1. According to the text, is it possible to develop Internet applications without understanding the architecture of the Internet and the technologies? Support your answer. (5 pts)

Yes, because a programmer only needs to learn about one interface to the network and one basic set of functions , the same set of functions are used in all applications programs that communicate over a network.

1. To what aspects of networking does data communications refer? (3 pts)

Data communications refers to the study of low-level mechanism and technologies used to send information across a physical communication medium

1. What is packet-switching, and why is packet switching relevant to the Internet? (4 pts)

Packet-switching means to form a circuit and then send information across the circuit, it allows multiple senders to transmit data over a shared network. It divides the data into small blocks and includes an identification of the intended recipient in each packet.

1. What is a protocol suite, and what is the advantage of a suite? (4 pts)

  Protocols are designed in complete, cooperative sets. Each protocol in a suite handles one aspect of communication including hardware failure. It is designed to work together efficiently.

1. List the layers in the TCP/IP model, and give a brief explanation of each. (10 pts)

 Application specifies how pair of applications interacts when they communicate. Transport is provide for communication from an application program on one computer to an application on another. Internet protocol specifies the communication between two computers across multiple interconnected networks or internet. Network Interface protocol specifies details about communication between higher layers of protocol (software), the underlying network (hardware). Physical all specifications related to electrical properties.

1. The plot in Figure 2.1 of Chapter 2 shows that Internet growth did not start until after 1995. Why is the figure misleading? (4 pts)

The scale is not appropriate to represent smaller points in the graph.

1. What Internet technology is the telephone system using? (2 pts)

It changed from analog to Voice over IP which is an Internet Technology

1. What are the two basic communication paradigms used in the Internet? (2 pts)

Stream Paradigm and Message Paradigm

1. Give six characteristics of Internet stream communication. (6 pts)

Connection oriented, one to one communication sequence of individual bytes, arbitrary length transfer, used by most applications and its build on TCP control

1. If a sender uses the stream paradigm and always sends 1024 bytes at a time, what size blocks can the Internet deliver to a receiver? (3 pts)

 It depends on the network because the network decides the size of the blocks and can be big or small.

1. What details does an application protocol specify? (4 pts)

 Specify details about the format and the meaning of the message that applications can exchange as well as procedures to be followed during communication. Actions to be taken if an error occurs, How to terminate a communication

1. What does a browser cache, and why is caching used? (5 pts)

Brower cache can reduce download times significantly by saving a copy of each image in a cache on the user’s disk and using the cached copy.

Describe the steps a browser takes to determine whether to use an item from its cache.

 Input and url command then obtain a copy of the webpage if the item in not in the local cache then request a copy and store it. Else issue a head request to the server If cache item is up to date then used the one in the system else issue a request and place a copy in the cache.

1. When a user requests an FTP directory listing, how many TCP connections are formed? Explain. (4 pts)

It creates two connections because the FTP server does not send responses over the same connection on which the client sends requests. Instead, the original connection the client creates is reserved for commands.

1. What are the two main email access protocols? ( 4 pts)

 Pop3 Post Office Protocol version 3 and IMAP Internet Mail Access Protocol

1. Using the telnet command in the Terminal interface on Linux or Windows cygwin, show the HTTP GET request and response messages for retrieving a webpage at [http://www.csusm.edu](http://www.csusm.edu/).

lyuz@ubuntu:~$ telnet www.csusm.edu 80

Trying 144.37.12.45...

Connected to www.csusm.edu.

Escape character is '^]'.

GET / HTTP/1.0

HTTP/1.1 200 OK

Age: 1

Date: Tue, 19 Feb 2013 00:11:33 GMT

Connection: Keep-Alive

Via: NS-CACHE-9.2: 1

ETag: "KXCKDPIBGCXPVKKY"

Server: Apache/2.2.15 (Red Hat)

Accept-Ranges: bytes

Content-Length: 14993

Content-Type: text/html; charset=UTF-8

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml" lang="en">

<head>

<meta charset="utf-8"/>

<meta content="http://www.csusm.edu/images/backgrounds/background\_campussephia.jpg" name="background"/>

