61A Lecture 27

Wednesday, November 5

Announcements

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Interpreting Scheme

The Structure of an Interpreter

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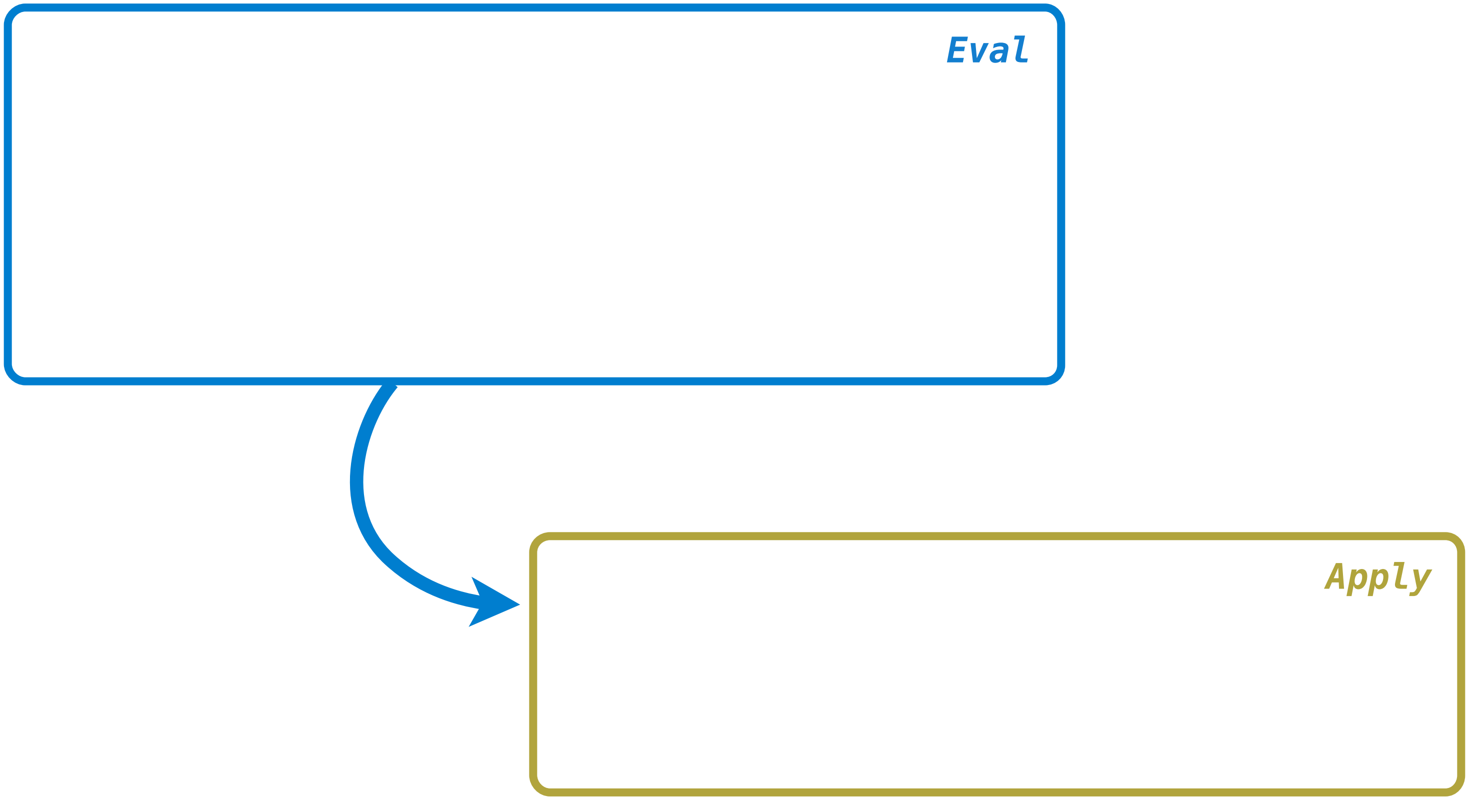

