

Computer Science E-1



Understanding Computers and the Internet

Lecture 4: The Internet

Wednesday, 11 October 2006

David J. Malan
`malan@post.harvard.edu`

Agenda



- Networks
 - Clients and Servers
 - Peer-to-Peer
 - LANs and WLANs
 - The Internet
 - Domains
- Email
 - Addresses
 - IMAP, POP, and SMTP
 - Netiquette
 - Spam
 - Emoticons
 - Snail Mail
 - Listservs
- SSH
- The World Wide Web
 - URLs
 - HTTP
- Blogs
- Instant Messaging
- SFTP
- Usenet

Networks



Networks



Domains

Domain	Subdomains
harvard.edu	dce., eecs., fas., law., post., ...

Networks



Domains

Generic top-level domains	
Un-sponsored	.biz .com .edu .gov .info .mil .name .net .org
Sponsored	.aero .cat .coop .int .jobs .museum .pro .travel
Infrastructure	.arpa .root
Startup phase	.mobi .post .tel
Proposed	.asia .cym .geo .kid .kids .mail .sco .web .xxx
Deleted/retired	.nato
Reserved	.example .invalid .localhost .test
Pseudo-domains	.bitnet .csnet .local .onion .uucp
Unofficial	see Alternative DNS roots

See also: [Country code top-level domains](#)

Table excerpted from http://en.wikipedia.org/wiki/Generic_top-level_domain.

Networks



Domains

.ac	- Ascension Island	.cu	- Cuba	.ie	- Ireland
.ad	- Andorra	.cv	- Cap Verde	.il	- Israel
.ae	- United Arab Emirates	.cx	- Christmas Island	.im	- Isle of Man
.af	- Afghanistan	.cy	- Cyprus	.in	- India
.ag	- Antigua and Barbuda	.cz	- Czech Republic	.io	- British Indian Ocean Territory
.ai	- Anguilla	.de	- Germany	.iq	- Iraq
.al	- Albania	.dj	- Djibouti	.ir	- Iran (Islamic Republic of)
.am	- Armenia	.dk	- Denmark	.is	- Iceland
.an	- Netherlands Antilles	.dm	- Dominica	.it	- Italy
.ao	- Angola	.do	- Dominican Republic	.je	- Jersey
.aq	- Antarctica	.dz	- Algeria	.jm	- Jamaica
.ar	- Argentina	.ec	- Ecuador	.jo	- Jordan
.as	- American Samoa	.ee	- Estonia	.jp	- Japan
.at	- Austria	.eg	- Egypt	.ke	- Kenya
.au	- Australia	.eh	- Western Sahara	.kg	- Kyrgyzstan
.aw	- Aruba	.er	- Eritrea	.kh	- Cambodia
.az	- Azerbaijan	.es	- Spain	.ki	- Kiribati
.ba	- Bosnia and Herzegovina	.et	- Ethiopia	.km	- Comoros
.bb	- Barbados	.fi	- Finland	.kn	- Saint Kitts and Nevis
.bd	- Bangladesh	.fj	- Fiji	.kp	- Korea, Democratic People's Republic
.be	- Belgium	.fk	- Falkland Islands (Malvinas)	.kr	- Korea, Republic of
.bf	- Burkina Faso	.fm	- Micronesia, Federal State of	.kw	- Kuwait
.bg	- Bulgaria	.fo	- Faroe Islands	.ky	- Cayman Islands
.bh	- Bahrain	.fr	- France	.kz	- Kazakhstan
.bi	- Burundi	.ga	- Gabon	.la	- Lao People's Democratic Republic
.bj	- Benin	.gd	- Grenada	.lb	- Lebanon
.bm	- Bermuda	.ge	- Georgia	.lc	- Saint Lucia
.bn	- Brunei Darussalam	.gf	- French Guiana	.li	- Liechtenstein
.bo	- Bolivia	.gg	- Guernsey	.lk	- Sri Lanka
.br	- Brazil	.gh	- Ghana	.lr	- Liberia
.bs	- Bahamas	.gi	- Gibraltar	.ls	- Lesotho
.bt	- Bhutan	.gl	- Greenland	.lt	- Lithuania
.bv	- Bouvet Island	.gm	- Gambia	.lu	- Luxembourg
.bw	- Botswana	.gn	- Guinea	.lv	- Latvia
.by	- Belarus	.gp	- Guadeloupe	.ly	- Libyan Arab Jamahiriya
.bz	- Belize	.gq	- Equatorial Guinea	.ma	- Morocco
.ca	- Canada	.gr	- Greece	.mc	- Monaco
.cc	- Cocos (Keeling) Islands	.gs	- South Georgia and the South Sandwich Islands	.md	- Moldova, Republic of
.cd	- Congo, Democratic Republic of the	.gt	- Guatemala	.mg	- Madagascar
.cf	- Central African Republic	.gu	- Guam	.mh	- Marshall Islands
.cg	- Congo, Republic of	.gw	- Guinea-Bissau	.mk	- Macedonia, Former Yugoslav Republic
.ch	- Switzerland	.gy	- Guyana	.ml	- Mali
.ci	- Cote d'Ivoire	.hk	- Hong Kong	.mm	- Myanmar
.ck	- Cook Islands	.hm	- Heard and McDonald Islands	.mn	- Mongolia
.cl	- Chile	.hn	- Honduras	.mo	- Macau
.cm	- Cameroon	.hr	- Croatia/Hrvatska	.mp	- Northern Mariana Islands
.cn	- China	.ht	- Haiti	.mq	- Martinique
.co	- Colombia	.hu	- Hungary	.mr	- Mauritania
.cr	- Costa Rica	.id	- Indonesia	.ms	- Montserrat