<title>California State University San Marcos</title>

<link href="general/styles/style.css" rel="stylesheet" type="text/css"/>

<link href="general/styles/content.css" rel="stylesheet" type="text/css"/>

<link href="general/styles/news\_rotate.css" rel="stylesheet" type="text/css"/>

<script src="general/scripts/jquery-1.7.2.min.js" type="text/javascript"></script>

<script src="general/scripts/modernizr.custom.04277.js" type="text/javascript"></script>

<script src="https://lynx.csusm.edu/search/search.js" type="text/javascript"></script>

<script src="general/scripts/swfobject/swfobject.js" type="text/javascript"></script>

<script src="general/scripts/news\_rotator.js" type="text/javascript"></script>

<script src="general/scripts/ajevent.js" type="text/javascript"></script>

<script src="general/scripts/bgimage.js" type="text/javascript"></script>

<script type="text/javascript">

$(document).ready(function(){

if (!Modernizr.multiplebgs) $("body").wrapInner('<div id="bg\_wrapper"></div>');

});

</script>

<script type="text/javascript">

var \_gaq = \_gaq || [];

\_gaq.push(['\_setAccount', 'UA-5214684-1']);

\_gaq.push(['\_trackPageview']);

(function() {

var ga = document.createElement('script'); ga.type = 'text/javascript'; ga.async = true;

ga.src = ('https:' == document.location.protocol ? 'https://ssl' : 'http://www') + '.google-analytics.com/ga.js';

var s = document.getElementsByTagName('script')[0]; s.parentNode.insertBefore(ga, s);

})();

</script>

</head>

<body>

<div id="bg\_wrapper\_image">

<div id="bg\_wrapper\_mask">

<header class="menu\_gradient">

<div class="row">

<div class="col col\_5"><a href="http://www.csusm.edu"><img alt="http://www.csusm.edu" height="40" src="images/logos/csusmlogo.png" width="376"/></a></div>

<div class="col col\_4" id="site\_search"><input id="searchinput" name="searchinput" onfocus="if (this.value==this.defaultValue) this.value='';" title="Search for people or information" value="Search for people or information..."/><img alt="Search Button" id="searchinputbutton" name="searchinputbutton" src="https://www.csusm.edu/images/buttons/SearchButton.png"/></div>

<div class="col col\_3" id="header\_icons">

<a href="https://www.facebook.com/csusm"><img alt="Facebook" height="46" src="images/buttons/icon\_facebook.png" width="46"/></a>

<a href="https://twitter.com/csusmnews"><img alt="Twitter" height="46" src="images/buttons/icon\_twitter.png" width="46"/></a>

<a href="http://www.youtube.com/user/csusm"><img alt="YouTube" height="46" src="images/buttons/icon\_youtube.png" width="46"/></a>

<a href="http://www.csusm.edu/about/contact.html"><img alt="Help" height="46" src="images/buttons/icon\_help.png" width="46"/></a>

</div>

</div>

</header>

<!-- top level navigation -->

<nav id="toplevel">

<div class="row">

<div class="col col\_12">

<ul>

<li><b><a href="http://www.csusm.edu/students/">Current Students</a></b></li>

<li><b><a href="http://www.csusm.edu/explore/">Prospective Students</a></b></li>

<li><b><a href="http://www.csusm.edu/families/">Parents &amp; Families</a></b></li>

<li><b><a href="http://www.csusm.edu/facultystaff/">Faculty &amp; Staff</a></b></li>

<li><b><a href="https://alumniweb.csusm.edu/index.php">Alumni</a></b></li>

<li><b><a href="http://www.csusm.edu/community/">Community</a></b></li>

<li><b><a href="http://www.csusm.edu/giving/">Donors &amp; Friends</a></b></li>

</ul>

</div>

</div>

</nav>

<div class="clear" style="padding-bottom: 110px;"></div>

<!--Add skip navigation. Show link for keyboard users-->

<div class="row">

<div class="col col\_3">

<nav class="sitelevel wht\_bx\_rndcrnr" style="height: 485px;">

<h2>STUDENT ESSENTIALS</h2>

<ul>

<li class="vnav vnavLevel1Normal"><a href="http://www.csusm.edu/academics/colleges.html">Colleges &amp; Departments</a></li>

