

CS/COE 0447 Fall 2009

Lab 1: Introduction to MIPS

Solution

Part 1: Getting started with MIPS assembly language

- **Question 1: What decimal number is 0x00000010?**
10
- **Question 2: What is the value of the program counter before the first instruction is executed? (the program counter is the register labeled "pc")**
0x00400000
- **Question 3: What is the value of the program counter after the first instruction is executed?**
0x00400004
- **Question 4: What are the values of the program counter and register \$t1 after the second instruction is executed?**
pc: 0x00400008
\$t1: 0x00000009
- **Question 5: What are the values of the program counter and register \$t1 after the third instruction is executed?**
pc: 0x0040000C
\$t1: 0x00000011
- **Question 6: By how much is the program counter incremented after each instruction is executed?**
4
- **Question 7: How big are instructions in MIPS?**
Number of bits: 32
Number of bytes: 4
Number of words: 1
- **Question 8:**
$$\begin{array}{r} 1000000 \\ + 000002C \\ \hline 100002C \end{array}$$
- **Question 9: Does each box shown in the data segment window represent a byte or a word? Please explain.**
Each box represents a word. Even though every byte has a different address, the simulator

shows words to save space and fit more data on the screen. The difference in the addresses of two consecutive boxes is 4, which means that each box has 4 addresses. Each of these is the address of a byte within the word.

- **Question 10:**

	Address	Hex Value
0x25	0x10010000	0x00000025
0x3	0x10010004	0x00000003
16	0x10010008	0x00000010
25	0x1001000C	0x00000019
3	0x10010010	0x00000003
0x44	0x10010014	0x00000044
0x33	0x10010018	0x00000033
0x22	0x1001001C	0x00000022
44	0x10010020	0x0000002C
33	0x10010024	0x00000021
22	0x10010028	0x00000016