Final Exam Review

Test format

- 2 hour test
- Cumulative – covers entire semester
- Closed book / notes
- Short answer (no multiple guess)

Web resources

A number of previous tests on HCC Digital Library:

(great study guide!)

http://hcc.cc.gatech.edu

What to Study?

- Follow syllabus, readings, and lecture notes
- You will be responsible for all readings whether they were covered in class or not

Topics I

History

- Bush – As We May Think
- Sutherland – Sketchpad
- Engelbart – NLS / Mouse
- Xerox Alto / Star
- Future videos (Apple, Sun, Microsoft)

Cognitive Models

- HIP / KLM/ Fitts' Law
- Perceptual / cognitive / motor processor
- Learning / memory
- Perpetual intermediates
- Learning through natural use

Topics II

Design Principles

- Affordances
- Conceptual model
- Mapping
- Visibility
- Feedback
- Causality

Design process

- Brainstorming
- User roles: user/tester/informant/design partner
- Interviews: contextual, leading, listening
- Personas
- Goals
- Prototypes (LoFi vs. HiFi) / Wizard of Oz

Topics III

Interaction Models

- Bridge of execution / evaluation
- Direct manipulation
- Interface structure (noun/verb vs. verb/noun)
- Metaphors

Evaluation

- Evaluating without users / cognitive walkthroughs / heuristic analysis
- Qualitative / usability studies
- Quantitiative / independent/dependent variables / significance

Extra topics

- Mobile Interfaces
- Information Visualization
- Social interfaces

Sample Question 1

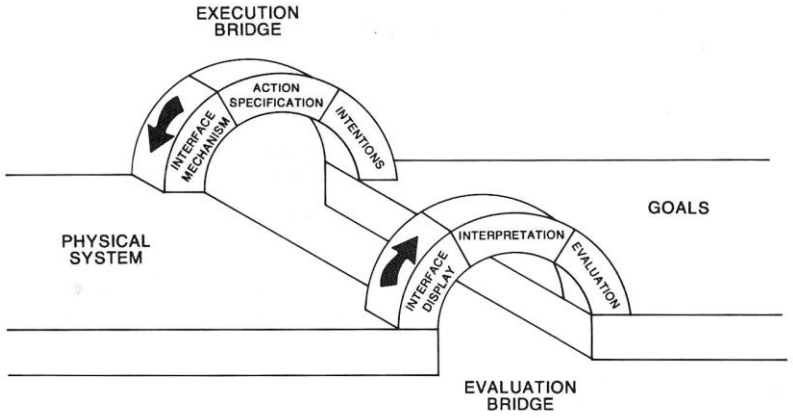
The following interface is used to adjust the setting of a car seat. Explain why this interface is likely to be readily understood by users.

- Good mapping
  - Easy to recognize/remember
  - Action on the device similar to action on the seat

Sample Question 2

What are the gulfs of execution and of evaluation? How can these concepts be used to describe user activity?

- Gulf of execution
  - Complexity of the translation from goals to actions
- Gulf of evaluation
  - Complexity of the translation from percepts to goals



Direct manipulation interfaces

Describe the key characteristics of a direct manipulation interface. Why is tightly coupled input/output so important to direct manipulation interfaces? Provide one example of a task for which direct manipulation interface would be very useful, and one example of a task for which a direct manipulation interface would be difficult (or tedious) to use.

- **Key characteristics**
  - **Continuous** and **visual** representation of the world
  - **Physical action** instead of complex command syntax
  - **Rapid incremental reversible** operation

Direct manipulation interfaces (cont'd)

- Tighly coupled (Inter-referential) input/output
  - Users should be able to use the result of command as input for the next command
- Pros
  - What You See Is What You Get
  - Copy a file from a folder to another by the drag-and-drop
  - Delete a file using a trash can icon.
  - Easy to remember
- Cons
  - Repetitive operations (script or macro),
  - Handling variables/wildcard,
  - Distinguishing individual elements from a class of elements,
  - What You See Is All You Get

Leading question

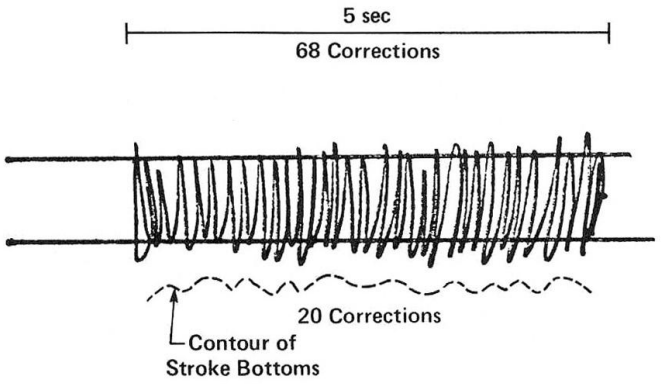
What is a leading interview question? Provide one example and explain why it can be considered leading. Provide a neutral formulation of the same question.

- A question that implies a specific answer is expected
  - Do you agree that this line of car, assembled in this factory, is better?
  - Which car do you think best suits your current needs?

Motor program

What are motor programs? Provide at least two examples that confirm the existence of motor programs. Once practiced using one limb, can motor programs be easily mapped to another limb?

- A pre-programmed set of muscular actions
  - Rapid movement (playing piano, typi
  - The squiggle experiment



- Can be mapped from one muscle group to the other
  - I can write my name with my elbow

Paper prototype

What is a low fidelity paper interface prototype? How is it built? How is it run? In which phase of the design cycle can it be used? What kind of information can be gathered using a paper prototype interface?

- Approach
  - Using sketches, foam-core, transparency, post-it, index card, tapes and glue to make mock-ups of elements of the interface (button, menus, dialog boxes…)
- Running it
  - One user who interacts with the mock-up
  - One “computer” who updates the mock-up to reflect user action
  - One observer who takes notes

Paper prototype (cont'd)

- When?
  - Early design stage
- What?
  - Basic usability issues, screen layout, work flow…
  - Not very good for timing

Persona

What is a persona? What are the key aspects of a successful persona? How is it constructed? How can it serve the design process?

- Definition
  - Fictional, detailed archetypical characters that represents a distinct group of potential users
- Key aspects
  - A well defined set of behaviors, goals and motivations
- Construction
  - During the analysis process, by identifying clusters in users behaviors, goals and motivations
- Why?
  - Keeps the design process focused

Fitts' law

What is Fitt's law? How is it formulated? Provide one example for which it can be used to predict user performance.

- Definition

$$T = a + b \log_2 \left(\frac{D}{W} + 1 \right)$$

  - T is the time to go between two targets of width W set L apart.
  - *a* and *b* are empirical constants depending on the experimental setting

- Example
  - How fast can I reach a button on the screen