Networks



Domains

.mt - Malta	.re - Reunion Island	.tt - Trinidad and Tobago
.mu - Mauritius	.ro - Romania	.tv - Tuvalu
.mv - Maldives	.ru - Russian Federation	.tw - Taiwan
.mw - Malawi	.rw - Rwanda	.tz - Tanzania
.mx - Mexico	.sa - Saudi Arabia	.ua - Ukraine
.my - Malaysia	.sb - Solomon Islands	.ug - Uganda
.mz - Mozambique	.sc - Seychelles	.uk - United Kingdom
.na - Namibia	.sd - Sudan	.um - US Minor Outlying Islands
.nc - New Caledonia	.se - Sweden	.us - United States
.ne - Niger	.sg - Singapore	.uy - Uruguay
.nf - Norfolk Island	.sh - St. Helena	.uz - Uzbekistan
.ng - Nigeria	.si - Slovenia	.va - Holy See (City Vatican State)
.ni - Nicaragua	.sj - Svalbard and Jan Mayen Islands	.vc - Saint Vincent and the Grenadines
.nl - Netherlands	.sk - Slovak Republic	.ve - Venezuela
.no - Norway	.sl - Sierra Leone	.vg - Virgin Islands (British)
.np - Nepal	.sm - San Marino	.vi - Virgin Islands (USA)
.nr - Nauru	.sn - Senegal	.vn - Vietnam
.nu - Niue	.so - Somalia	.vu - Vanuatu
.nz - New Zealand	.sr - Suriname	.wf - Wallis and Futuna Islands
.om - Oman	.st - Sao Tome and Principe	.ws - Western Samoa
.pa - Panama	.sv - El Salvador	.ye - Yemen
.pe - Peru	.sy - Syrian Arab Republic	.yt - Mayotte
.pf - French Polynesia	.sz - Swaziland	.yu - Yugoslavia
.pg - Papua New Guinea	.tc - Turks and Caicos Islands	.za - South Africa
.ph - Philippines	.td - Chad	.zm - Zambia
.pk - Pakistan	.tf - French Southern Territories	.zw - Zimbabwe
.pl - Poland	.tg - Togo	
.pm - St. Pierre and Miquelon	.th - Thailand	
.pn - Pitcairn Island	.tj - Tajikistan	
.pr - Puerto Rico	.tk - Tokelau	
.ps - Palestinian Territories	.tm - Turkmenistan	
.pt - Portugal	.tn - Tunisia	
.pw - Palau	.to - Tonga	
.py - Paraguay	.tp - East Timor	
.qa - Qatar	.tr - Turkey	

Email



Email



Addresses

Some Canonical Forms
username@domain.tld
username@subdomain.domain.tld

Examples
anakin-skywalker@tatooine.org
billg@microsoft.com
cscie1@lists.dce.harvard.edu
frodo.baggins@shire.net
Harry_Potter@hogwarts.edu
malan@post.harvard.edu

Email



Addresses

Which are syntactically valid?

daffy duck@looneytunes.com

Dave@cbs

jay@NBC.com

malan@post.harvard.edu

somebody@franklin.ma.us

user@yahoo!.com



Email



Netiquette

Date: B.C.
From: Mr. Slate <boss@slaterockandgravel.com>
To: Fred Flintstone <fred@bedrock.net>
Subject:

YOU'RE..... FIRED!

Email



Spam

Date: Wed, 2 Oct 2006 18:33:27 -0400 (EDT)
Reply-to: b98123@excite.com
From: Barbara <b123jkr@yahoo.ca>
Subject: Are you in debt?

Are you in debt? Having trouble paying it off? We can help! We can consolidate your bills into just one monthly payment and help achieve the following:

- Save you a lot of money by eliminating late fees
- Settle your accounts for a substantially reduced amount
- Stop creditors calling you on the phone
- Help avoid bankruptcy
- .. And more!

By first reducing, and then completely removing your debts, you will be able to start fresh. Why keep dealing with the stress, headaches, and wasted money, when you can consolidate your debts and pay them off much sooner!