<li class="vnav vnavLevel1Normal"><a href="http://biblio.csusm.edu/">Library</a></li>

<li class="vnav vnavLevel1Normal"><a href="http://cc.csusm.edu/">Cougar Courses</a></li>

<li class="vnav vnavLevel1Normal"><a href="http://mail.cougars.csusm.edu/">Webmail</a></li>

<li class="vnav vnavLevel1Normal"><a href="http://www.csusm.edu/schedule/">Class Registration &amp; Tuition</a></li>

<li class="vnav vnavLevel1Normal"><a href="http://www.csusm.edu/dates/">Important Dates &amp; Deadlines</a></li>

<li class="vnav vnavLevel1Normal"><a href="http://www.csusm.edu/catalog/">Catalog</a></li>

<li class="vnav vnavLevel1Normal"><a href="http://www.csusm.edu/academicadvising/index.html">Academic Advising</a></li>

<li class="vnav vnavLevel1Normal"><a href="http://www.csusm.edu/orgs/">Student Organizations</a></li>

<li class="vnav vnavLevel1Normal"><a href="http://www.csusmbookstore.com/">Bookstore &amp; University Store</a></li>

</ul>

<div class="more\_info"><a href="http://www.csusm.edu/students/">View other student links...</a></div>

</nav>

</div>

<div class="col col\_9"><div class="wrap"><div id="filmstrip"><div class="item news\_img"><a href="http://csusmcougars.com/news/2013/2/14/MBBALL\_0214134144.aspx"><img alt="Basketball guard Danny Redmon" src="images/homepage-themes/billboard\_bball-seniors2.jpg"/><div class="item\_text img\_text" imageIndex="0"><div><h2>Final Home Game: Feb. 23</h2>Catch your No. 7 CSUSM men's basketball team (20-4) in action for their final home game of the season on Saturday, Feb. 23 at 7:30 p.m. at MiraCosta College. Admission is free for CSUSM students, faculty and staff. Read more...</div></div></a></div><div class="item news\_img"><a href="news/topstories/articles/2013/02/Goldberg.html"><img alt="Merryl Goldberg Earns James Irvine Foundation Award" src="images/homepage-themes/billboard\_goldberg.jpg"/><div class="item\_text img\_text" imageIndex="1"><div><h2>Honoring a Creative Leader</h2>Dr. Merryl Goldberg receives the James Irvine Foundation Leadership Award for her groundbreaking research that improves the lives of Californians. Read more...</div></div></a></div><div class="item news\_video"><img alt="In the Executive's Chair with Phil Blair" src="/"/><div class="yt\_play\_overlay"></div><div class="ytvideo" id="d-EKu9fw\_aQ">

You need Flash player 8+ and JavaScript enabled to view this video.

</div><div class="item\_text video\_text" imageIndex="2"><div><h2>Unafraid to Succeed</h2>President and CEO of Manpower San Diego, Phil Blair shares advice on leadership, corporate culture and finding success "In the Executive's Chair." Watch now...</div></div></div><div class="item news\_img"><a href="http://www.csusm.edu/iits/support/cougarapps/"><img alt="CSUSM student using Cougar Apps on a wireless laptop at a community plaza" src="images/homepage-themes/homepage\_cougarapps.jpg"/><div class="item\_text img\_text" imageIndex="3"><div><h2>Have you tried CougarApps?</h2>Access campus applications and your files anywhere, anytime, on any device. Learn more and try it today...</div></div></a></div></div><div id="thumbnails"><div><div class="thumb pointer" imageIndex="0"><img alt="Basketball guard Danny Redmon thumbnail" src="images/homepage-themes/billboard\_bball-seniors2.jpg"/></div><div class="thumb" imageIndex="1"><img alt="Merryl Goldberg Earns James Irvine Foundation Award thumbnail" src="images/homepage-themes/billboard\_goldberg.jpg"/></div><div class="thumb" imageIndex="2"><img alt="In the Executive's Chair with Phil Blair thumbnail" src="http://img.youtube.com/vi/d-EKu9fw\_aQ/0.jpg"/></div><div class="thumb" imageIndex="3"><img alt="CSUSM student using Cougar Apps on a wireless laptop at a community plaza thumbnail" src="images/homepage-themes/homepage\_cougarapps.jpg"/></div></div></div></div></div>

