CIS 314
QTSpim Tutorial

Brian Gravelle & Shreeya Khadka
SPIM Overview

- Spim is a simulator to run MIPS32 programs
- QtSpim is a new Qt GUI interface for spim that supports various platforms (Windows, Mac, Linux)
- It reads and executes MIPS assembly language programs
- It also has a simple debugger
After Launch

User Text Segment [00400000]..[00440000]
lw $4, 0($29)
addiu $5, $29, 4
addiu $6, $5, 4
sll $2, $4, 2
addu $6, $5, $2
jal Ox00000000 [main]
ori $2, $0, 10
syscall

Kernel Text Segment [80000000]..[80010000]
addu $27, $0, $1
lui $1, -28672
sw $2, 512($1)
lui $1, -28672
sw $4, 516($1)
addiu $6, $5, 4
sll $2, $4, 2
addiu $6, $5, $2
syscall

Copyright 1990-2012, James R. Larus. All Rights Reserved.
SPIM is distributed under a BSD license.
See the file README for a full copyright notice.
Starting SPIM
Register Panel

• The Register panel shows the contents of all the MIPS registers
  ‣ There are two tabs
    • One for the floating point registers
    • One for the integer registers. The integer registers include general purpose registers (R1-R31) and special purpose registers such as the Program Counter (PC)
Memory panel

- The Memory panel has two tabs: Data and Text
- The Text tab shows the contents of the Program memory space
- From left to right, this includes:
  - The memory address of an instruction in hexadecimal (shown in brackets)
  - The contents of that memory address in hexadecimal
  - In binary form, this is the actual MIPS instruction that the processor runs
The Memory panel has two tabs: Data and Text.

The Text tab shows the contents of the Program memory space.

From left to right, this includes:

- The "human-readable" assembly language instruction using the hardware register numbers (shown in bold).
- The assembly language program you wrote using symbolic register names and memory address symbols (shown in italics).
Memory panel
Data panel

• The Data tab shows the contents of the Data memory space
• This includes the variables and array data you create, along with the stack content
Data tab
Loading of programs

Load File

Recent Files

Reinitialize and Load File

Save Log File

Print

Exit

File Simulator Registers Text Segment Data Segment Window Help

User Text Segment [00400000]...[00400000]

User Text Segment [00400000]...[00400000]

Kernel Text Segment [80000000]...[80010000]

SPIN Version 9.1.5 of January 3, 2012
Copyright 1990-2012, James R. Lumsdaine.
All Rights Reserved.
SPIN is distributed under a BSD license.
See the file README for a full copyright notice.
Program execution

your assembly code starts

register change resulting from previous instruction

current instruction
Program data
Setting break points

Right click the instruction to set breakpoint
Line by line debugging