Introduction to Human-Computer Interaction

User Interface Design

Lecture 5

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with acknowledgements to:
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recap: graphical user interface

interface

that uses *output* peripherals (screen, projector)

+

some *input* peripherals (mouse, pen) that provide *relative positions w.r.t.* the *output* peripherals

to

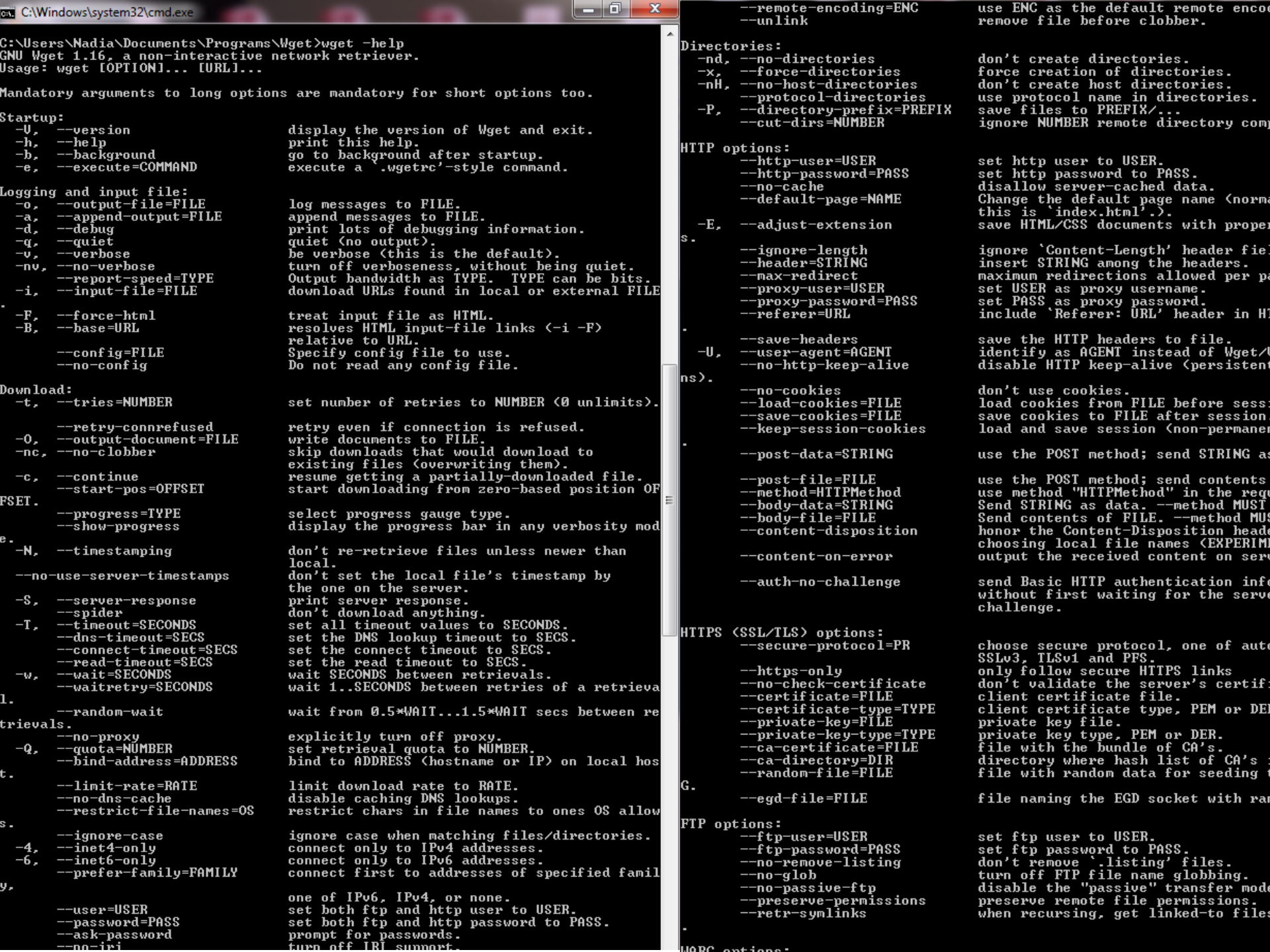
allow reference to aspects on the interface using pointing (thus linking input/output)

*what makes a **good** gui?*

- what makes an interface easy, hard, or "natural"?

wget

- GNU Wget is a free software package for retrieving files using HTTP, HTTPS and FTP, the most widely-used Internet protocols. It is a non-interactive commandline tool, so it may easily be called from scripts, cron jobs, terminals without X-Windows support, etc.
- GNU Wget has many features to make retrieving large files or mirroring entire web or FTP sites easy, including:
  - Can resume aborted downloads, using REST and RANGE
  - Can use filename wild cards and recursively mirror directories
  - NLS-based message files for many different languages
  - Optionally converts absolute links in downloaded documents to relative, so that downloaded documents may link to each other locally
  - …



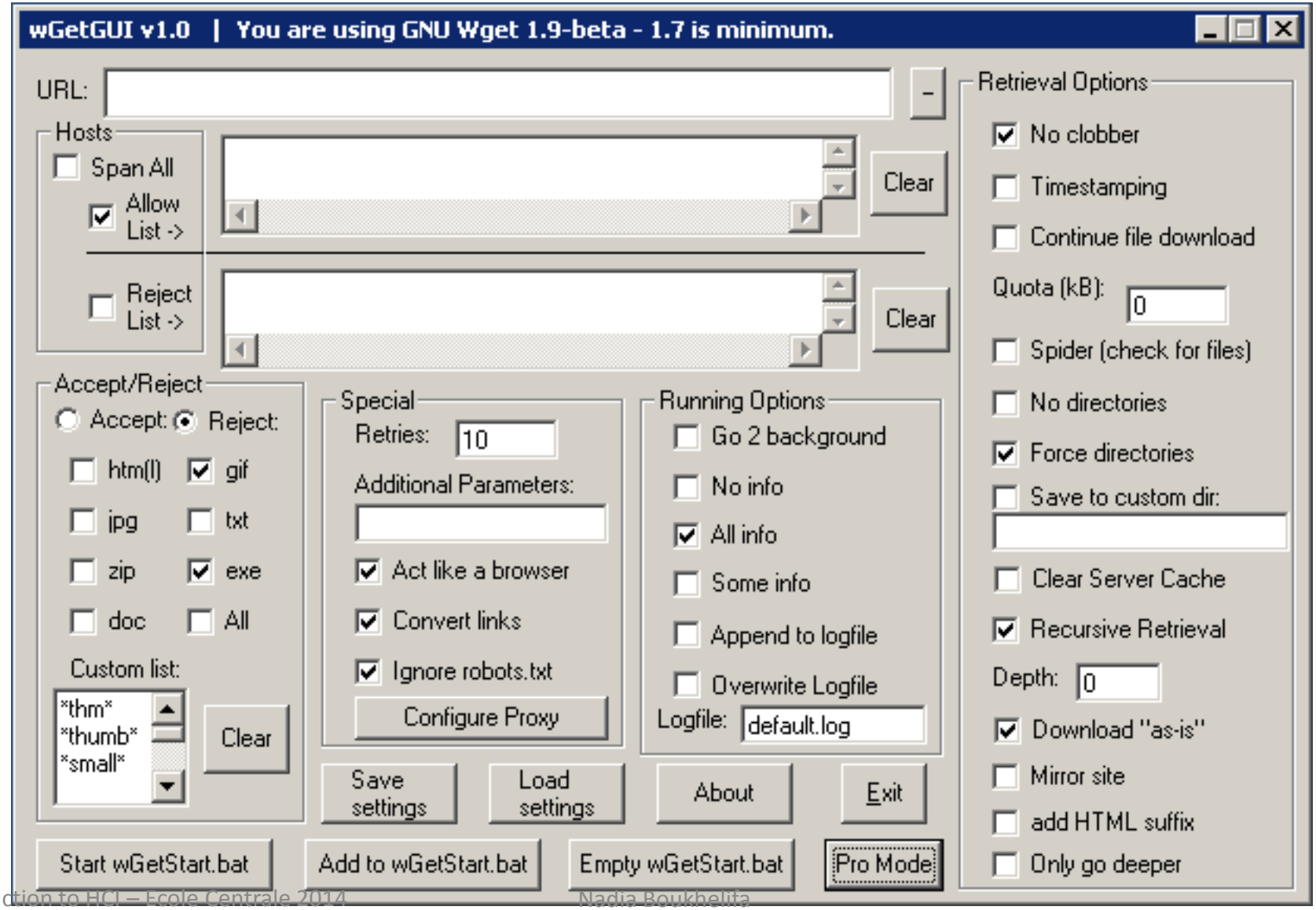
C:\Windows\system32\cmd.exe

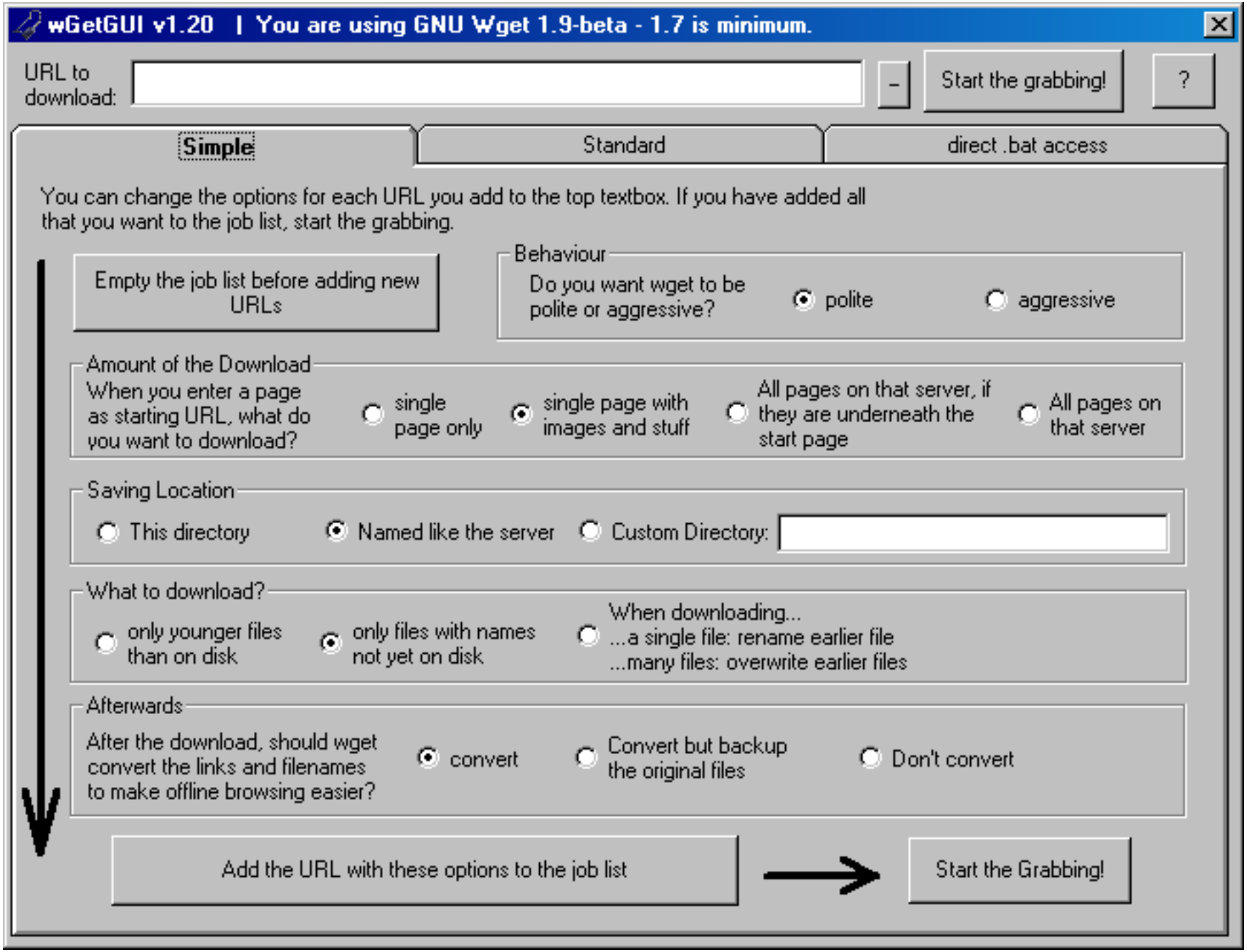
```
C:\Users\Nadia\Documents\Programs\Wget>wget -help
GNU Wget 1.16, a non-interactive network retriever.
Usage: wget [OPTION]... [URL]...

Mandatory arguments to long options are mandatory for short options too.

Startup:
  -V,  --version                   display the version of Wget and exit.
  -h,  --help                      print this help.
  -b,  --background                go to background after startup.
  -e,  --execute=COMMAND           execute a `.wgetrc'-style command.

Logging and input file:
  -o,  --output-file=FILE          log messages to FILE.
  -a,  --append-output=FILE        append messages to FILE.
  -d,  --debug                     print lots of debugging information.
  -q,  --quiet                     quiet (no output).
  -v,  --verbose                   be verbose (this is the default).
  -nv, --no-verbose                turn off verboseness, without being quiet.
       --report-speed=TYPE         Output bandwidth as TYPE.  TYPE can be bits.
  -i,  --input-file=FILE           download URLs found in local or external FILE
.
  -F,  --force-html                treat input file as HTML.
  -B,  --base=URL                  resolves HTML input-file links (-i -F)
                                   relative to URL.
       --config=FILE               Specify config file to use.
       --no-config                 Do not read any config file.

Download:
  -t,  --tries=NUMBER              set number of retries to NUMBER (0 unlimits).

       --retry-connrefused         retry even if connection is refused.
  -O,  --output-document=FILE      write documents to FILE.
  -nc, --no-clobber                skip downloads that would download to
                                   existing files (overwriting them).
  -c,  --continue                  resume getting a partially-downloaded file.
       --start-pos=OFFSET          start downloading from zero-based position OF
FSET.
       --progress=TYPE             select progress gauge type.
       --show-progress             display the progress bar in any verbosity mod
e.
  -N,  --timestamping              don't re-retrieve files unless newer than
                                   local.
  --no-use-server-timestamps       don't set the local file's timestamp by
                                   the one on the server.
  -S,  --server-response           print server response.
       --spider                    don't download anything.
  -T,  --timeout=SECONDS           set all timeout values to SECONDS.
       --dns-timeout=SECS          set the DNS lookup timeout to SECS.
       --connect-timeout=SECS      set the connect timeout to SECS.
       --read-timeout=SECS         set the read timeout to SECS.
  -w,  --wait=SECONDS              wait SECONDS between retrievals.
       --waitretry=SECONDS         wait 1..SECONDS between retries of a retrieva
l.
       --random-wait               wait from 0.5*WAIT...1.5*WAIT secs between re
trievals.
       --no-proxy                  explicitly turn off proxy.
  -Q,  --quota=NUMBER              set retrieval quota to NUMBER.
       --bind-address=ADDRESS      bind to ADDRESS (hostname or IP) on local hos
t.
       --limit-rate=RATE           limit download rate to RATE.
       --no-dns-cache              disable caching DNS lookups.
       --restrict-file-names=OS    restrict chars in file names to ones OS allow
s.
       --ignore-case               ignore case when matching files/directories.
  -4,  --inet4-only                connect only to IPv4 addresses.
  -6,  --inet6-only                connect only to IPv6 addresses.
       --prefer-family=FAMILY      connect first to addresses of specified famil
y,
                                   one of IPv6, IPv4, or none.
       --user=USER                 set both ftp and http user to USER.
       --password=PASS             set both ftp and http password to PASS.
       --ask-password              prompt for passwords.
       --no-iri                    turn off IRI support.
       --remote-encoding=ENC       use ENC as the default remote enco
       --unlink                    remove file before clobber.

Directories:
  -nd, --no-directories            don't create directories.
  -x,  --force-directories         force creation of directories.
  -nH, --no-host-directories       don't create host directories.
       --protocol-directories      use protocol name in directories.
  -P,  --directory-prefix=PREFIX   save files to PREFIX/...
       --cut-dirs=NUMBER           ignore NUMBER remote directory comp

HTTP options:
       --http-user=USER            set http user to USER.
       --http-password=PASS        set http password to PASS.
       --no-cache                  disallow server-cached data.
       --default-page=NAME         Change the default page name (norma
                                   this is `index.html').
  -E,  --adjust-extension          save HTML/CSS documents with prope
s.
       --ignore-length             ignore `Content-Length' header fie
       --header=STRING             insert STRING among the headers.
       --max-redirect              maximum redirections allowed per pa
       --proxy-user=USER           set USER as proxy username.
       --proxy-password=PASS       set PASS as proxy password.
       --referer=URL               include `Referer: URL' header in H
.
       --save-headers              save the HTTP headers to file.
  -U,  --user-agent=AGENT          identify as AGENT instead of Wget/
       --no-http-keep-alive        disable HTTP keep-alive (persisten
ns).
       --no-cookies                don't use cookies.
       --load-cookies=FILE         load cookies from FILE before sess
       --save-cookies=FILE         save cookies to FILE after session
       --keep-session-cookies      load and save session (non-permane
.
       --post-data=STRING          use the POST method; send STRING as

       --post-file=FILE            use the POST method; send contents
       --method=HTTPMethod         use method "HTTPMethod" in the req
       --body-data=STRING          Send STRING as data. --method MUST
       --body-file=FILE            Send contents of FILE. --method MU
       --content-disposition       honor the Content-Disposition head
                                   choosing local file names (EXPERIM
       --content-on-error          output the received content on ser

       --auth-no-challenge         send Basic HTTP authentication inf
                                   without first waiting for the serv
                                   challenge.

HTTPS (SSL/TLS) options:
       --secure-protocol=PR        choose secure protocol, one of aut
                                   SSLv3, TLSv1 and PFS.
       --https-only                only follow secure HTTPS links
       --no-check-certificate      don't validate the server's certif
       --certificate=FILE          client certificate file.
       --certificate-type=TYPE     client certificate type, PEM or DE
       --private-key=FILE          private key file.
       --private-key-type=TYPE     private key type, PEM or DER.
       --ca-certificate=FILE       file with the bundle of CA's.
       --ca-directory=DIR          directory where hash list of CA's
       --random-file=FILE          file with random data for seeding
G.
       --egd-file=FILE             file naming the EGD socket with ra

FTP options:
       --ftp-user=USER             set ftp user to USER.
       --ftp-password=PASS         set ftp password to PASS.
       --no-remove-listing         don't remove `.listing' files.
       --no-glob                   turn off FTP file name globbing.
       --no-passive-ftp            disable the "passive" transfer mod
       --preserve-permissions      preserve remote file permissions.
       --retr-symlinks             when recursing, get linked-to file
.

WARC options:
```

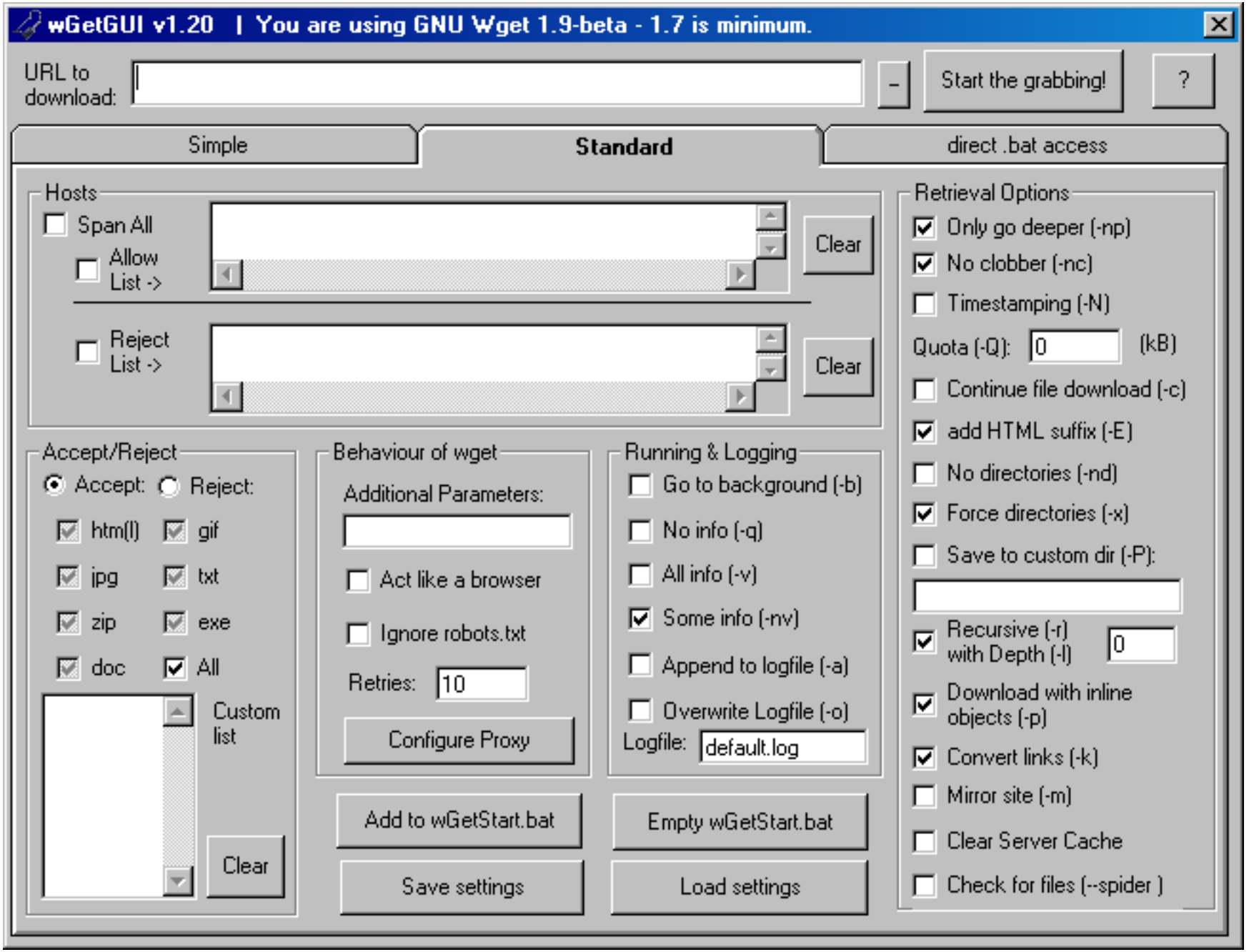
C:\Windows\system32\cmd.exe

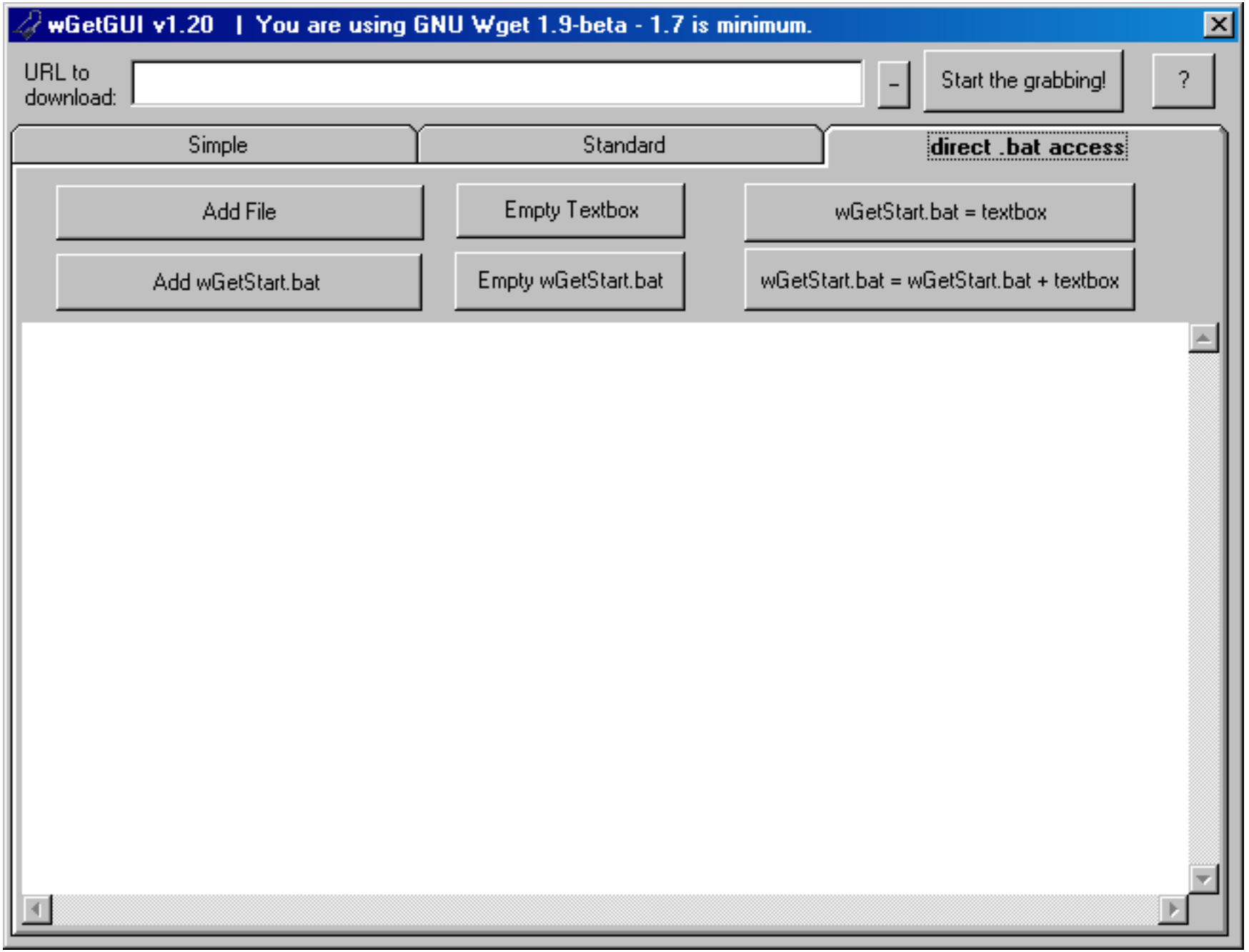
```
       --auth-no-challenge          send Basic HTTP authentication information
                                    without first waiting for the server's
                                    challenge.

HTTPS (SSL/TLS) options:
       --secure-protocol=PR         choose secure protocol, one of auto, SSLv2,
                                    SSLv3, TLSv1 and PFS.
       --https-only                 only follow secure HTTPS links
       --no-check-certificate       don't validate the server's certificate.
       --certificate=FILE           client certificate file.
       --certificate-type=TYPE      client certificate type, PEM or DER.
       --private-key=FILE           private key file.
       --private-key-type=TYPE      private key type, PEM or DER.
       --ca-certificate=FILE        file with the bundle of CA's.
       --ca-directory=DIR           directory where hash list of CA's is stored.
       --random-file=FILE           file with random data for seeding the SSL PRN
G.
       --egd-file=FILE              file naming the EGD socket with random data.

FTP options:
       --ftp-user=USER              set ftp user to USER.
       --ftp-password=PASS          set ftp password to PASS.
       --no-remove-listing          don't remove `.listing' files.
       --no-glob                    turn off FTP file name globbing.
       --no-passive-ftp             disable the "passive" transfer mode.
       --preserve-permissions       preserve remote file permissions.
       --retr-symlinks              when recursing, get linked-to files (not dir)
.

WARC options:
       --warc-file=FILENAME         save request/response data to a .warc.gz file
.
       --warc-header=STRING         insert STRING into the warcinfo record.
       --warc-max-size=NUMBER       set maximum size of WARC files to NUMBER.
       --warc-cdx                   write CDX index files.
       --warc-dedup=FILENAME        do not store records listed in this CDX file.

       --no-warc-digests            do not calculate SHA1 digests.
       --no-warc-keep-log           do not store the log file in a WARC record.
       --warc-tempdir=DIRECTORY     location for temporary files created by the
                                    WARC writer.

Recursive download:
  -r,  --recursive                  specify recursive download.
  -l,  --level=NUMBER               maximum recursion depth (inf or 0 for infinit
e).
       --delete-after               delete files locally after downloading them.
  -k,  --convert-links              make links in downloaded HTML or CSS point to

                                    local files.
       --backups=N                  before writing file X, rotate up to N backup
files.
  -K,  --backup-converted           before converting file X, back up as X.orig.
  -m,  --mirror                     shortcut for -N -r -l inf --no-remove-listing
.
  -p,  --page-requisites            get all images, etc. needed to display HTML p
age.
       --strict-comments            turn on strict (SGML) handling of HTML commen
ts.

Recursive accept/reject:
  -A,  --accept=LIST                comma-separated list of accepted extensions.
  -R,  --reject=LIST                comma-separated list of rejected extensions.
       --accept-regex=REGEX         regex matching accepted URLs.
       --reject-regex=REGEX         regex matching rejected URLs.
       --regex-type=TYPE            regex type (posix).
  -D,  --domains=LIST               comma-separated list of accepted domains.
       --exclude-domains=LIST       comma-separated list of rejected domains.
       --follow-ftp                 follow FTP links from HTML documents.
       --follow-tags=LIST           comma-separated list of followed HTML tags.
       --ignore-tags=LIST           comma-separated list of ignored HTML tags.
  -H,  --span-hosts                 go to foreign hosts when recursive.
  -L,  --relative                   follow relative links only.
  -I,  --include-directories=LIST   list of allowed directories.
       --trust-server-names         use the name specified by the redirection
                                    url last component.
  -X,  --exclude-directories=LIST   list of excluded directories.
  -np, --no-parent                  don't ascend to the parent directory.

Mail bug reports and suggestions to <bug-wget@gnu.org>.

C:\Users\Nadia\Documents\Programs\Wget>
```

