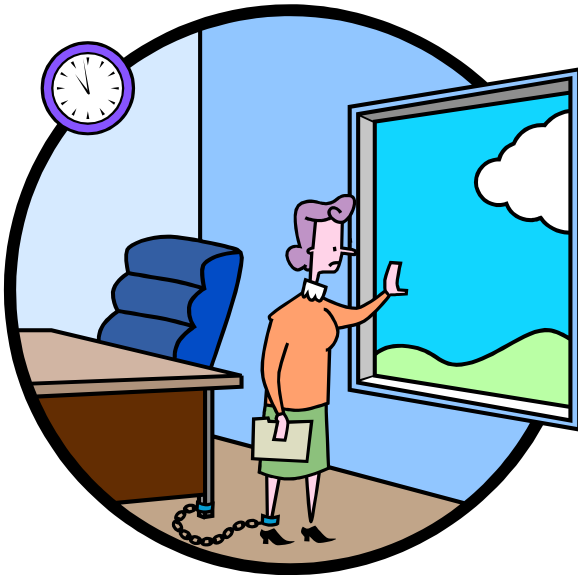
Windows

*CIS*2750*

Advancing Computing Techniques

Windows

- A window is a portion of the screen, defined by a border that contains a particular *view* of the system.



Characteristics of Windows

- A *title*.
- A *size* (height and width) which usually can be varied.
- A *state*—either active or not accessible.
  - Have *focus:* which window is the keyboard logically connected to? Software can "grab" focus. *Focus options:*
    - Click to focus (traditional Windows)
    - Focus follows mouse (traditional *nix)
- *Visibility* or the portion that can be seen.
- *Location* relative to the display's boundary.

Characteristics of Windows

- *Presentation* or arrangement in relation to other windows.
  - Tiled
  - Overlapping
  - Cascading
- *Management* or manipulation methods for the window on the screen.
- A *highlighted* or selected portion.
- The *task* for which it is dedicated.

Advantages of Windows

- Presentation of different *levels* of information
- Presentation of multiple *kinds* of information
- Access to different *sources* of information
- *Combination* of multiple sources of information
- Performance of multiple *tasks*
- Multiple *representations* of the same task
- Reminders
- Monitors

Components of a Window

- **Frame or Border**
  - boundary to define shape of the work area and
  - size (control points for resizing)
- **Title Bar Text and Icon**
  - the title bar is the top line of the window
  - name of object being viewed in window
  - small version of icon for object being viewed

Components of a Window

- **Title Bar Buttons**
  - shortcuts to specific commands
    - Close
    - Minimize
    - Maximize
    - Restore (down)
    - Move
    - Size
    - Help

Components of a Window

- **Menu Bar**
  - organization and access to common application commands
  - generally located at the top of the window (horizontal)
  - choices are displayed on pull-down menus

Components of a Window

- **Control/Tool Bar(s)**
  - permanently displayed arrays of choices or commands (tool buttons) that must be accessed quickly and often
- **Command Area**
  - area into which a command can be typed
  - usually located at the bottom of the window (between the horizontal scroll bar and the message area)

Components of a Window

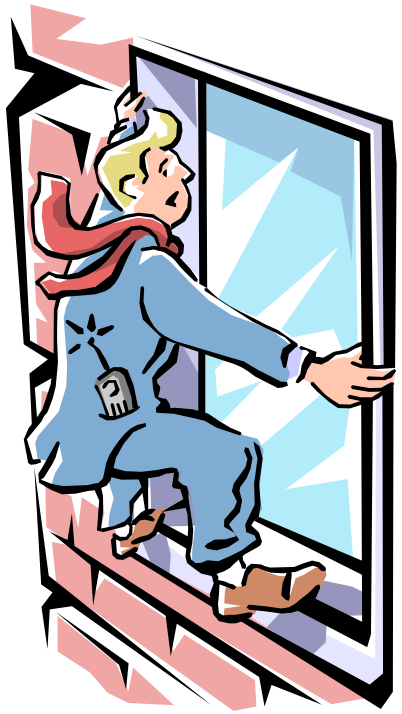
- **Status Bar**
  - area to display status information about what is displayed in the window
  - located at either the top of the window below the title bar or at the bottom of the window

Components of a Window

- **Scroll Bar**
  - standard control to support scrolling
  - vertical scrolling is controlled by a scroll bar on the right side of the workarea
  - horizontal scrolling is controlled by a scroll bar at the bottom of the workarea
  - split box and split bar
    - splitting a window permits multiple views of an object