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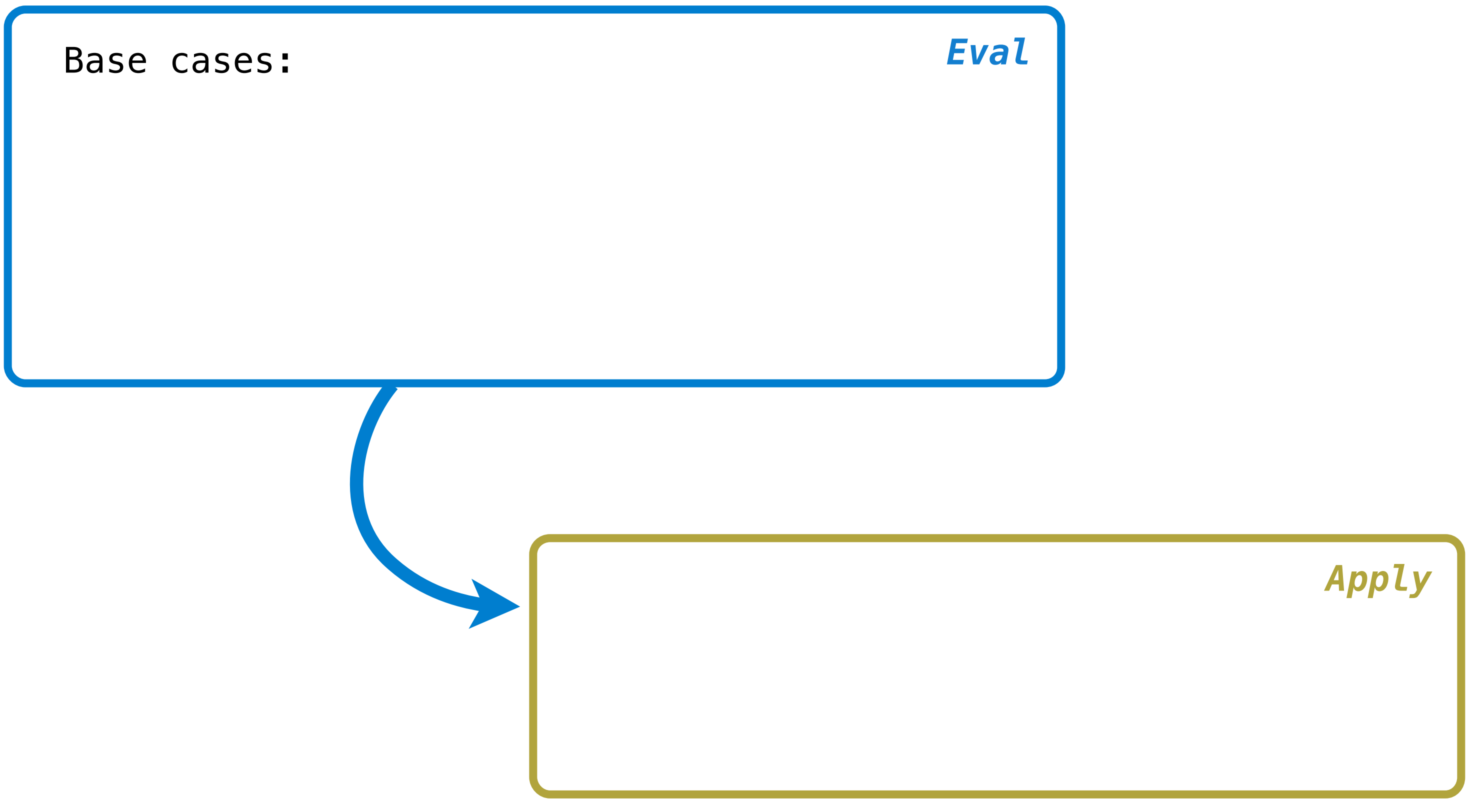

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Base cases:
- Primitive values (numbers)

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Special Forms

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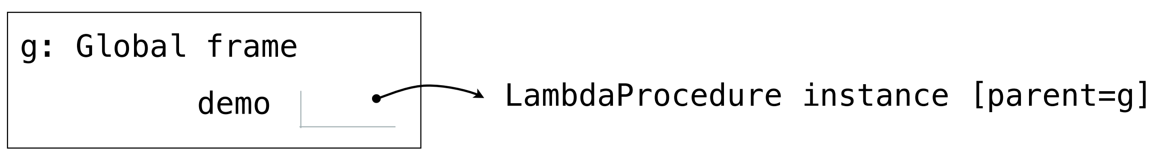

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demo → LambdaProcedure instance [parent=g]

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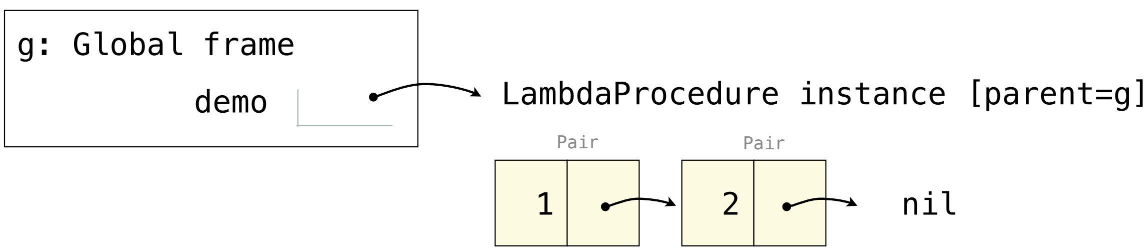

