

Lab 4

READ INSTRUCTIONS CAREFULLY BEFORE YOU START THE LAB.

This lab is due on Sunday, March 22, 2020.

Lab must be submitted electronically to iLearn on <https://ilearn.csumb.edu> by 11:55 p.m. on the due date. Late lab assignments will not be accepted.

Lab submission must contain all files zipped/compressed into a single folder. Any other formats will not be accepted. The naming convention of the file should be Lab4_lastname. **Put your names in the documents as well.**

This lab is worth 15 points.

Name : Antonio Felix

1. Getting Started with MARS

We will use the MARS (MIPS Assembler and Runtime Simulator) to practice MIPS assembly.

Download MARS

You can download MARS from the site below:

[MARS MIPS simulator](#)

Tutorials

Quasar Distant has put together a ton of tutorials to take you through the various layers of MIPS programming in MARS. It would be good for you to go through at least the first 3-4 and then select the ones you want to watch to learn more.

<https://www.youtube.com/watch?v=u5Foo6mmW0I&list=PL5b07qImA3P6zUdDf-o97ddfpvPFuNa5A>

Additional Resources

- [MIPS architecture and assembly language](#)
 - Information on the structure of the language
- [MIPS instruction set](#)
 - Each instruction and its breakdown including the binary representation
- [MIPS assembly introduction \(MARS\)](#)
 - SEPPT - Somebody Else's PowerPoint - This is a good slide by slide intro to MIPS. Go through it and see how much you are grasping.
- [Additional MIPS Documents](#)
 - Additional information can be found here. These are documents coming from other sources on the web.

- [MIPS Macros](#)
 - Macros for MIPS can help simplify your assembly

[MIPS Green Sheet](#)

The MIPS green sheet is a quick reference that you will want to download. Use this for register addressing, commands , etc...

2. Lab Instructions

In this lab you will create a "Mad Libs" style program. The program will read in four (4) or more values from the user and insert those values into a story. At least one of the values must be a string and one of the values must be an integer.

Not familiar with Mad Libs - go here:

<http://www.madlibs.com/>

Not familiar with reading in values in MIPS - go here:

<https://courses.missouristate.edu/KenVollmar/mars/Help/SyscallHelp.html>

3. Grading Criteria

You will be graded on the following:

- Each team member submits their own submission
- Each team member will be graded on their assembly taking in at least one string
- Each team member will be graded on their assembly taking in at least one integer
- Each team member will be graded on producing a Mad Lib style result with the 4 values shown
- Each team member will be graded on functional assembly

4. What to turn in?

- Each team member will submit their own submission.
- Work together to figure out how to make your program function.
- You will submit your assembly file (.asm file)
- You will also submit a screenshot of the inputs and them functioning in the MARS console (in pdf format).
- Zip the assembly file and pdf file into one folder and submit the zip file to iLearn

Edit Execute

Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x3c011001	lui \$1,0x00001001	34: la \$a0, namemsg
	0x00400004	0x34240080	ori \$4,\$1,0x00000000	
	0x00400008	0x24020004	addiu \$2,\$0,0x00000000	35: li \$v0, 4
	0x0040000c	0x0000000c	syscall	36: syscall
	0x00400010	0x24020008	addiu \$2,\$0,0x00000000	38: li \$v0, 0
	0x00400014	0x3c011001	lui \$1,0x00001001	39: la \$a0, name input
	0x00400018	0x34240080	ori \$4,\$1,0x00000000	
	0x0040001c	0x24050020	addiu \$5,\$0,0x00000000	40: li \$a1, 32
	0x00400020	0x00044021	addu \$8,\$0,\$4	41: move \$t0, \$a0
	0x00400024	0x0000000c	syscall	42: syscall
	0x00400028	0x3c011001	lui \$1,0x00001001	45: la \$a0, bodymsg
	0x0040002c	0x34240080	ori \$4,\$1,0x00000000	

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x10010020	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x10010040	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x10010060	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x10010080	0x65746e45	0x20612072	0x6564616e	0x4500203a	0x7265746e	0x62206120	0x2079646f	0x74726170
0x100100a0	0x4500203a	0x7265746e	0x6465795c	0x4500203a	0x7265746e	0x720c120	0x74736275	
0x100100c0	0x6564616e	0x4500203a	0x7265746e	0x6465795c	0x4500203a	0x7265746e	0x62206120	0x74736275
0x100100e0	0x74697720	0x68742068	0x20002065	0x2e756e64	0x69724420	0x64206120	0x2065726f	0x6e612000
0x10010100	0x61742064	0x0020656b	0x20736120	0x73657270	0x65626563	0x6662064	0x20002072	0x73796164
0x10010120	0x0000002a	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000

0x10010000 (data) ☒ Hexadecimal Addresses ☒ Hexadecimal Values ☐ ASCII

Mars Messages Run I/O

Enter a name: Felix
 Enter a body part: stomach
 Enter a fluid: h2o
 Enter a substance: Acetaminophen
 Enter a number: 5

Clear

Mars Messages Run I/O

Enter a fluid: h2o
 Enter a substance: Acetaminophen
 Enter a number: 5
 Felix
 is sick with the stomach
 flu. Drink more h2o
 and take Acetaminophen
 as prescribed for 5 days.
 -- program is finished running --

Clear