wGetGUI v1.0


wGetGUI v1.0 | You are using GNU Wget 1.9-beta - 1.7 is minimum.
URL:
Hosts
Span All
Allow List ->
Reject List ->
Clear
Clear
Accept/Reject
Accept:
Reject:
htm(l)
gif
jpg
txt
zip
exe
doc
All
Custom list:
thm
thumb
small
Clear
Special
Retries:
10
Additional Parameters:
Act like a browser
Convert links
Ignore robots.txt
Configure Proxy
Running Options
Go 2 background
No info
All info
Some info
Append to logfile
Overwrite Logfile
Logfile:
default.log
Retrieval Options
No clobber
Timestamping
Continue file download
Quota (kB):
0
Spider (check for files)
No directories
Force directories
Save to custom dir:
Clear Server Cache
Recursive Retrieval
Depth:
0
Download "as-is"
Mirror site
add HTML suffix
Only go deeper
Save settings
Load settings
About
Exit
Start wGetStart.bat
Add to wGetStart.bat
Empty wGetStart.bat
Pro Mode


wGetGUI v1.20 | You are using GNU Wget 1.9-beta - 1.7 is minimum.
URL to download:
Start the grabbing!
?
Simple
Standard
direct .bat access
You can change the options for each URL you add to the top textbox. If you have added all that you want to the job list, start the grabbing.
Empty the job list before adding new URLs
Behaviour
Do you want wget to be polite or aggressive?
polite
aggressive
Amount of the Download
When you enter a page as starting URL, what do you want to download?
single page only
single page with images and stuff
All pages on that server, if they are underneath the start page
All pages on that server
Saving Location
This directory
Named like the server
Custom Directory:
What to download?
only younger files than on disk
only files with names not yet on disk
When downloading...
...a single file: rename earlier file
...many files: overwrite earlier files
Afterwards
After the download, should wget convert the links and filenames to make offline browsing easier?
convert
Convert but backup the original files
Don't convert
Add the URL with these options to the job list
Start the Grabbing!


wGetGUI v1.20 | You are using GNU Wget 1.9-beta - 1.7 is minimum.
URL to download:
Start the grabbing!
?
Simple
Standard
direct .bat access
Hosts
Span All
Allow List ->
Clear
Reject List ->
Clear
Retrieval Options
Only go deeper (-np)
No clobber (-nc)
Timestamping (-N)
Quota (-Q):
0
(kB)
Continue file download (-c)
add HTML suffix (-E)
No directories (-nd)
Force directories (-x)
Save to custom dir (-P):
Recursive (-r) with Depth (-l)
0
Download with inline objects (-p)
Convert links (-k)
Mirror site (-m)
Clear Server Cache
Check for files (--spider)
Accept/Reject
Accept:
Reject:
htm(l)
gif
jpg
txt
zip
exe
doc
All
Custom list
Clear
Behaviour of wget
Additional Parameters:
Act like a browser
Ignore robots.txt
Retries:
10
Configure Proxy
Running & Logging
Go to background (-b)
No info (-q)
All info (-v)
Some info (-nv)
Append to logfile (-a)
Overwrite Logfile (-o)
Logfile:
default.log
Add to wGetStart.bat
Empty wGetStart.bat
Save settings
Load settings


wGetGUI v1.20 | You are using GNU Wget 1.9-beta - 1.7 is minimum.
URL to download:
-
Start the grabbing!
?
Simple
Standard
direct .bat access
Add File
Empty Textbox
wGetStart.bat = textbox
Add wGetStart.bat
Empty wGetStart.bat
wGetStart.bat = wGetStart.bat + textbox

so…

- We probably don't need to run a usability study on this design, because intuitively, we see that there are "things that are wrong" with the current design.
- How can we formalize this idea of "using our intuition" so that it is more systematic, and less haphazard?

design and usability heuristics

- **general principles** for interaction design
- **rules of thumb;** focus the designer's mind on the user and the main requirements
- vague on detail but **capture high level knowledge**

heuristics: Ben Shneiderman and Jakob Nielsen

http://en.wikipedia.org/wiki/Ben_Shneiderman

http://en.wikipedia.org/wiki/Jakob_Nielsen_%28usability_consultant%29

Shneiderman's golden rules

1. strive for **consistency**
2. enable frequent users to use **shortcuts**
3. offer informative **feedback**
4. design dialog to **yield closure**
5. offer **simple error handling**
6. permit easy **reversal of actions**
7. support internal locus of **control**
8. **reduce short-term memory load**

Jakob Nielsen's Heuristics

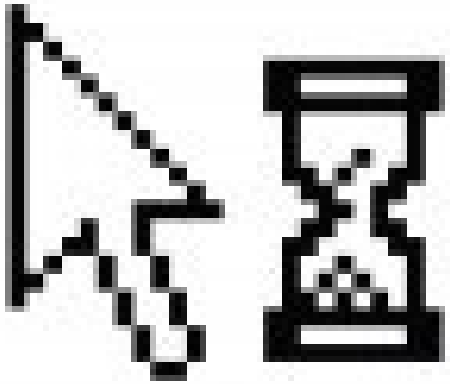
1. **Visibility of system status**
2. **Match between system and real world**
3. **User control and freedom**
4. **Consistency and standards**
5. **Error prevention**
6. **Recognition over recall**
7. **Flexibility and efficiency of use**
8. **Aesthetic and minimalist design**
9. **Help users recognize, diagnose, and recover from errors**
10. **help and documentation**

1 | visibility of system status

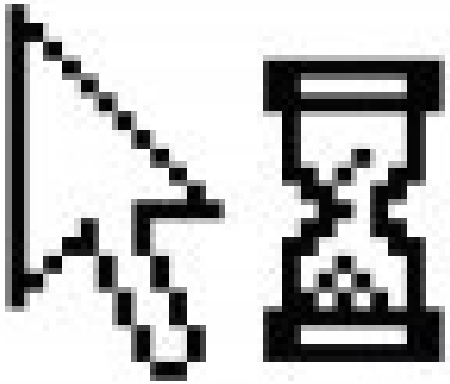
- for every operator action, there should be some **system feedback**.

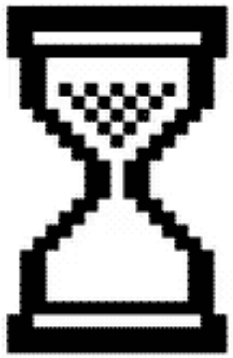
- for frequent and minor actions, the response can be modest, while for infrequent and major actions, the response should be more substantial.

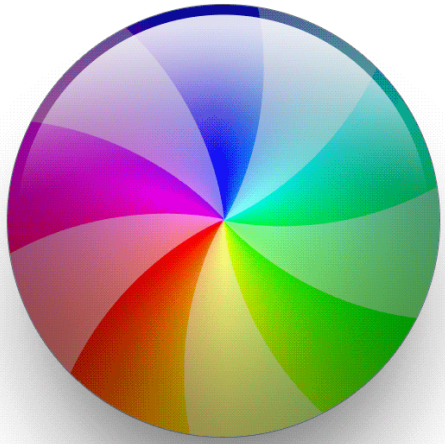
1 | visibility of system status



1 | visibility of system status





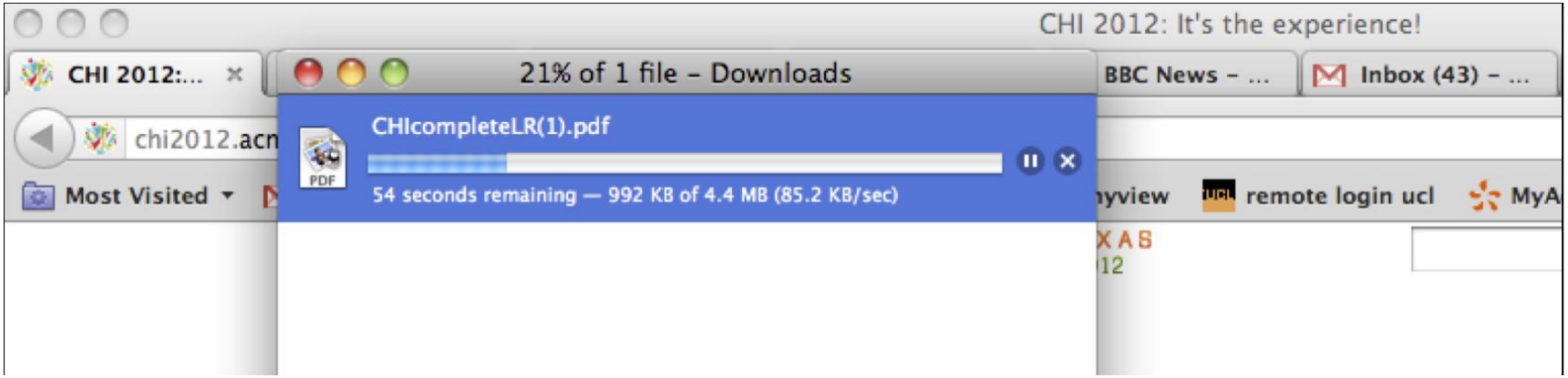


interlude: response time

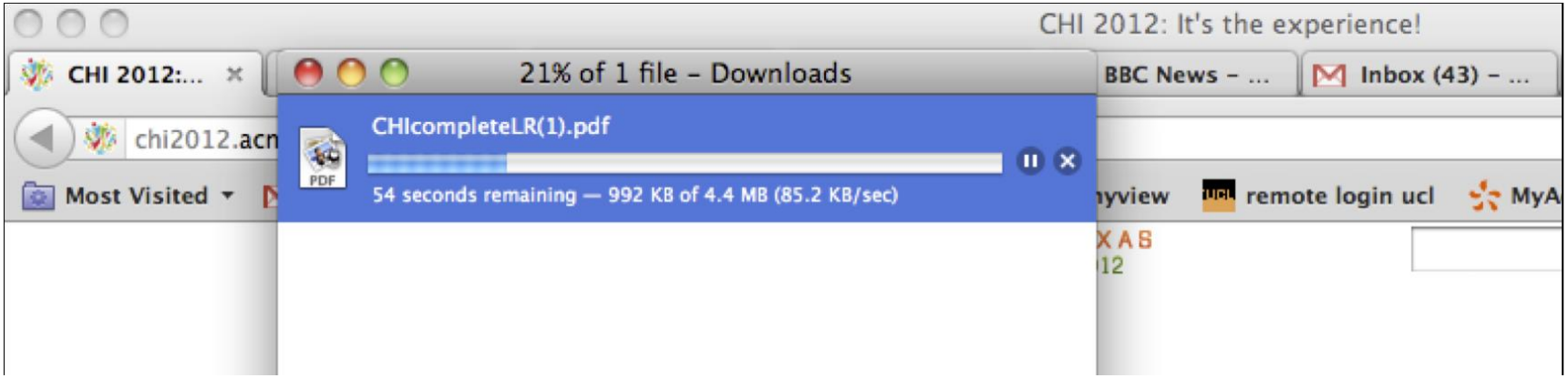
- 3 main time limits (determined by human perceptual abilities) to keep in mind when optimizing app performance.
  - ~0.1 second: limit for making user feel system reacts instantaneously
  - ~1.0 second: limit for user's flow of thought to stay uninterrupted. Normally no special feedback needed yet for delays <1.0s
  - 10 seconds: limit for keeping a user's attention. Feedback necessary.

Jakob Nielsen Usability Engineering

1 | visibility of system status



1 | visibility of system status



feedback depends on response time:

- < 1 s : just show outcome
- ~ 1 s : show feedback that activity is underway
- > 1 s : show fractional progress

1 | visibility of system status

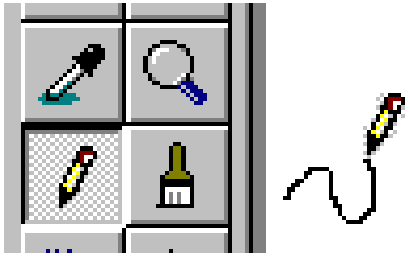
if unknown time for execution (try to avoid!):

1 | visibility of system status

if unknown time for execution (try to avoid!):

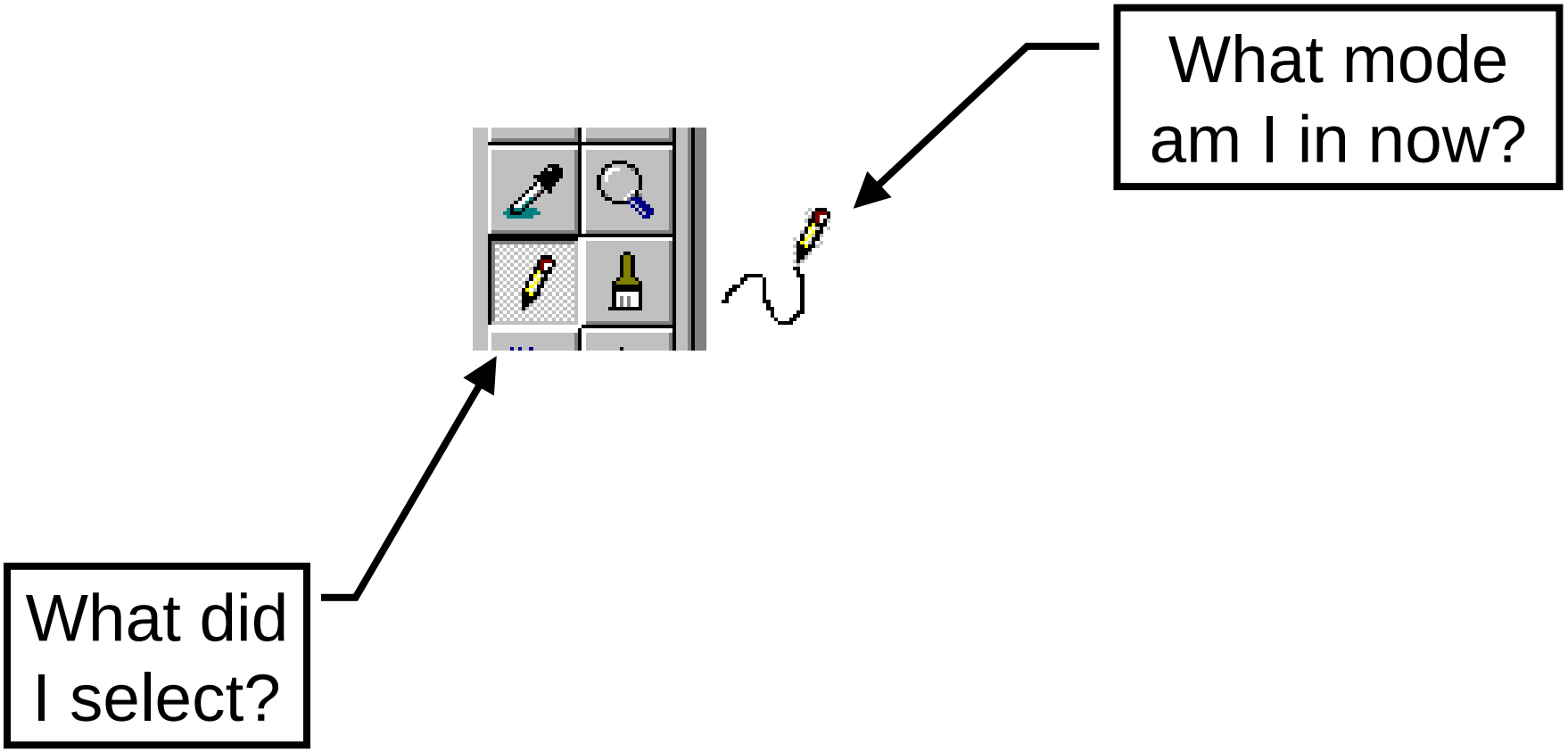
1 | visibility of system status

1 | visibility of system status



What did I select?

1 | visibility of system status



1 | visibility of system status

What mode am I in now?

What did I select?

How is the system interpreting my actions?

interlude: modes

modes are problematic

- people forget what mode they are in, and functionality seems arbitrarily limited.

No one remembers what mode they're in

Universal remote controls can control a variety of devices

Buttons are overloaded (e.g. "up", "down", "left", "right", "OK"), so that pressing it will control a device depending on which mode the device is in.

This one indicates (by a blinking light) which device is being activated, but it doesn't suck any less.

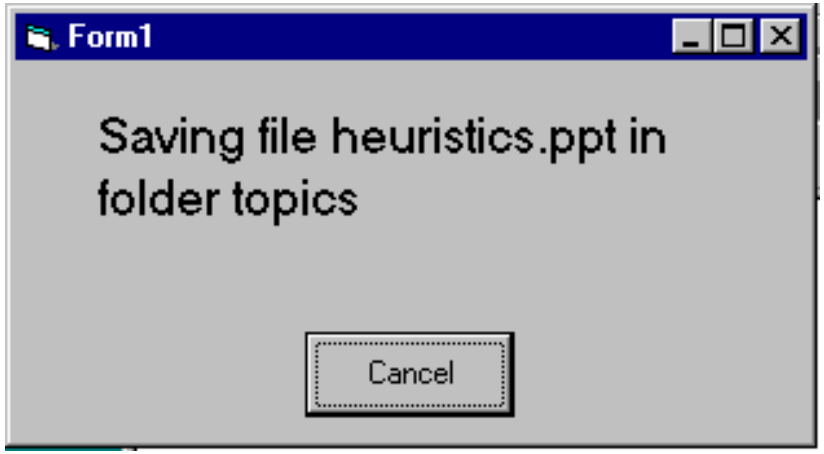
Modes » One more…

1 | visibility of system status

- be as specific as possible, based on user's input

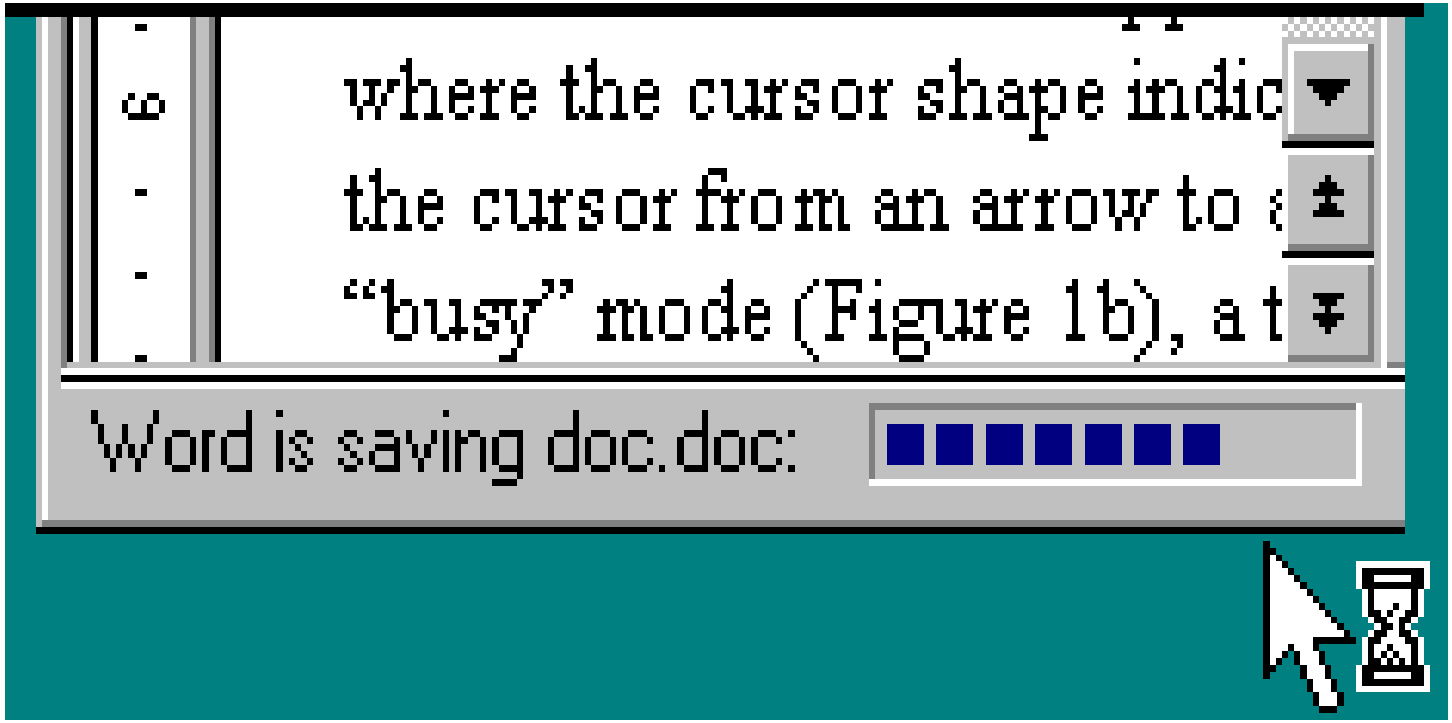
1 | visibility of system status

- be as specific as possible, based on user's input



1 | visibility of system status

- best within the **context of the action**



1 | visibility of system status

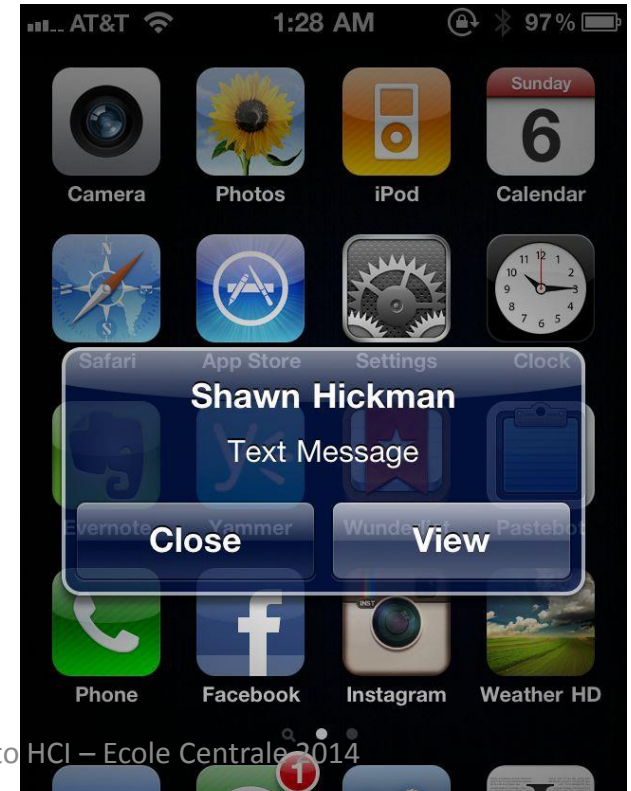
- Best within the **context of the action**

  Try to avoid modal dialogs where possible.

1 | *visibility of system status*

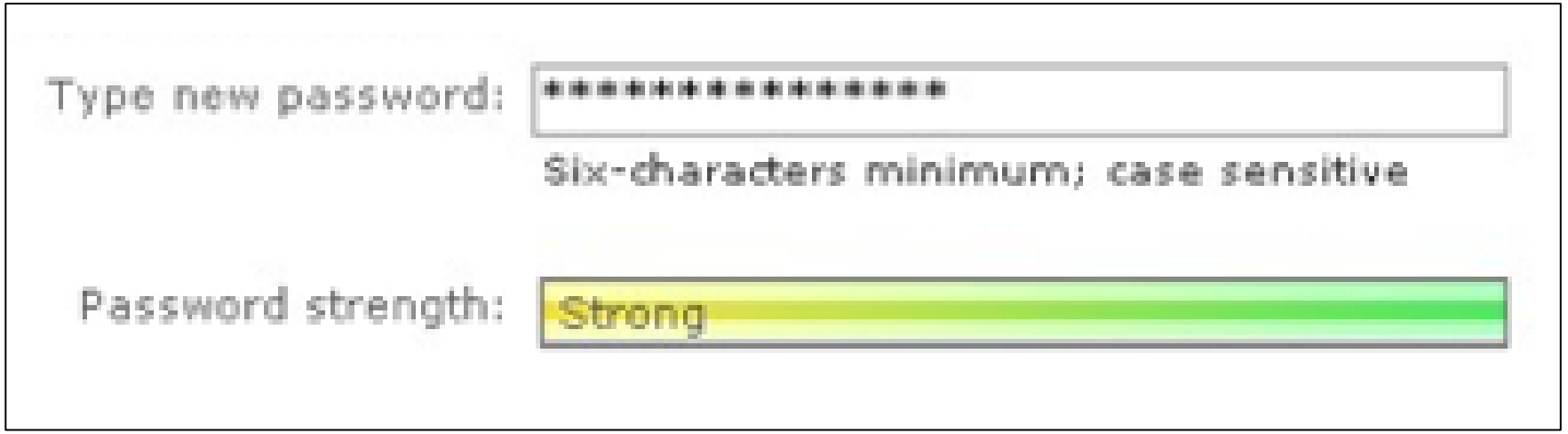
- best within the **context of the action**

Try to avoid modal dialogs where possible.



