

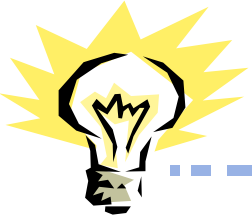
Errors

An ounce of prevention...



Agenda

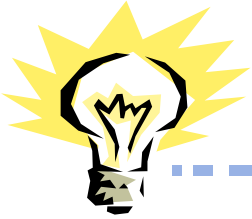
- Error types
- Slip types
- Error prevention guidelines
- Error recovery guidelines



Error-handling Strategies

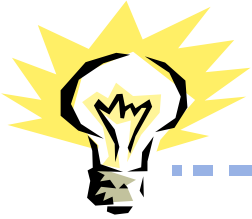
1. Avoid and prevent
2. Identify and understand
3. Handle and recover





Perceptual Errors

- Result from poor perceptual cues
 - ❖ Display of objects that are visually similar
 - ❖ Invisible or poorly expressed states
 - ❖ Failure to capture user's attention
 - ❖ Lack of perceivable feedback



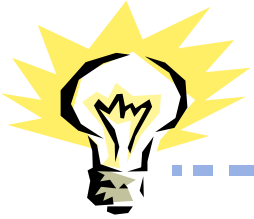
Perceptual Errors

Are perceptual errors likely here?

[FrontPage Save Results Component]
Fields marked in **BOLD RED** are required fields and need to be filled in to process the account setup.

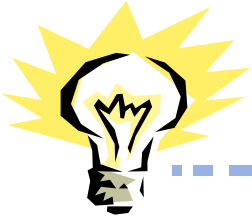
First Name	<input type="text"/>	Last Name	<input type="text"/>
Street Address	<input type="text"/>	City	<input type="text"/>
State/Prov	<input type="text" value="Choose a State"/>	Country	<input type="text" value="United States"/>
	If other please specify below		If other please specify below
	<input type="text"/>		<input type="text"/>
Postal/Zip	<input type="text"/>	Phone	<input type="text"/> - <input type="text"/>
E-Mail	<input type="text"/>	Fax	<input type="text"/> - <input type="text"/>
Birth Date	<input type="text" value="-Select-"/>	Weight	<input type="text"/> Lbs.
	<input type="text" value="--"/>		
Sex	<input type="text" value="--"/>	Smoker?	<input type="text" value="--"/>
Are You Pregnant?	<input type="text" value="--"/>	Are You Nursing?	<input type="text" value="--"/>

Please indicate here if you will accept the generic version of the medication that you seek to have dispensed through The Canadian Drug Store.



Cognitive Errors

- Caused by taxing memory and thinking
 - ❖ Tax recall memory
 - ❖ Poor mnemonic aids
 - ❖ Inconsistency
 - ❖ Lack of context or status info
 - e.g., where came from in a menu
 - ❖ Mental calculations and translations





Cognitive Errors

Are cognitive errors likely here?



**New York State
Unified Court System**
OnLine Decisions



Help

Decisions are available for many Supreme Court Civil Cases in Broome, Kings, Nassau, New York, Queens, and Suffolk Counties. Select decisions from New York Supreme Criminal Court and other criminal courts are also available. More counties and courts to be added shortly. (Limited online decisions now available in Erie, Livingston and Monroe Counties)

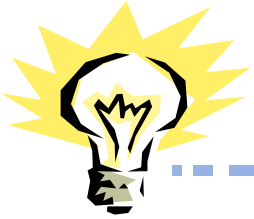
[Full Text Search of Decisions Now Available](#)
[Click Here](#)

Query Options
Enter Index No (or Docket No)
Optional Enter County

[Full Text Search of Decisions](#)

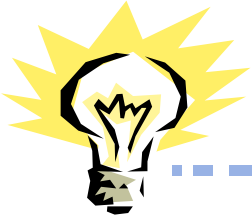
These opinions are uncorrected and subject to revision in the Official Reports.

