Plan for Today

Register Allocation and Instruction Scheduling
- tradeoff between parallelism and data locality

Improving register allocation in MiniJava
- allocating register Temps to expressions
- allocating register Temps for local variables that are not parameters

Possible improvements over spill all

Register allocation for expression Trees
- assign Temps associated with machine registers to intermediate results within an expression tree
  - only need 2 (e.g. $t0, $t1)
  - indicate to spillAll that those Temps should not be spilled
  - can use caller-saved registers since registers won’t be live across function calls

Possible improvements over spill all cont...

Register allocation for local variables
- not parameters, those are passed on the stack
- modify MipsFrame so that allocLocal returns a callee-saved register
- indicate to spillAll that those Temps should not be spilled
- locals can be live across function calls, so modify MipsFrame constructor, prologue, and epilogue to ensure that the callee-saved registers used are saved and restored