Often better: subtle notifications about events.

1 | visibility of system status



1 | visibility of system status

2 | match between system and the real world

2 | match between system and the real world

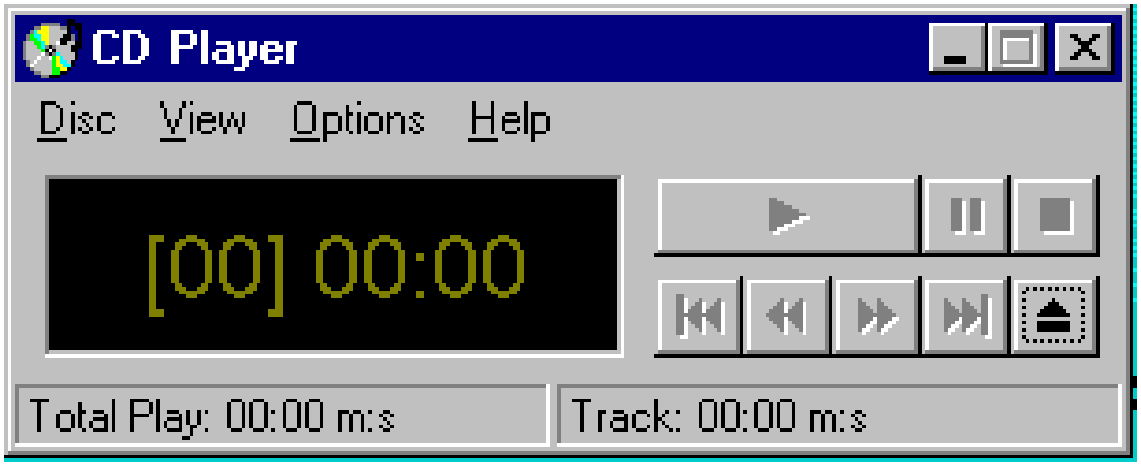
system should speak the user's language, with words, phrases and concepts familiar to the user, rather than system-oriented terms

follow real-world conventions: information should appear in natural and logical order based on user's expectations

remove modes

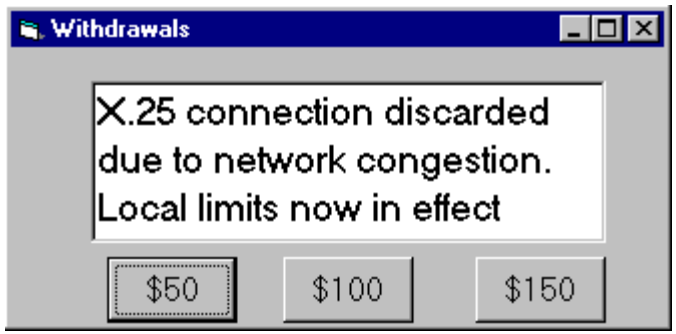
2 | *match between system and the real world*

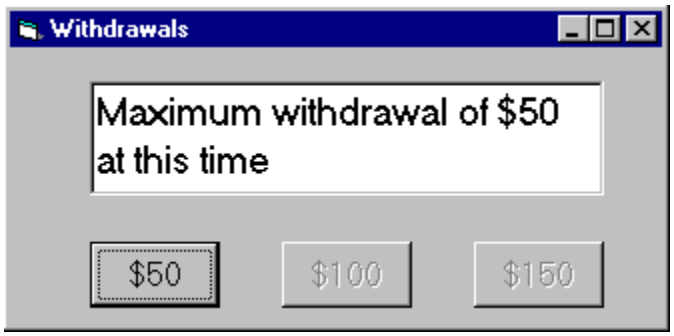
- use the user's conceptual model
- match the users' task sequence
- minimize mapping between interface and task semantics



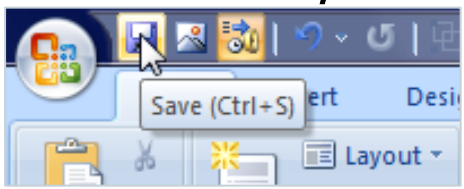
2 | *match between system and the real world*

- terminology based on user's language for the task

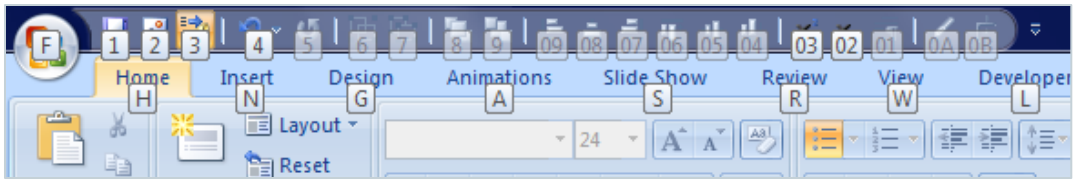




- use meaningful icons, abbreviations, & mnemonics
  - (tooltip icon)

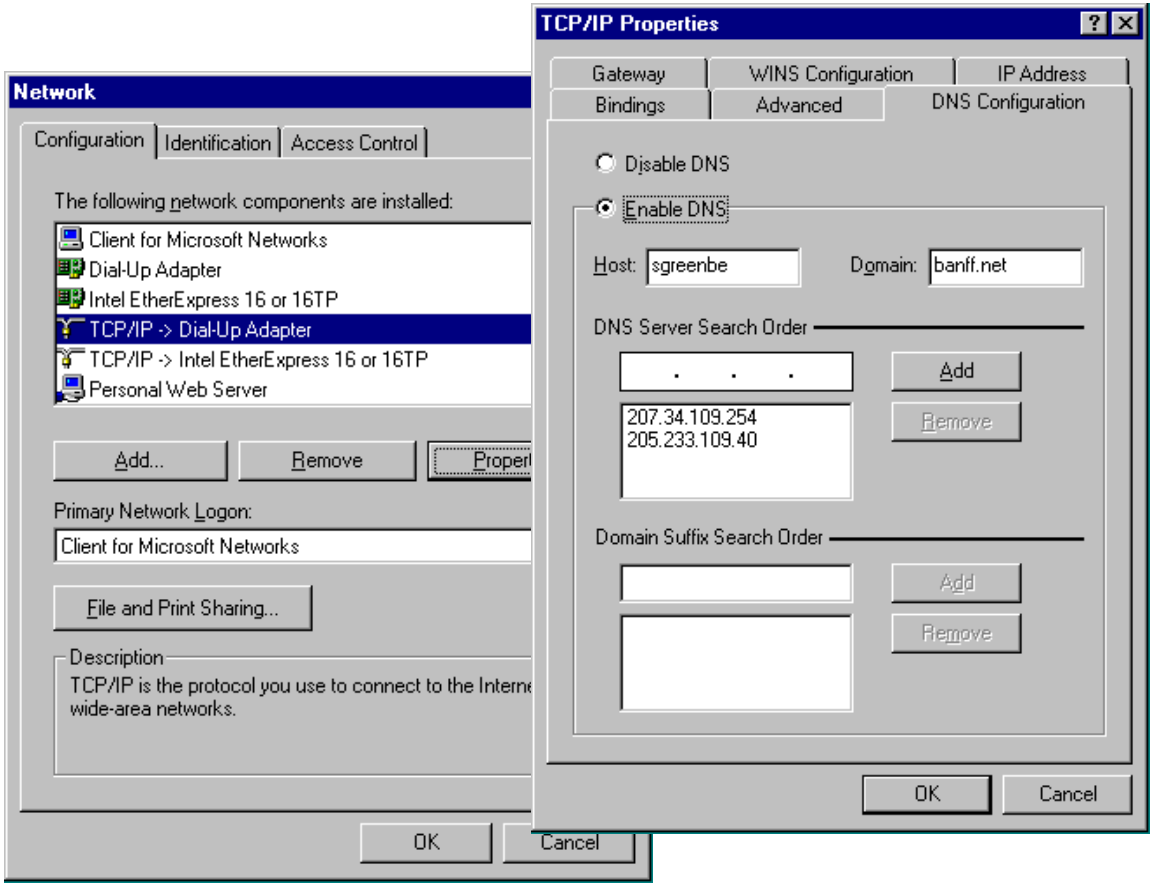


  - Ctrl-S (abbreviation)
  - ALT F S (mnemonic for menu action)



2 | *match between system and the real world*

speak the user's language…



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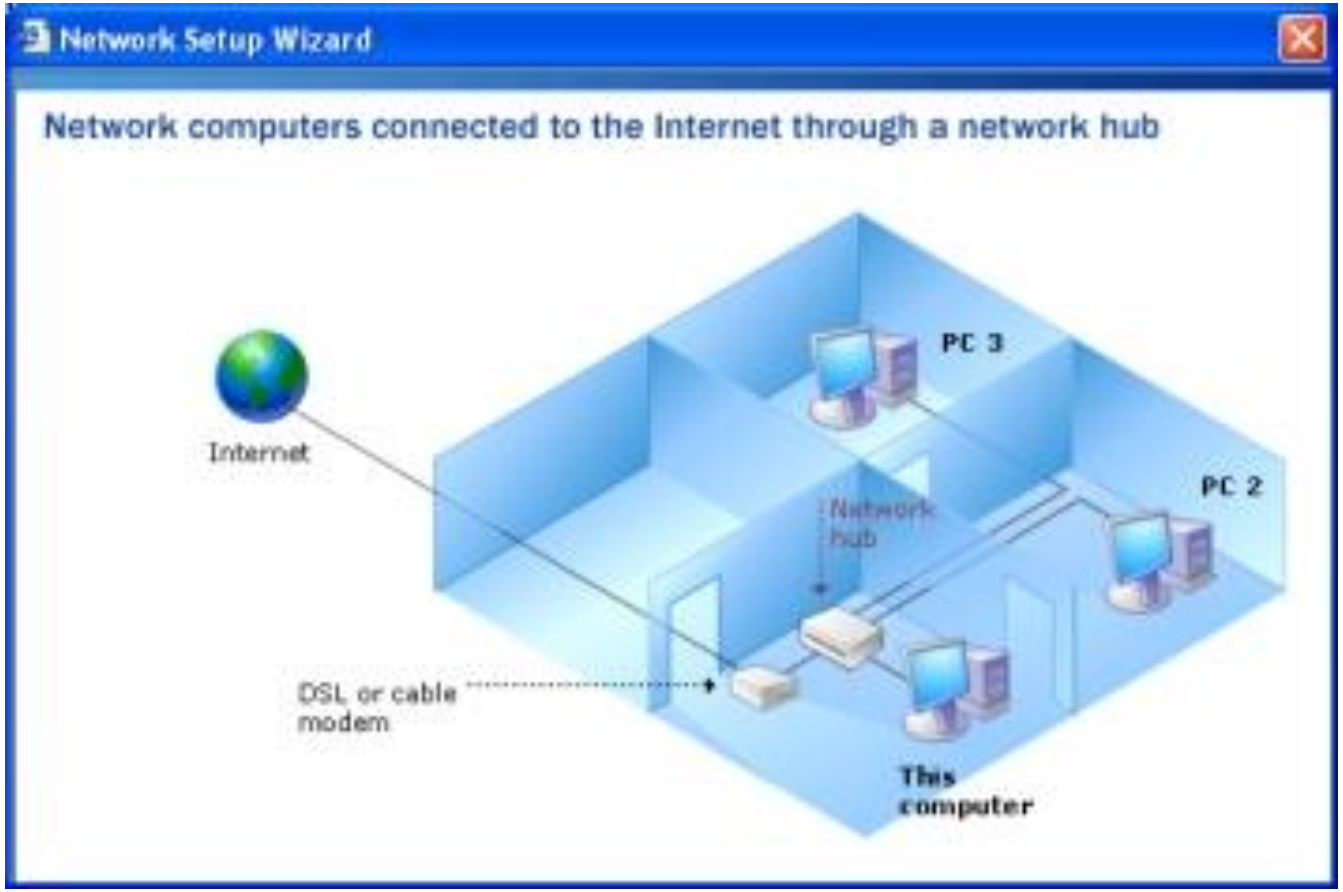

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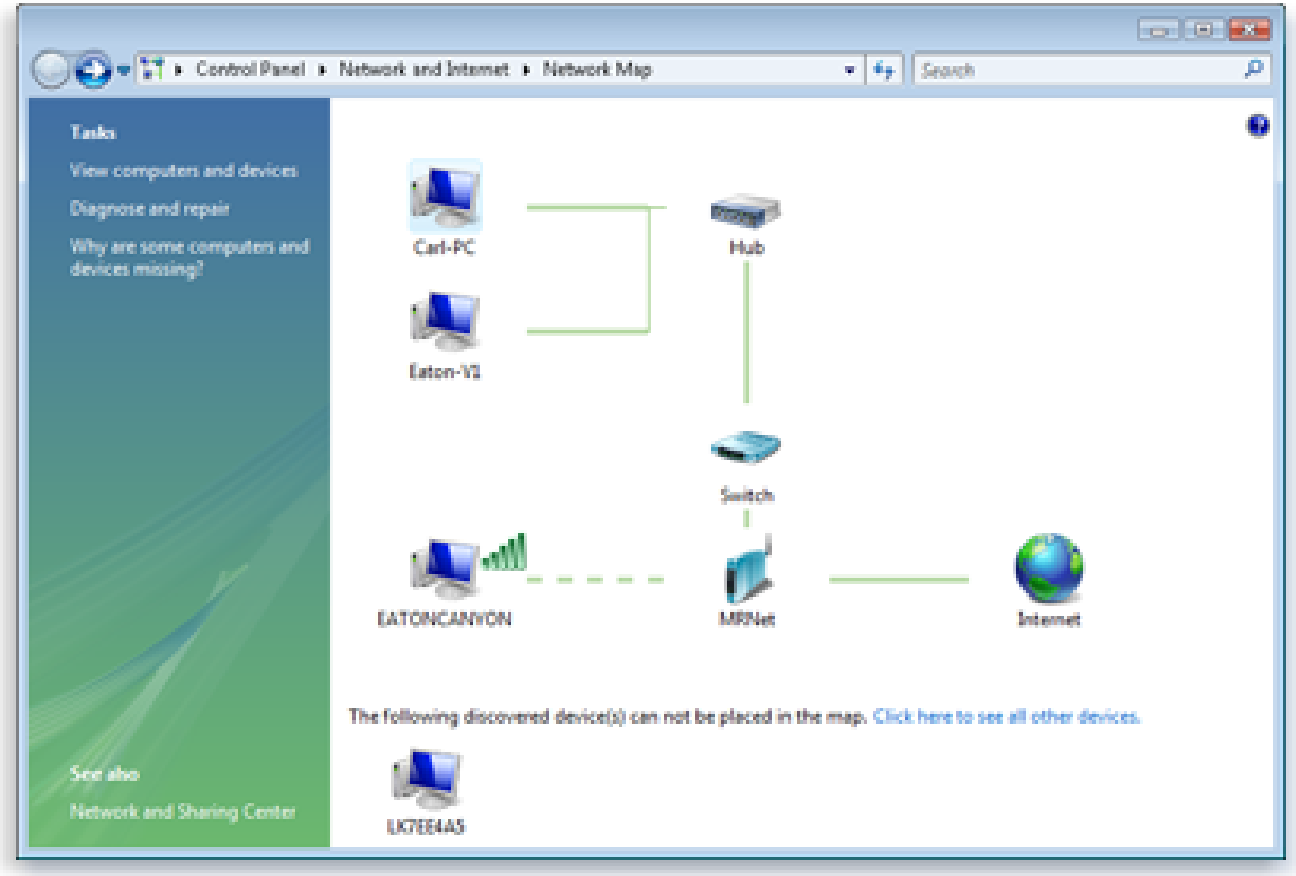

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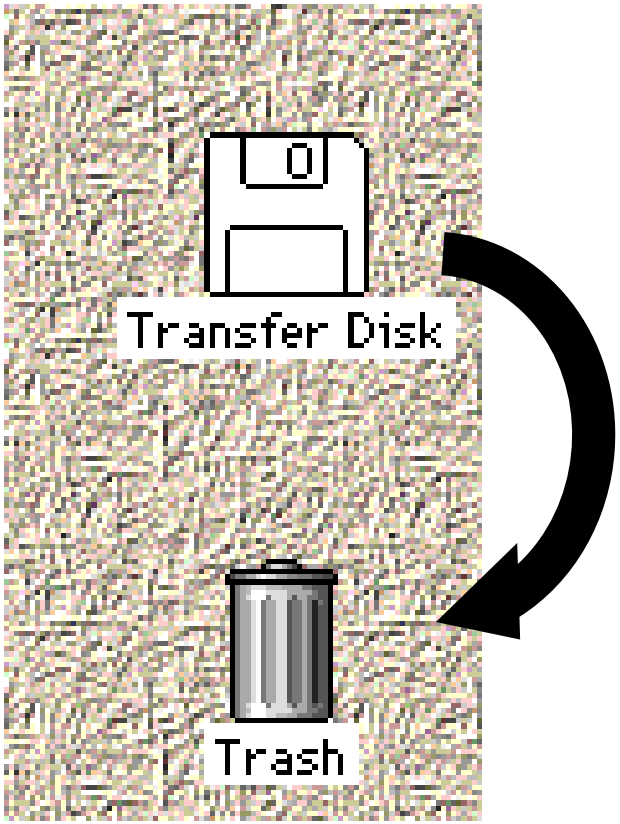

Source: Interface Hall Of Shame http://hall.shame.gp.co.at/

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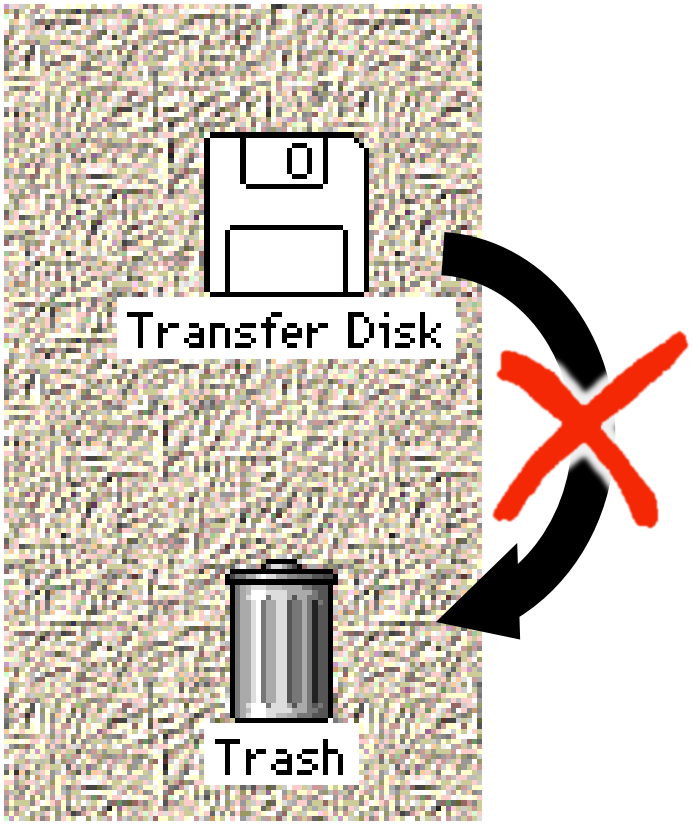


Source: Interface Hall Of Shame http://hall.shame.gp.co.at/

3 | user control and freedom

3 | *user control and freedom*

- **provide clearly marked exits**

http://hallofshame.gp.co.at/errormsg.htm

3 | user control and freedom

- **provide clearly marked exits**
- **users don't like to feel trapped by the computer**
  - should offer an easy way out of as many situations as possible

3 | user control and freedom

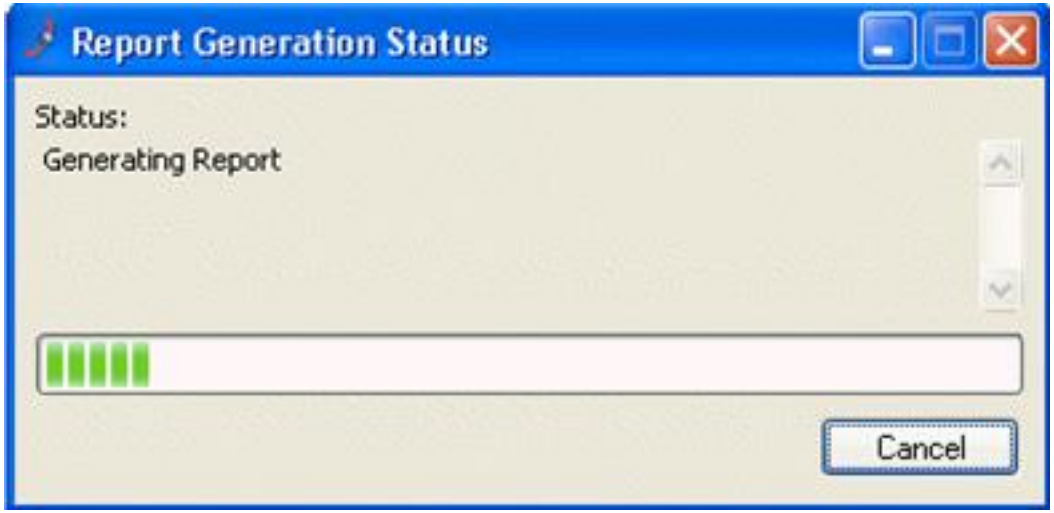
- **provide clearly marked exits**

- **users don't like to feel trapped by the computer**
  - should offer an easy way out of as many situations as possible

- **strategies:**
  - *Cancel button* (for dialogs waiting for user input)
  - *Universal Undo* (can get back to previous state)
  - *Interrupt* (especially for lengthy operations)
  - *Quit* (for leaving the program at any time)
  - *Defaults* (for restoring a property sheet)

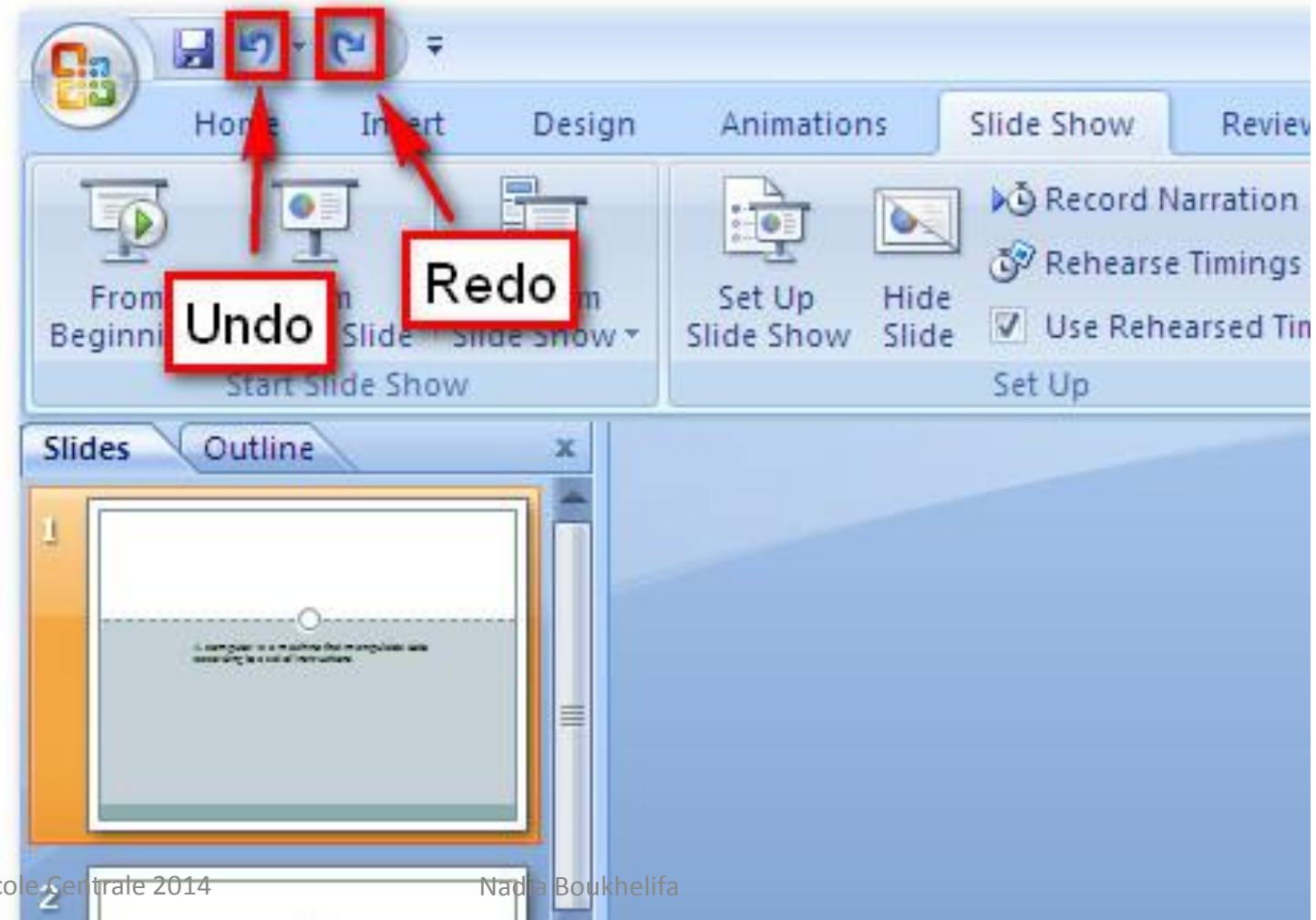
3| user control and freedom

- learning by exploring
- dealing with errors
- user is sentient, computer is not