*They may or may not have been entered in the County Clerk's Office.
Reliance on the decisions on this site for purposes other than inquiry is at the user's risk.*



Motor Errors


- Taxing the motor skills
 - ❖ Awkward movements
 - ❖ Highly similar motor sequences
 - e.g., double click, click
 - ❖ Pressure for speed
 - ❖ Require a high degree of hand-eye coordination
 - ❖ Requiring special types of motor skills (type)



Motor Errors

Lots of errors are likely here!!

JAVASCRIPT-SYNTAX-SEARCH FORUM-SEARCH ASP CONSULTING-INFO-PORTFOLIO

 [Can't Find The Code? Advertise Here](#) **OpenCube** Visual Tools Text Effects MenuSystem Download Slide Tree M Free Drop D

[DHTML - JavaScript Effects](#)
-Cross Browser -Fast Loading -Fully Customizable

[Set Viewing Preferences](#)

Web Hosting
[Great Deal](#)
[Great Service](#)
[Great Prices](#)

CATEGORIES
[SUBMIT SCRIPT](#)
[AD](#) [1]
[ALERT](#) [1]
[ARRAY](#) [7]
[ASP](#) [2]
[BANNER](#) [6]
[BOOKMARKLET](#) [1]
[CHECKBOX](#) [7]
[COLOR](#) [16]
[CONSTRUCT](#) [4]
[COOKIE](#) [20]
[CSS](#) [21]
[DATE](#) [59]
[DHTML](#) [71]
[DIV](#) [15]
[DOCUMENT](#) [138]
[EMAIL](#) [10]
[ENCRYPTION](#) [6]
[EVENT](#) [31]
[FORM](#) [143]
[FRAMES](#) [14]
[FUNCTION](#) [4]
[GAMES](#) [13]
[GRAPH](#) [4]
[HISTORY](#) [1]
[HREF](#) [28]
[IFRAME](#) [2]

JavaScript --> [VIEW HI-LITE CODE](#) [VIEW CODE](#) [RUN CODE](#)
MENU
Drop Down menu from Top of Page
- DESCRIPTION

This shows how to have a menu that is a drop down from the top of the page.

It is possible to modify the menu to scroll or not, also to change colors, and all dimensions.

[Click here to see the example](#)

Author Name: JS-Examples [web site]
Date Submitted: August, 2000
Times Viewed: 101950
Runs in IE: Yes
Runs in NS: Yes

Category List:
MENU

Key Words:
dropdown menu

Most Viewed Examples

[Form Dynamically Display Parts](#)
[IFRAME - reload](#)
[Auto centering popup window](#)
[DHTML Previews Textarea](#)
[Alter IE Colors](#)
[GetElementById](#)
[Date Object Format Extension](#)

JavaScript Search

[Advanced Keyword List](#)

Free Report
[E-Learning: Myths and Realities](#)
[Click here!](#)

Script Topics
[carriage returns](#)
[Checkbox & Text *](#)
[document finish](#)
[Invoke EXCEL Mac*](#)
[absolute coordin*](#)
[cut the size of *](#)
[Mouseover Pops U*](#)
[Mouseover Pops U*](#)
[send a form via *](#)
["Loading&qu*](#)
[Prevent HREF dou*](#)
[Add a frame with*](#)
[Top Bar of a Win*](#)
[getting access t*](#)

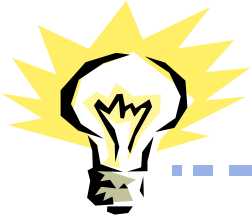
Forum Experts
[Mike Robb](#)
[Juan Fu](#)
[quest5](#)
[Ricardo Zonta Sa*](#)
[Mike Barrett](#)
[Eric Evans](#)
[Andy Frith](#)
[Helge Larsen](#)
[Vijayanath Satlu*](#)
[Nicole Martel](#)
[Griqory](#)
[neff](#)



Slips

- Automatic (subconscious) error that occurs without deliberation
- Examples?