Components of a Window

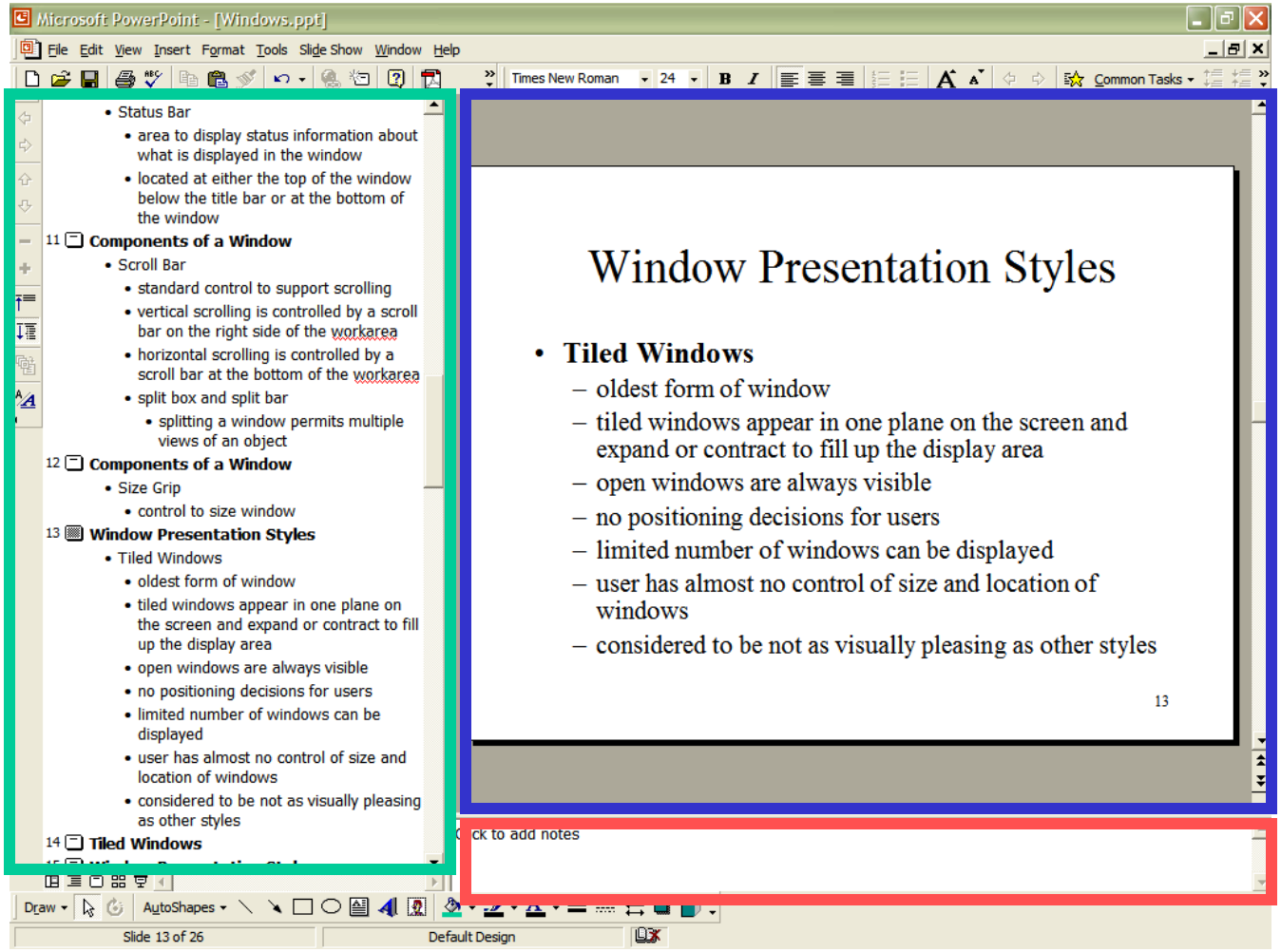
- **Size Grip**
  - control to size window



Window Presentation Styles

- **Tiled Windows**
  - oldest form of window
  - tiled windows all appear in *one plane* on the screen and expand or contract to fill up the display area
  + open windows are always visible
  + no positioning decisions for users
  – limited number of windows can be displayed
  – user has almost no control of size and location of windows
  – considered to be not as visually pleasing as other styles

