



Finding the Schema That Works

Anton J. Holland
Ann Fothergill-Brown

Schema

Hypothetical construct that explains how humans classify, store, and use knowledge.

Example

“The agent set up three appointments for Peter and Diane. The two-storey really captured their imagination. They made an unconditional offer the next day.”

Example

Peter and Diane were buying a house.

Example

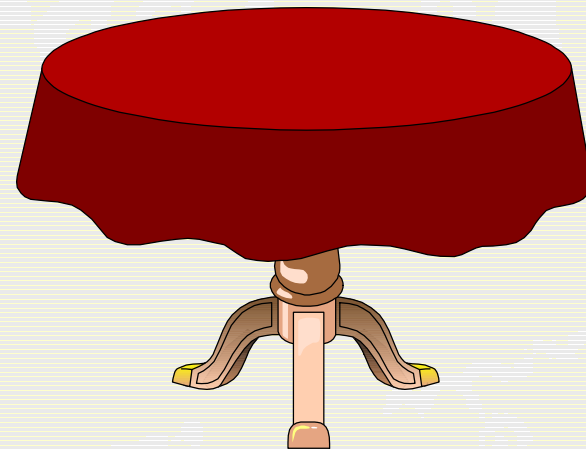
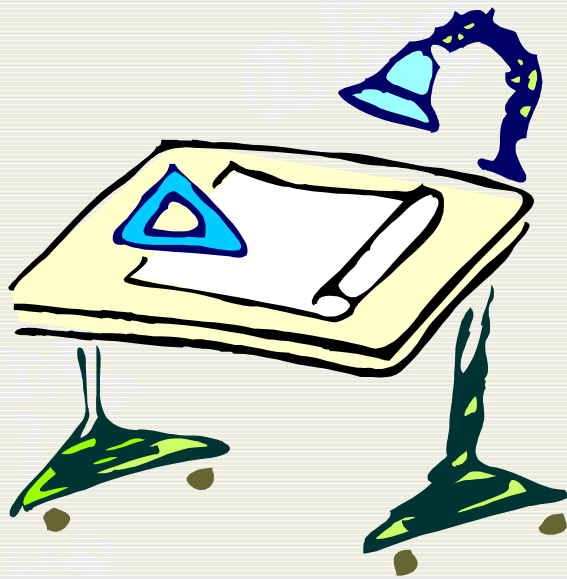
“Buy house” schema probably involves
at least

- ! Real-estate agent
- ! Appointments to view
- ! House types
- ! Conditional or unconditional offer to buy

Schema

- ! Acquisition method unknown
- ! Demonstrated in research
- ! Organized in prototypical terms