</div>

<div class="clear"></div>

<div class="row">

<!--Quick links-->

<div class="col col\_12">

<nav class="wht\_bx\_rndcrnr">

<div class="bb\_links" id="bb\_news">

<a href="http://www.csusm.edu/news/">NewsCenter</a>

</div>

<div class="bb\_links" id="bb\_athletics">

<a href="http://www.csusmcougars.com/">Cougar Athletics</a>

</div>

<div class="bb\_links" id="bb\_tem">

<a href="http://www.csusm.edu/temecula/">CSUSM @ Temecula</a>

</div>

<div class="bb\_links" id="bb\_give">

<a href="http://www.csusm.edu/giving/">Give to CSUSM</a>

</div>

<div class="bb\_links" id="bb\_mycsusm">

<a href="https://my.csusm.edu/">myCSUSM</a>

</div>

</nav>

</div>

</div>

<div class="clear"></div>

<!--Events-->

<div class="row">

<div class="col col\_6">

<section class="wht\_bx\_rndcrnr">

<h2>UPCOMING CAMPUS EVENTS</h2>

<div class="events">

<ul id="c\_events">

<!--

<li>

<b>Sample Event Name</b><br />

Sample Date | Sample Time | Sample Location

</li>

-->

</ul>

</div>

<div class="more\_info"><a href="http://www.csusm.edu/calendar/">View the full campus events calendar...</a></div>

</section>

</div>

<div class="col col\_6">

<section class="wht\_bx\_rndcrnr">

<h2>UPCOMING ATHLETICS EVENTS</h2>

<div class="events">

<ul id="a\_events">

<!--

<li>

<b>CSUSM vs Opponent</b><br />

Thursday June 28 | 3pm | @CSUSM

</li>

-->

</ul>

</div>

<div class="more\_info"><a href="http://www.csusmcougars.com/calendar.aspx">View the full athletics calendar...</a></div>

</section>

</div>

</div>

<div class="clear"></div>

<footer class="wht\_border\_top">

<div class="blk\_grad\_overlay">

<div class="row">

<div class="col col\_12" id="footer\_info">

<h3>NEW TO CSUSM?</h3>

<p>Founded in 1989, California State University San Marcos is a new kind of university &#8212; the 20th campus to be established in the 23-campus CSU system.</p>

<p>Today, more than 10,000 students attend our 304-acre, state-of-the-art main campus, which is nestled in the foothills of San Marcos, California (northern San Diego County). We are a dynamic university dedicated to teaching future generations via hands-on experiences, cutting-edge science and computer labs, and relevant coursework with a global perspective.</p>

<p>Explore our websites to learn more about what makes us so special:</p>

</div>

</div>

</div>

<div class="menu\_gradient" id="footernavbar">

<div class="row">

<div class="col col\_12">

<div class="footer\_header">

<p>About CSUSM</p>

</div>

<div class="footer\_header">

<p>Apply</p>

</div>

<div class="footer\_header">

<p>Study</p>

</div>

<div class="footer\_header">

<p>Experience</p>

</div>

<div class="footer\_header footer\_border\_right">

<p>Partner</p>

</div>

</div>

</div>

</div>

<div class="row">

<div class="col col\_12" id="footernavlinks">

<nav>

<div class="footernav">

<ul>

<li><a href="http://www.csusm.edu/president/">Office of the President</a></li>

<li><a href="http://www.csusm.edu/about/administration.html">Administrative Offices</a></li>

<li><a href="http://www.csupalliativecare.org/">CSU Institute for Palliative Care at CSUSM</a></li>

<li><a href="http://www.csusm.edu/news/">NewsCenter</a></li>

<li><a href="http://www.csusm.edu/about/facts/">Stats, Facts &amp; Accountability</a></li>

<li><a href="http://www.csusm.edu/about/safety/">Campus Police &amp; Safety</a></li>

<li><a href="http://www.csusm.edu/police/Clery.pdf">Security/Fire Safety (PDF)</a></li>

<li><a href="http://www.csusm.edu/guide/">Directions, Transit &amp; Parking</a></li>

