Recursion
ctd

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Advanced Programming

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Lists and Recursion

Thinking about Lists recursively

- A list can be defined recursively
- A list is either empty or the first element of the list followed by another list (called tail of the list)
  - L = Φ or
  - L = {first(L), tail(L)}

List Operations

- Prepend
  - prepend(a,L) = {a} if L= Φ
  - prepend(a,L) = {a, prepend(first(L), tail(L))}
- Append recursively
  - Append(L, a) = {a} if L= Φ
  - Append(L, a) = prepend(first(L),Append(tail(L), a))

Length of a list recursively

- Length(L) = 0 if L = Φ
- Otherwise
  - Length(L) = 1 + length(tail(L))

Reversing a list

- Rev(L) = L if L = Φ
- Rev(L) = append(first(L), Rev(tail(L));