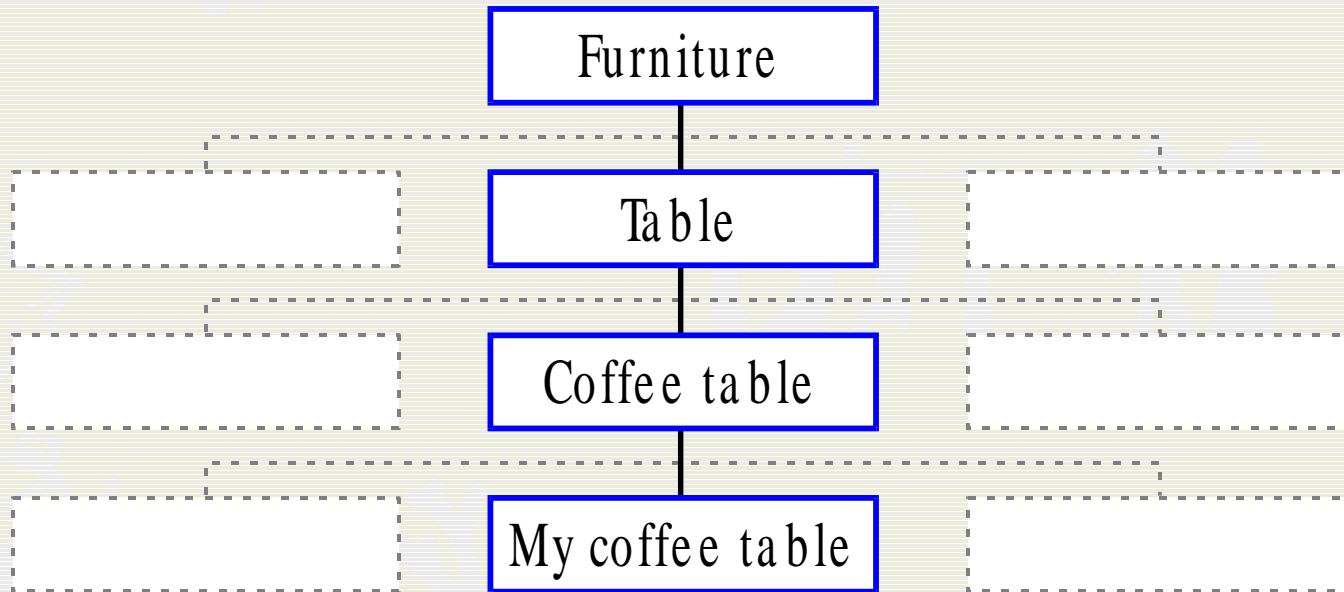
Prototype: Table



Schema

- ! Formed by individual experience
- ! Often shared (cultural)
- ! Stable over time
- ! Frequently hierarchical

Hierarchical Schema



Mental Model

- ! Interaction of schemas and procedural knowledge
- ! Applied to task performance and problem solving

Example

“Charlie entered the restaurant. The chef handed him the check. ‘I didn’t order alcohol,’ Charlie complained.”

Example

! Schema components are accurate

But

! Story doesn't match the mental model

Schema Application

! Feedback loop

! Parse

! Tune

! Restructure

Schema Application

! Automatic

! Little conscious control over acquisition and retrieval strategies

Schema Application

! Prototypical

! “Default values” take over for portions of the script not supplied by the new experience

Example

“Charlie ate at his favourite restaurant last night. After the server handed him the check, Charlie complained: ‘I didn’t order alcohol!’”

Example

! Type of restaurant

! Chinese? Italian? Mexican? “American”?

! Type of alcoholic beverage

! Wine? Beer? Distilled spirits?

! With or without a mixer?

Schema Application

! Influences recall

! Depends on

! how well-organized the schema and how
“typical” the event

! conformity with expectation

Enlist the Power of Schemas

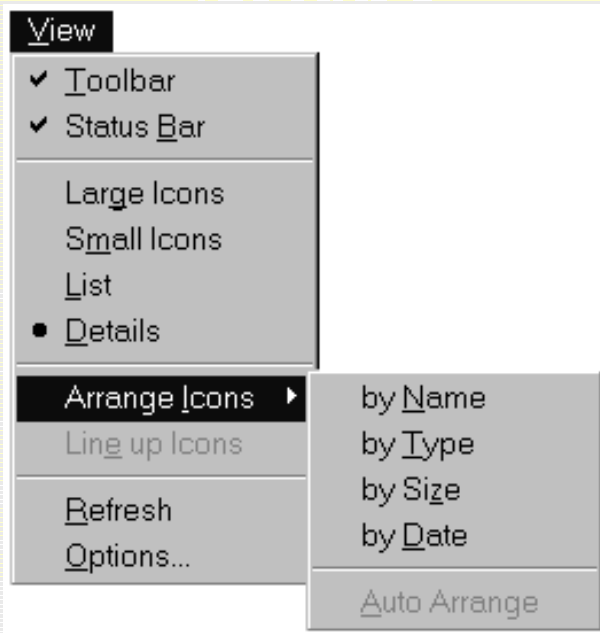
- ! Fit into existing schema or invent one
- ! Beware the effect of prototypes
- ! Design for the best recall
- ! Conform to expectation

Exercise 1–A Graphical Schema

- ! Read the object descriptions carefully
- ! Match the graphical objects to the descriptions
- ! Write the official names of the objects

