

Internet 101

A BEGINNER'S
GUIDE TO THE INTERNET AND
THE WORLD WIDE WEB



Wendy G. Lehnert

INTERNET

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Preface

Preface

This book is more than just a book about the Internet. It is part of an integrated package (or coursepack) that includes Web pages for both students and teachers. The Internet 101 coursepack is designed primarily for undergraduates who have little or no computer experience and who want to use the Internet. In its entirety, this text is appropriate for a 3-credit college-level course on the Internet. Alternatively, selected chapters can be integrated into a general computer literacy curriculum or an introduction to computer science course. It can be used as the basis for a workshop on the Internet, independent course projects, self-instruction, or personal reference. The text covers all the basic Internet applications of interest to a non-technical audience, and also includes optional topics appropriate for an honors section or computer science majors. Its only prerequisite is some prior exposure to some computer application (such as a word processor, spreadsheet, or educational software). However, no specific knowledge of a particular computer platform is required.

The Internet requires skills and know-how that can only be acquired through online experience. This book takes a hands-on approach right from the start, and encourages a systematic exploration of the Internet. Anyone who reads this book and works through a sampling of the exercises will become proficient in the use of the Internet.

Using the Internet 101 Web Pages

The best way to learn about the Internet is by spending time on the Internet, but that time must be spent intelligently. The Internet 101 Web pages accompany each chapter as a timely source of supplemental readings, related topics, and software resources. Students and teachers alike can use these pages to pursue a subject in greater depth, and anyone can use them as a source of reliable pointers to high-quality Internet resources. Through the integration of the book with a Web site, the Internet becomes an extension of the book, where problems and exercises can be pursued without any need for extensive lists of bookmarks or notes based on the text. Why retype a lengthy URL from a printed page when you can launch a Web browser and click a link? The book

provides important background and explanations that are essential for Internet mastery, while the Web pages streamline the process of transforming instruction into action, encouraging the crucial hands-on experimentation that leads to true Internet mastery. Additional online resources are also available specifically for teachers (see “Notes to the Teacher” below).

Why the Iguana?

The green iguana is a fitting symbol for everything that is unique and wonderful about the Internet. Iguanas are surprisingly popular in the United States as pets, especially among college students and the 20-or-30-something crowd. Unfortunately, there is much published misinformation available to a prospective iguana owner when it comes to simple matters such as what constitutes a healthy diet or how an iguana should be housed. Luckily for the iguana, many iguana enthusiasts are active on the Internet and talking to each other. Questions from beginners are being answered in great detail by herpetologists and experienced iguana owners. Thanks to the Internet, this native inhabitant of tropical rain forests now thrives in Arizona, Alaska, and all kinds of temperate regions. The iguana community is not a place you will find on any map, but it is alive and well on the Internet!

Meeting the Challenges

One can argue that there are already more than enough books about the Internet. That’s certainly what I thought in 1995 when I set out to design a course on the subject. It’s true that many books have been written, but precious few are textbooks written by experienced teachers. I’ve tried to teach from the available books. At first I inflicted a 1300-page reference book on my students. The next year I tried out a 200-page book that contained only the minimal basics. In both cases, I found myself preparing extensive notes for my students in order to give them what they really needed to know. The shortcomings of many Internet books are readily recognized by anyone who has taught this material. The major difficulties are (1) material and pointers that are out of date, (2) the inclusion of too many low-level details about platform-dependent software, and (3) a failure to convey anything about the history and real-world implications of the Internet. The Internet 101 coursepack has been designed to address each of these problem areas, as described below.

The Currency Solution

The Internet is a moving target. Servers that were popular two years ago are no longer maintained or used by as many people today. The most popular Web

browsers are enhanced and re-released at least once a year. The best Web search engines redesign their interfaces and expand their services in an effort to stay competitive. Any Internet book that was written more than a year ago invariably contains outdated material. The currency problem applies to both Internet software and Internet resources, both of which are at the heart of any introduction to the Internet. Many books about the Internet have been written with no regard for the problem of maintaining currency.

For example, many Internet books contain lengthy compilations of useful Internet addresses (URLs). Unfortunately, URLs have a half-life of about 6-12 months. This means that of any collection of URLs that are operational today, at least half of the URLs are likely to produce a “404 Not Found” error a year from now. A book that contains an obsolete URL and does not explain how to find the new URL for the same material or other comparable resources is not teaching essential Internet skills. Readers are being handed a proverbial fish when they really need to learn how to catch their own.

