Slicing Floorplan

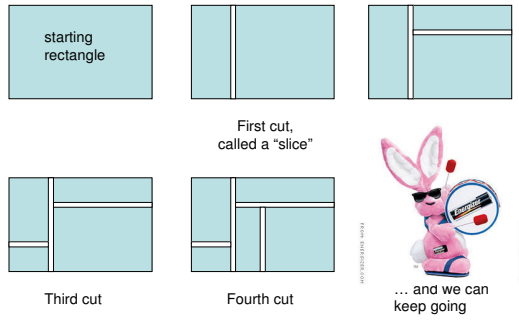
Project #3

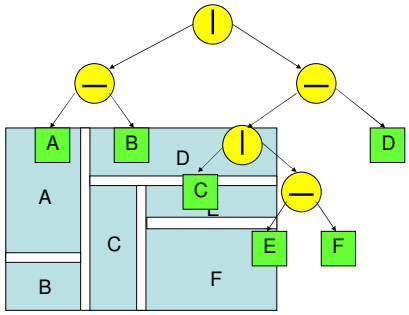
Placement Problem

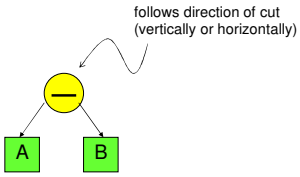
- ASIC design
- floor plan layouts

many variations and algorithms

Slicing decomposition

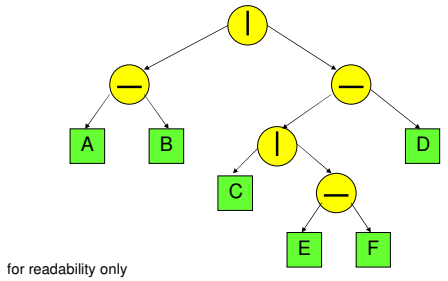






Task #1

- read in a filename from a text box
- open the file and read in the structure of the slicing floor plan
- this will be formatted as follows:
  - "|" denotes a vertical cut
  - "-" denotes a horizontal cut
  - a character denotes the room identifier
  - this will be presented as a string, with no spaces
- these will be ordered according to a preorder traversal of a binary tree



for readability only

| - A B - | C - E F D

actual: |-AB-|C-EFD

Task #2

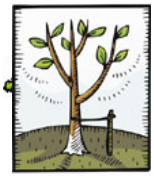
- Use an inorder traversal to draw the binary tree as described on page 302 of Goodrich/Tamassia.
- Nodes must be labeled.
- A reasonable looking node is all I am asking for. Do not obsess over placement of your character. The focus of this problem is binary trees.

Task #3

- Draw the sliced floor plan described by your tree.
- Label the rooms with their identifier.

Anticipated Questions

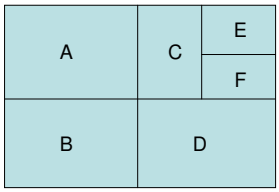
- What do we do if we get an ill-formed tree?



You will receive good tree data.

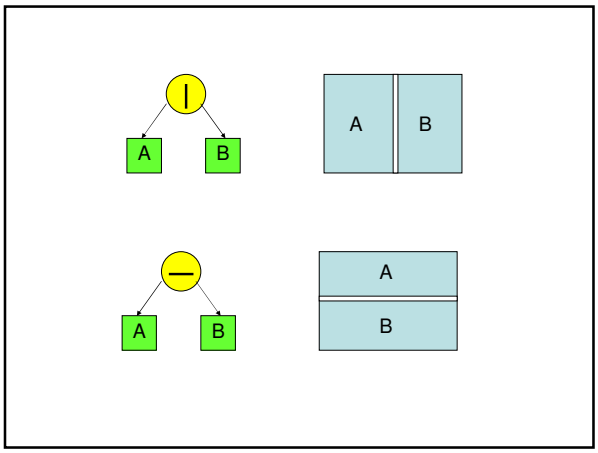
Anticipated Questions

- How do I figure out the dimensions of my tree?
  - by ratios of 50/50 to keep it simple

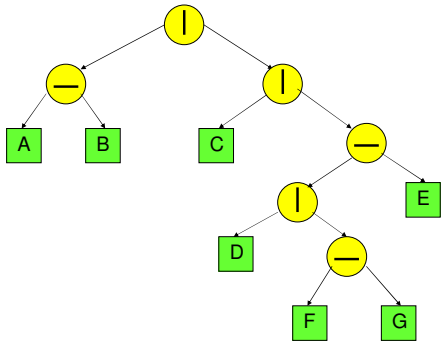


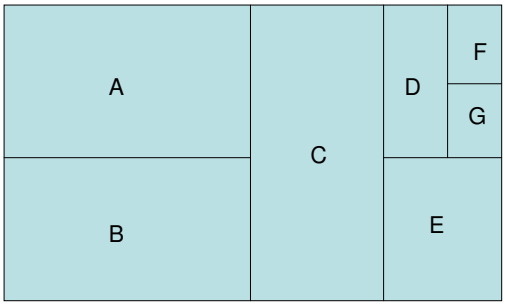
Anticipated Questions

- How do I label my tree?
  - left to right
  - top to bottom



Draw this floor plan.





Anticipated Questions

- When is it due?
  - Task #1 & 2: Monday, October 24, 2005 at 6:40 p.m.
  - Task #3: Monday, October 31, 2005 at 6:40 p.m.
- Note that with task #3, you are turning in the entire project that draws both the tree and the floor plan.

Anticipated Questions

- What do I turn in?
  - hardcopy of the program
  - signed academic integrity statement
  - electronic version
    - java & header files only, no projects or packages
    - email to both teaching assistant and me

Anticipated Questions

- How do I work with my graphics?
  - We'll stick with applets. ☹
  - It's a simple interface for C++ people who are working on their GUI and the differences with Java.

Anticipated Questions

- How do I draw circles and squares?
  - You can use any Java graphics method you want (unless you find one to draw binary trees!)
  - Common, as used in the Big Java text for ICS and DSA 1 are:
    - Rectangle (x1, y1, x2, y2)
      - import java.awt.Graphics2D
    - Ellipse2D.Double (x, y, width, height)
      - import java.awt.geom.Ellipse2D
  - Use the Sun web pages.

FAQ

- Will be added if more questions come up that would be useful to share with the class.