<li><a href="http://www.csusm.edu/guide/maps.html">Campus Maps</a></li>

<li><a href="http://www.csusm.edu/admissions/espanol/index.html">Informaci&#243;n en Espa&#241;ol</a></li>

<li><a href="http://www.csusm.edu/about/contact.html">Contact Us</a></li>

<li><a href="http://www.calstate.edu" target="\_blank"><img alt="http://www.calstate.edu" src="https://www.csusm.edu/images/footer/csu.gif"/></a></li>

<li><a href="http://www.collegeportraits.org/CA/CSUSM" target="\_blank"><img alt="http://www.collegeportraits.org/CA/CSUSM" src="https://www.csusm.edu/images/footer/cp.gif" style="margin-top: 2px;"/></a></li>

</ul>

</div>

<div class="footernav">

<ul>

<li><a href="http://www.csusm.edu/admissions/freshmen/">Freshmen Admissions</a></li>

<li><a href="http://www.csusm.edu/admissions/transfer/">Transfer Admissions</a></li>

<li><a href="http://www.csusm.edu/gsr/">Graduate Students</a></li>

<li><a href="http://www.csusm.edu/global/admissions/">International Students</a></li>

<li><a href="http://www.csusm.edu/el/">Extended Learning</a></li>

<li><a href="http://www.csusm.edu/admissions/financing/">Tuition &amp; Cost of Attendance</a></li>

<li><a href="http://www.csusm.edu/finaid/apply\_for\_finaid/">Financial Aid</a></li>

<li><a href="http://www.csusm.edu/housing/">Student Housing</a></li>

<li><a href="http://www.csusm.edu/about/employment.html">Faculty &amp; Staff Careers</a></li>

</ul>

</div>

<div class="footernav">

<ul>

<li><a href="http://www.csusm.edu/academics/colleges.html">Colleges &amp; Departments</a></li>

<li><a href="http://biblio.csusm.edu/">Library</a></li>

<li><a href="http://www.csusm.edu/academicadvising/index.html">Academic Advising</a></li>

<li><a href="http://www.csusm.edu/schedule/">Class Registration</a></li>

<li><a href="http://www.csusm.edu/catalog/">University Catalog</a></li>

<li><a href="http://www.csusm.edu/gsr/">Graduate Studies &amp; Research</a></li>

<li><a href="http://www.csusm.edu/temecula/">CSUSM at Temecula</a></li>

</ul>

</div>

<div class="footernav">

<ul>

<li><a href="http://www.csusm.edu/fystudents/">First-Year Students</a></li>

<li><a href="http://www.csusmcougars.com/">Cougar Athletics</a></li>

<li><a href="http://www.csusm.edu/orgs/">Student Organizations</a></li>

<li><a href="http://www.csusm.edu/sll/">Student Life &amp; Leadership</a></li>

<li><a href="http://www.csusm.edu/asi/">Associated Students, Inc.</a></li>

<li><a href="http://www.csusm.edu/families/">For Parents &amp; Families</a></li>

<li><a href="https://alumniweb.csusm.edu/">Alumni Association</a></li>

</ul>

</div>

<div class="footernav footer\_border\_right">

<ul>

<li><a href="http://www.csusm.edu/giving/">Give to CSUSM</a></li>

<li><a href="http://www.csusm.edu/community/">Community Engagement</a></li>

<li><a href="http://www.csusm.edu/procurement/procurementservices/vendorinformation.html">Doing Business with CSUSM</a></li>

<li><a href="http://www.csusm.edu/community/students.html">Community Service Learning</a></li>

<li><a href="http://www.csusm.edu/events/">Host Your Event at CSUSM</a></li>

<li><a href="http://www.csupalliativecare.org/">CSU Institute for Palliative Care at CSUSM</a></li>

</ul>

</div>

</nav>

</div>

</div>

<div id="footer\_copyright">

<div class="row">

<div class="col col\_12">&#169; Copyright 2013 California State University San Marcos. All rights reserved.</div>

</div>

</div>

</footer>

</div>

</div>

</body>

</html>Connection closed by foreign host.

lyuz@ubuntu:~$

(5 pts)