardware and system maintenance for network systems

1. Demonstrate connecting common peripherals, including: parallel, serial, USB, FireWire devices (e.g., printers, hard drives, scanners), CD-ROM/DVD 4.2.1
2. Compare common file systems (e.g., NTFS, FAT, Ext3, ReiserFS) 4.2.2
3. Demonstrate the use of file system management tools, including: convert, Chkdsk, Disk Cleanup, Disk Defragmentor 4.2.3
4. Demonstrate file management including: backup, delete, restore 4.2.4

Networking Technology Foundations: Network Security & IT Career Opportunities

5.1 Define terminology

1. Prepare a list of terms with definitions 5.1.1

5.2 Identify common Internet security and availability issues

1. Analyze network attack types and procedures to counter each attack type 5.2.1
2. Evaluate benefits and drawbacks of symmetric, asymmetric and hash encryption 5.2.2
3. Illustrate Virtual Private Networks (VPNs) and the purposes of remote access protocols, including: Point-to-Point Tunneling Protocol (PPTP), Layer 2 Tunneling Protocol (L2TP) 5.2.3
4. Distinguish among the following security methods: DMZ, (including dual-homed and triple-homed firewalls), VLAN, intranet, extranet, PKI 5.2.4

5.3 Manage career opportunities in the IT industry

1. Demonstrate using Internet technology to obtain employment 5.3.1