

## Plan for Today

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### 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

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### 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...

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### 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