

# Higher Level Objects



# User Interface Management Systems (UIMS)



- DBMS analogy


- Out of favor

# Easiest Task: Presentation



- UI Builders (Layout Editors)

# Building User Interfaces by Direct Manipulation (Luca Cardelli)



- Domain: dialog boxes
- Position and size handled well

# Stretching: Attachment Points



- One for each edge of interactor BBox
  - layout task => size and position of BBoxes

# Stretching Rules



- 1) attachment points move prop to dialog stretch
- 2) attachment points maintain a fixed distance from interactor edge

# Opus (Hudson and Mohamed)



- More general visual notation for layout
  - Constraint-based

# Four Basic Notation Constructs



- Frames
- Constraints
- Reference lines
- Interactor objects

# Layout



- Same as before
  - layout task => size and position of BBoxes

# Constraints



- Represented by arrows

# Frames



# Reference Lines



- Analogy: ref lines used by draftsmen

Simple, yet powerful