Long actions should be cancelable

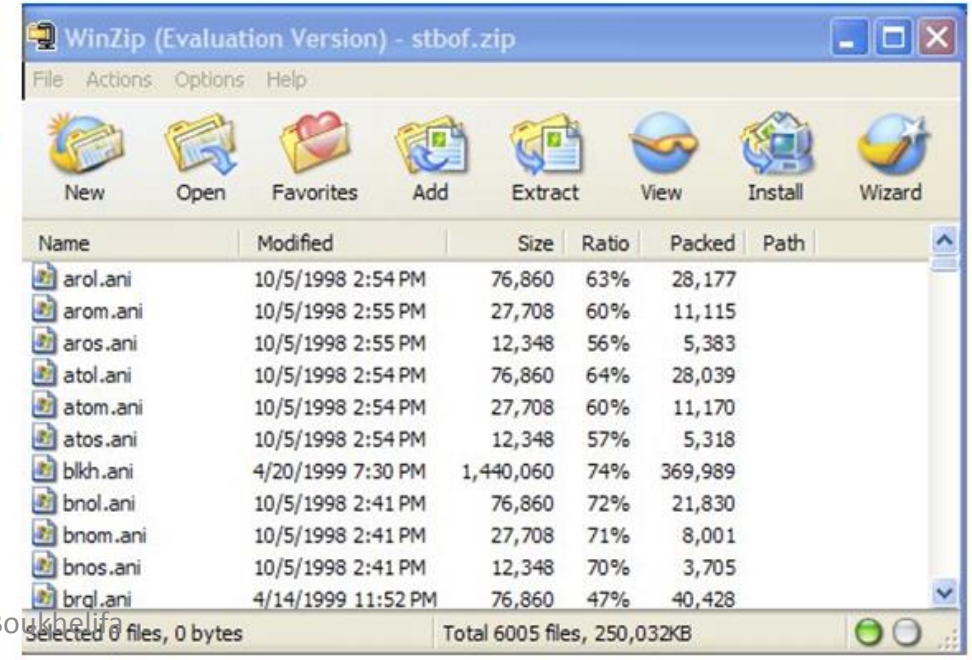
3 | user control and freedom



3| *user control and freedom*

Wizard

Center Stage



3 | user control and freedom

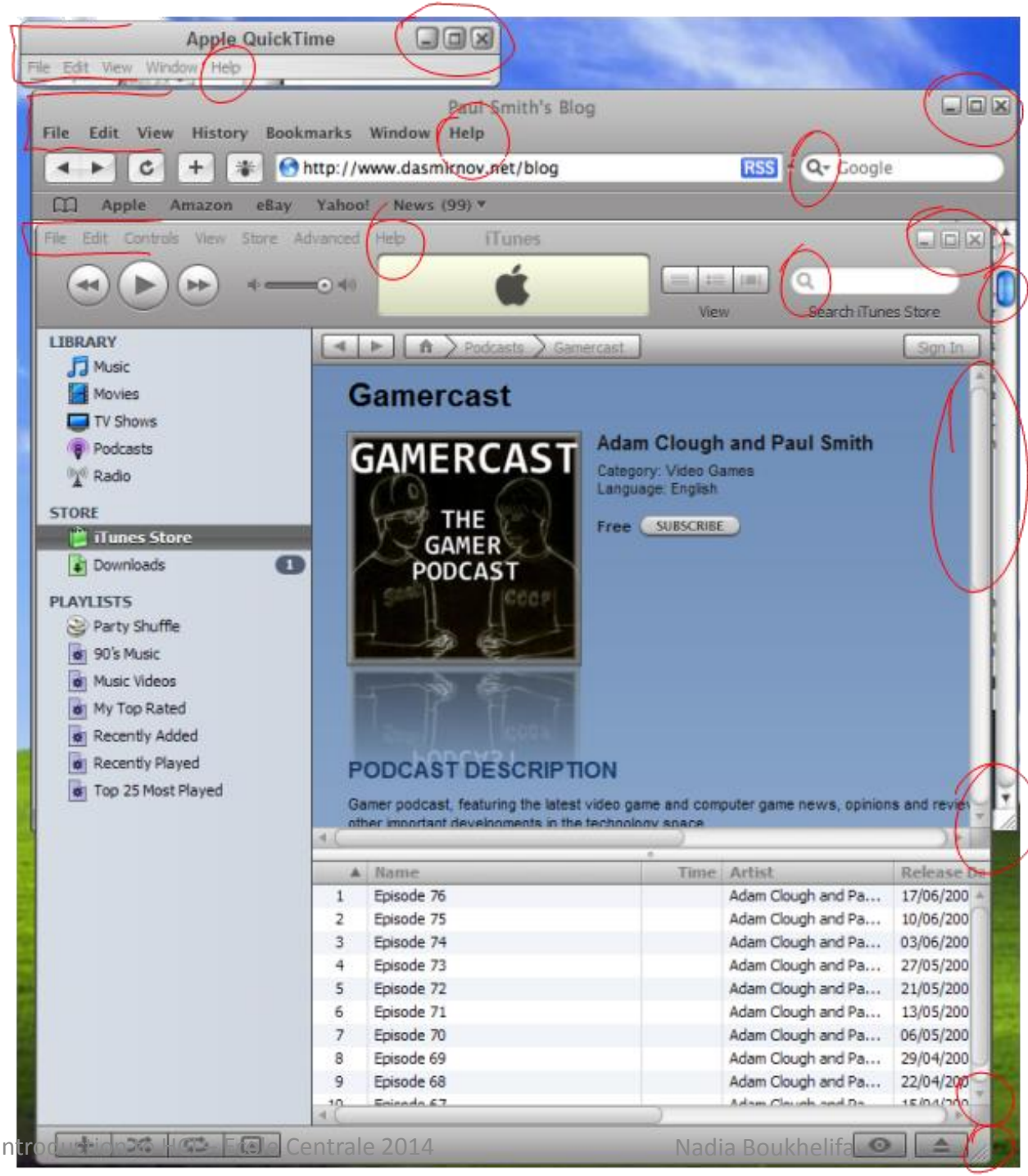
4 | consistency and standards

4 | consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing.

4 | consistency and standards

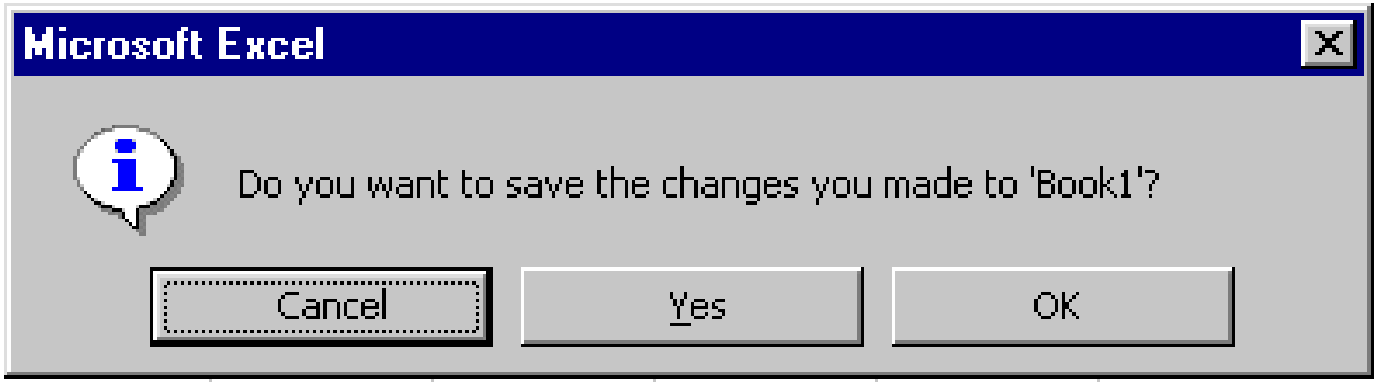
- **consistent syntax of input**



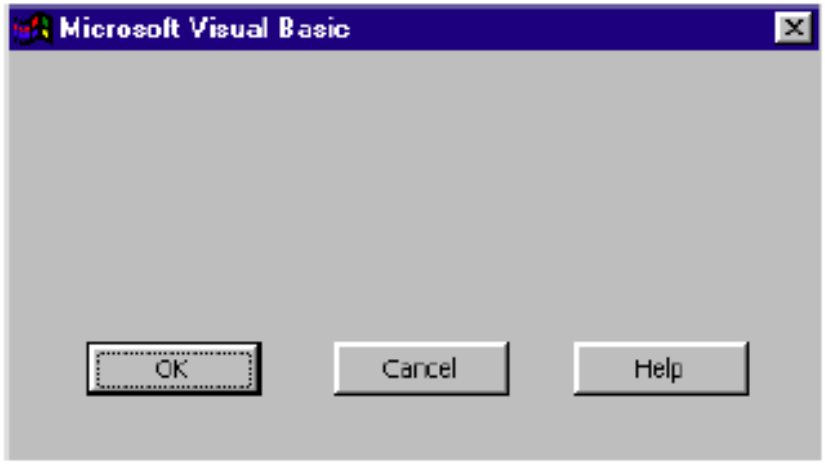
Apple hates
Windows users

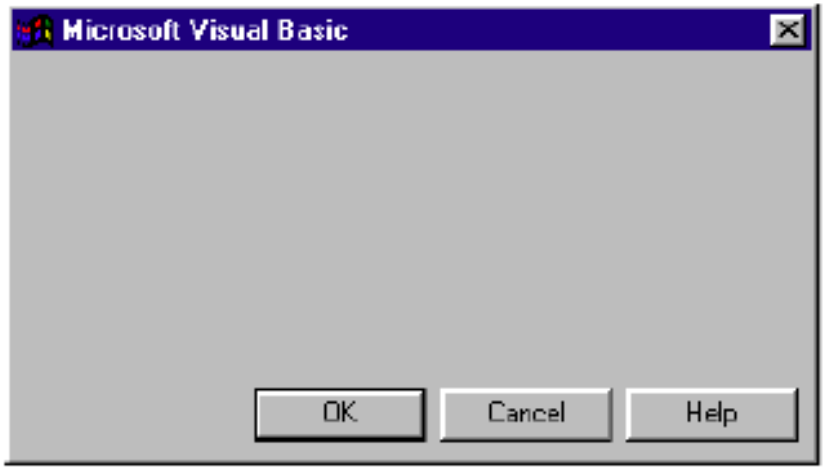
4 | *consistency and standards*

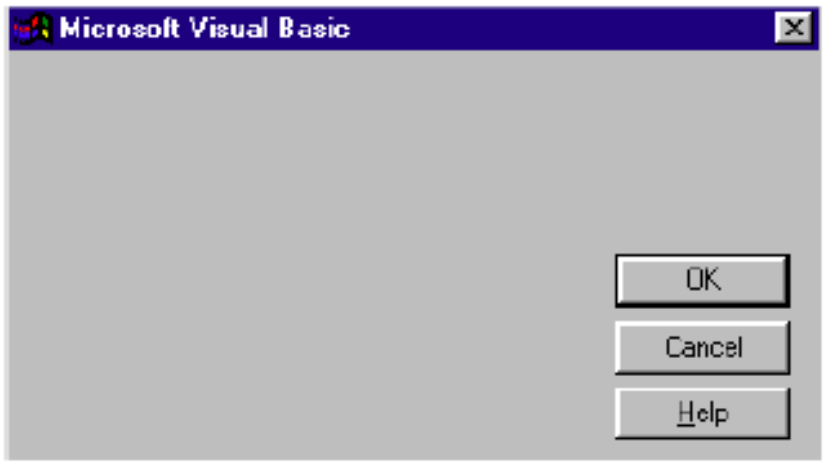
- consistent syntax of input
- **consist language and graphics**
  - same visual appearance across the system (e.g. widgets)
  - same information/controls in same location on all windows

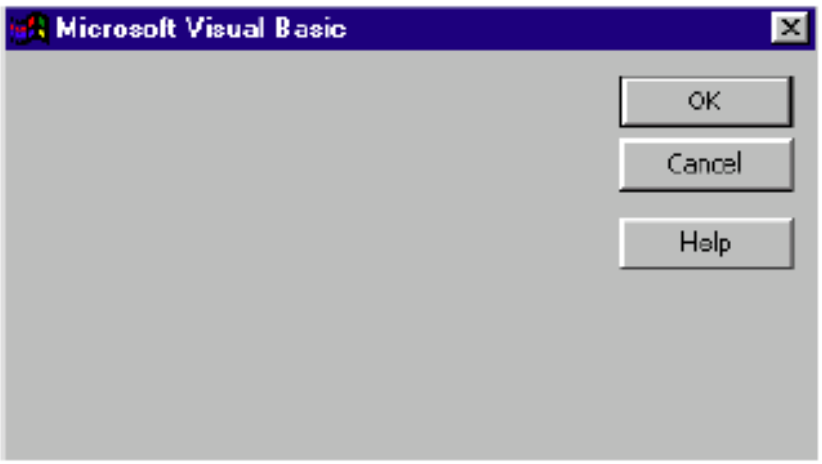


4 | *consistency and standards*









Source: http://hallofshame.gp.co.at/

4 | Consistency and standards

- consistent syntax of input

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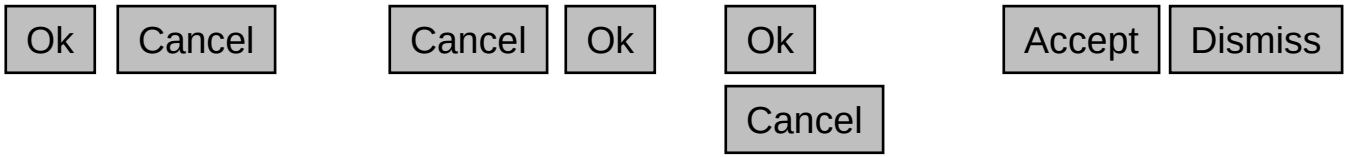
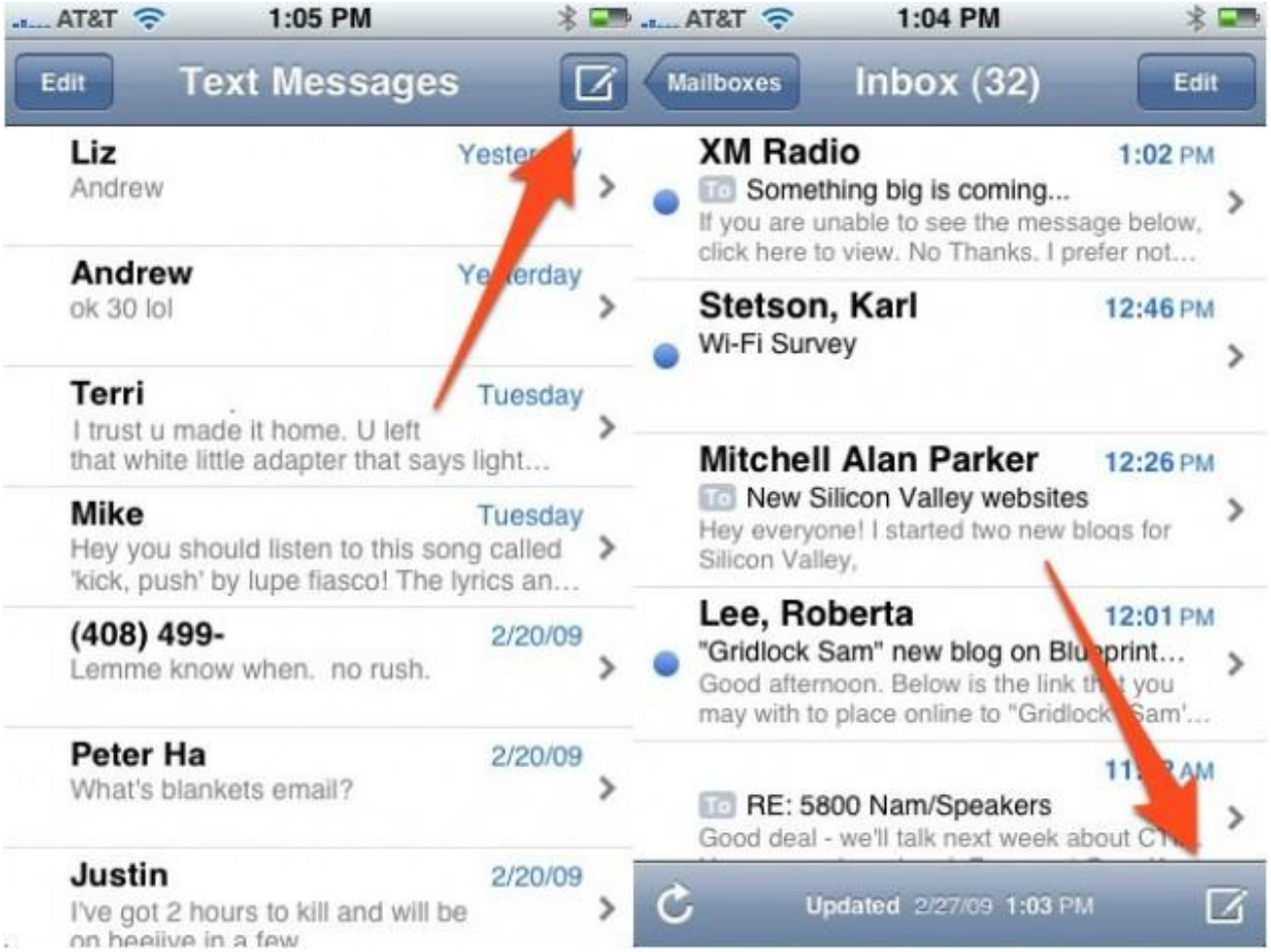


- **consistent effects**
  - commands, actions have same effect in equivalent situations
  - predictability

4 | *consistency and standards*



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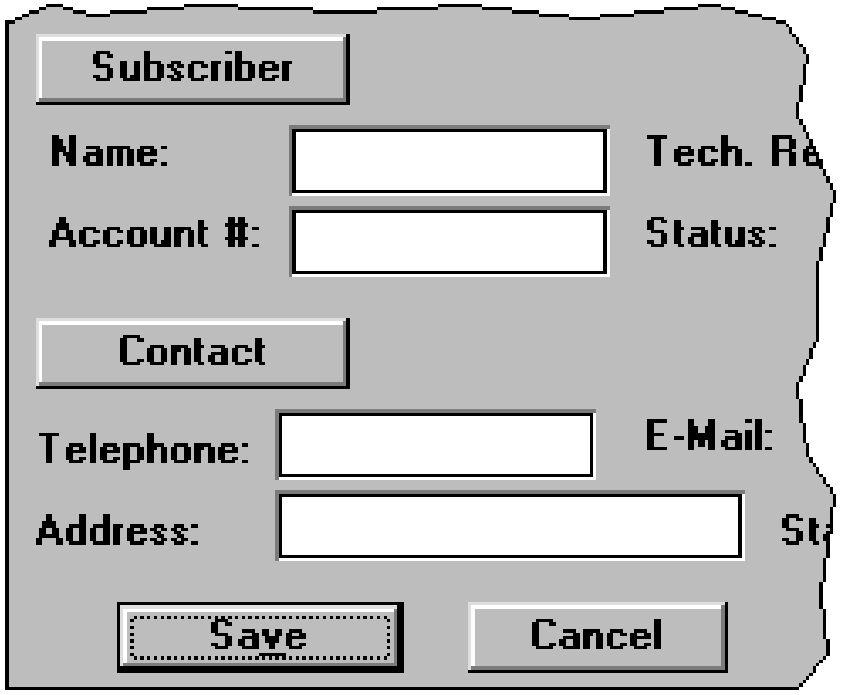
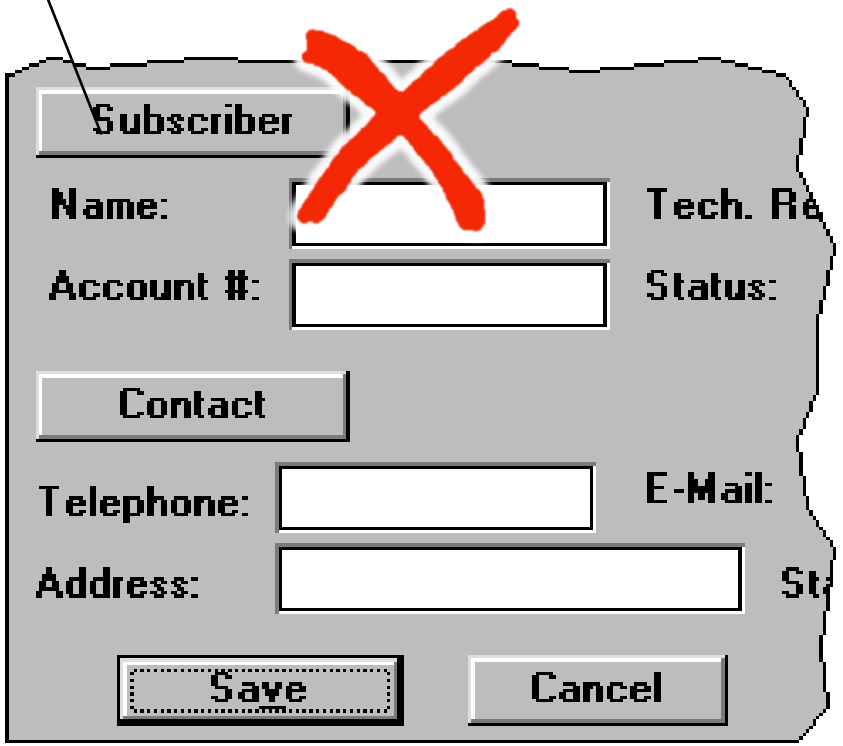


4 | *consistency and standards*

these are **labels with a raised appearance**.

is it any surprise that people try and click on them?



4 | consistency and standards

- principle of least surprise
  - similar things should act similarly
  - different things should look different
- adhere to platform guidelines
- consistent language, color, working, ordering
- consistent use of input syntax

4| consistency and standards

types of consistency:

- internal consistency
  - is the interface consistent with itself
- external consistency
  - is the design consistent with similar types of applications/applications on the platform
- metaphorical consistency
  - is the design consistent with the similar real-world entity/object

5 | *error prevention*

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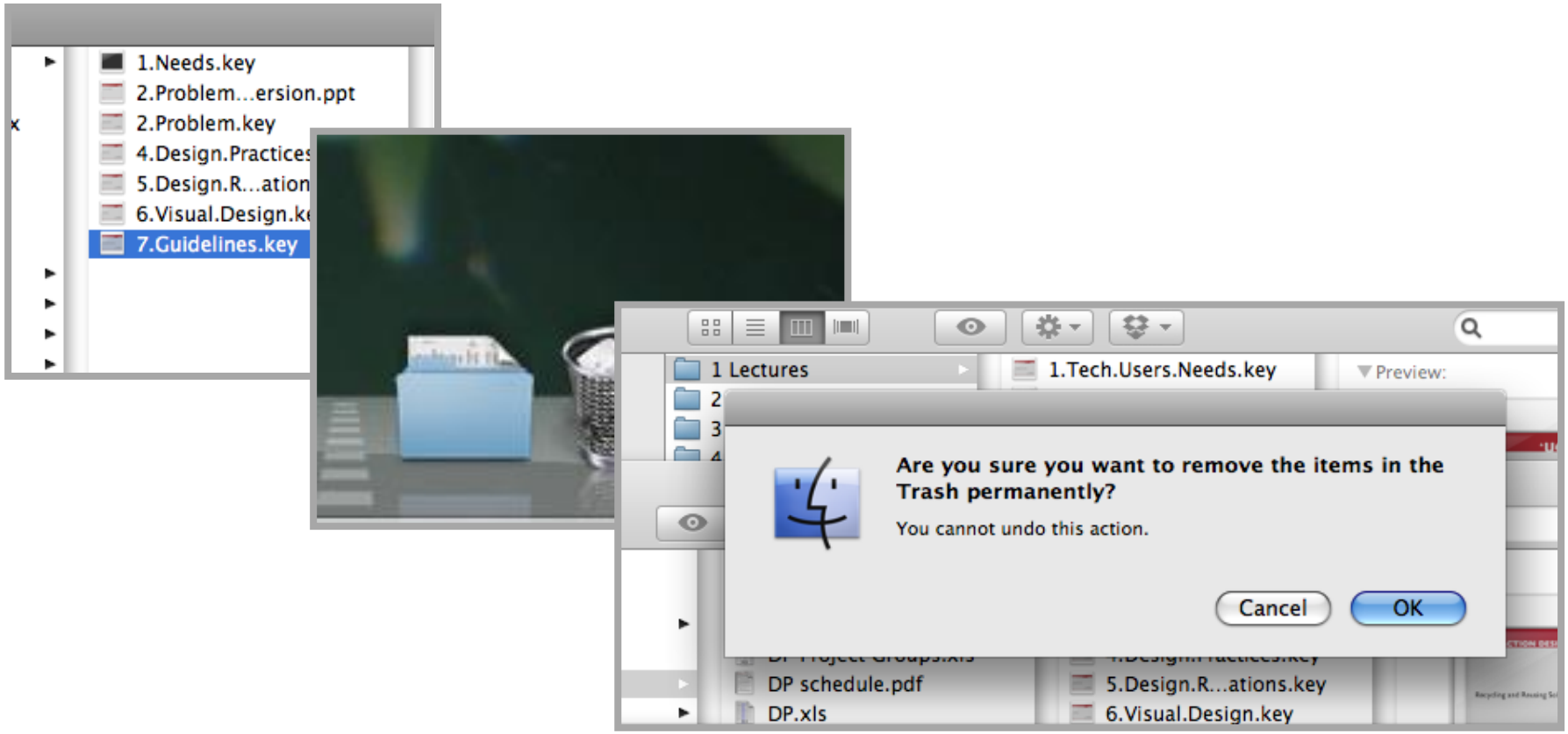

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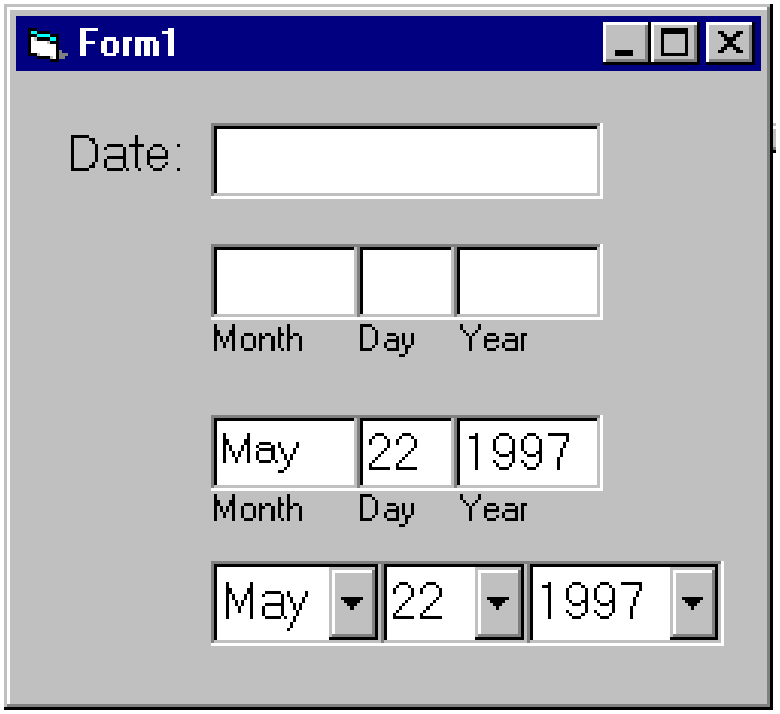