To obtain more information, with no obligations or costs, please fill out the form below and submit. Your submission will be processed within 10 business days and you will be shortly contacted by one of our informed staff. Thank you!

[...]

If this e-mail arrived to you by error, or you wish to never receive such advertisements from our company, please reply to this e-mail with the word REMOVE in the e-mail subject line. We apologize for any inconveniences.



Email

Spam

From: diplomaguy@diplomas.for.you
Subject: --Bachelor's, Master'a, PhD's!--
Date: Tue, 26 Aug 2005 15:32:38 -0400 (EDT)

U N I V E R S I T Y D I P L O M A S

Obtain a prosperous future, money earning power,
and the admiration of all.

Diplomas from prestigious non-accredited
universities based on your present knowledge
and life experience.

No required tests, classes, books, or interviews.

Bachelors, masters, MBA, and doctorate (PhD)
diplomas available in the field of your choice.

No one is turned down.

Confidentiality assured.

CALL NOW to receive your diploma
within days!!!

1 - 2 8 1 - 5 8 7 - [...]

or

1 - 6 1 5 - 3 6 6 - [...]

Call 24 hours a day, 7 days a week, including
Sundays and holidays.

Email



Emoticons

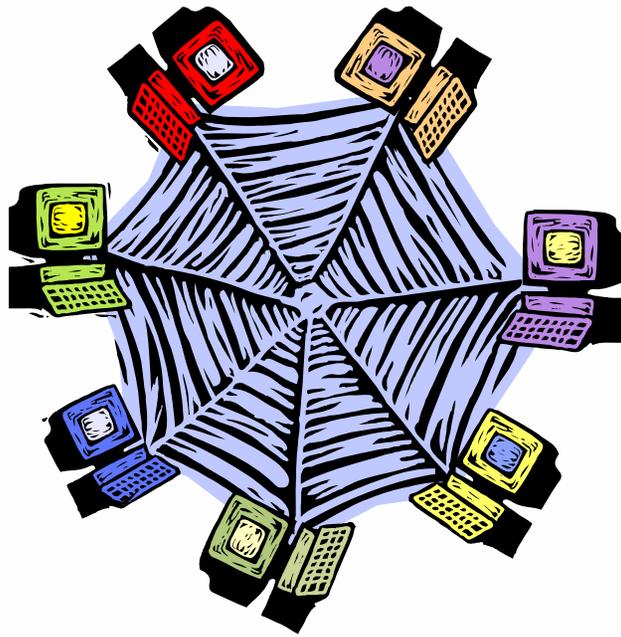
: -)	Your basic smiley. This smiley is used to inflect a sarcastic or joking statement since we can't hear voice inflection over email.
;-)	Winky smiley. User just made a flirtatious and/or sarcastic remark. More of a "don't hit me for what I just said" smiley.
: - (Frowning smiley. User did not like that last statement or is upset or depressed about something.
>: ->	User just made a really devilish remark.
(-:	User is left handed [and smiling].
:*)	User is drunk.
8-)	User is wearing sunglasses.
: - [User is a vampire.
: -E	User is a bucktoothed vampire.
: -F	User is a bucktoothed vampire with one tooth missing.
: ' - (User is crying.
: ' -)	User is so happy, s/he is crying.
: <)	User is from an Ivy League School.
: -D	User is laughing (at you!)
X- (User just died.
:)	Midget smiley.
=)	Variation on a theme...
: }	What should we call these?
: -O	oops
: -P	nyahhhh!

Excerpted from <http://members.aol.com/bearpage/smileys.htm>.

SSH



The World Wide Web



The World Wide Web



URLs

Canonical Form

<code>protocol://machine/path</code>

Examples

<code>http://www.foo.com</code>

<code>http://foo.com</code>

<code>http://FOO.com</code>

<code>http://www.foo.com/index.html</code>
--

<code>http://www.foo.com/help.html</code>

<code>http://www.foo.com/index.html#section</code>
--

<code>http://www.foo.com/search.cgi?phrase=what+is+foo</code>

<code>ftp://ftp.foo.com</code>

The World Wide Web



URLs

Which are syntactically valid?
<code>http:\\www.bar.com</code>
<code>www.bar.com</code>
<code>http://www.bar.com/menus/friday.html</code>
<code>http://www.bar.com/?item=pizza&topping=cheese</code>
<code>http://CNN</code>
<code>ftp://ftp.bar.com/pub/setup.exe</code>

Blogs



Instant Messaging



SFTP



Usenet



Popular Hierarchies
alt.*
biz.*
comp.*
humanities.*
misc.*
news.*
rec.*
sci.*
soc.*
talk.*

For more thorough listings, visit <http://www.google.com/grphp> OR <news://news.fas.harvard.edu>.

Computer Science E-1



Understanding Computers and the Internet

Lecture 4: The Internet

Wednesday, 11 October 2006

David J. Malan
`malan@post.harvard.edu`