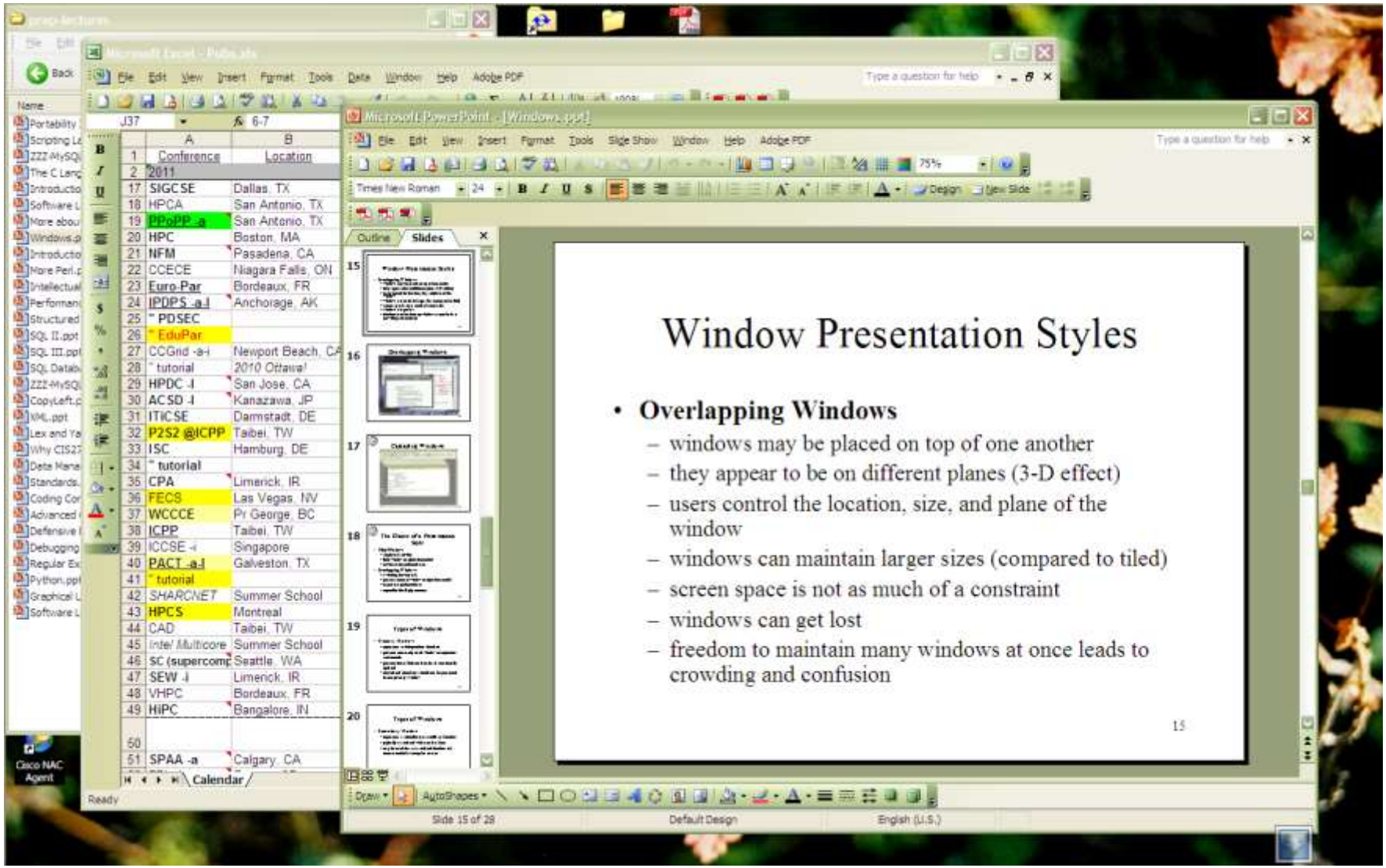
Tiled Windows



Window Presentation Styles

- **Overlapping Windows**
  - windows may be placed on top of one another
  - they appear to be on different planes (3-D effect)
  + users control the location, size, and plane of the window
  + windows can maintain larger sizes (compared to tiled)
  + screen space is not as much of a constraint
  – windows can get lost
  – freedom to maintain many windows at once leads to crowding and confusion
- **Cascading (uniform size/offset overlapping)**