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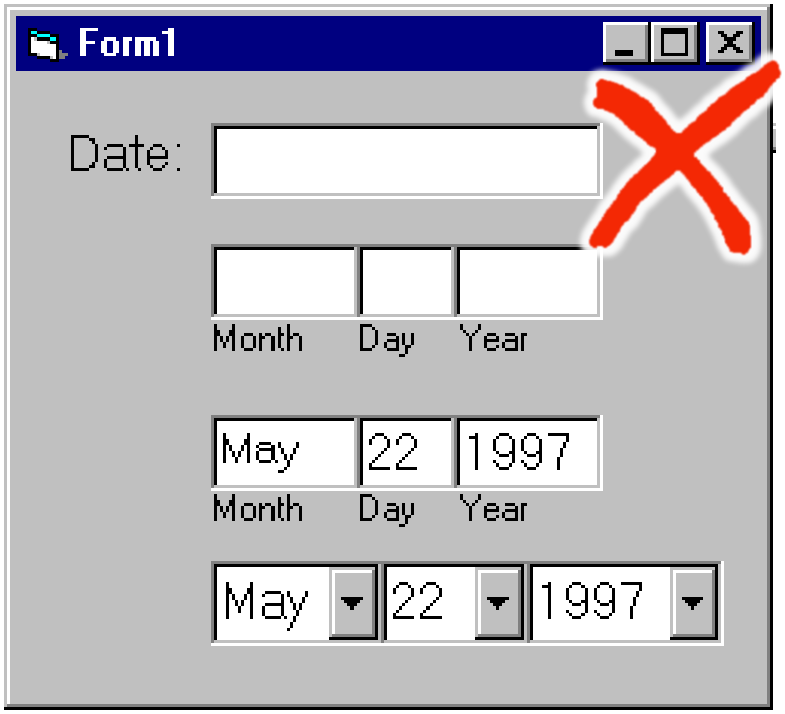

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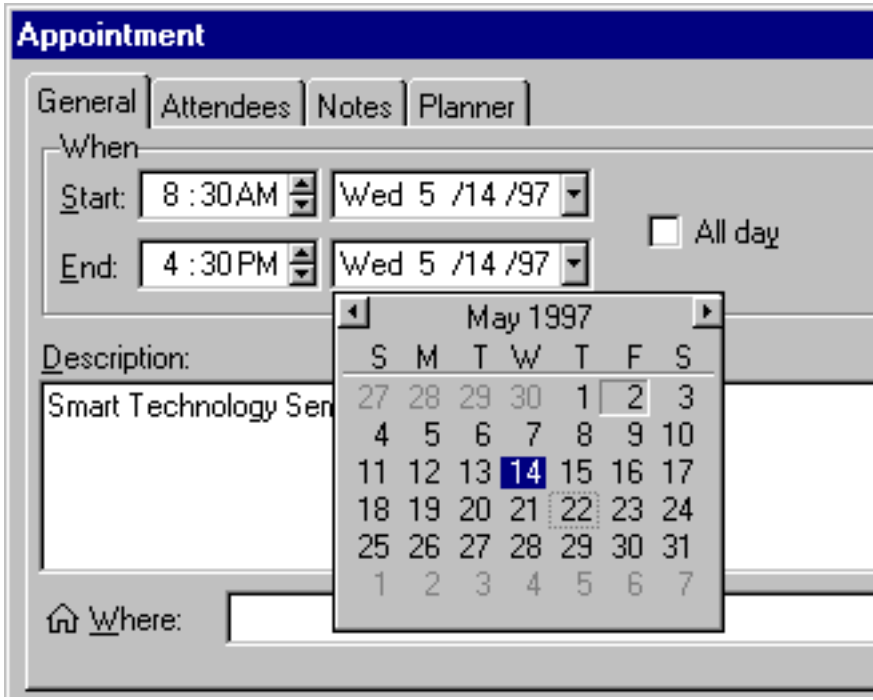

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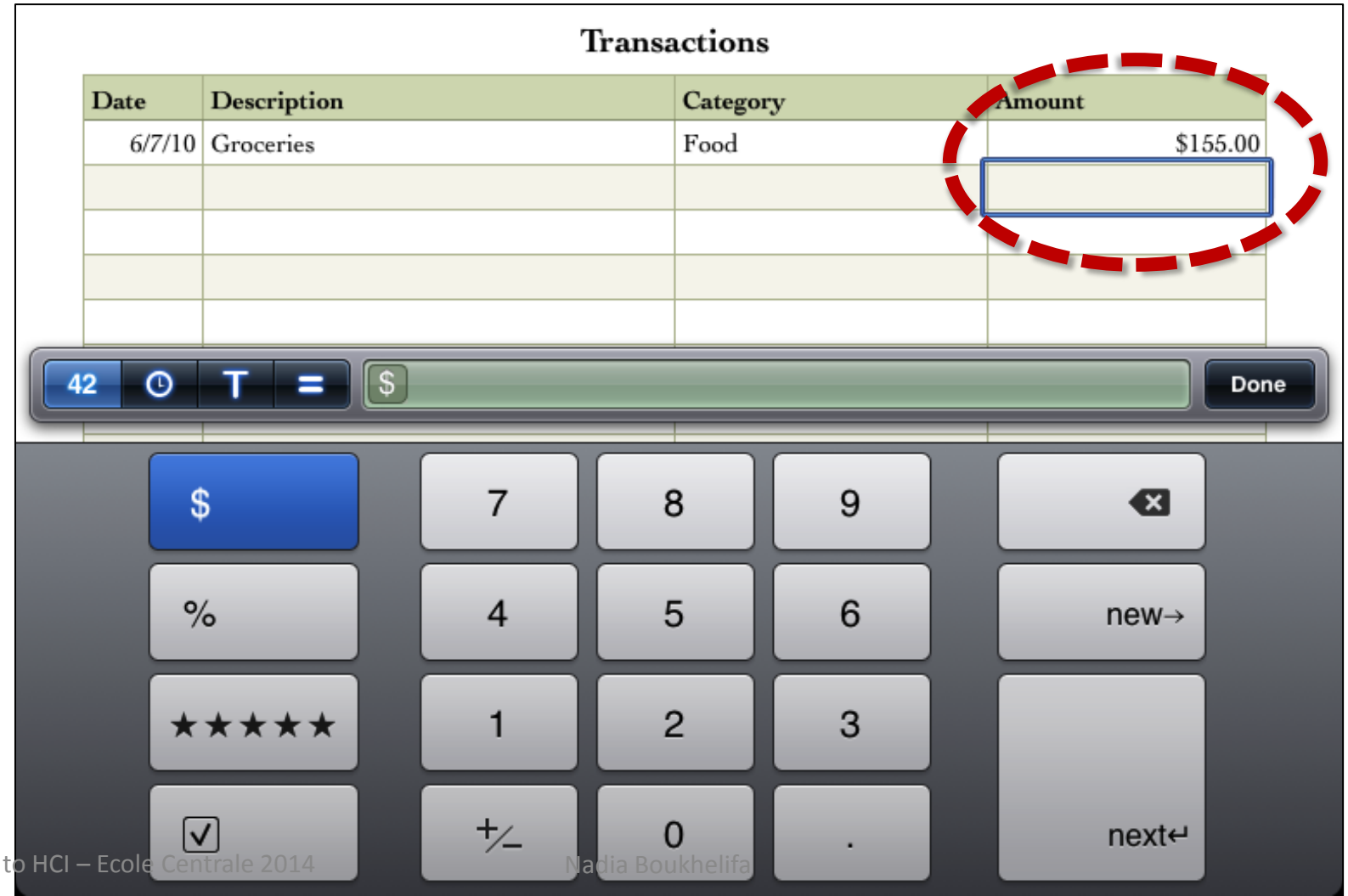

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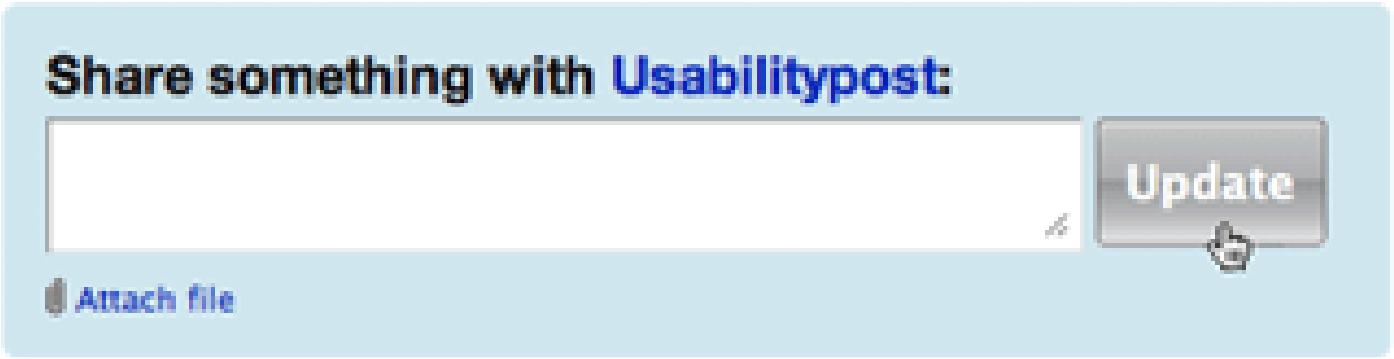
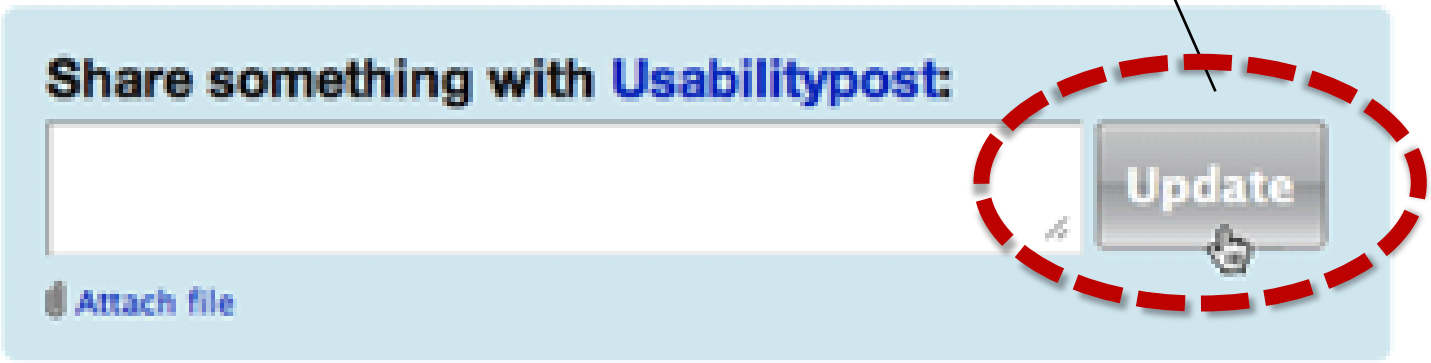
5 | *error prevention*



Source: http://design-ecolbiterfaces.com/

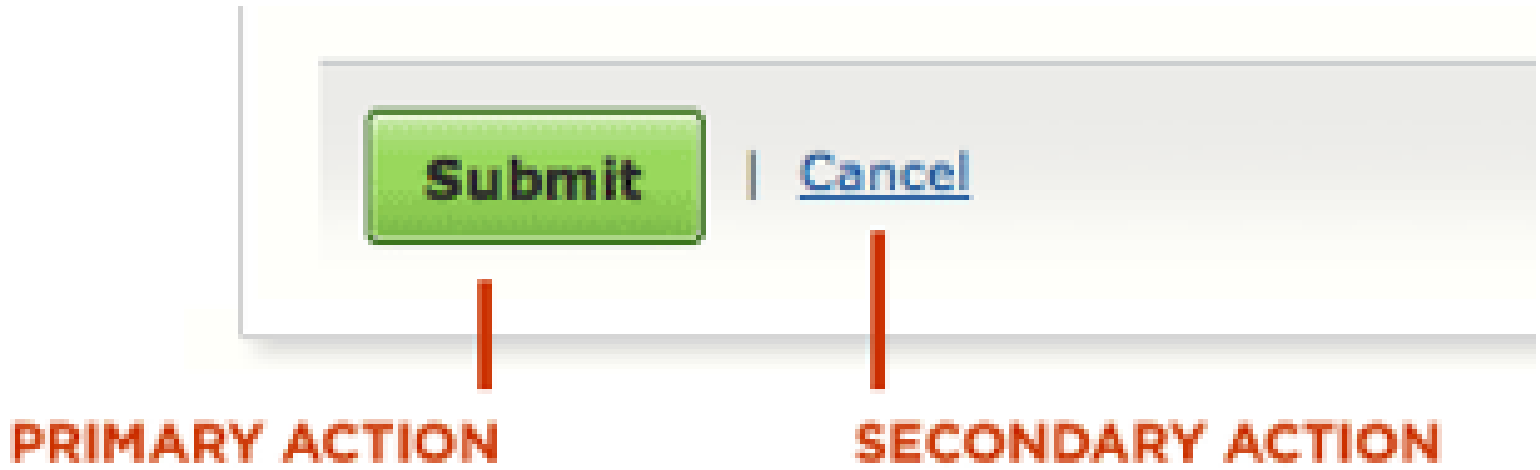
5 | *error prevention*

Button disabled when nothing entered



Source: http://design-ecole.com/ecole-2014

5 | *error prevention*



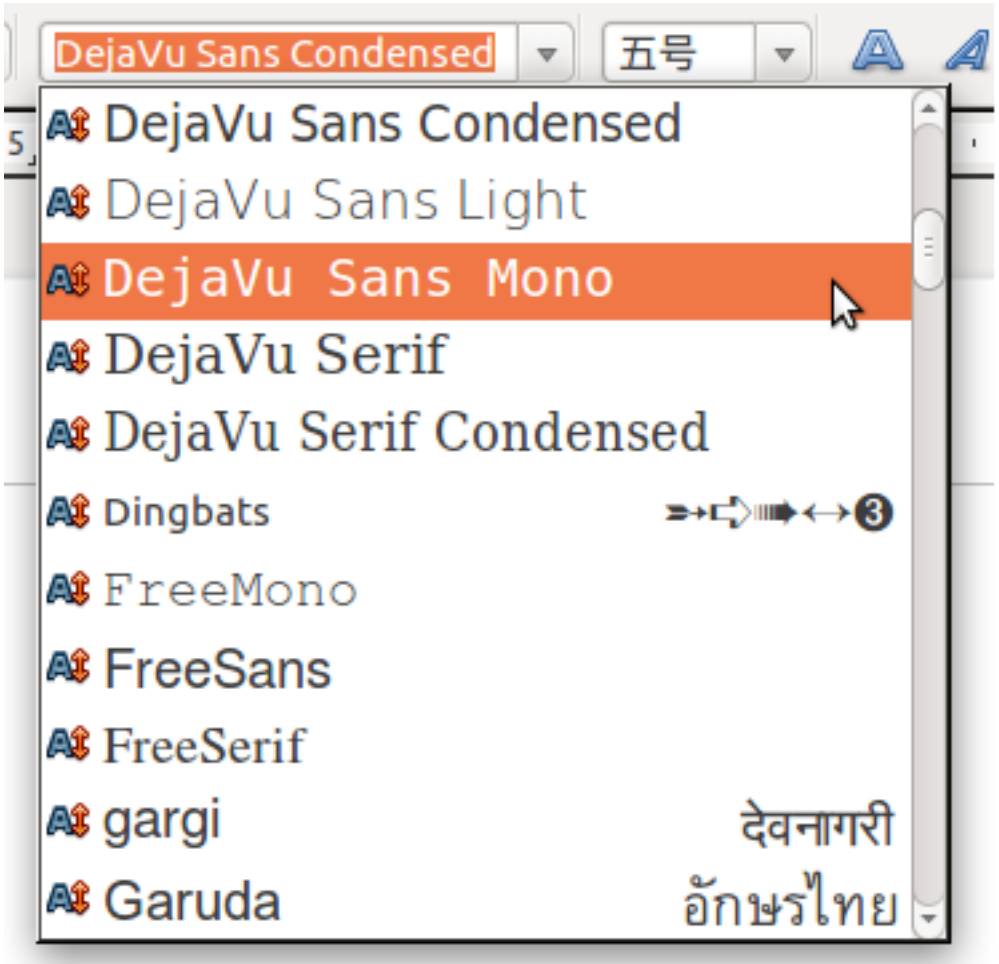
Source: http://design-ecolab.com/facts.2014

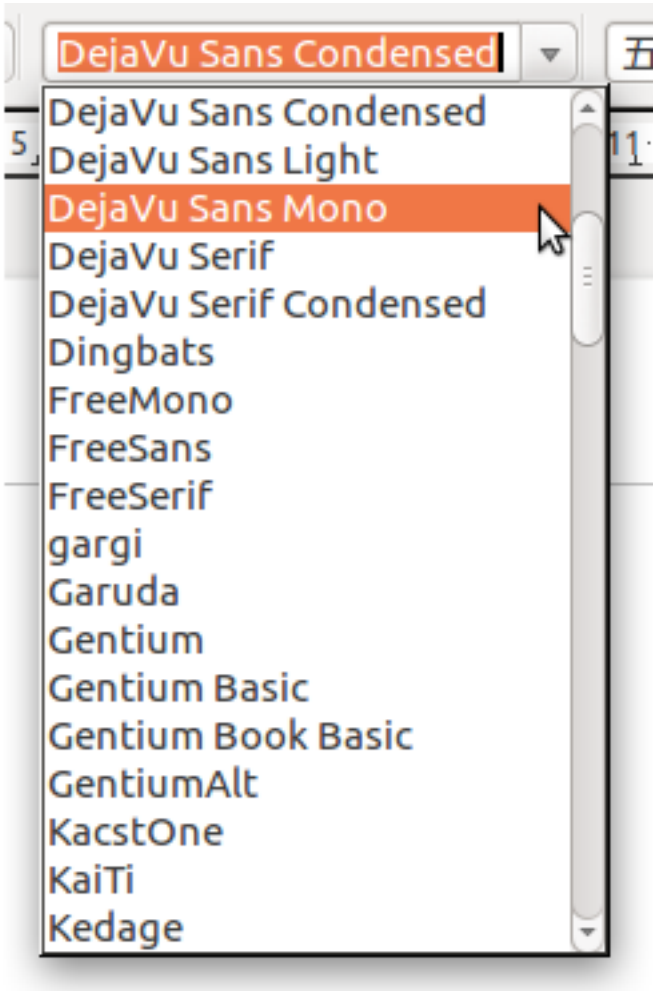
6 | recognition rather than recall

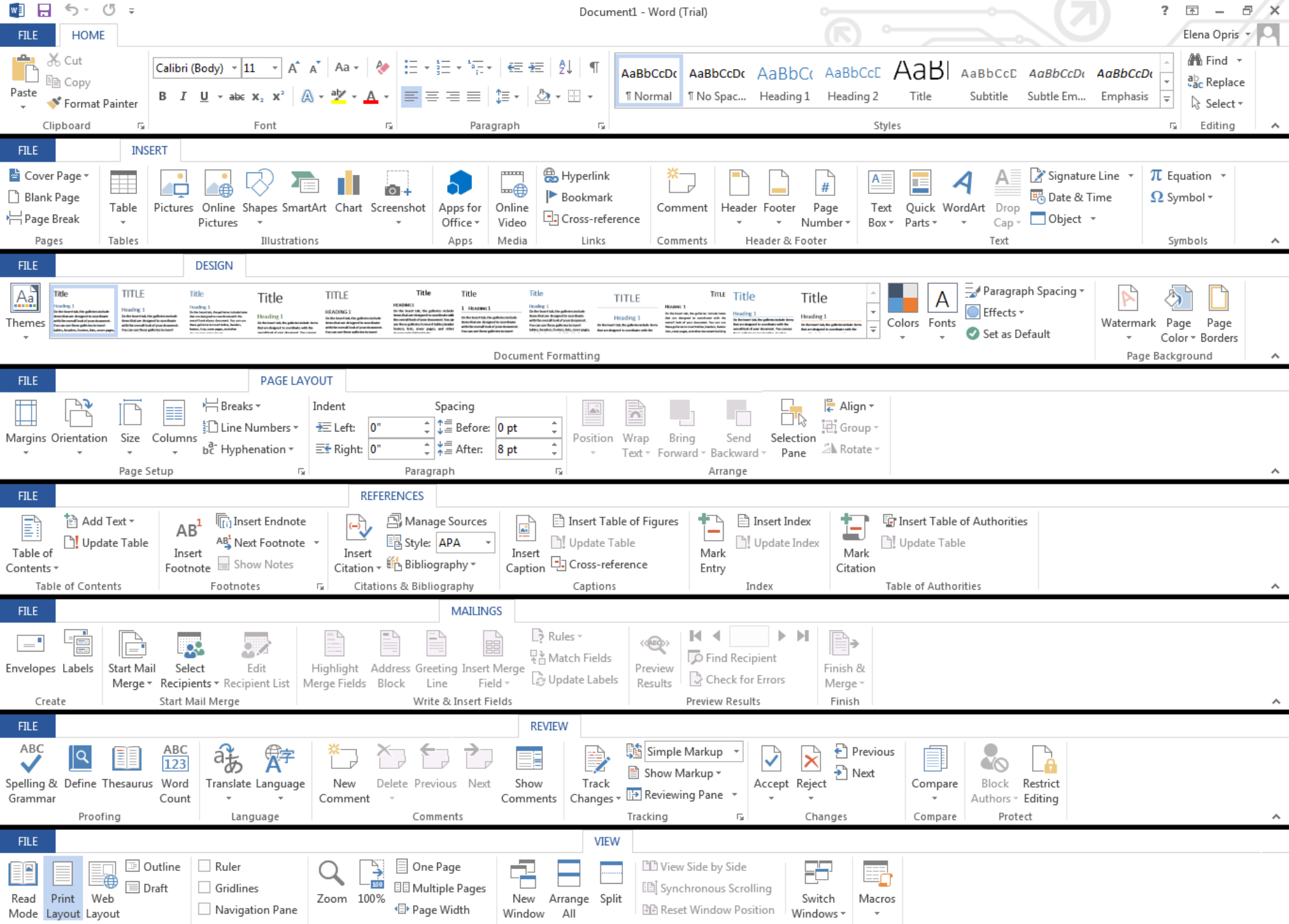
```
 i686 GNU/Linux
Ubuntu 10.04.2 LTS

Welcome to Ubuntu!
 * Documentation:  https://help.ubuntu.com/

  System information as of Thu Oct 13 18:39:03 UTC 2011

  System load:  0.0               Processes:           95
  Usage of /:   2.7% of 19.70GB   Users logged in:     0
  Memory usage: 4%                IP address for eth0: 10.240.119.222
  Swap usage:   0%

  Graph this data and manage this system at https://landscape.canonical.com/

42 packages can be updated.
27 updates are security updates.


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

root@srv-su22m:~#
```

Start
Favorites
Dave Landis
Surfs up!
I hope you're ready for s...
2
Kayaking Lessons
12:00 PM–1:00 PM
31
Friday
Photos
57°
San Francisco
Clear
Today
72°/54° Clear
Tomorrow
73°/51° Clear
Weather
Internet Explorer
Help & Tips
SkyDrive
Store