This book does not contain extensive lists of URLs. I have tried to keep the number of URLs down to a minimum because of their short lives. However, I realize that a small collection of high-quality Web pointers are invaluable to a beginner. So whenever it is appropriate to provide the reader with pointers to a select collection of Web pages, I have included these URLs in the text itself. But the better place to look for specific URLs is at the Internet 101 Web site:

<http://www.awl.com/cseng/titles/0-201-32553-5/>

URLs found at this site will be updated as needed to minimize the frustration of pursuing outdated pointers. I will also post updates to the Internet 101 text on this site, in the event that material in print becomes outdated. Information that is inherently unstable is best managed on a Web site where addresses and descriptions can be readily updated. Only the most stable information about the Internet belongs in a book. This book was organized from the start with an associated Web site in mind in order to conquer the currency problem.

The Platform Dependence Solution

Too many Internet books are mired in the technical details of specific software that is irrelevant for a large number of otherwise potential readers. If a book assumes a Macintosh platform, no one will read it but Macintosh users. Likewise for PCs and UNIX workstations. Shopping around for a platform-dependent text does not always solve the problem, because a reader really wants a book that covers a specific collection of software: the software that is available to the reader. Platform-specific books typically fail to include all the soft-

ware readers need to know, even though the book addresses the right platform. For example, if a book assumes a UNIX platform, its author can select from three popular text editors (pico, vi, and emacs), two popular mail clients (elm and pine), and many possible newsreaders (readnews, vnews, rn, trn, xrn, and tin). If a book covers only one option from each category, it will invariably miss the mark for many potential readers.

A few books attempt to deal with this by taking the opposite tack: They try to cover all of the most popular software on one or more hardware platforms in an effort to maximize their readership. But this comprehensive approach necessarily results in a hefty, encyclopedic-type reference book.

It is an egregious error to give students the impression that computers and the Internet demand substantial software mastery. It is better to describe a minimal kernel of essential software features and then move on to other matters. Most all Web browsers have the same navigational capabilities and preference options, just as most text editors support paragraph formatting and grab-and-drop. By concentrating on generic software descriptions rather than specific command sets, this book stresses the more stable functionality of Internet applications while avoiding the less stable details of specific interfaces and applications. On the other hand, command list summaries do come in handy and beginners benefit greatly from software demonstrations.

To solve the platform dependence problem, I have placed software-specific material on the Internet 101 Web pages. There you will find pointers to software introductions, command summary sheets, and additional software-related material for Macintosh, Windows, and UNIX platforms. By keeping this information online, I avoid burdening the reader with irrelevant pages of text. It is easier to skip an irrelevant link on a Web page than 200 pages of irrelevant material in a printed book.

In a classroom environment, teachers can duplicate brief command summary handouts and instruction sheets to cover whatever software is supported by their own computer facilities. Many schools have an Information Technology Office or a Computer Support Service that routinely distribute software overviews to students and staff for quick reference. Software summaries and command sheets are also available on the Internet 101 Web pages. If you ever change your software or your computer platform, you won't need a new book. You'll just need new software summaries.

The Big Picture Solution

When an Internet book is preoccupied with low-level details, it can't place the Internet in the larger context of its historical roots, social impact, and legal ramifications. Chapter 2 presents basic Internet concepts in an historical framework to set the stage for everything that follows. In addition, each chapter that introduces a new application explains a little about its origins and motivation.

Students can absorb the whats and the hows more readily when they are combined with some whys and whens.

Moreover, no one should claim to understand the Internet without having first explored the most important social issues that perplex lawyers, politicians, publishers, and telecommunication analysts (to name a few). Chapter 13 describes seven illegal activities facilitated by the Internet, and discusses the major social issues associated with the Internet. Readers will also find short digressions addressing the real-world side of the Internet throughout all of the chapters. In my experience, students enjoy anecdotes based on real events, and concrete examples make general concepts more memorable for everyone.

Special Features of This Book

Visual icons have been used throughout this textbook to highlight specific kinds of information. Each icon signals an information category, alerting the reader to information that may be of practical value, pedagogical import or that is a real-world example of something described in the text. Six different icons are used:

The Internet 101 Web Pages

Under this icon at the start of each chapter is a short list of related content on the Internet 101 Web pages. These lists are meant to be more suggestive than comprehensive to give the reader a taste of what is available online.



Helpful Hints

Experience in the classroom has taught me to anticipate specific traps into which students frequently fall. Under this icon the reader will find helpful advice about these most common beginner pitfalls.



Heads-Up Warnings

When it is appropriate to warn the reader about a potentially regrettable scenario, it is highlighted with this icon. Everyone likes to avoid disasters and embarrassment, and a fearful neophyte may eschew hands-on exploration in an effort to prevent serious mistakes. But armed with an understanding of the most commonly encountered mistakes and technical difficulties, beginners can venture forth on the Internet without fear.