Overlapping Windows



Cascading Windows

Crimson Editor

File Edit Search View Document Project Tools Macros Window Help

tabutils.h | tabutils.c | bats.script

C:\wgardner\prog\c\2500\Asmt3\tabutils.h

C:\wgardner\prog\c\2500\Asmt3\tabutils.c

C:\wgardner\prog\c\2500\Asmt3\bats.script

```
1  // A3 bats.script; update 2/12/06 to test sort()
2  // A3 RATS
3
4  // Library header files
5  #include <iostream>
6          using std::cin;
7          using std::cout;
8          using std::endl;
9  #include <new>
10         using std::set_new_handler;
11 #include <string>
12         using std::string;
13 #include <sys/wait.h>
14
15 extern "C" { // interpret functions in .h file as C, not C++
16
17 // Header files for testing
```

Ready | Ln 1, Ch 1 | 123 | ASCII, UNIX | READ REC COL OVR

The Choice of a Presentation Style

- **Tiled Windows**
  - single-task activities
  - little window manipulation needed
  - novice or inexperienced users
- **Overlapping Windows**
  - switching between tasks
  - greater amount of window manipulation needed
  - expert or experienced users
  - unpredictable display contents

Types of Windows

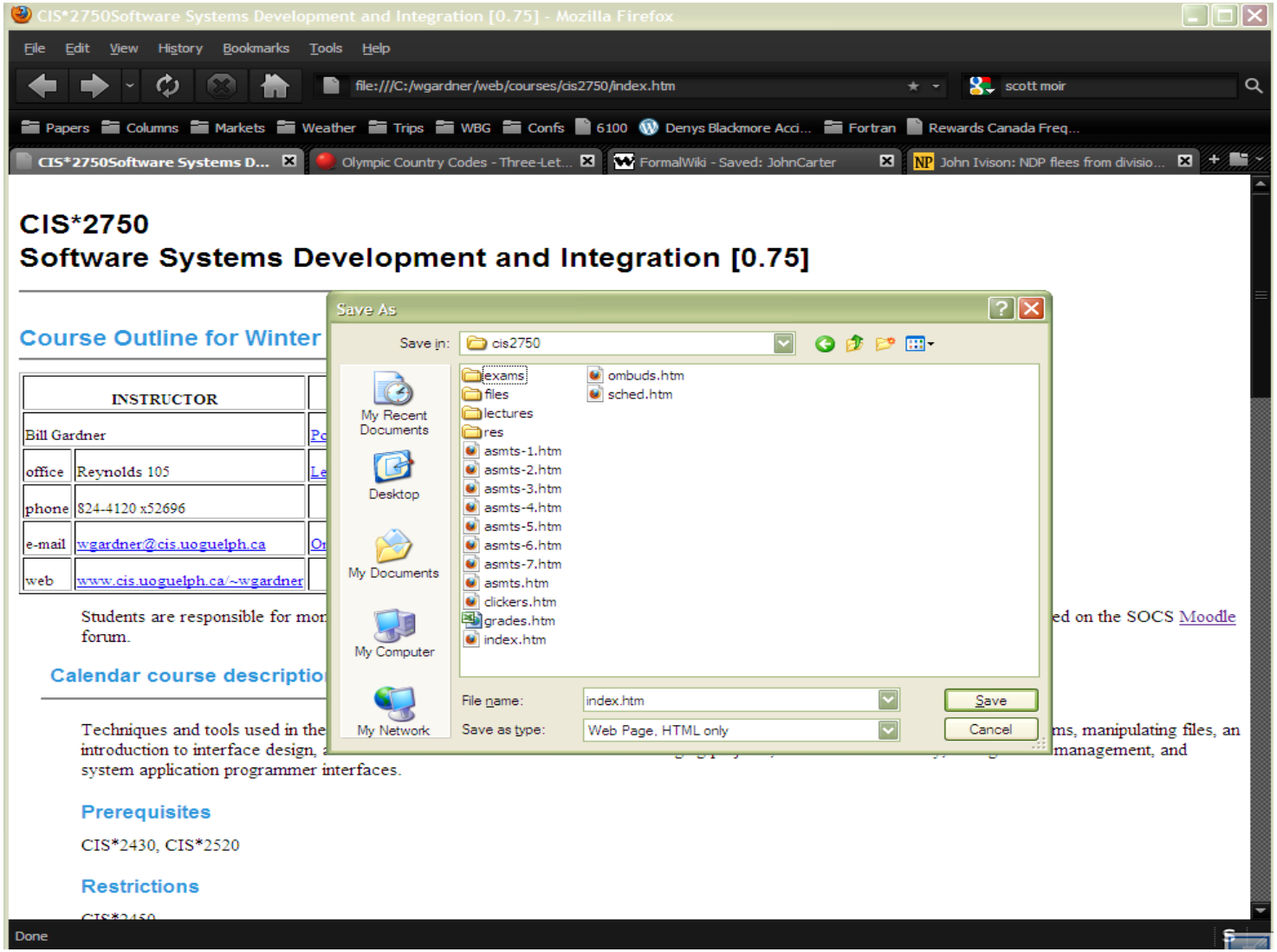
- **Primary Window**
  - represents an independent function
  - presents constantly used window components and controls
  - presentation of information that is continually updated
  - *non-related* functions should not be presented in one primary window