6 | *recognition rather than recall*






Document1 - Word (Trial)
FILE
HOME
Elena Opris
Paste
Cut
Copy
Format Painter
Calibri (Body)
11
Find
Replace
Select
Clipboard
Font
Paragraph
Styles
Editing
INSERT
Cover Page
Blank Page
Page Break
Table
Pictures
Online Pictures
Shapes
SmartArt
Chart
Screenshot
Apps for Office
Online Video
Hyperlink
Bookmark
Cross-reference
Comment
Header
Footer
Page Number
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Date & Time
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Tables
Illustrations
Apps
Media
Links
Comments
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Effects
Set as Default
Watermark
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Page Borders
Document Formatting
Page Background
PAGE LAYOUT
Margins
Orientation
Size
Columns
Breaks
Line Numbers
Hyphenation
Indent
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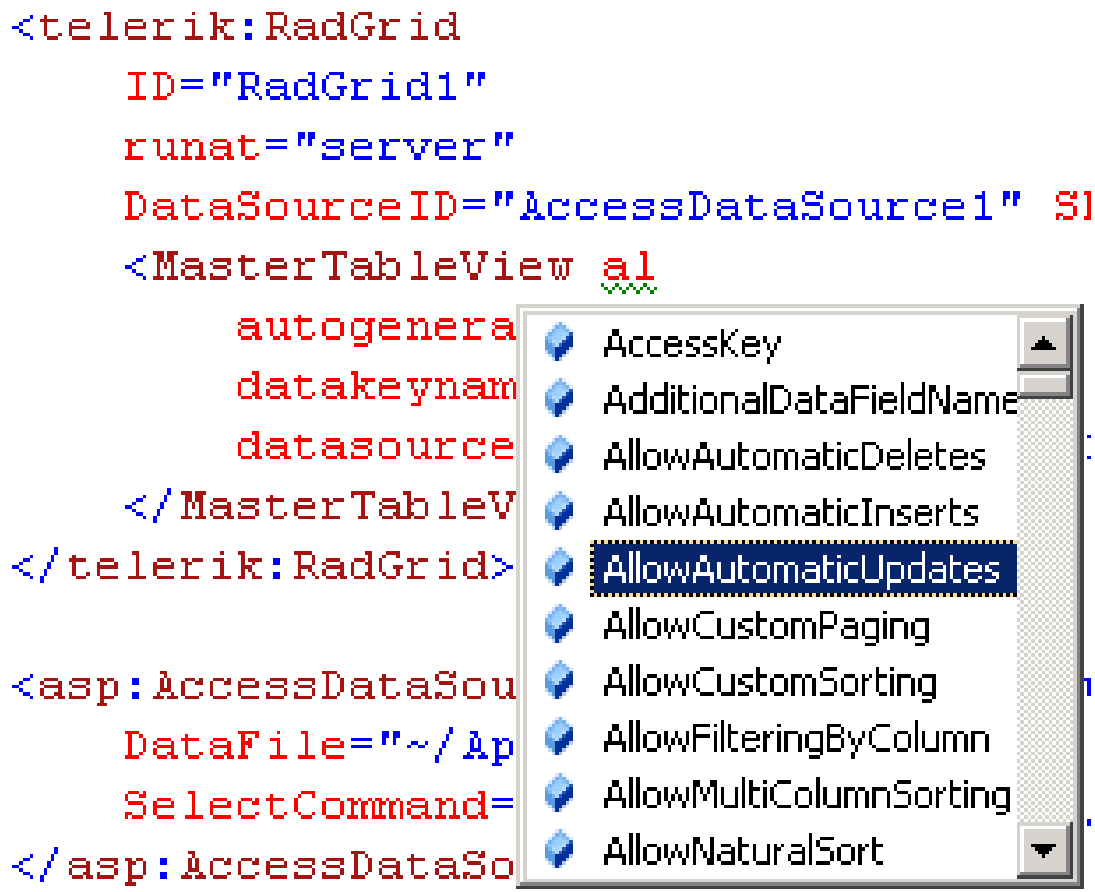
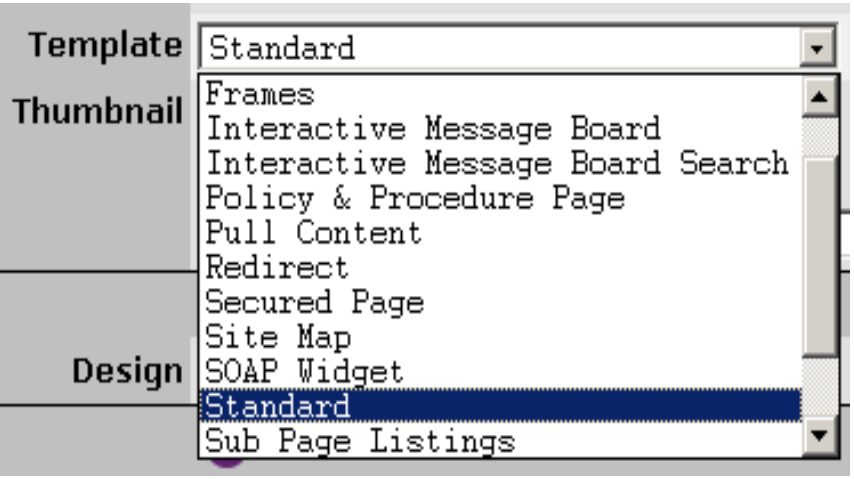
Right:
Spacing
Before:
After:
Position
Wrap Text
Bring Forward
Send Backward
Selection Pane
Align
Group
Rotate
Page Setup
Paragraph
Arrange
REFERENCES
Table of Contents
Add Text
Update Table
Insert Footnote
Insert Endnote
Next Footnote
Show Notes
Insert Citation
Manage Sources
Style:
APA
Bibliography
Insert Caption
Insert Table of Figures
Update Table
Cross-reference
Mark Entry
Insert Index
Update Index
Mark Citation
Insert Table of Authorities
Update Table
Table of Contents
Footnotes
Citations & Bibliography
Captions
Index
Table of Authorities
MAILINGS
Envelopes
Labels
Start Mail Merge
Select Recipients
Edit Recipient List
Highlight Merge Fields
Address Block
Greeting Line
Insert Merge Field
Rules
Match Fields
Update Labels
Preview Results
Find Recipient
Check for Errors
Finish & Merge
Create
Start Mail Merge
Write & Insert Fields
Preview Results
Finish
REVIEW
Spelling & Grammar
Define
Thesaurus
Word Count
Translate
Language
New Comment
Delete
Previous
Next
Show Comments
Track Changes
Simple Markup
Show Markup
Reviewing Pane
Accept
Reject
Previous
Next
Compare
Block Authors
Restrict Editing
Proofing
Language
Comments
Tracking
Changes
Compare
Protect
VIEW
Read Mode
Print Layout
Web Layout
Outline
Draft
Ruler
Gridlines
Navigation Pane
Zoom
100%
One Page
Multiple Pages
Page Width
New Window
Arrange All
Split
View Side by Side
Synchronous Scrolling
Reset Window Position
Switch Windows
Macros
Views
Show
Zoom
Window
Macros
PAGE 1 OF 1
0 WORDS
100%

6 | recognition rather than recall



6 | *recognition rather than recall*



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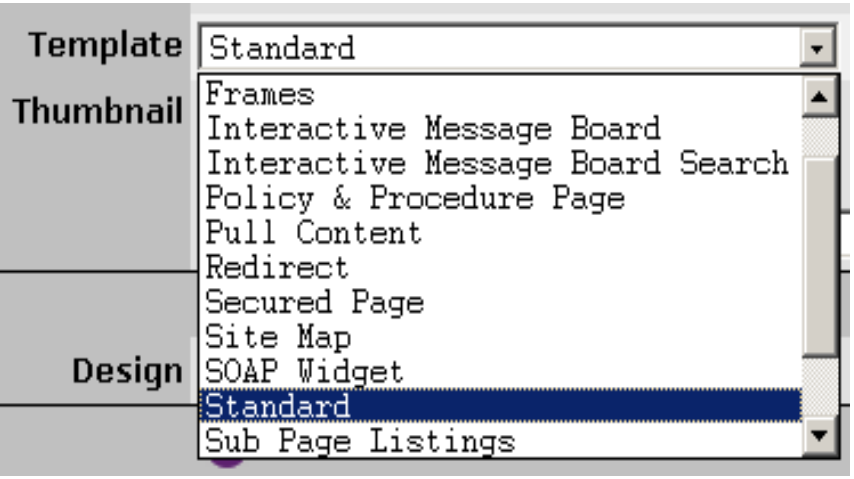
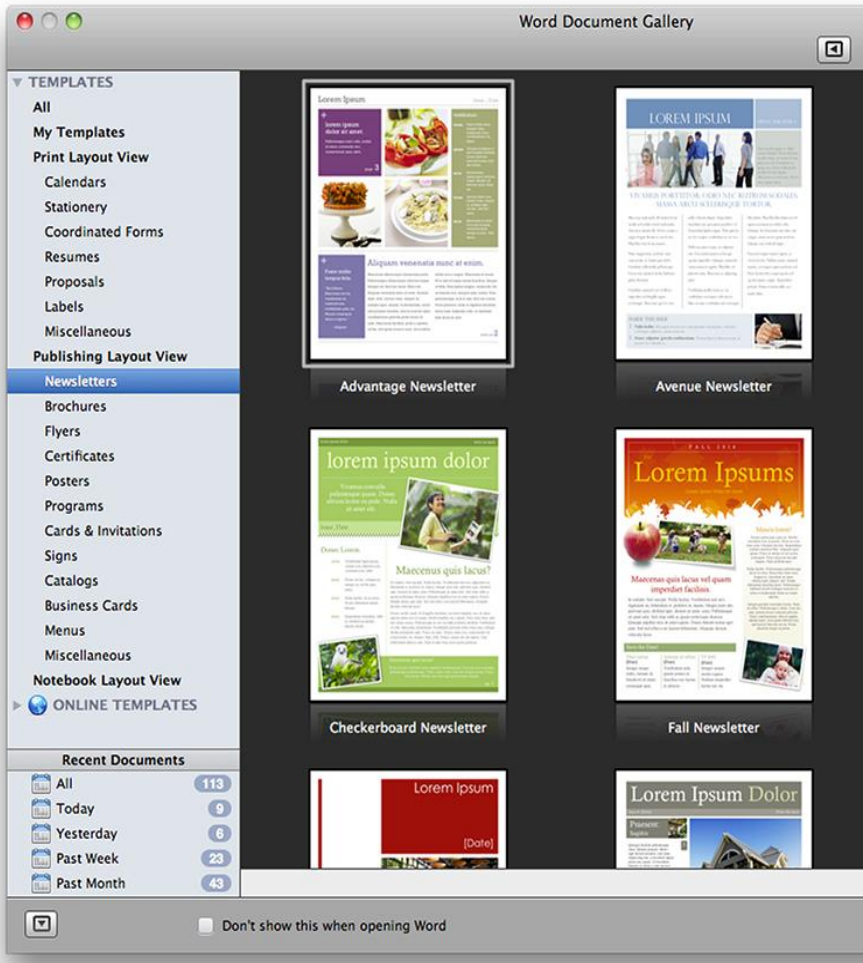


vs.



7 | flexibility and efficiency of use

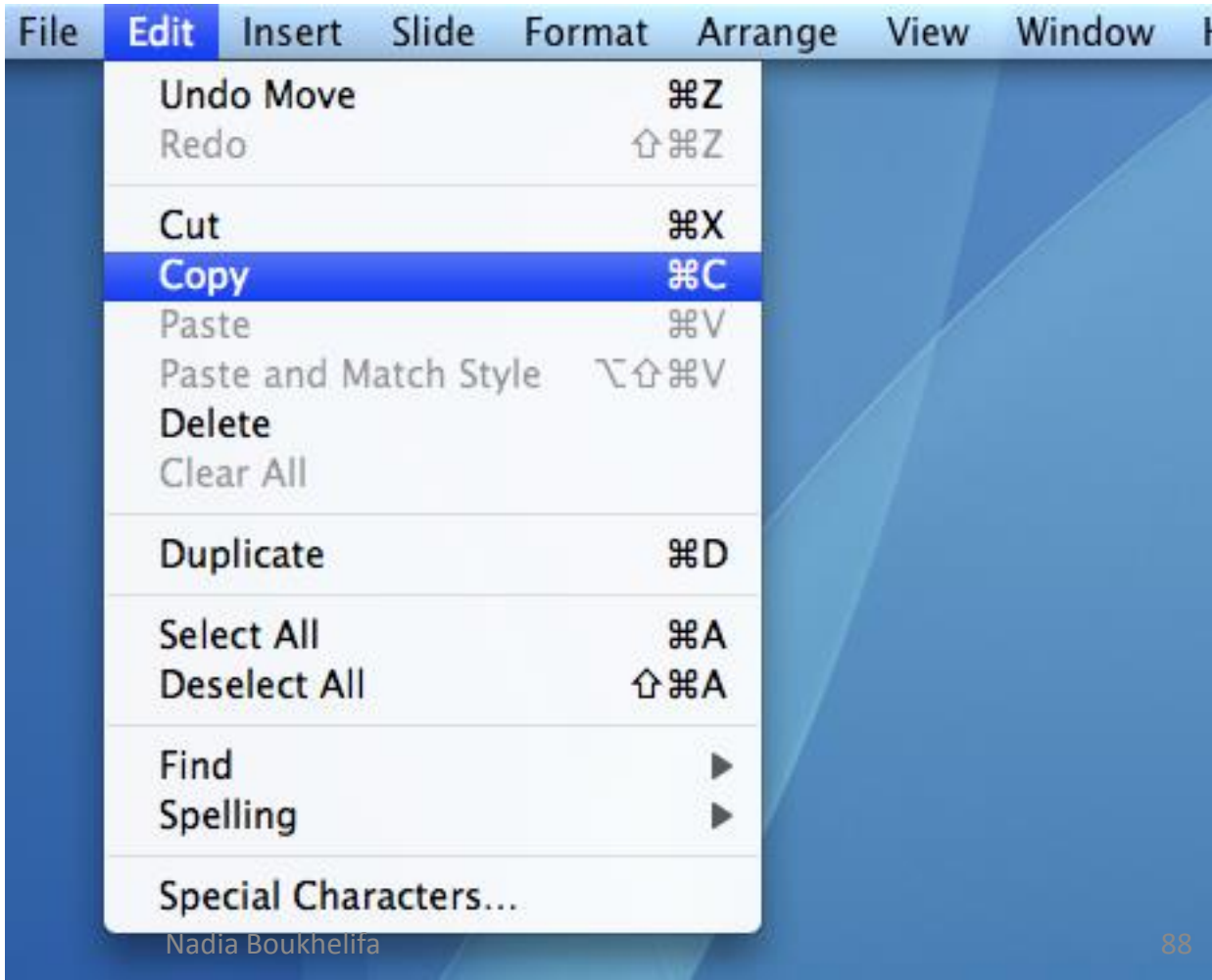
7 | flexibility and efficiency of use

As the frequency of use increases, so do the user's desires to reduce the number of interactions and to increase the pace of interaction.

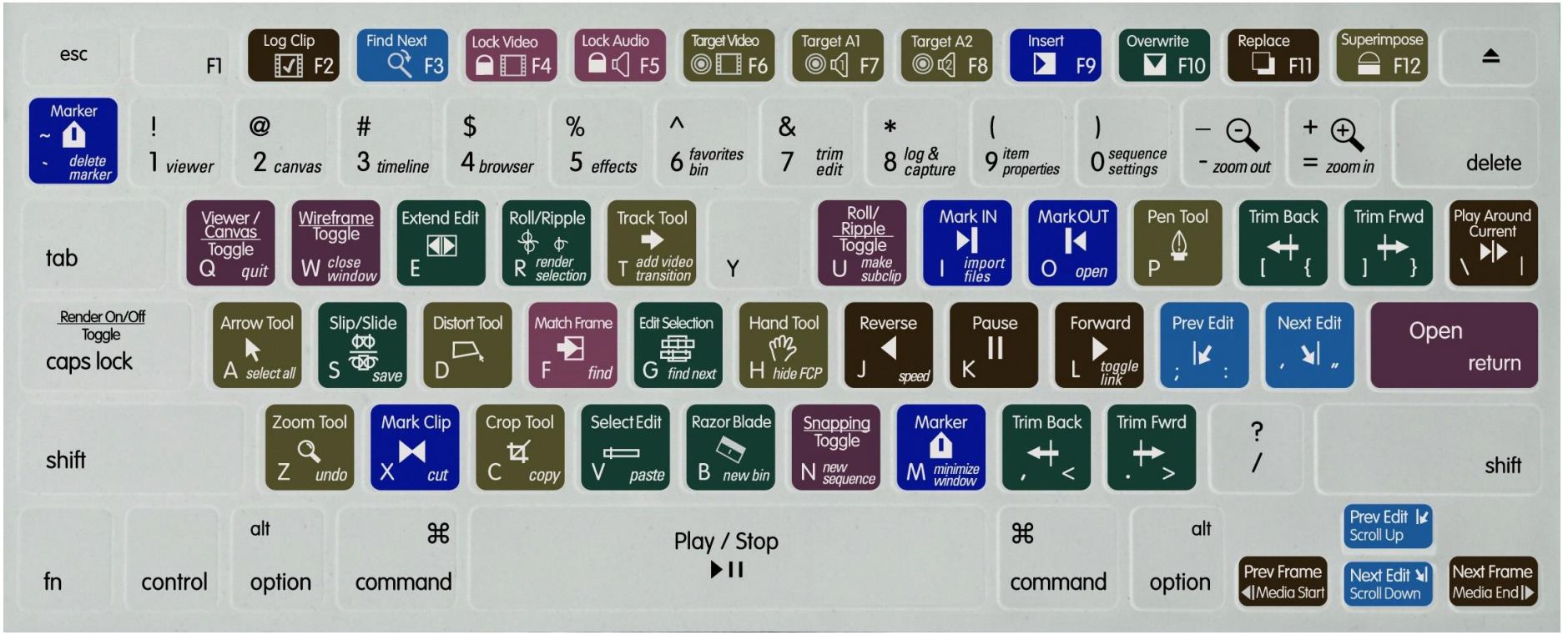
Abbreviations, function keys, hidden commands, and macro facilities are very helpful to an expert user.

7 | *flexibility and efficiency of use*

a) Keyboard shortcuts



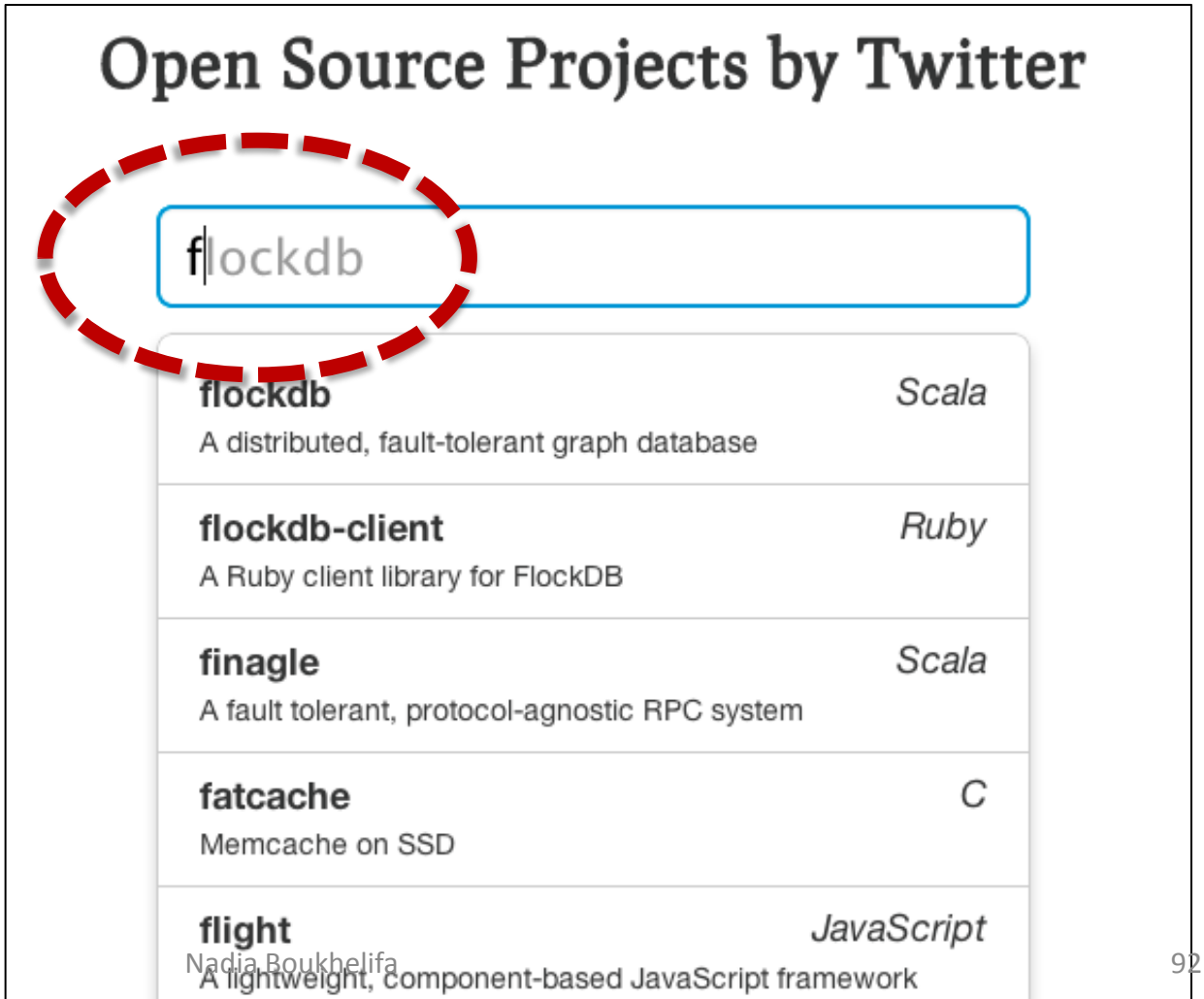
MacBook Pro


esc
F1
Log Clip F2
Find Next F3
Lock Video F4
Lock Audio F5
Target Video F6
Target A1 F7
Target A2 F8
Insert F9
Overwrite F10
Replace F11
Superimpose F12
Marker delete marker
1 viewer
2 canvas
3 timeline
4 browser
5 effects
6 favorites bin
7 trim edit
8 log & capture
9 item properties
0 sequence settings
- zoom out
= zoom in
delete
tab
Viewer / Canvas Toggle Q quit
Wireframe Toggle W close window
Extend Edit E
Roll/Ripple R render selection
Track Tool T add video transition
Y
Roll/Ripple Toggle U make subclip
Mark IN I import files
Mark OUT O open
Pen Tool P
Trim Back [{
Trim Frwd] }
Play Around Current \ |
Render On/Off Toggle
caps lock
Arrow Tool A select all
Slip/Slide S save
Distort Tool D
Match Frame F find
Edit Selection G find next
Hand Tool H hide FCP
Reverse J speed
Pause K
Forward L toggle link
Prev Edit ; :
Next Edit , „
Open return
shift
Zoom Tool Z undo
Mark Clip X cut
Crop Tool C copy
Select Edit V paste
Razor Blade B new bin
Snapping Toggle N new sequence
Marker M minimize window
Trim Back , <
Trim Fwrd . >
? /
shift
fn
control
alt option
⌘ command
Play / Stop
⌘ command
alt option
Prev Frame Media Start
Prev Edit Scroll Up
Next Edit Scroll Down
Next Frame Media End

LABELLE COMMUNICATIONS

7 | *flexibility and efficiency of use*

b) auto-complete

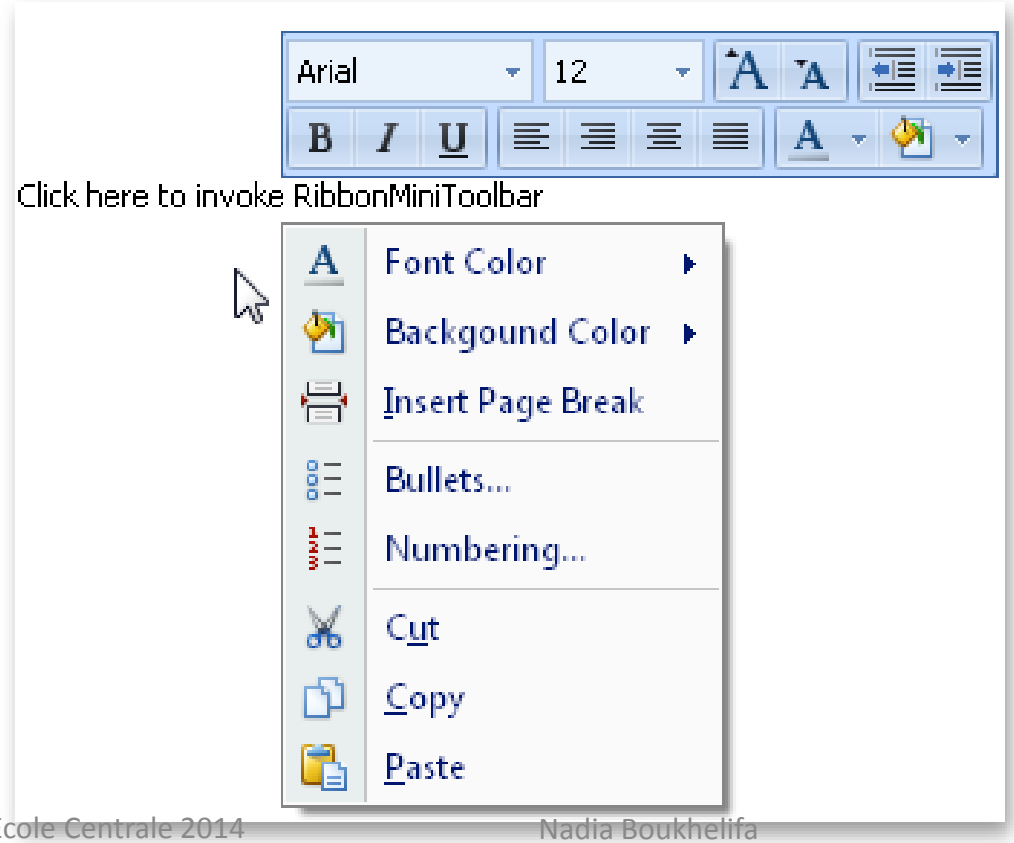


7 | *flexibility and efficiency of use*

c) History

7 | *flexibility and efficiency of use*

d) Context menus



7 | flexibility and efficiency of use

e) Type ahead (buffering, e.g., FIFO)

(entering input before the system is ready for it)

7 | flexibility and efficiency of use

designing for varying degrees of expertise

- **novice users**
  - restrict vocabulary to simple, necessary terms
  - minimal number of actions to achieve task
  - provide additional feedback
- **intermediate users**
  - use consistent structure and terminology for menus
  - emphasise recognition over recall
  - reference materials (on-line or printed)
- **expert users**
  - allow the user to optimize for speed
  - shortcuts: keystrokes, abbreviations, etc

