CZ2004 Human-Computer Interaction
Tutorial 6: Interaction and Design Concepts

1.

   a. Classify the following user interfaces into the 4 major interaction types of instruction, conversation, object manipulation and ego manipulation. Also explain your reasoning.

      i. Accessing your mobile phone voicemail through the automated voicemail system.

      ii. Driving a virtual Formula 1 car in a simulation program.

      iii. Deleting files by moving the icons to the recycle bin on the computer desktop.

      iv. Filling in an online form and submitting to register a new user account for a particular web portal.

2. The following hypothetical text conversation is encountered between a user and an automated assistant for an online bookshop:

   User: I want to buy *The Hunger Games* by Suzanne Collins.
   Computer: Would you like to buy the full trilogy as a discounted bundle?
   User: Yes, I would like to buy the full bundle instead.
   Computer: The bundle has been added to your shopping cart for $30.
   User: I've changed my mind and want to cancel the order.

   a. Copy the Conversation for Action Schema from the lecture notes (you don't have to reproduce this from memory). Trace out the path in the schema relating to the above conversation and indicate the sequence of node numbers.

   b. How would you rate the interactivity and intuitiveness for this form of interaction?

   c. What is a rough upper limit for the response times that users will tolerate for this interface? What happens if the response times are slower than that?

   d. Suggest ways of increasing the anthropomorphic attributes of this interface.

3.

a. Explain the term *affordance*, and point out the affordances of different parts of the oscilloscope shown in the figure below. What does affordance tell us about function?

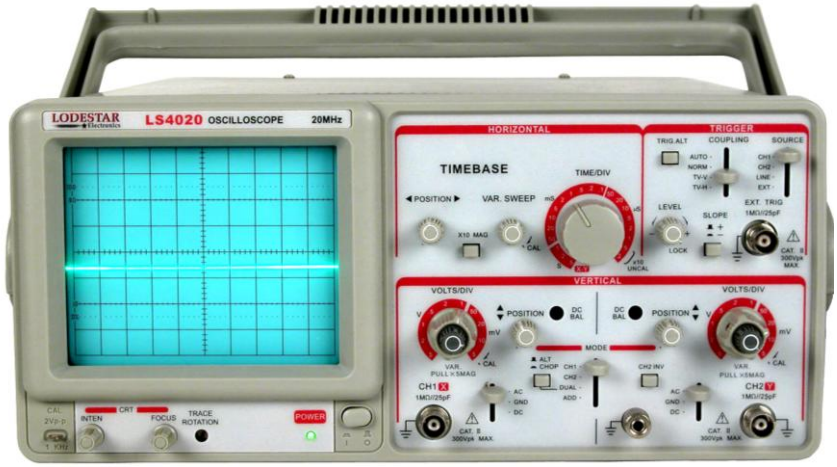

Image taken from http://www.lodestarelectronics.com

b. Compare and contrast *metaphors* and *idioms*. In MS Windows, we can click the top-right corner button of a window to close it. Is this interface function a metaphor or idiom? Why?

c. Suggest how *choice limitation* is designed into a typical File→Open dialog box in MS Word. Discuss whether this design is ideal or not.

4.

a. What are widgets, and what purpose do they serve from a design perspective? How are they used within a GUI builder?

b. What is the main benefit of using a *pattern language*? On the following page is a pattern called "Search Results" extracted from the UI pattern language by Martijn Welie. Briefly explain how this pattern is useful in a design process in terms of "unfolding". Point out higher-level patterns and sibling or lower-level patterns that may be accessed in this "unfolding" procedure.

Search Results

Problem

Users need to process a list of search results

Solution

Present sorted results with a short description

Use when

Users have done some form of search, e.g. using a Search Box or Advanced Search or Booking. Now the users need to process the result, most likely by choosing one or more items for further investigation i.e. seeing the page, adding the item to a Shopping Cart, collect items for a Product Comparison.

How

Users are presented with a numbered list of results, sorted by relevance and starting with the most relevant result. Quite often, the number of results is too high to make all results fit on a page. Therefore results are shown in batches of 10 to 20 results using a Paging mechanism. Users will generally only look at the first two pages of results and then refine their query if they didn't find what they wanted.

Displaying results. Ideally, the object itself is shown as the result along with a short description. This is possible when users search for objects like books, cars, mobile phones and so on. See the example of Amazon below. When users searched for a page within the site, the title of the page is the best thing to show. Other elements of a description include a summary, location, category, author etc. Which description elements are most appropriate depends on the particular site you are building. Nonetheless, descriptions should be short (e.g. 3 lines) and to the point. You may also "type" results by indicating the type in words or using icons. Also provide a link "more like this..." to find similar results (if your search engine supports this)

Categorizing results. If the results represent several "types" of objects, consider categorizing the results by that type. For example, when searching on Amazon, results may be books, movies, or CD's etc. If your site has an Advanced Search, users can select the type directly for a more focused search. If you use categorized results, you need to show the top 5 results in each category and allow users to see the whole list for that category

Special results. If your site uses Topic Pages and users typed in a keyword that matches a topic, you must present the corresponding topic page as a special result. It probably is more relevant than any of the other results anyway. Therefore, present such special results first and separate from the other "normal" results.

Built-up of the results page. The results page has the follow built-up:

- A header saying something like "Search Results"
- A search box that tells users what they typed in and allows them to refine it.
- A link to Advanced Search if it is available. Also present links to other Search related functionality such as Search Tips, Frequently Asked Questions (FAQ),Site Index,Site Map.
- A statement about the results, how many, spelling suggestions etc
- The results, categorized if appropriate, and paged using Paging

Consider combining this with a Collector mechanism to collect search results. Either for Product Comparison or Shopping Cart functionality. In some cases it makes sense to filter on the search results. For example, by showing only items that have been added to the site in the last 2 weeks. Or setting the sort-order.