Types of Windows

- **Secondary Window**
  - represents a subordinate or ancillary function
  - typically associated with one data item
  - may be used for an associated function of a more extended or complex nature

Types of Windows

- The following image shows
  - a **primary** window (*Firefox*) and
  - an associated **secondary** window (*Save as*...).


CIS*2750Software Systems Development and Integration [0.75] - Mozilla Firefox
File Edit View History Bookmarks Tools Help
file:///C:/wgardner/web/courses/cis2750/index.htm
scott moir
Papers Columns Markets Weather Trips WBG Confs 6100 Denys Blackmore Acci... Fortran Rewards Canada Freq...
CIS*2750Software Systems D...
Olympic Country Codes - Three-Let...
FormalWiki - Saved: JohnCarter
John Ivison: NDP flees from divisio...
CIS*2750
Software Systems Development and Integration [0.75]
Course Outline for Winter
INSTRUCTOR
Bill Gardner
office Reynolds 105
phone 824-4120 x52696
e-mail wgardner@cis.uoguelph.ca
web www.cis.uoguelph.ca/~wgardner
Students are responsible for mor
forum.
ed on the SOCS Moodle
Calendar course descriptio
Techniques and tools used in the
introduction to interface design,
ms, manipulating files, an
management, and
system application programmer interfaces.
Prerequisites
CIS*2430, CIS*2520
Restrictions
Save As
Save in: cis2750
My Recent Documents
Desktop
My Documents
My Computer
My Network
exams
files
lectures
res
asmts-1.htm
asmts-2.htm
asmts-3.htm
asmts-4.htm
asmts-5.htm
asmts-6.htm
asmts-7.htm
asmts.htm
clickers.htm
grades.htm
index.htm
ombuds.htm
sched.htm
File name: index.htm
Save as type: Web Page, HTML only
Save
Cancel
Done

Dialog Boxes

- Used to extend and complete an interaction within a limited context
- Presentation of *brief* messages
- Request of specific actions
- **Modal** dialog boxes will not permit interaction with other windows until the current dialog is complete. When the interaction is complete, the dialog box is removed from the screen
- Should be used carefully since it constrains the user

Organizing Windows

- Use **primary** windows to perform a major interaction.
  - If a primary window is closed, also close all secondary windows.
- Use **secondary** windows to extend the interaction and obtain or display supplementary information.
- Use **dialog** boxes for infrequently used or needed information.

Organizing Windows

- Strive to support the user's task in the most efficient sequence of steps.
  - Minimize the number of windows needed.
  - Make large-enough windows → Minimize the need for scrolling, *but*...
  - Make windows as **small** as reasonable.
    - Text: 12 lines
    - Alphanumeric data: 7 lines

Organizing Windows

- Strive to support the user's task in the most efficient sequence of steps (more)
  - Minimize the number of window operations necessary to achieve any task.
  - Make navigation between windows efficient and intuitive.
  - Clearly demarcate windows from each other and the background.

Organizing Windows

- Strive to support the user's task in the most efficient sequence of steps (more)
  - Allow the user to move, resize and shuffle windows.
  - Window actions should be capable of being performed through the **keyboard** as well as the mouse.

End of GUI Design Lectures

- Have fun building your A3 GUI!
  - Tkinter GUI toolkit
  - Tix widgets (optional)