Exercise 1, Question 1

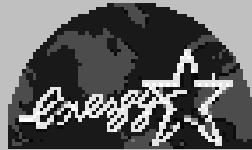
! Cascade menu



Exercise 1, Question 2

! Check box

Energy saving features of monitor

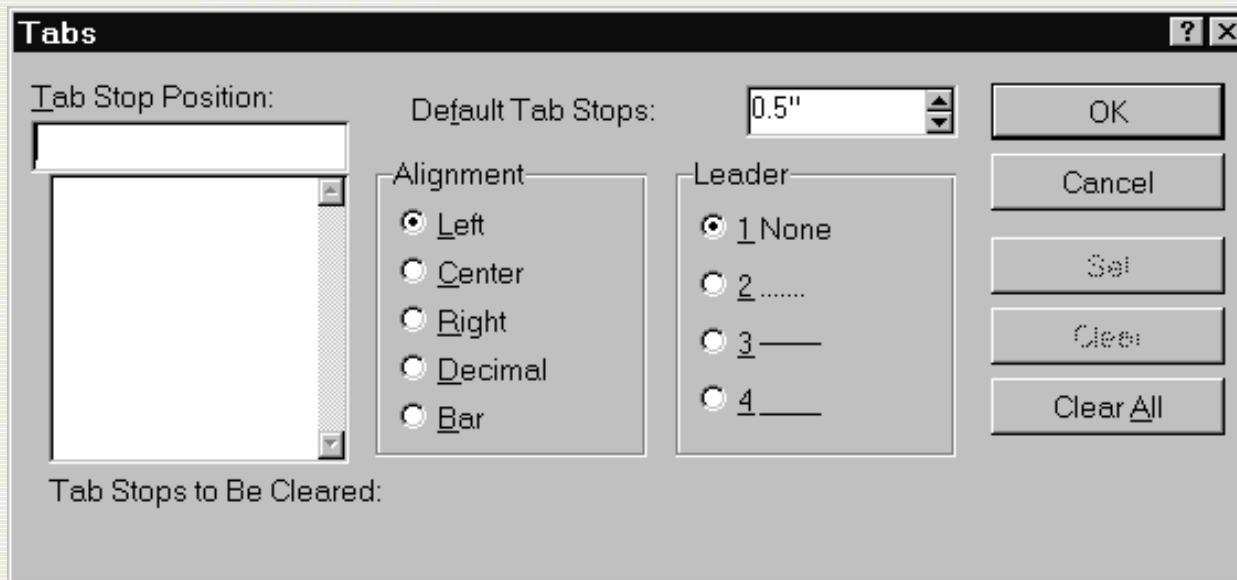


Low-power standby

Shut off monitor

Exercise 1, Question 3

! Dialog box



Exercise 1, Question 4

! Command button (push button)

Browse...

Exercise 1, Question 5

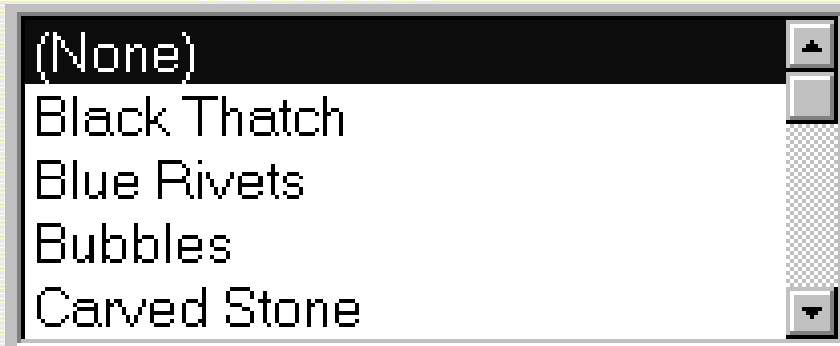
! Icon



Date/Time

Exercise 1, Question 6

! List box



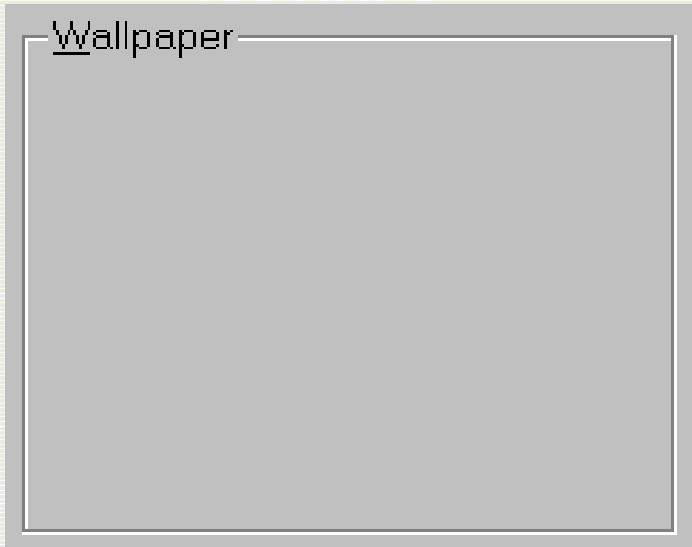
Exercise 1, Question 7

! Option button

Display: Tile Center

Exercise 1, Question 8

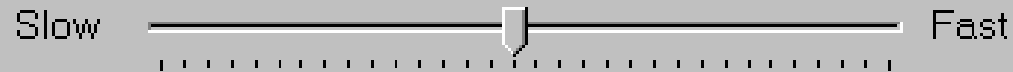
! Frame



Exercise 1, Question 9

! Scroll bar

Repeat rate:



Size:



(varying types: slider, spinner, scroll bar)


Exercise 1, Question 10

! Text box

Address:

