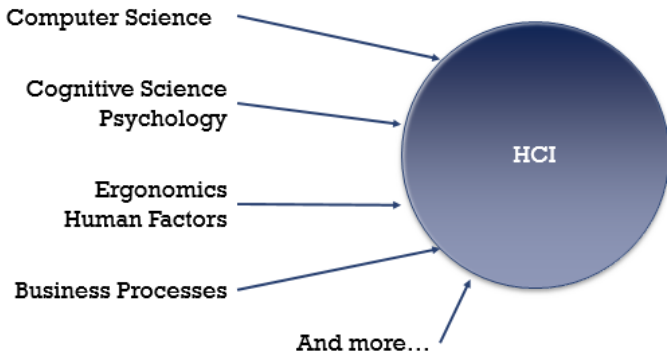
HCI komische Notizen

Test 1: HCI will be 6 marks out of the 25. (¼ of the test)

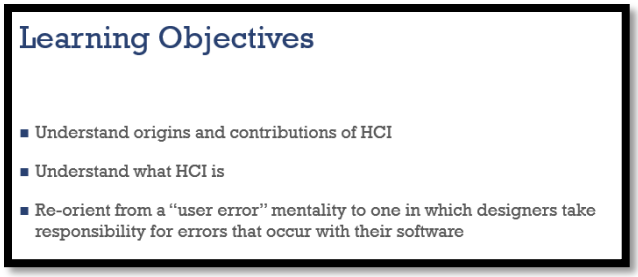
Exam: HCI might be 9 marks out of the 70. (~13%). Sonia's topics are 17 marks in total (HCI and UML)!!!

Lecture 1 (25/07): Intro

- HCI is a field of Computer Science that deals with making computer systems discoverable, learnable, effective and pleasant to use.



-
- *UX:* deals with "all aspects of the end-user's interaction with the company, its services and its products"
    - *UX* concerns the way in which the user will interact with the system, navigate their way around it naturally and intuitively, following your cues that guide them to their goal, with the right things visible to them at the right time, making for an experience they feel good about
- Goals of user-centered design:
    - Easy to learn
    - Effective to use
    - Enjoyable



- *UCD (user centered design):* moves to a participatory mindset, in which users co-create and co-design their interactions
- *Interaction design:* understanding the dynamics of how we interact with computing devices, from high level questions around using apps, to how people understand icons and widgets, to social dynamics around computing device use.
- "*UI* is how a product looks and all its visual elements, which plays a significant role in *UX*, which is the overall product experience... While usability and user interface (UI) design are important aspects of UX design, they are subsets"
    - Choice of colors, buttons, icons, animations + layout onscreen = UI concerns, UI design decisions.
    - These are decided after the UX is designed!!

- Golden rules of design: (ben Schneiderman) [was in test 1!!]
    - 1.Strive for consistency.
    - 2.Cater to universal usability.
    - 3.Offer informative feedback.
    - 4.Design dialogs to yield closure.
    - 5.Prevent errors.
    - 6.Permit easy reversal of actions.
    - 7.Support internal locus of control.
    - 8.Reduce short-term memory load.
-

Lecture 2 (1/8): UserCenteredDesign

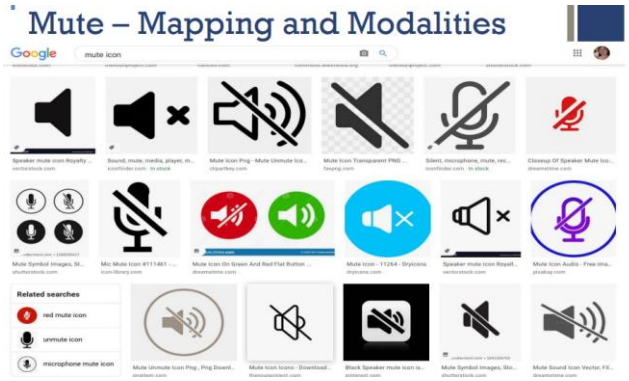
- Questions to ask oneself:
    - Who will be the users you study?
    - How will you recruit them?
    - Where will you do the study?
    - What will you do with them?
    - and then?
- Sampling approaches:
    - Convenience sampling: choosing participants who are accessible and available(easiest)
    - Referral sampling: choosing participants through an intermediary who refers researchers to these participants
    - Snowball sampling: participants are asked to help identify other participants and so on in a chain
    - Purposive sampling: intentionally choosing participants based on their specific characteristics
    - Stratified sampling: dividing subjects into subtypes/subgroups and sampling each of these separately using another sampling method
    - Random sampling: using a random function to select participants from the entire population so that a statistically random sample is obtained
- Using Design principles:
    - Goal: provide designers with information and insights about the (potential) impact of their designs

- Trade-offs: the more general the rule, the more chance it conflicts with another rule
- We can make a vague distinction between: Guidelines: vague, need to know theoretical underpinning
- Standards: can be very specific (e.g. 3 button mouse)

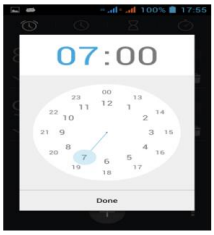
Standards	***Guidelines***
Higher authority	Lower authority
Little overlap	Conflicts/overlap/trade-off
Limited application	Less focused
Minimal interpretation	Interpretation required

