

CptS 355 Oct 21, 2009

$$a^{**} b \equiv a^b \quad a^{\wedge} b$$

```
fun last [] = raise Empty
  | last [x] = x
  | last (e:::r) = last r
```

↑
variable I don't care about

} 'a list → 'a

get the 1st element of a list

```
fun getItem [l] = NONE  
  | getItem (x::_) = SOME x
```

} 'a list → 'a option

nth item of a list

```
fun nth (l, n) = let ('a list * int) → 'a  
  fun loop (e::_, 0) = e  
    | loop ([], _) = raise Subscript  
    | loop (l_::_t, n) = loop (t, n-1)
```

in

if n ≥ 0 then loop(l, n) else raise Subscript

end

$a \text{ list} * a \text{ list} \rightarrow 'a \text{ list}$

fun revAppend ([], l) = l

(revAppend (h::t), l) = revAppend (t, h::l)

revAppend ([1, 2, 3], [4, 5, 6]) = [3, 2, 1, 4, 5, 6]

revAppend ([2, 3], [1, 4, 5, 6])

~~map (f, l)~~
fun map f l

type of f is 'a \rightarrow 'b
('a \rightarrow 'b) \rightarrow ('a list \rightarrow 'b list)

type of l is 'a list

(map f)

('a list \rightarrow 'b list)

fun id x = x

(map id [1, 2, 3])

('a list \rightarrow 'a list)

\equiv [1, 2, 3]

