

Introduction to Computer Organization (CCIT4026)

HKU SPACE Community College

(Lab 02 – CL01/CL07/CL08)

Instructions:

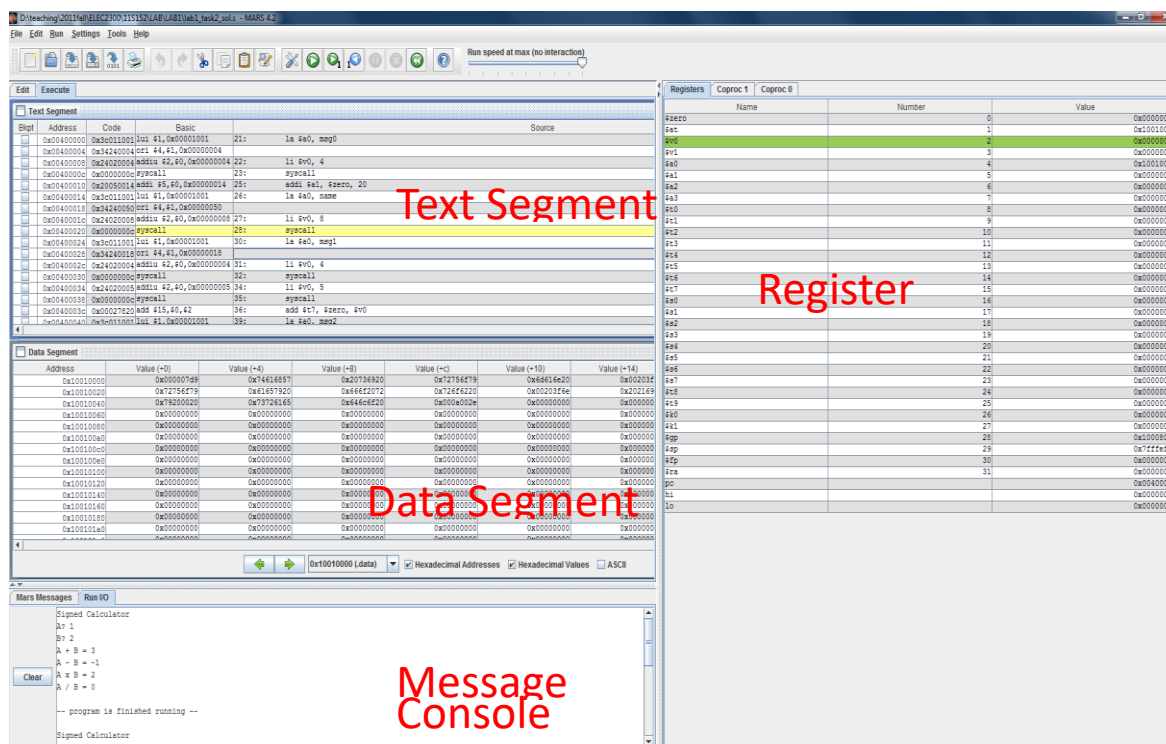
1. Fill in your personal information on the provided answer sheet (WORD) file.
2. The lab. submission consists of two components: a) A lab. report in PDF format which includes the material stated in the lab. sheet and b) The original assembly source code file for output verification.
3. Submission missing **EITHER** the lab. report (.pdf) **OR** the final source code (.asm) would **NOT** be graded.
4. Screen captures your final assembly source codes (with colors) and the input/output messages onto a WORD file and then **convert to PDF format**. The file would be considered as lab. report.
5. **Source code listing shown in the lab. report file CANNOT be superseded by the source code “.asm” file. Mark deduction would be imposed if no source code listing is shown in the report file.**
6. Upload **BOTH** the lab. report PDF file **AND** the final source code to SOUL.
7. Make sure the source codes are readable and neatly formatted. Unclear, incorrectly-sized or codes of poor readability would **NOT** be graded.
8. Each instruction should be associated with suitable comments to improve readability.
9. All problems are expected to be answered by using the **instructions** mentioned in the course materials **ONLY**. If you have to bring in instructions out of this scope, **prior consent** from the lecturer should be sought and a proper citation has to be provided otherwise the answers would be considered as **INCORRECT**.
10. **Make sure to run** (and single-step) your codes on MARS simulator to confirm its functionality before submission.
11. **Photo capture of the results** shown on the monitor is **NOT** acceptable. Use screen capturing software such as “Snipping Tool” on Window, then copy and paste the images onto the WORD file.
12. **No late submission will be accepted.**
13. Please read the Student Handbook for issues related to academic honesty. The College places very high importance on honesty in academic work submitted by students, and adopts a policy of zero tolerance on cheating and plagiarism. Any related offense may be passed to the Guidance Committee. Possible disciplinary action, including termination of study, may follow.
14. By making a submission, you also confirm to have read and understood the above-listed instructions and HKU SPACE Community College's academic honesty policy, and agree to comply with them. Failure to comply with the above instructions may lead to disqualification of your assignment results and possible disciplinary actions.