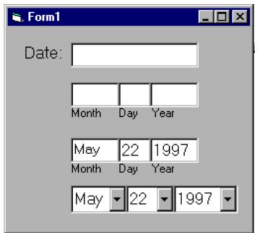
Lecture 3 (8/8): Everyday design:

- *Affordances* are the potential actions and interactions that the environment offers
- *Perceived affordances* of an object are those properties of the object which give users clues as to how the device is used
    - Avoid false affordance (appears it can be done, but it cannot)
    - Avoid hidden affordance (it can be done, but this isn't evident)
- *Mapping* (by Donald Norman): ensure a natural correlation between objects and the interface controlling them



- *Skeuomorph:* When a derivative object retains ornamental design cues that were necessary or essential to the original.
- *Constraints*: constrain a design so it can only be used the right way.

- 



+ Entering a Time
Constraints help users enter correct information.

Lecture 4 (15/8)

- Affordance: how the interface is meant to be used.
  - [E.g. a button is for pushing; a knob is for turning]
- Affordance is about the *perceived/assumed function* of the object.
  - [e.g. when you see a door handle, you assume its function is to open a door]
- Mapping is the relationship between the controls and the effect that they have.
- Visibility of system status

Important principles below (these were tested in class test 1)!!

- User control & freedom:
  - Support: undo, redo, exit options, to help user minimize mistakes.
  - [E.g. when you click cancel, and a pop-up appears saying “Are you sure you want to cancel? [yes] [no] “]
- Aesthetic & minimalist design:
  - Show only the necessary information for the user. Every extra element reduces the relevance of others.

- Help & documentation:
    - Make it easy to find the necessary help & docs
- Match between system & real world:
    - Use real-life, applicable concepts, examples, that are familiar to the user and to help them understand.
- Error prevention:
    - Prevent problems from occurring as much as possible
- Breadcrumbs:
    - E.g. helping you see, what you were previously viewing
        - (e.g. on Amathuba)
- Help users to recognize errors:
    - Display error messages in simple, plain English (or whatever language), to help indicate a problem and give suggestions on how to troubleshoot.

Design principles/ techniques:

- Knowledge chunking:
- 80/20 Pareto law (20% of functionality, will account for 80% of usage)
- Principle of least effort: make frequent actions easy to do, and make the unlikely/rarer actions harder to do. [e.g. close button is always at the top right of a tab]
    - [e.g. morse code, menus, “dangerous” operations]
- Principle of least astonishment:
    - Consistency is key; applies to both functionality and form.
- Modes: allow different behaviors from the same interface [e.g. Caps lock, Num lock]

- Fitt's law (1954): time taken to acquire target is a function of the distance to and size of the target
- Hick's law: time taken to reach a decision goes up as the no. Of choices increases

TERM 2:

Lecture 5 (10/10): Design cycle

- Design cycle:
  - Ideation > Design & Analysis > Prototyping > Evaluation
- Brainstorming:
  - Just sketch some stuff. Quick and low detailed.

Understanding the user/client:

- Create persona's:
  - Understand your clients: Who(age, identity, etc.) ? Where(first world vs third world e.g.) ? What? Why (are we still here)
  - Every user is unique, and will therefore have different interests

- Flows:
  - Task flow: outline steps for specific goals
  - User flow: map a user's path (e.g. decision points, reflections)

- Prototype:
    - Is something that's built and tangible, that you can get feedback on.
- Low-fi prototype (low-fidelity):
    - Low quality, quick & dirty but show the outline. D 't focus on details
- High-fi prototype:
    - Higher quality, looks almost like the final product.
    - Disadvantage: may imply a finalized design in client's mind AND might discourage client from giving constructive feedback. Since you've done so much work for the prototype, they might feel bad if they give too much criticism.

Lecture 6 (17/10): Evaluation

- Qualitative observations
    - Requires understanding of the client needs, goals, actions via:
    - Interviews, Contextual, Inquiry, Cultural, Probes, Focus, Groups, Workshops
- Inquiry:
    - Contextual inquiry:
        - "An act of asking information"
        - Basically, the designer listens and asks the participants questions during an activity, to gain more insight.
    - Diary studies:
        - Have participants record their actions at regular intervals
- Analysis:
    - Transcribing data --> Noting main ideas --> Reflection & interpretation --> Analysis

CHATGPT generated below!!:

Evaluation Methods:

- **Cognitive Walkthrough**: A step-by-step simulation of a user's thought process during interaction, assessing if users can understand and complete tasks.
- **Wizard of Oz Testing**: A prototype-based approach where a human simulates system responses, often used when the backend is not fully developed.
- **Heuristic Evaluation**: Experts evaluate an interface against a set of usability heuristics. Steps include pre-evaluation training, individual assessment, severity rating, and a debriefing session for feedback.

Discount Usability Techniques: These methods are quick, low-cost, and require minimal resources, focusing on a favorable cost-benefit ratio. They include simplified scenarios, heuristic evaluations, and cognitive walkthroughs.

Congratulations, you made it to the end of this awful module in computer science! I'll rather be submerged in 1000 bottles of baby oil than go through this hellish section again.

You've got this!!