Useful Jargon and Definitions

All books about the Internet must explain a certain amount of technical jargon in order to prepare readers for life online. Many relevant definitions and



explanations have been distributed throughout this text, introduced in the context of a specific motivating application. Important concepts and jargon are also emphasized with this icon for easy reference.



Software Checklists

Under this icon, readers will find essential software features highlighted in software checklists. These checklists describe generic software features that are common to all application packages of the same genre. If you have software documentation for a specific application, and a software checklist, you can test your mastery of the software by working through the checklist. If you can do everything on the checklists for a specific application, you have the software mastery needed to put that application to work for you.

The First E-mail Message

Real-World and the Internet

Real-world anecdotes and interesting facts about the Internet can be found throughout this book under this icon. Concrete examples of general concepts may be included in these digressions to illustrate the Internet in action or a specific class of Internet phenomena. Concrete examples can make an abstract concept easier to grasp and remember. They also lighten up the reading.

The Index

The index for this text was designed by me with beginners and casual readers in mind. Entries like “newbies: classic mistakes”, and “e-mail: missing” will help readers zero in on practical information that might otherwise be difficult to find.

A Note to the Student

It has been my experience that students find this material thoroughly enjoyable and easy to learn. This book is designed to give you all the basics needed for full Internet mastery in a few months. If you set out to cover a chapter a week, you should be able to complete the software checklists, problems, and exercises that are designed to give you first-hand experience with the Internet. Take advantage of the Internet 101 Web pages and do as many exercises as you can.

If you are not enrolled in a class and wish to use this book for self-study, Chapter 1 and Appendix A will show you how to obtain Internet access from scratch. Chapter 2 lays out some foundational concepts that will be referenced throughout the remainder of the text. Once you are off the ground, you can visit specific chapters in any order you wish as your interests dictate (see “Internet Topics and Chapter Selection”).

The Internet offers educational resources, social enrichment, professional advantage, and entertainment. Efforts to commercialize the Web have un-

doubtedly contributed to a picture of the Internet as a bountiful landscape which can be traversed and harvested with minimal effort. But mastering the command set for a Web browser does not constitute Internet mastery. The Web is indeed a potential gold mine, but its treasures are not easily found without informed search strategies and some knowledge of the Internet in general. True Internet mastery is not difficult to achieve, but it does require some effort. This book was written to make that effort fruitful, so that the Internet will be an enjoyable and worthwhile addition to your life.

A Note to the Teacher

An instructor's manual is available on the Internet 101 Web pages with a sample course syllabus, suggested homework assignments, answers to all of the problems and exercises, and general advice about the logistics of managing online homework collection and other matters. If you have never taught a course about the Internet before, a special section covers tips and advice that I have acquired from first-hand experience. Some of this information is publically available and some (e.g. answers to exercises) is available only to registered course instructors. Please contact your Addison-Wesley representative for information about accessing this manual or send e-mail to aw.cse@aw.com.

Internet Topics and Chapter Selection

It is standard practice to organize Internet books around individual software applications. This text follows suit, but emphasizes additional material in the context of each software application. A brief synopsis of the topics will give you a feel for the material beyond the software, and where to find it.

E-mail and Mailing Lists

Many people who rely on the Internet in work environments have discovered that working with the Internet can be very time-consuming. With more and more people using e-mail for business communications, it is important to go beyond the commands for reading, deleting, and writing e-mail messages. Automated filters and mail routing can be used to separate urgent messages from messages that can be ignored. But there are additional techniques for minimizing the time spent with e-mail. Chapter 3 begins with the basics of e-mail and goes on to outline 14 strategies for effective e-mail management. Chapter 4 covers mailing lists, including techniques for handling the extremely heavy volumes of e-mail (e.g. 100 messages a day) associated with highly active mailing lists.

Finding Things on the World Wide Web

According to one survey, 84% of Internet users are not satisfied with their ability to find things on the Web. For every book that talks about what to do after a Web search engine returns 80,000 so-called hits, there are 30 more that merely offer pointers to additional search engines. As a result, too many people are under the impression that it is impossible to find information on the Internet. With so many books about the Internet, it is remarkable how few discuss the skills and tricks that make the difference between success and failure with a Web search engine. Effective keyword searches should be a central component of any syllabus dedicated to the Internet. This book includes two self-contained chapters (5 and 7) devoted to the Web and how to find things on the Web. You will not find long lists of URLs in these chapters but you will find an introduction to keyword search engines, subject trees, and clearinghouses. In addition, Chapter 7 presents a systematic approach to keyword searches based on a simple taxonomy of the questions behind the queries.

