MIDTERM REMINDER

FRIDAY NOV 14TH 5:30-7:30
1221 COMP SCI

COVERS THROUGU "POINTS TO" ANALYSIS

PROJ #4 GRAPH COLORING REGISTER ALLOCATION
"MACHINEFUNCTION" PASS

START-UP SKELETON IN ~CS701-1/PUBLIC/PROJ4/SKELETON

VREGS VS PREGS (BOTH APPEAR IN INTERFERENCE GRAPH)

NO SPILLING REQUIRED

STEPS:

1. FOR EACH REG CLASS, GET POSSIBLE PHYSICAL REGS
2. DO REACHING DEFS AND LIVEVAR ANALYSES
3. COMPUTE LIVE RANGES
4. BUILD INTERFERENCE GRAPH

LIVE RANGE INTERFERE IF
OVERLAP IN CFG NODES
AND

AVAIL REGS AND ALIASES ARE NON-DISJOINT
5. COLOR THE INTERFERENCE GRAPH

(a) PUSH "EASY NODES."
    DON'T DOUBLE COUNT NEIGHBORS W/ SAME COLOR

(b) THEN PUSH A NODE W/ MAX NEIGHBORS
    (NO SPILL COST USED)

(c) POP NODES
    PREG ONLY ONE CHOICE
    GET COLOR NOT ALREADY USED BY NEIGHBORS
    NO SPILLING NEEDED IN ASG
    (JUST ERROR MSG)

6. IN LLVM INST, REPLACE VREG W/ PREG(SELECTED COLOR)

   IF CALL IS IN LIVE RANGE (.ISCALL())
   ALLOCATE STACK SPACE (ONLY PER LIVE RANGE)
   STORE REG BEFORE EACH CALL
   RELOAD REG AFTER EACH CALL

--- EXTRA CREDIT --- (SPILLING)

   FIND 3 PHYSICAL REGS PER REG CLASS
   GET STACK SPACE FOR SPILL
   GET SPILL REG
   FOR USE, LOAD FROM STACK INTO SPILL REG
   FOR DEF, STORE SPILL REG INTO STACK
   REPLACE VREG WITH SPILL REG IN INST
DEBUGGING FLAGS
PRINTLINE \{ GIVEN TO YOU
PRINTRD
PRINTRANGES
PRINTGRAPH