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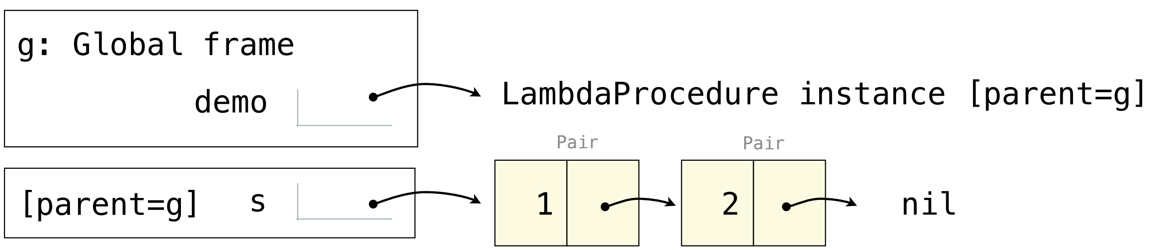

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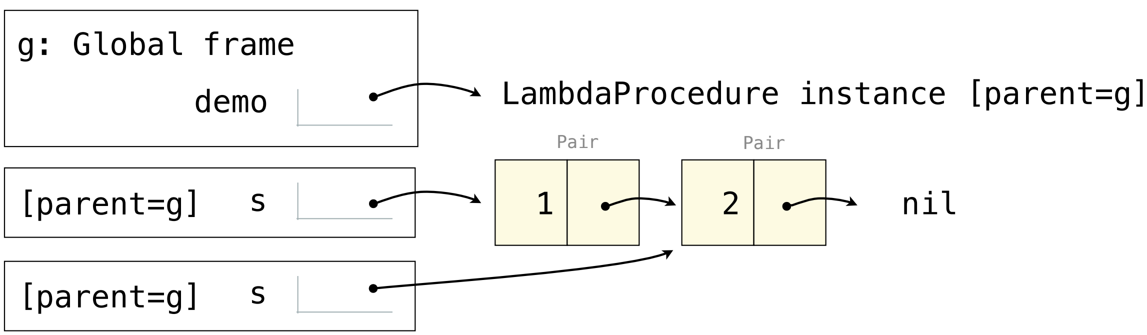

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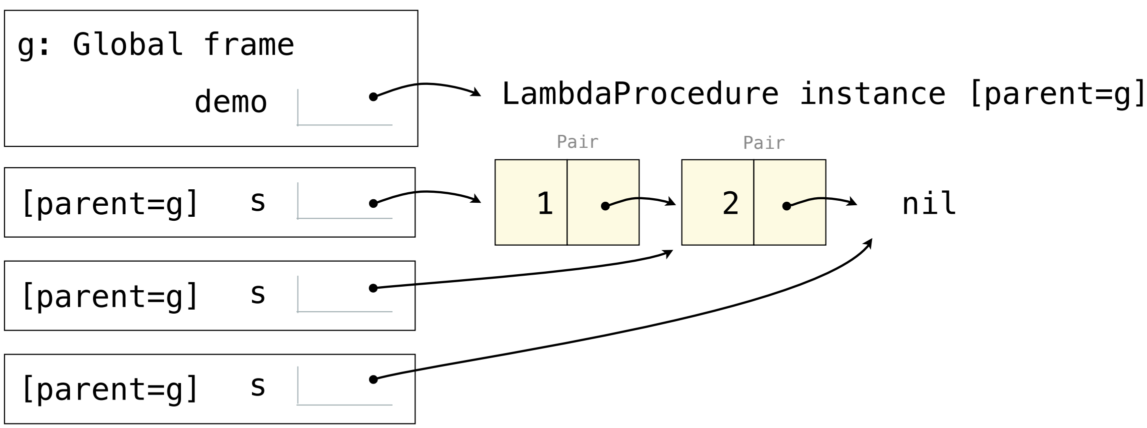

Eval/Apply in Lisp 1.5

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apply[fn;x;a] =
      [atom[fn] → [eq[fn;CAR] → caar[x];
                   eq[fn;CDR] → cdar[x];
                   eq[fn;CONS] → cons[car[x];cadr[x]];
                   eq[fn;ATOM] → atom[car[x]];
                   eq[fn;EQ] → eq[car[x];cadr[x]];
                   T → apply[eval[fn;a];x;a]];
      eq[car[fn];LAMBDA] → eval[caddr[fn];pairlis[cadr[fn];x;a]];
      eq[car[fn];LABEL] → apply[caddr[fn];x;cons[cons[cadr[fn];
                                                   caddr[fn]];a]]]
eval[e;a] = [atom[e] → cdr[assoc[e;a]];
      atom[car[e]]→
              [eq[car[e],QUOTE] → cadr[e];
              eq[car[e];COND] → evcon[cdr[e];a];
              T → apply[car[e];evlis[cdr[e];a];a]];
      T → apply[car[e];evlis[cdr[e];a];a]]
```