Gopher resources are in decline, but students will invariably stumble across Gopher menus with their Web browser. Chapter 6 answers the question “Why do these Web pages all look alike, and why do they keep mentioning Veronica?” Gopher is also pedagogically interesting as the answer to the question, “What would the Web look like if it had no graphics and no hypertext?” A comparison of Gopher space and the Web makes it easier to appreciate those unique elements of the Web that make it such a compelling communication medium.

Usenet Newsgroups

The Usenet newsgroups are a favorite haunt for those who enjoy channel surfing through 20,000 ongoing conversations. But the true legacy of Usenet lies in the tradition of FAQ files as a repository of reliable information. FAQs are also a striking example of the “gift economy” of the Internet. Usenet raises additional issues as well. The problem of Usenet spam motivates an examination of Netiquette, free speech, censorship, self-regulation, and legislative intervention. The existence of searchable Usenet archives raises questions of privacy and whether anything on the Internet can be truly private. Chapter 8 covers the operation of news readers and resources for finding newsgroups along with the larger issues that go hand-in-hand with Usenet.

Software on the Internet

Students are often eager to exploit the software resources of the Internet, but they should know more than the basics of FTP before they download executables onto a home computer. Chapter 9 covers FTP, the practical ins

and outs of file formats and file utilities, and clearinghouses for reputable shareware and freeware. Computer viruses and virus detection software are covered, including the new class of macro viruses which are an increasingly common problem for people who use mail attachments.

Online Communities

Public Telnet servers are another example of an Internet application which is gradually being absorbed by the Web. However, Telnet servers and their tradition of registered members shows how online privileges can be tied to community standards for acceptable online behavior. This model of community membership provides an interesting counterpoint for the anarchy of Usenet. Telnet servers also gave rise to MUDs and IRC, which are interesting playgrounds for gender bending, general role playing, and the curious phenomenon of TinySex. Chapter 10 covers all of this as well as Freenets and community networks. Other chapters that cover communication vehicles for online communities include Chapter 4 (on mailing lists) and Chapter 8 (on the Usenet newsgroups).

Web Page Construction

Many students are drawn to the Internet because they want to construct a home page on the Web. Basic HTML is not difficult and students are pleasantly surprised to see how quickly they can bring up their own Web pages. The last section of Chapter 5 and all of Chapter 11 constitute a short workshop on Web page construction: text formatting, absolute links, named links, relative links, directory path names, the alignment of inline graphics, text/graphics alignment, GIF and JPEG images, transparent GIFs, interlaced GIFs, clickable graphics, thumbnail sketches, tables, frames, and useful items for a Webmaster's toolbox. I stop short of anything involving real programming (CGI and Java), but Web page construction may prove to be an entry point into computer programming for students who would otherwise have no interest in the subject.

Encryption on the Internet

Chapter 12 offers an optional foray into digital encryption with an emphasis on practical PGP. Double-key cryptography is explained along with the mechanics of encrypted files, clear signed documents, signature verification, and public key validation. If you skip this material it won't be missed, but students tend to find it interesting. Chapter 12 lays out the basics of PGP along with the saga of Phil Zimmermann and the difficulties of legislative efforts to control strong encryption on the Internet. An optional (extra credit) PGP assignment at the end of the semester is a great way to wrap things up on a fun note.

Chapter Selection

This book was written for students enrolled in a course devoted to the Internet, as well as students in computer literacy courses or other courses where the Internet is only part of the curriculum. Because each chapter is largely self-contained, an instructor has a lot of flexibility in the selection of reading assignments and exercises. There is more than enough material here to fill a 15-week semester, and optional sections can be omitted to fit trimester or quarter schedules. Here are some suggested curriculum options:

For a course devoted to the Internet:

All chapters 1-13, omitting selected optional sections as needed

For an Internet unit in a computer literacy course:

Chapters 1, 2, 3, 5, 8, and 13

For an Internet unit in an introductory computer science course:

Chapters 2, 5, 9, 12, and 13

For a workshop or independent project on the World Wide Web:

Chapters 5, 7, 11, and 13 including all optional sections

For an online research course aimed at students in journalism, legal studies, or other specialities in the humanities:

Chapters 1, 2, 3, 4, 5, 7, and 8

Selected readings from chapters 2 and 13 can be scattered throughout a syllabus in order to balance hands-on activities with the “big picture.” Some material can be regarded as optional and may be reserved for an honors section or extra credit. In the table of contents, optional material has been marked (*) for easy identification.

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