1. Introduction

In this lab, you are required to write a simple program for asking the name and age of a user and display them on a screen

2. More about MARS

MARS is a lightweight interactive development environment (IDE) for programming in MIPS assembly language.



(a) Registers Window

- This window displays registers of a MIPS processor.
- This includes **32 general-purpose registers**
- 32 single floating-point registers
- 32 double floating-point registers.

(b) Text Segment Window

- It displays the TEXT segment of the memory contents. There **you find instructions from the user and kernel text segments (The program loaded)**.
- By default, your program begins at 0x00400000.
- Due to the 32-bit nature of MIPS, the second instruction is located at 0x00400004.

(c) Data Segment Window

- It displays the memory contents of DATA, STACK, and KERNEL DATA segments. They are updated as a program executes.
- The data segment starts at 0x10010000 in MIPS simulator

(d) Message Window

- It displays messages from the simulator. It does not display output from an executing program. Any error message will be displayed here

(e) Console Window

- When a program reads or writes, its IO appears in a window, also called the Console.

Program Skeleton:

You may start your program by using the following template, and **comments** must be included to describe the functions that you have performed.

E.g. # Print a new line, # read a string, etc.

```
# NAME: Chan Tai Man
# Student ID: 1234567
# CCIT4026 Computer Organization
# CCIT4026-CL01
# Lab2
#
# Input and Output
#-----Data Segment-----
    .data

#-----Text Segment-----
    .text
    .globl __start
__start:
    # -----
    # Write your code here

    # -----

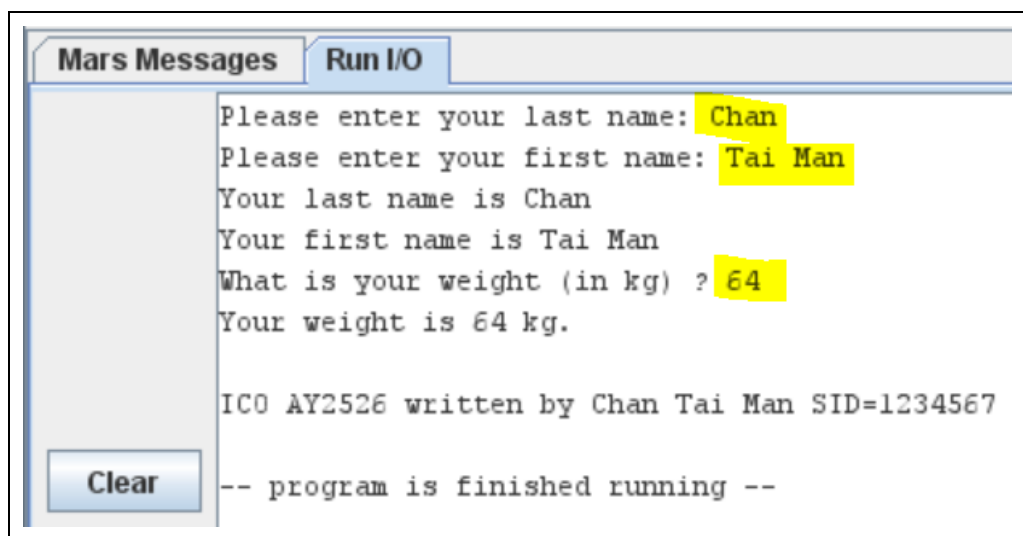
# Terminate the program
```

