User Documentation

- Stored information about how to use a system
  - reference manuals, tutorials, online help
  - many systems incorporate a diverse set of online and paper documentation
- Challenge is to support all documentation needs
  - *novice users* encountering for the first time (not just 'how', also need to understand 'what' and 'why')
  - *routine users* who need reminder or new task procedure
  - *change users* who know how to perform routine tasks with related application software, but not with this software
  - *expert users* who want to find most efficient procedure

Paper or Online?

Advantages of Paper	Disadvantages of Paper
Highly portable, can be used anywhere	Finding and turning to a page is an extra task
Easy to scan at varying levels of detail	Paper is bulky, takes up office or desk space
Can be annotated with normal writing tools	Large manuals may seem intimidating to novices
Famililar and well-practiced reading habits	Lack of coordination between paper and software
Reading is faster from paper than screens	Fixed organization of content
People like owning books and other manuals	Paper and print deteriorates over time with use

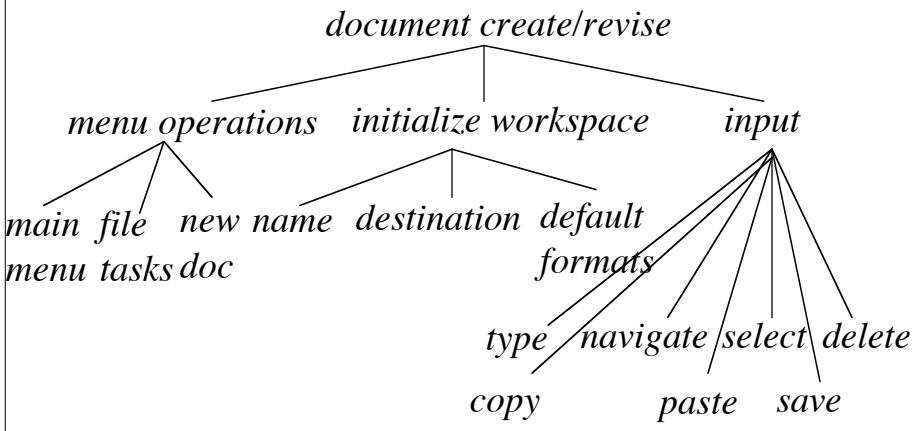
Online info is becoming more ubiquitous, but paper still has a number of advantages

Systematic Documentation

- Comprehensive hierarchical task decomposition
  - recursively analyze each task into constituent subtasks
  - terminate with simple, step-by-step actions
  - can also include custom versions for different users
  - often, designers' view of what mental model should be
- Each concept introduced, practiced, explained
  - typically presented as structured tutorial, online or paper-based
  - e.g., tell you what you are about to do, tell you how to do it in detail, then tell you what you did

Systematic Documentation

- *What are the downsides of this approach?*



"Active learning"

- a good thing: people develop "by doing"
  - actively leverage their prior knowledge
  - hypothesize and experiment
  - diagnose and recover from error
  - try to accomplish meaningful tasks
- a bad thing: people are undisciplined users
  - pursue bad inferences and overgeneralizations
  - jump the gun, skip around
  - get tangled in errors within errors
  - don't follow steps accurately

Similar Issues for Expertise

- With repeated use, action plans are practiced
  - knowledge is converted from *declarative* (description) to *procedural* (script)
  - we have already discussed "fast path" techniques that support such chunking
- But proceduralization not the same as optimization
  - many users do not *want* to improve
  - motivated to generate results, not to learn techniques for doing this efficiently
  - experience ≠ expertise!

The Paradox of the Active User

- The assimilation paradox
  - people interpret new situations in terms of what they already know, but new learning requires going beyond what is already known
- The production paradox
  - people want to get something done, but they must first spend time learning how to get something done

Design challenge: exploit these tendencies, turn what might be seen as weaknesses to advantage!

Minimalist Instruction

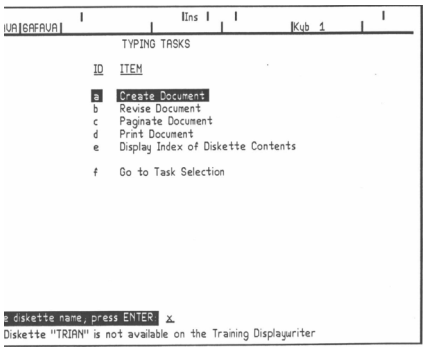
- Embed training in realistic tasks
  - e.g., writing a letter, not learning the menu system
- Allow users to get started fast
  - minimal verbiage, low conceptual overhead
- Rely on users to think and improvise
  - deliberately open-ended tasks, instructions
  - that leverage users' prior knowledge where relevant
- Support error recognition and recovery
  - careful attention to feedback, just-in-time hints

Why does this require an iterative design process?

Examples of Minimalism

- Minimal Manual
  - task-oriented, but deliberately brief and incomplete
- Training Wheels
  - exotic or expert functionality blocked for novices
- Guided Exploration Cards
  - motivating suggestions + error recovery
- Scaffolded Examples
  - complex process (e.g., software design) is progressively accomplished through an unfolding example

These techniques can be combined to create overall training approach



Information in the Interface

Help and feedback designed to support longterm use, software intended to be walk-up-and-use

- Messages: balancing specificity and task relevance with length and complexity
- Consider whether and how to layer help information
  - top level for typical user, but increasing levels of detail to support users who *want* to learn
- Tooltips a useful approach, if done well
  - e.g., should do more than just (re)name a button, icon!
  - combine with layering for task-oriented learning

Socially Mediated Documentation

- Capture, organize, and reuse the "pockets of expertise" in an organization
  - a homegrown user support network
  - sometimes even just a pointer to the right person
  - "knowledge management"
- More globally, network-based FAQs, forums
  - sometimes sponsored by a corporation
  - or people with technical questions, interest
- Key question is who organizes, maintains?

Intelligent Help and Training

- Adaptive instruction: modeling and tracking the knowledge held by individual learners
  - assessing what they know, presenting new problems & activities that will expand the knowledge base
  - some success with algebra, LISP programming, but not for more general applications or users
- Context-sensitive help: recognizing what the user is trying to do, offering suggestions
  - software agents, e.g. Microsoft "Clippy", not very successful for the general case
  - but "wizards" work well for highly scripted tasks

Designing Documentation

- Develop scenarios and usability specifications that center on learning concerns
  - common metaphors are 'advice-giving' people, e.g. a coach, a policeman, a lawyer or judge
  - must consider both novice and longterm use scenarios
- Iterative process, like all user-centered design
  - should parallel other design work as much as possible
  - writing user guides is one way to discover problems
  - e.g., elaborate a scenario to consider 'what if' the user did not know what to do, makes an error, ...