7 | *flexibility and efficiency of use*

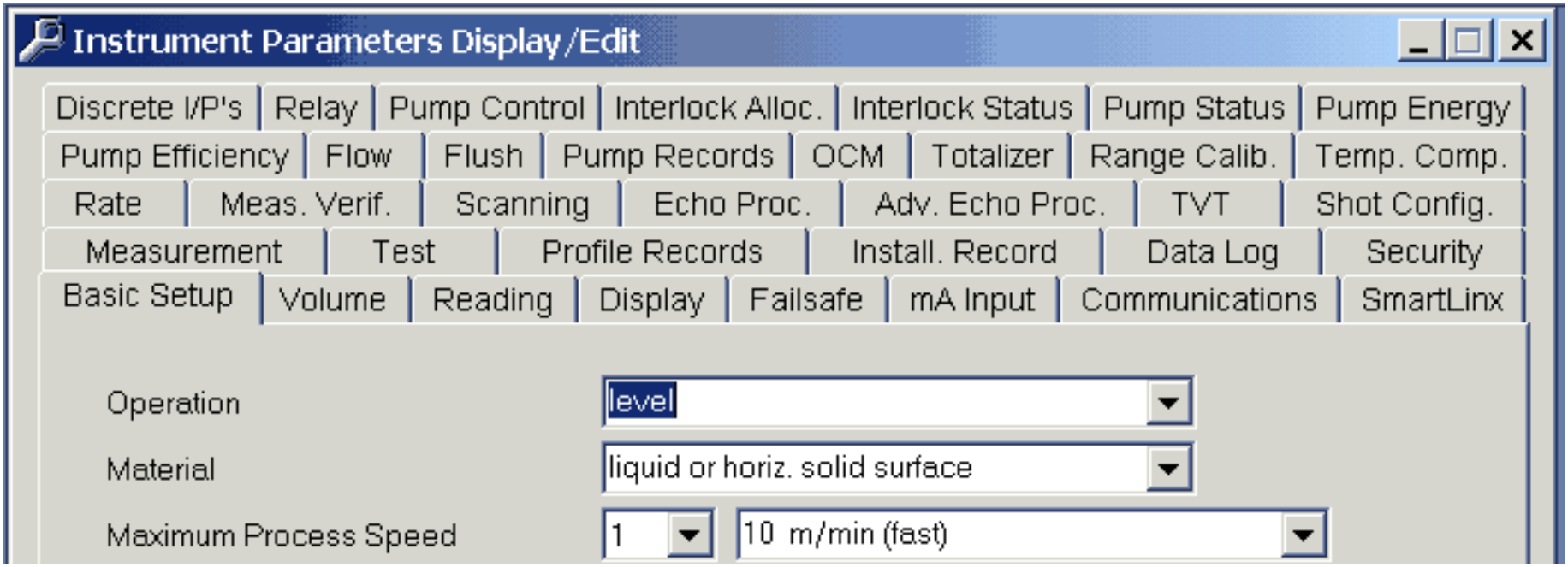
8 | aesthetic and minimalist design

8 | aesthetic and minimalist design

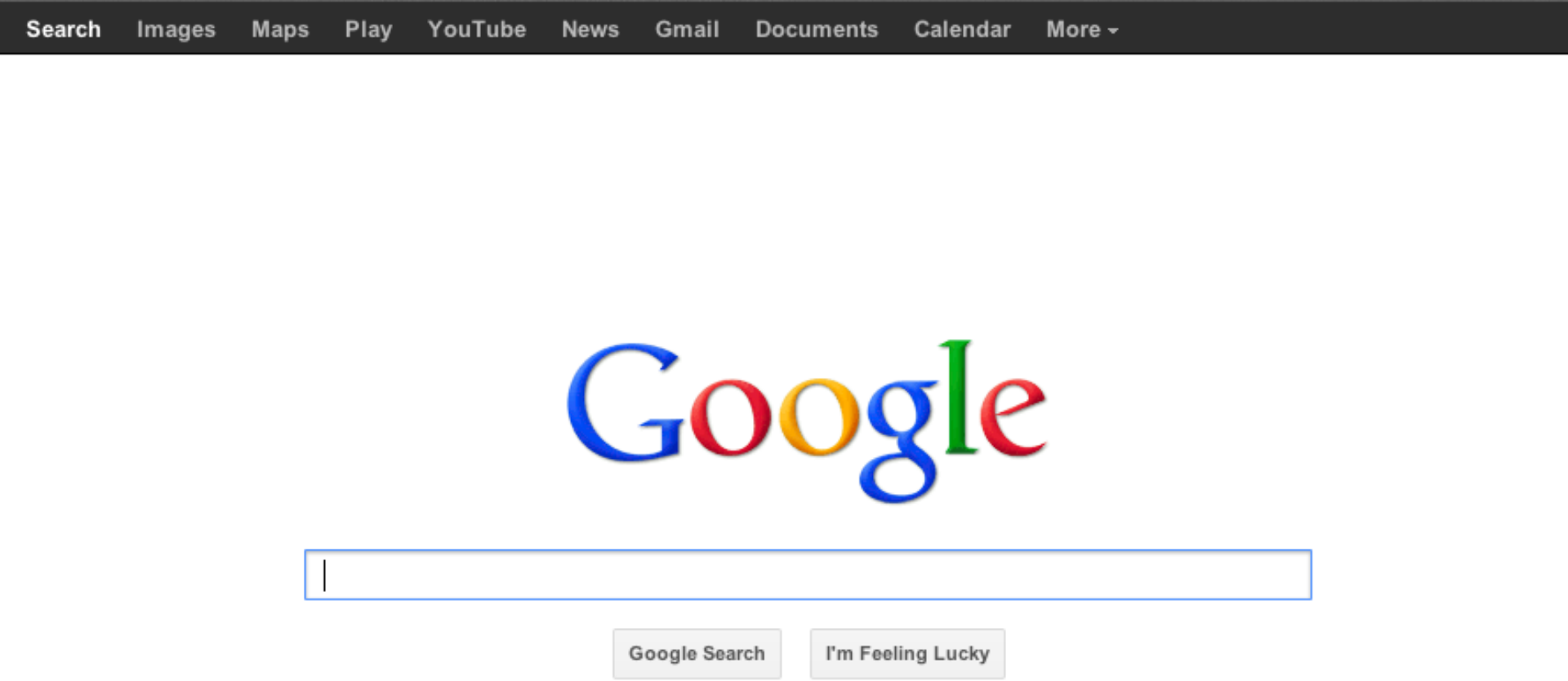
Present exactly the information the user needs

- less is more: less to learn, to get wrong, to distract…
- information should appear in natural order
  - related information is graphically clustered
  - order of accessing information matches user's expectations
- remove or hide irrelevant or rarely needed information
  - competes with important information on screen

8 | aesthetic and minimalist design



Source: http://hallofshame.gp.co.at/


Search
Images
Maps
Play
YouTube
News
Gmail
Documents
Calendar
More
Google
Google Search
I'm Feeling Lucky

Make Yahoo your homepage

YAHOO! UK

Web Images Video News Shopping More

Search

HOME 27 October 2013 | YAHOO Yahoo.com | SIGN IN New here? Sign up

YAHOO SITES Edit

- Mail
- News
- Sport
- Dating
- Lifestyle
- Finance (FTSE 100 ⇧)
- omg!
- Cars
- Movies
- Videos on Screen
- Shopping
- Games
- Messenger
- Weather (12°C)
- Answers
- Travel
- Horoscopes

Developing News: Follow the course of St Jude's storm as it sweeps into Britain from the south. ›› Latest news

Bale 'already lined up to leave Real Madrid'

Gareth Bale's awful start at Real Madrid has reportedly put a Premier League return in motion. Destination ››

- La Liga table
- Neymar dazzles in Clasico
- Suarez scores hat-trick

Latest on UK storm

Bale 'already set to leave Real'

Simpsons voice actress dies

Musician Lou Reed dies

1 - 4 of 80

NEWS SPORT ENTERTAINMENT FINANCE

• Storm: Britain Prepares For '80mph Winds'

Trending now

1. Indian Grand Prix
2. Weather warnings
3. Premier League
4. Sofa beds
5. Syria
6. Home insurance
7. Dual fuel prices
8. Rugby League
9. Strictly Come D
10. NFL London

Editor's video picks

Kim, Cheryl: Who shocked us the most?

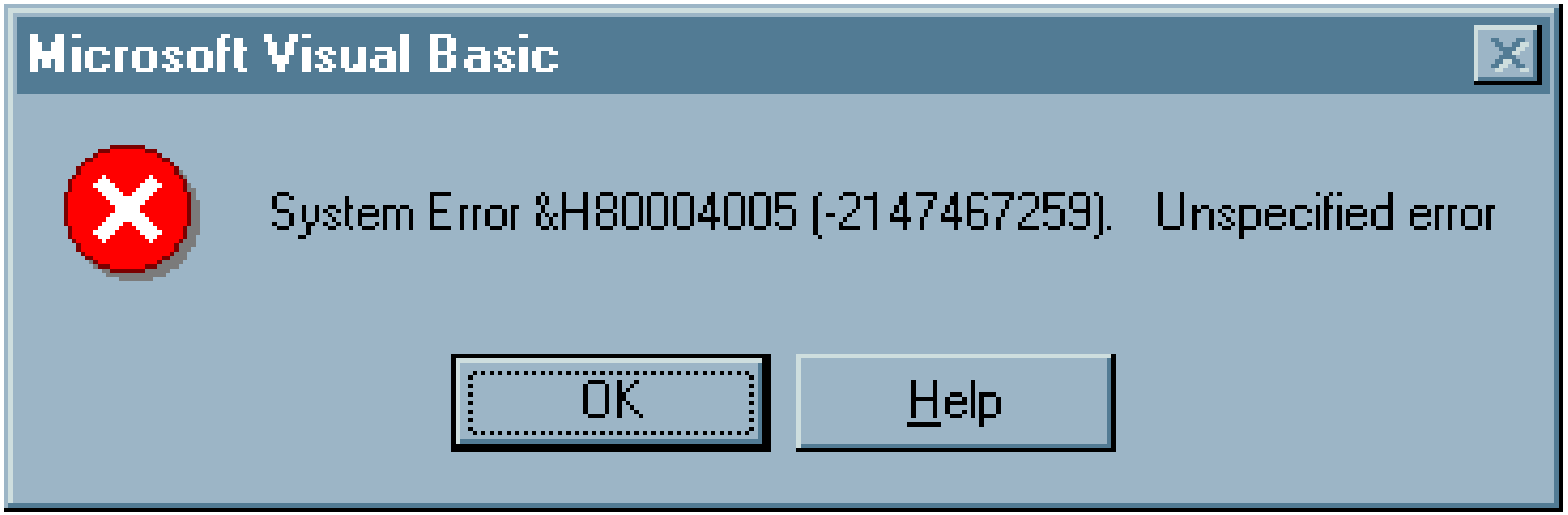
Comedy: When your mum joins Facebook sketch

8 | aesthetic and minimalist design

8 | aesthetic and minimalist design

9 | *help users recognize, diagnose, and recover from errors*

9 | *help users recognize, diagnose, and recover from errors*



9| *recovering from errors*

example error messages:

- "Sorry, the request was unsuccessful"
  - How so?
- "E-Mail address is improperly formatted or contains invalid characters"
  - Which is it?
- "The password you entered has an incorrect number of characters. Please enter a password 6-16 characters long, using any combination of upper case letters, lower case letters, and numbers"
  - still sucks but I know what went wrong
- "could not log in. valid authentication credentials were not provided"
  - nerding out. People know the word "password" and "user name"

- Invalid email address entered
- Billing zipcode format is invalid.
- Missing a value for the required property: billzipcode
- Missing a value for the required property: billcity
- Missing a value for the required property: billaddress1
- Missing a value for the required property: login
- Missing a value for the required property: billstate

registration

1. Personal information

First * M Last *

Stuart Jones

Email (Login) *

Email me promotions?

Gender

2. Billing information

(Credit Card Mailing Address)

Care of

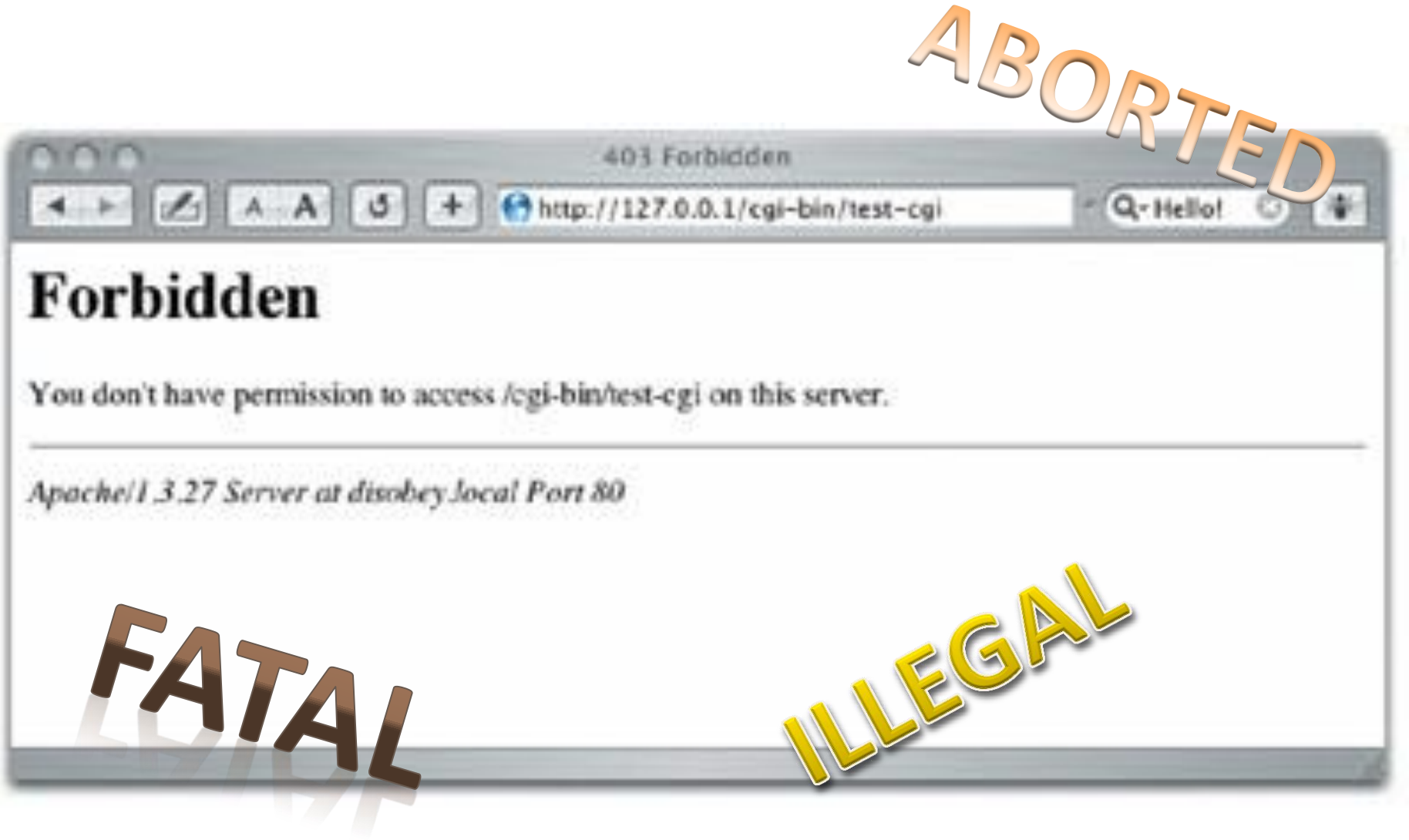
Address *

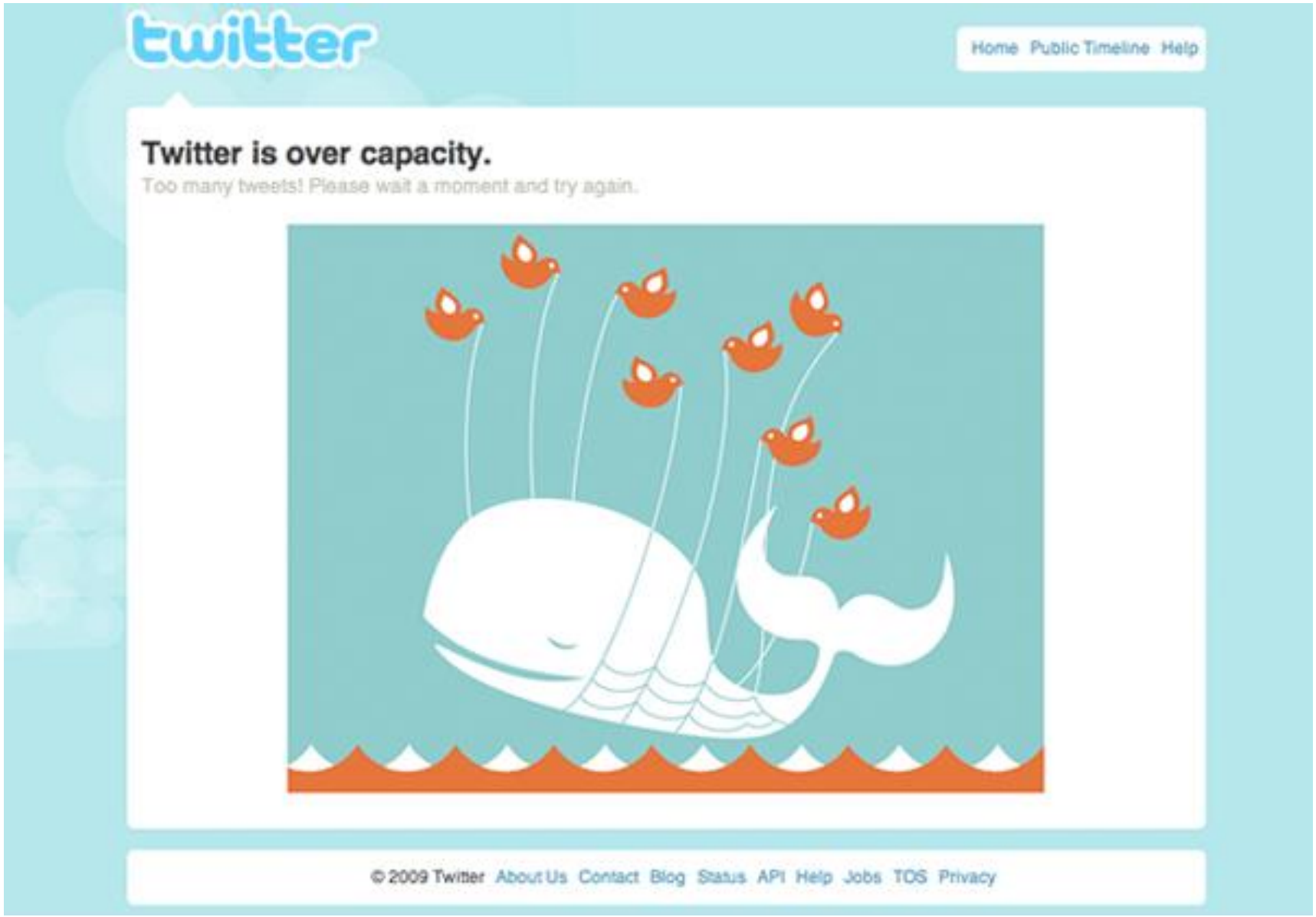
City *

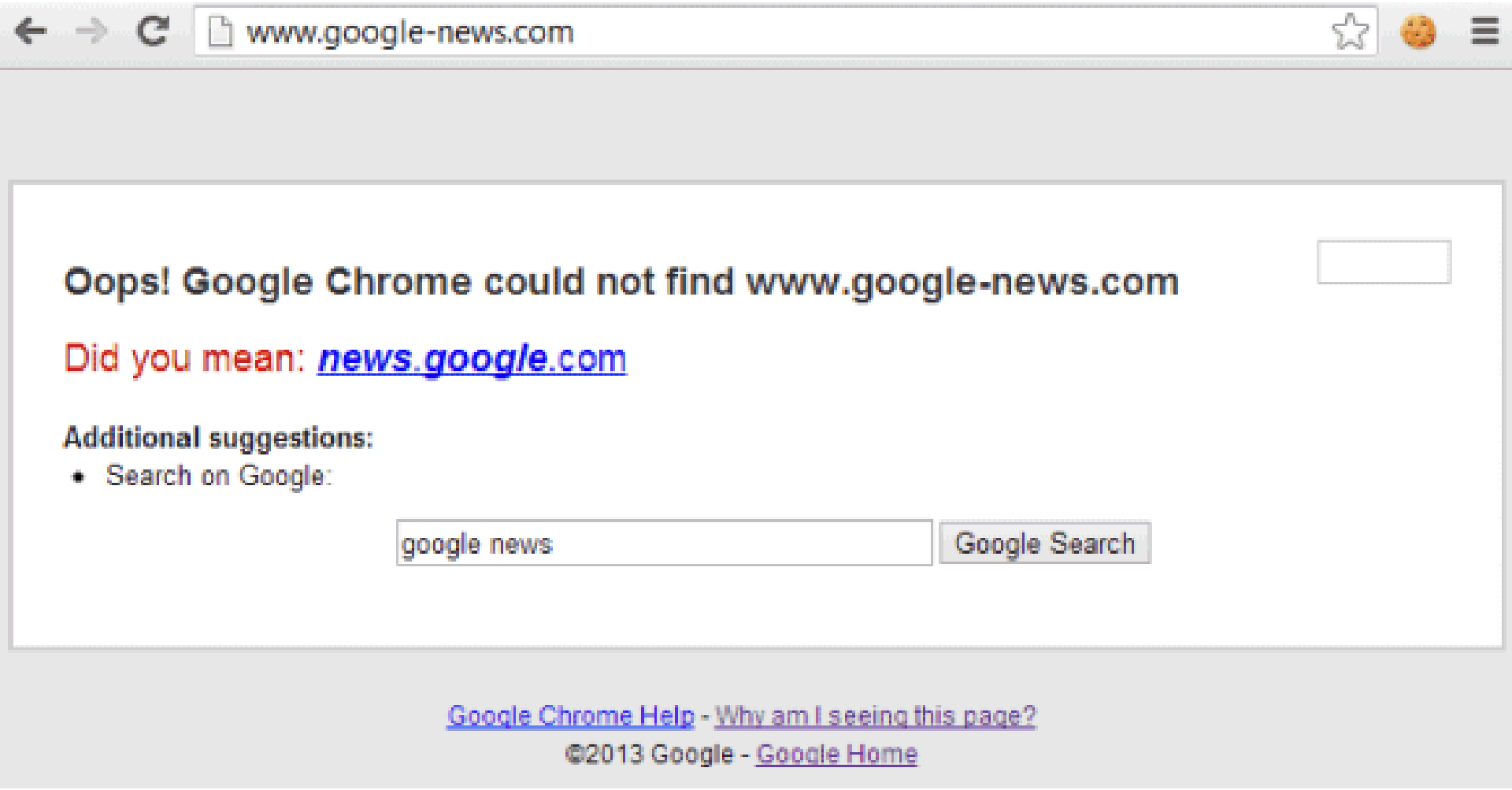
Error messages are too far away from where they can be corrected.

Also, can we say "nerd language" for the error messages themselves?

be polite, never blame the user




twitter
Home Public Timeline Help
Twitter is over capacity.
Too many tweets! Please wait a moment and try again.
© 2009 Twitter About Us Contact Blog Status API Help Jobs TOS Privacy


www.google-news.com
Oops! Google Chrome could not find www.google-news.com
Did you mean: news.google.com
Additional suggestions:
Search on Google:
google news
Google Search
Google Chrome Help - Why am I seeing this page?
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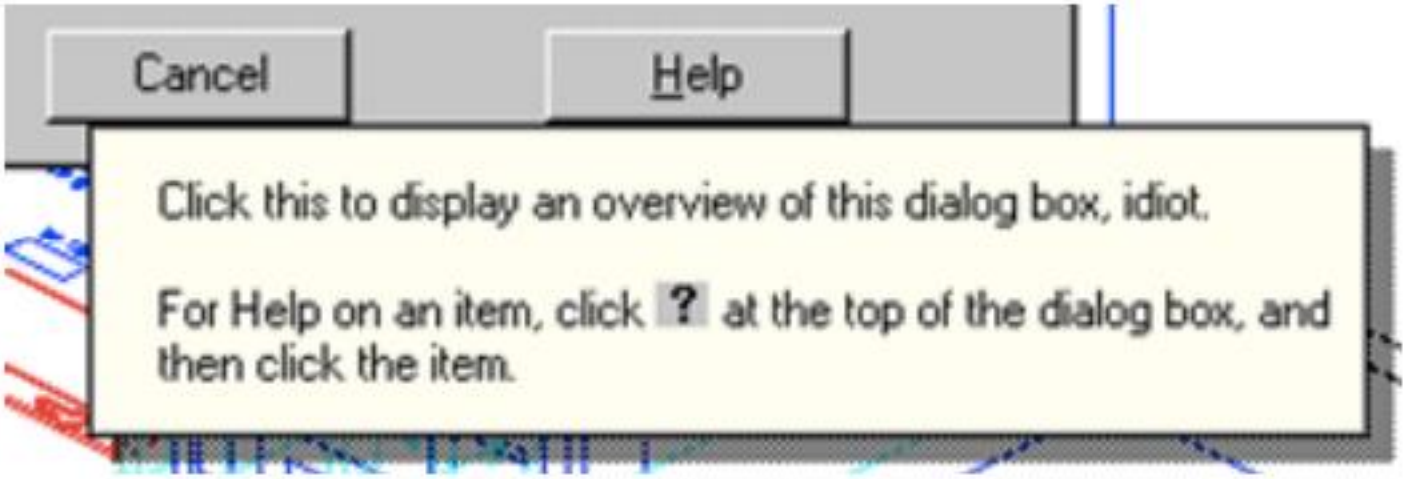
be polite even when you're coding for yourself…

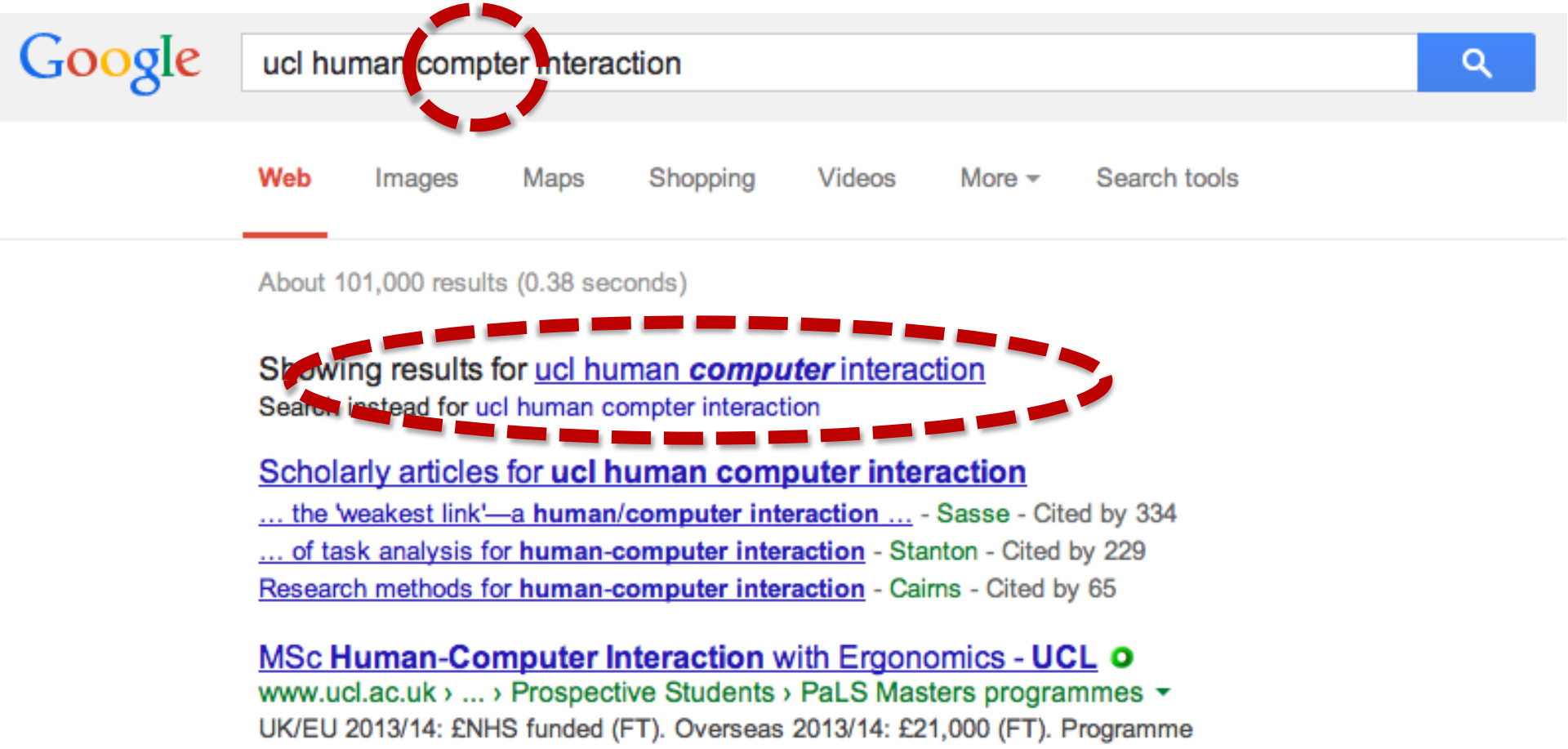


Source Interface Hall of Shame

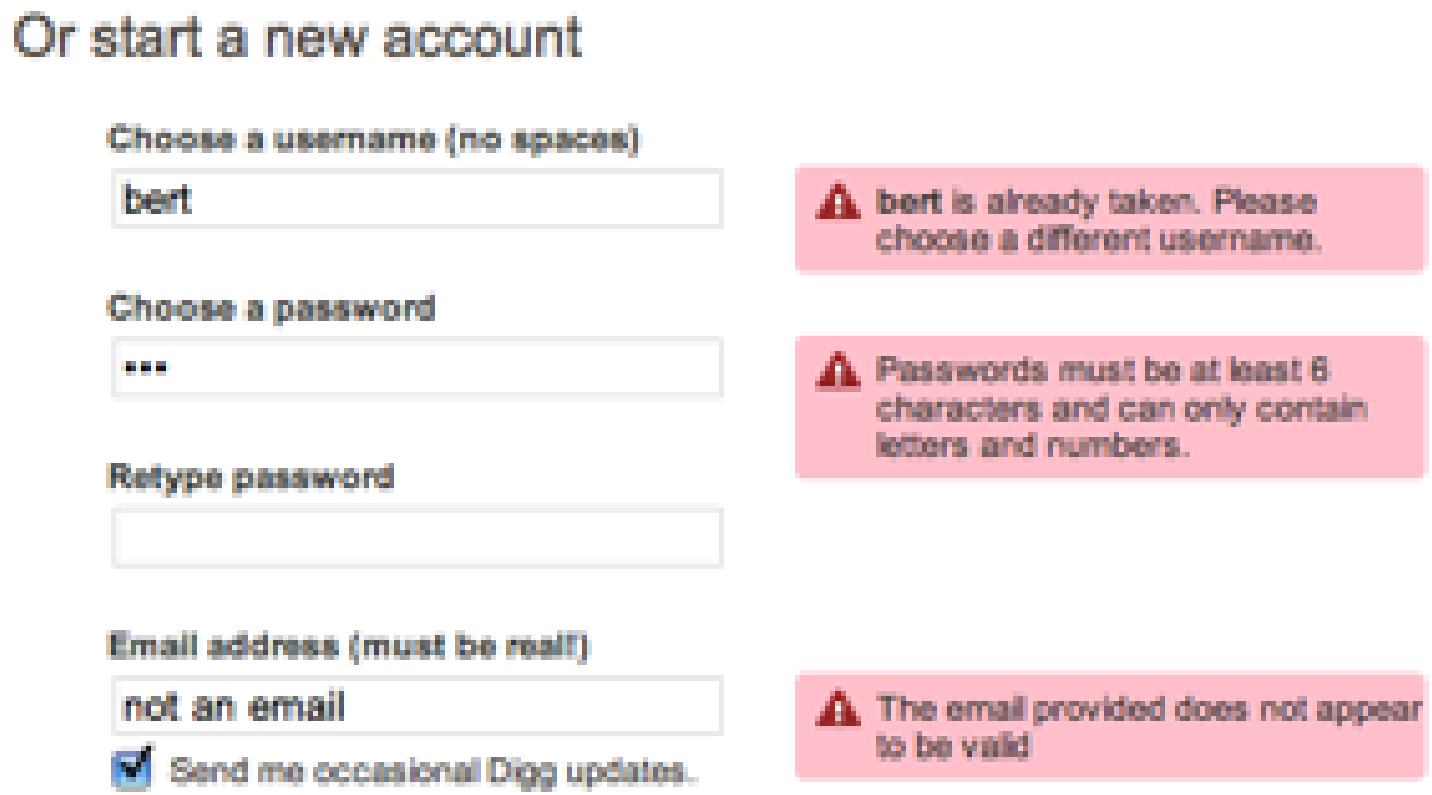
Provide suggestions/examples

» not “cannot open file”, but “cannot open file named paper.doc”