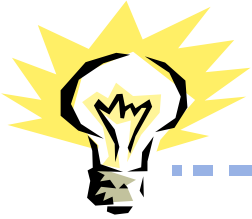
Types of Slips

- 1. Capture error
 - ❖ Continue frequently done activity instead of intended one
 - Type “animation” instead of animate
 - Confirm deletion of file instead of cancel
- 2. Description error
 - ❖ Intended action has much in common with others possible (usually when distracted, close proximity)
 - ctrl key & caps lock key / Sun & Mac



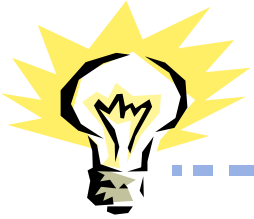
Types of Slips

- 3. Data driven error
 - ❖ Triggered by arrival of sensory info which intrudes into normal action
 - Call to give someone a number, dial that number instead
- 4. Associative activation
 - ❖ Internal thoughts and associations trigger action
 - Phone rings, yell “come in”



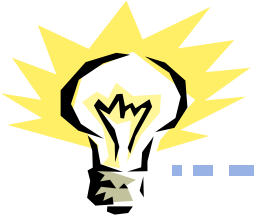
Types of Slips

- 5. Loss of activation
 - ❖ Forgetting goal in middle of sequence of actions
 - Start going into room, then forget why you're going there
- 6. Mode errors
 - ❖ Do action in one mode thinking you're in another
 - Delete file, but you're in wrong directory



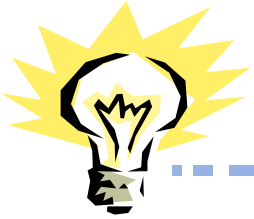
Error Prevention Guidelines

- Eliminate modes or provide visible cues for modes
- Use good coding techniques (color, style)
- Maximize recognition, minimize recall
- Design non-similar motor sequences or commands
- Minimize need for typing



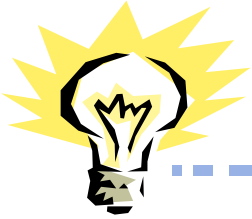
Error Prevention Guidelines

- Test and monitor for errors and engineer them out
- Allow reconsideration of action by user (e.g., removing file from trash)



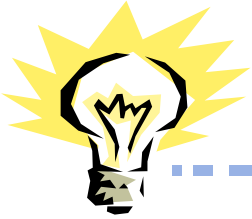
Error Recovery Guidelines

- Provide appropriate type of feedback
 - ❖ Gag - Prevent user from continuing
 - Erroneous login
 - ❖ Warn - Warn user an unusual situation is occurring
 - Bell or alert box
 - ❖ Nothing - Just don't do anything (Careful, user must determine problem)
 - Mac: move file to bad place



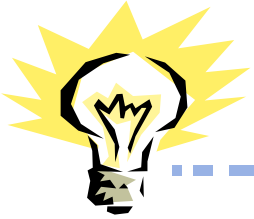
Error Recovery Guidelines

- Responses (continued)
 - ❖ Self-correct - Guess correct action & do it
 - Spell-check correction
 - ❖ Dialog - System opens dialog with user
 - Go into debugger on run-time crash
- Query - Ask user what should've been done, then allow error action as legal one
 - Command language naming error



Error Recovery Guidelines

- Provide undo function
- Provide cancel function from operations in progress
- Require confirmation for drastic, destructive commands
- Provide reasonableness checks on input data
 - ❖ Did you really mean to order 5000?



