SML: Recursion, Pattern Matching, Datatypes

Prof. Evan Chang
Meeting 9, CSCI 3155, Fall 2009

Announcements

• Assignment 4 due Thu at 11:55pm
  - Individual
• No new assignment this Thu 😊
  - Study for the midterm next Thu 😊

Typing and Evaluation with Bindings

• Declarations yield an environment
• An environment is a set of bindings (e.g., variable to values) used in subsequent declarations or expressions

(x + 3 : int) : ?

x + 3 : int ⊢ x + 3 : int

Recursion, Pattern Matching, and Datatypes
**Evaluation**

```ml
fun factorial 0 = 1
| factorial n = n * factorial (n - 1);
```

```
factorial 3;
```

```ml
fun factorial_iter (n: int) : int =
  let fun helper (0: int, acc: int) : int = acc
    | helper (n: int, acc: int) : int = helper (n - 1, n * acc)
  in helper (n, 1) end;

factorial_iter 3;
```

**For Next Time**

- Reading
- Online discussion forum
  - ≥1 substantive question, comment, or answer each week
- Homework assignment 4