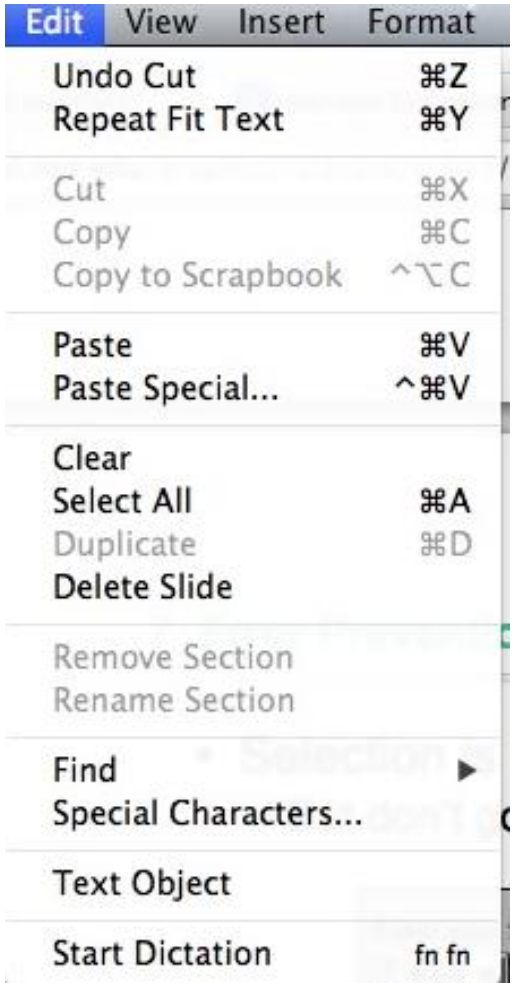
9 | *help users recognize, diagnose, and recover from errors*



9 | *help users recognize, diagnose, and recover from errors*



prevention techniques (on the small)



Grey out illegal commands

Avoid typing errors through selection

Source: Interface Hall of Shame

error types

- slips (and lapses)
  - failure to correctly execute a procedure
  - slip is a failure or execution; lapse is a failure of memory
  - typically found in skilled behaviour
- mistakes
  - using wrong procedure for goal
  - typically found in rule-based behaviour or problem-solving behaviour

slips (and lapses)

- capture error
  - frequently done activity takes charge instead of intended one
    - leave your house, and end up walking toward school instead of to the grocery store
- description error
  - intended action similar to others that are possible
    - pour orange juice on cereal
    - throwing shirt into toilet instead of into hamper

Lapses

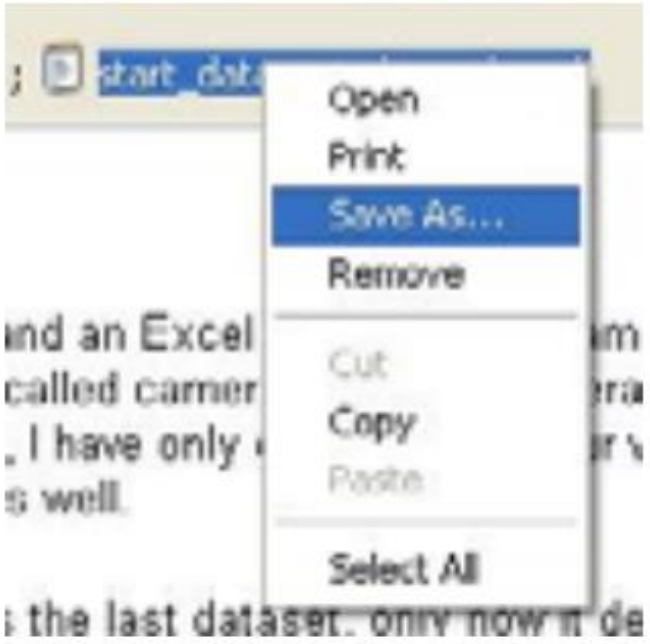
- Loss of intention
  - forgetting the goal partway
  - walking into a room, forgetting why you went there
- omissions due to interruption
  - get coat out, interrupted by phone call; then go out without coat
- omissions due to already satisfied goal
  - walking away from ATM w/o card
  - walking away from copier without originals

slips (and lapses)

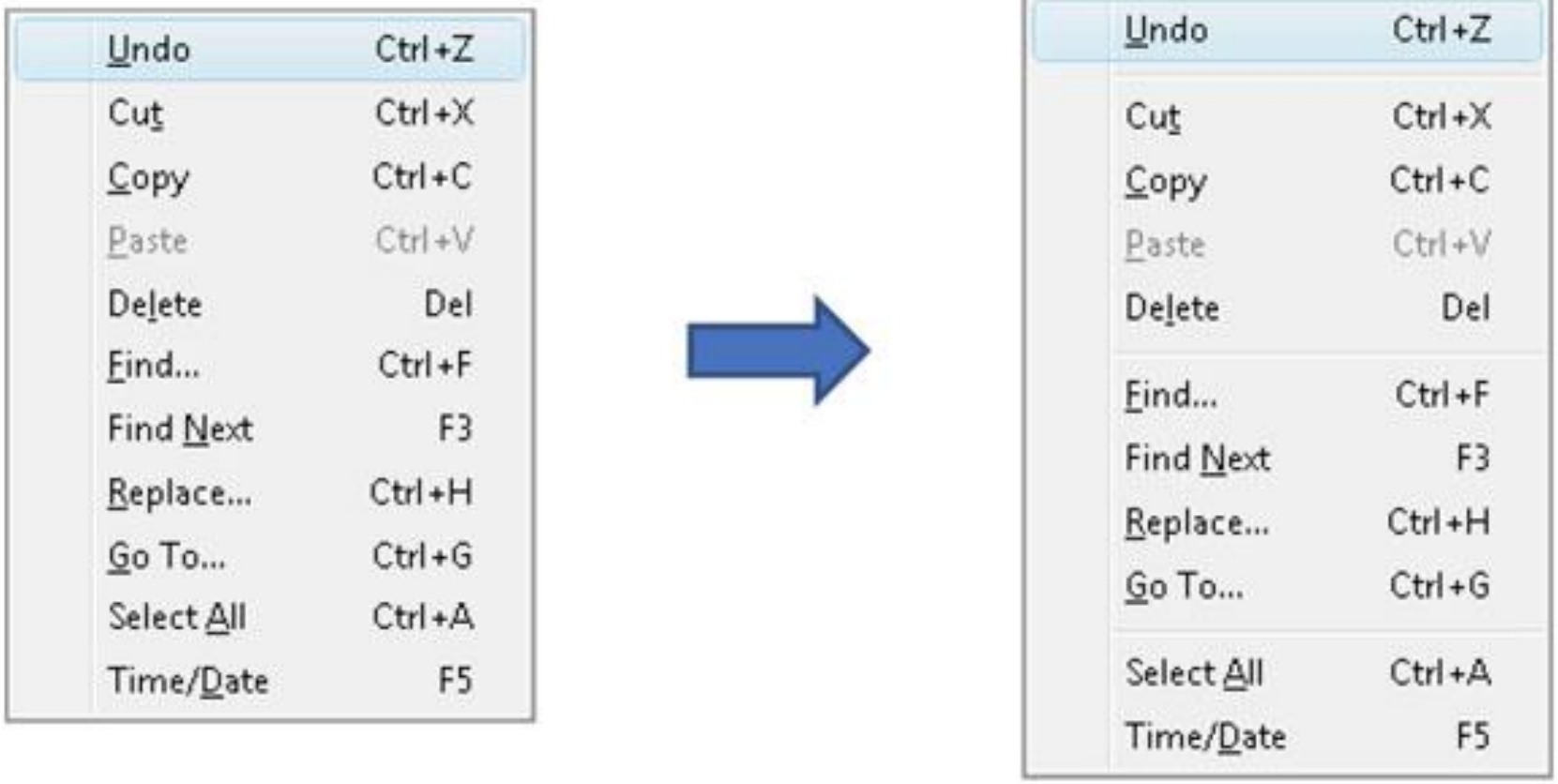
- Mode errors
  - people do actions in one mode thinking they are in another
    - refer to a file that's in a different directory
    - looking for commands / menu options that are not relevant

preventing capture and description slips

- avoiding habitual action sequences with identical prefixes
- avoid actions with very similar descriptions
- keep dangerous commands away from common ones



what do you think of this redesign?



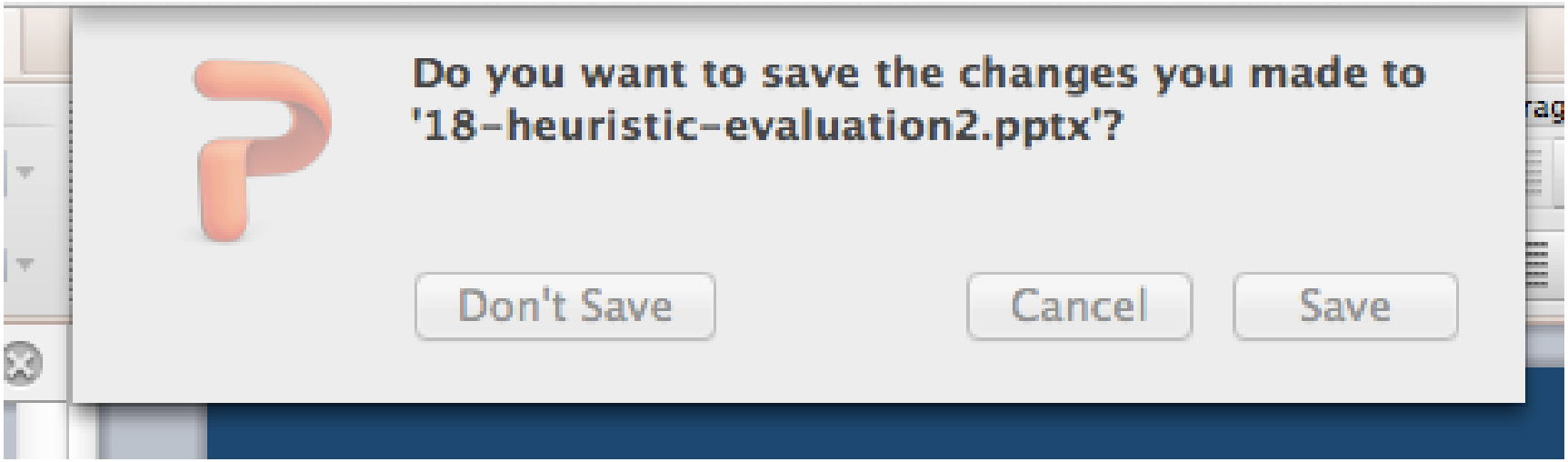
preventing mode errors

- eliminate modes
- increase visibility of mode
- spring-loaded or temporary modes
- disjoint action sets in different modes

avoiding lapses

- keep procedures short
- minimize interruptions
- use forcing functions
  - automatic transmission: you must hold down brake to shift out of Park
  - must take card out of ATM before you get your money

confirmation dialogs



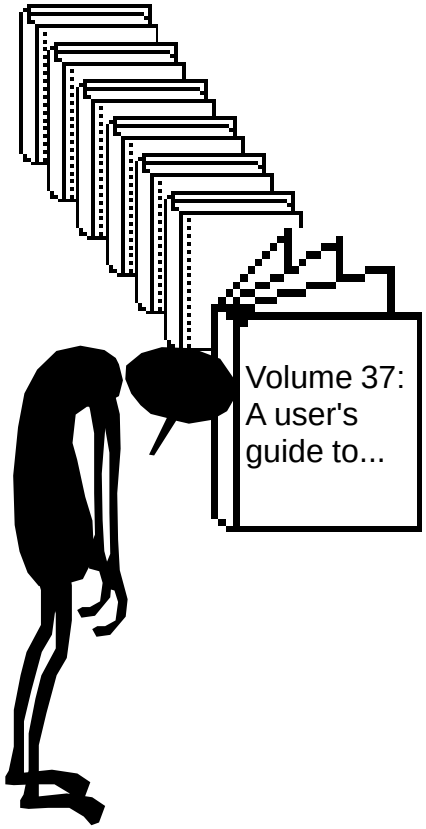
9 | help users recognize, diagnose, and recover from errors

- design to prevent errors from occurring
- eliminate error-prone conditions
- present users with a confirmation option before they commit to the action
- provide undo

10 | help and documentation

10 | help and documentation

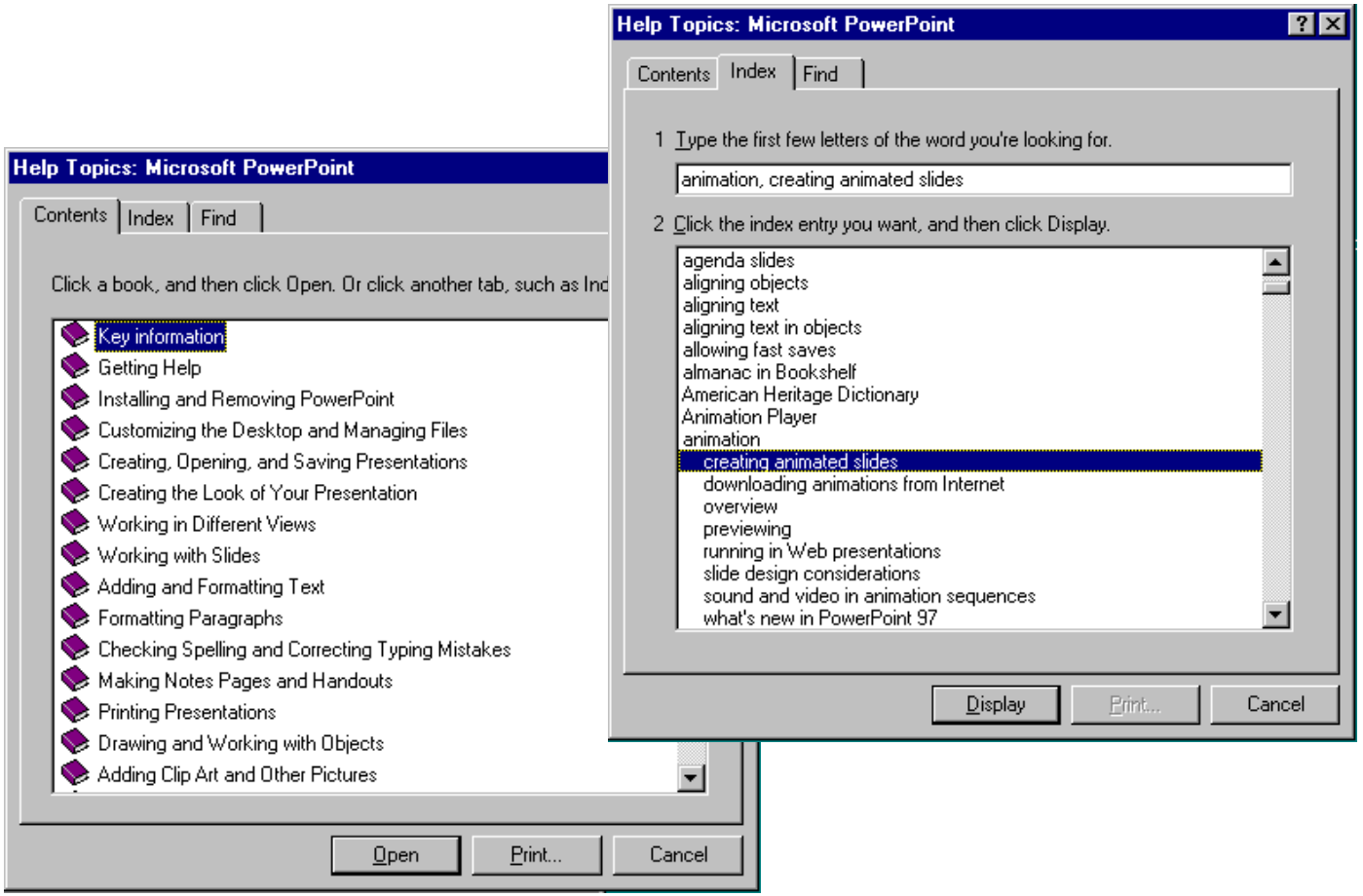
- **help is not a replacement for bad design**
- **simple systems:**
  - walk up and use; minimal instructions
- **most other systems:**
  - feature rich
  - simple things should be simple
  - learning path for advanced features



10 | help and documentation

- **Many users do not read manuals**
- Help usually needed when users are in some kind of panic
  - paper manuals unavailable in many businesses
  - online documentation better, faster, up-to-date
  - good search/lookup tools
  - online help specific to current context

types of help: search and index

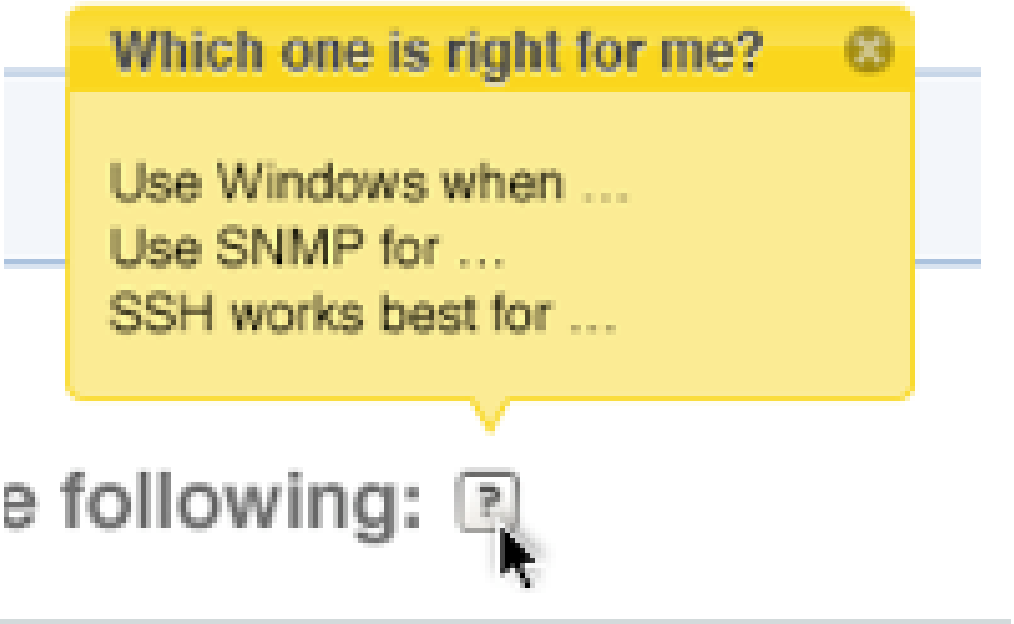


Microsoft Help

types of help: tutorials

Source: http://design-ecolibrium.com/ecolibrium/tools/2014

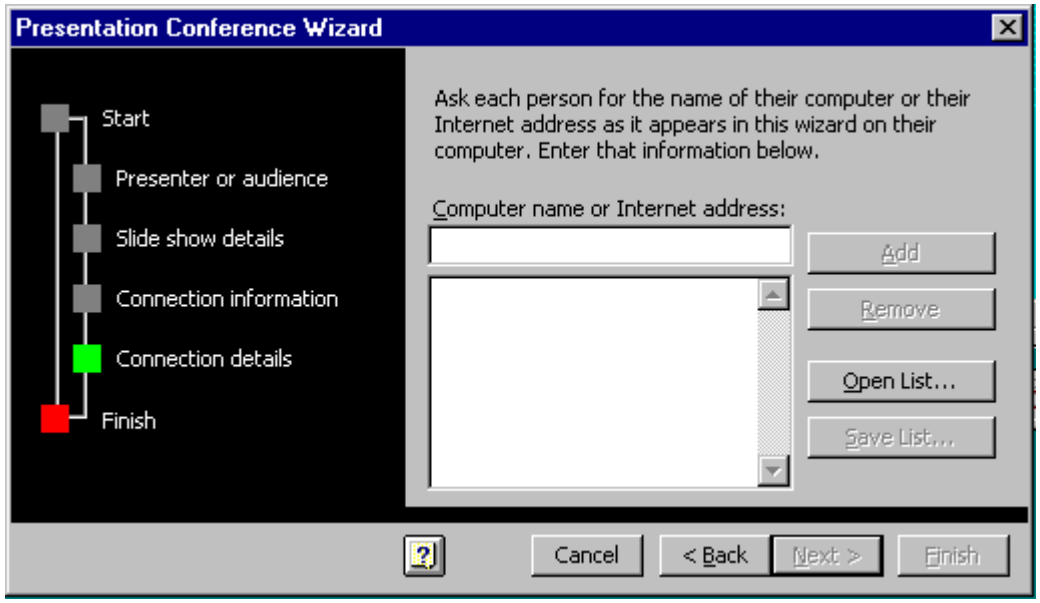
types of help: mouse-over/hover information



Source: http://dilbert.com

types of help: Wizards

- walks user through typical tasks
- *but* dangerous if user gets stuck



Jakob Nielsen's Heuristics

1. **Visibility of system status**
2. **Match between system and real world**
3. **User control and freedom**
4. **Consistency and standards**
5. **Error prevention**
6. **Recognition over recall**
7. **Flexibility and efficiency of use**
8. **Aesthetic and minimalist design**
9. **Help users recognize, diagnose, and recover from errors**
10. **help and documentation**

Shneiderman's golden rules

1. strive for **consistency**
2. enable frequent users to use **shortcuts**
3. offer informative **feedback**
4. design dialog to **yield closure**
5. offer **simple error handling**
6. permit easy **reversal of actions**
7. support internal locus of **control**
8. **reduce short-term memory load**

LAB

PCII Results

- only satisfactory

WHY

- instructions are crucial, look at them; list != describe
- look at the grading sheet

- main flaws:
  - design requirements follow a study
    - half of your requirements seemed completely made up
  - studies did not ask questions that help to elicit tasks, design requirements

PCIII Results

- only satisfactory

WHY

- Sketches / storyboards not always related to user requirements
- You did not read instructions / grading sheet

PCIII Results

- main flaws:
  - Your selected ideas and storyboards should reflect user requirements
  - Storyboards do not show important aspects of interface / use
  - Problem with Images: fuzzy, cropped, no labels
  - Problem with storyboards: labels, transitions, details
  - Groups of 4 submitting work of 3.

Next: your project component IV

- build a vertical prototype
  - follow storyboard from component III
  - if your requirements or storyboards are not usable, send me a new one and get it approved
  - pick a programming language you like
- prototype should
  - be functional, core functionality has to work
- prototype does **not**
  - have to run on final platform (e.g. mobile device, web browser ,…)

your next project component

- deliverable
  - on March 2nd
  - print out and bring grading sheet to class
  - 10 minute demo of your system
  - every student has to do part of the presentation
- today
  - I want to talk to every team and see progress made in the lab
  - take the time to check with me if you are on the right track

Exam (March 16th)

- 3h maximum
- will consist of:
  - general course questions from the first 6 lectures
    - "what is the design life cycle"
    - "name three techniques for user requirements analysis"
  - creative tasks
    - imagine you have to idea to design a new x …
      - "who are your users and stakeholders"
      - "what would be their tasks"
    - sketch 5 ideas for a new technique for x …

Exam

- no material allowed in exam
  - that means:
    - exam questions will be general
    - I do not ask you to memorize tiny details