Error Recovery Guidelines

- Return cursor to error field, allow fix
 - ❖ Tell them what to fix, how to fix it
- Provide some intelligence
 - ❖ Guess what they wanted to do
- Provide quick access to context-sensitive help



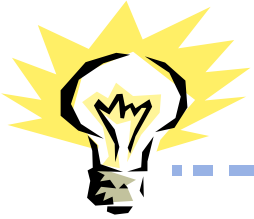
Error Handling Example (Web)

- Form fill in is the most common error

A screenshot of an Internet Explorer browser window titled "Global Directory Service - Identification". The browser's address bar is empty. The navigation toolbar includes buttons for Back, Forward, Stop, Refresh, Home, AutoFill, Print, and Mail. The main content area displays a form titled "Registered users" with the following elements:

- User ID** field containing the text "joe schmoe".
- Password** field, which is empty.
- A link: [Forgot your password ?](#)
- Buttons:
- Links: [Help pages](#) and [Email us at support if you have any problems](#)

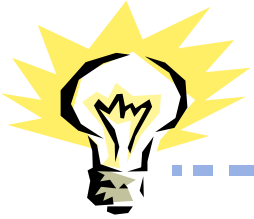
At the bottom of the browser window, it says "Internet zone". Overlaid on the right side of the browser window is an "Internet Explorer Script Alert" dialog box. The dialog box has a title bar, a close button, and a message: "Please enter a value for the 'Password' field." with an "OK" button at the bottom right.



Errors in Speech Interfaces

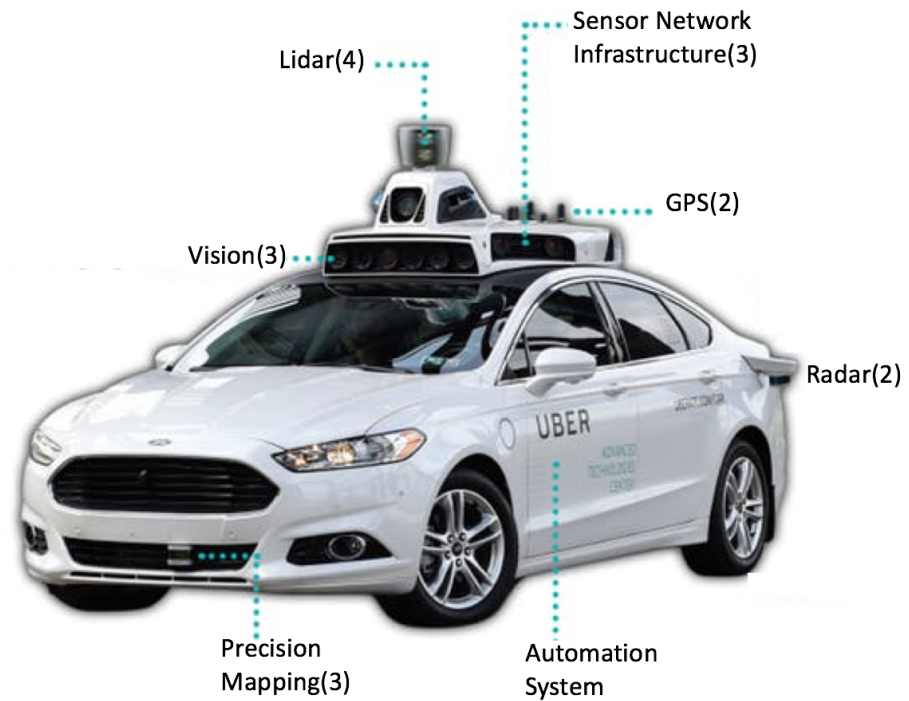
- What errors occur?
- How do you design for recovery?

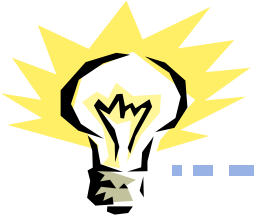




Errors in Automated Cars

- What errors occur?
- How do you design for recovery?

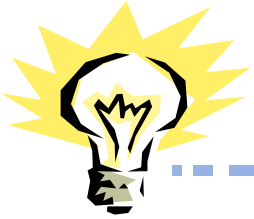




Errors in Self Checkouts

- What errors occur?
- How do you design for recovery?





Upcoming

- Help & Documentation
- Audio
- Mobile/Ubicomp