- (3) Save the file as lab2.asm
- (4) Assemble the program by clicking Run -> Assemble
- (5) Run the program by clicking Run -> Go

3. Lab. Tasks

In this Lab., you are required to write a program for asking the basic information from the user. In this program, the user is required to input his/her name as ASCII strings and related information (an integer value) while the sample inputs are **highlighted** as shown below. Your program is required to output a greeting to the user and display the input information as shown in the sample below. Finally display the pre-defined author information message, which should be pre-defined in the data segment.

Sample Output:



- i. Assembled and run the revised program. Make sure that the correct output is displayed on the "Run I/O" window.
- ii. Copy and paste the screen capture of the source code from the MARS editor onto the provided answer sheet template in WORD file.
- iii. Copy and paste the screen capture of the assembled window that shows your assembled machine codes.
- iv. Copy and paste the screen capture of the "Run I/O" window that shows your program execution output (Program termination message **MUST** be shown).
- v. Fill in your name, class, student ID and a photo of your student ID card at the beginning of the WORD file. A sample submission format is shown below.
- vi. Convert the provided answer sheet template WORD file to PDF format as your lab. report.
- vii. Rename your revised "lab1.asm" and lab. report pdf file to the file names according to the following format,

- i. "ICO_Lab2_CL<classNO>_<yourname>_<studentID>.asm" and
- ii. "ICO_Lab2_CL<classNO>_<yourname>_<studentID>.pdf"

iii. e.g., For CL01,

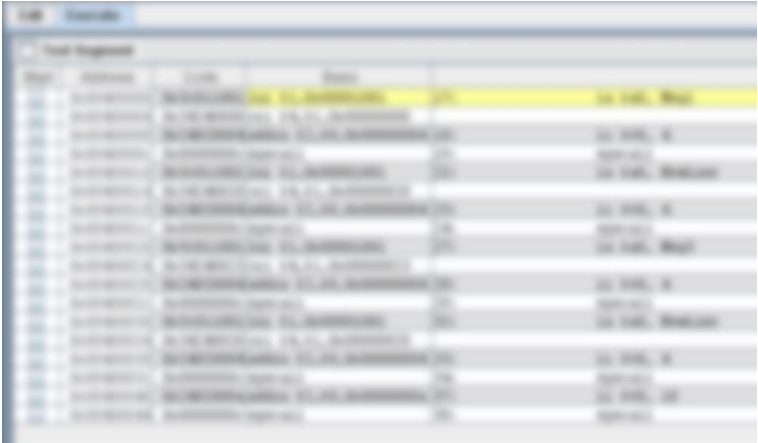
1. "ICO_Lab2_CL01_CHANTaiMan_20002000.asm" and
2. "ICO_Lab2_CL01_CHANTaiMan_20002000.pdf"

- viii. Upload BOTH the lab. report PDF file and your ".asm" to SOUL before the deadline.
- ix. No mark would be given if no source code file ".asm" is submitted OR missing your student ID card photo.
- x. Late submission will NOT be graded.

Sample Submission:

		(Insert a photo of your student ID card below)
Student Name:		(No mark would be given if no student ID is present here)
Student no.:		
Class Number:		

Source Code (Captured from MARS)	Screen capture the output directly from MARS Editor. 
Assembled Results (Captured from MARS)	Screen capture the (ALL) output directly from "Execute" window:

	
Run I/O results (Captured from MARS)	Screen capture the output directly from “Run I/O” window: 

— THE END —