Exercise 1, Question 11

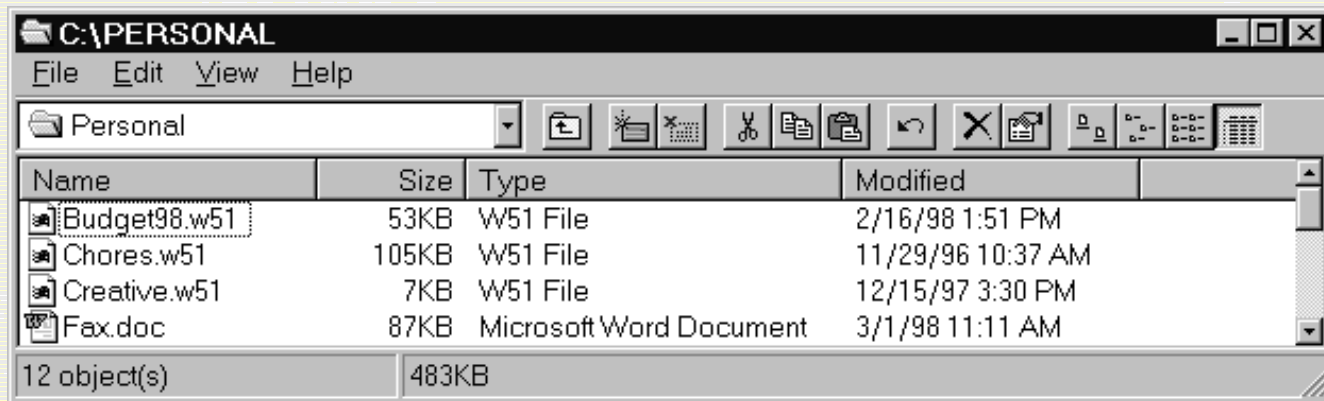
! Combo box

Named: 

dalyag
annfb

Exercise 1, Question 12

! Window



Parts: title bar, menu bar, toolbar, grid, status bar, system menu, control buttons, sizing control

Exercise 2–A Conceptual Schema

- ! Read the command descriptions carefully
- ! Decide what the concept groups are (name them)
- ! Assign each command to the appropriate concept group
- ! Order the concept groups

Exercise 2–A Conceptual Schema

Common Concept Groups for Software

- ! Navigate
- ! Get help
- ! View data
- ! Add/change/delete data
- ! Deal with errors

Exercise 2–Concept Group 1

Navigation/Help

- ! Screen number
- ! Back
- ! Next
- ! Help
- ! Exit

Exercise 2–Concept Group 2

View Records

! Get

! Refill

! Top

! Clear screen

! Scan

! Zoom

Exercise 2–Concept Group 3

Manipulate Records

- ! Add
- ! More
- ! Leaf
- ! Change
- ! Delete

Exercise 3–A Quick-Recognition Schema

- ! Read the descriptions of the language elements carefully
- ! Divide language elements into two concept groups
- ! Devise a format for each group to promote instant recognition

Exercise 3–A Quick-Recognition Schema

Variables

- ! outputs a system value
- ! “proper” noun (use capital letters)

Functions

- ! takes input value, returns output value
- ! lowercase letters; parentheses mark input value

Exercise 3–Concept Group 1

Variables (output)

- ! \$ClipPath
- ! \$Date
- ! \$ErrLevel
- ! \$Graphics
- ! \$Located
- ! \$Null
- ! \$DBCharSet

Exercise 3–Concept Group 2

Functions (input-output)

- ! \$absolute ()
- ! \$concat ()
- ! \$distinct ()
- ! \$fileprint ()
- ! \$max ()
- ! \$objstatus ()
- ! \$substring ()

Exercise 4–A

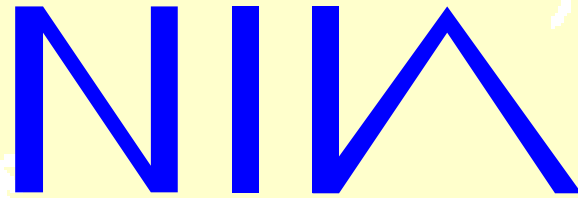
Hierarchical Schema

- ! Read the “alignment” statements
- ! Arrange the statements into a hierarchy, from general to most specific

Exercise 4–A

Hierarchical Schema

1. Create ...
 6. Develop ...
 3. Hire ...
 9. Conduct ...
 5. Bring ...
 8. Add ...
10. Provide ...
 7. Reduce cost ...
 4. Study ...
11. Reduce inventories ...
 2. Find ...

The logo for NIVA Inc. features the letters 'NIVA' in a bold, blue, sans-serif font. The 'V' is stylized with a sharp peak. Below the letters is a thick blue horizontal bar.

NIVA Inc.

DocuCenter®

Finding the Schema That Works

Thank you for your attention.
