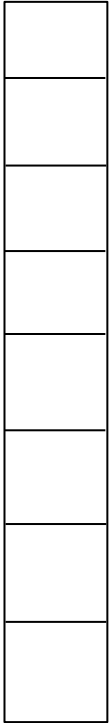

From Data to Pixels

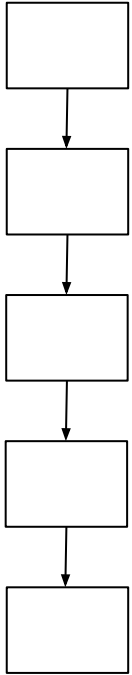
Day 2, Markku Reunanen

Data structures



Arrays should be familiar by now

- Fast
 - Space efficient
 - Easy to access items
 - Hard to insert/remove items or change size
 - No hierarchy
-



Lists

- Dynamic
- Easy to insert/remove items
- Size can grow and shrink as needed

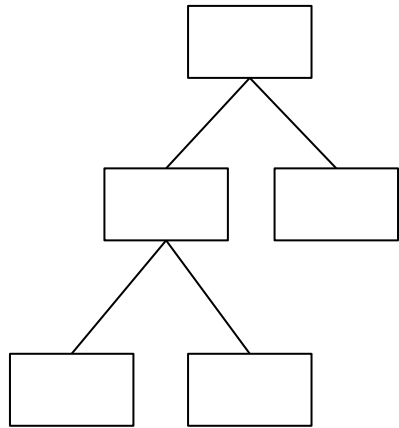
List *head* and *tail*

For built-in types: *IntList*, *FloatList*, *StringList*

For objects: *ArrayList*<type>

.size() instead of *.length*

Trees



Contain hierarchy in addition to the data

A tree consists of *nodes*

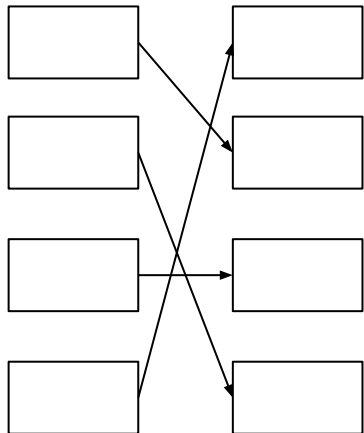
Tree *root*, *leaves* and *height*

Parent and *child* nodes

Hierarchical data: HTML, XML, organizations, game worlds ...

No ready-made trees in Java, but easy to do or find libraries

Hash tables



(or hash maps, maps or dictionaries)

Key/value pairs

Search by key, get the value

For built-in types: *IntDict*, *FloatDict*, *StringDict*

For general use: *HashMap* and *Hashtable*

Regular expressions

Powerful notation for searching and replacing text in strings

Available on strings through:

- *matches()*
 - *split()*
 - *replaceFirst()*
 - *replaceAll()*
 - not: *replace()*
-