

CSC 256 Machine Structures

Section 02

Spring 2023

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Class Time: Mon/Wed 11:00AM - 12:15PM
Location: Burk Hall 237

Prerequisites: *a grade of C or better in CSC230 or CSC330*

Reading Material

CSC 256 Course reader (available on CANVAS)

Other Resource:

Computer Organization, Patterson, D. and Hennessy, J. Morgan-Kaufmann, 4th or 5th edition

Reference: *See MIPS Run*, by Dominic Sweetman (Morgan Kaufmann)

Instructor: Jingyi Wang
Office: TH
Office Hours: Mon 10:00- 11:00 via Zoom or by appointment
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TA: TBD
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Grading Policy:

Attendance	10%
Assignments	50%
2 Mid-Exam	20%
1 Final-Project (Individual)	20%

No rescheduling will be allowed for travel-related reasons.

For every day the assignment is late after due date, **25%** of the credit will be deducted from the assignment/project score. No assignments will be accepted once they are **2** days late.

Please submit your assignment/project on CANVAS, any submission sent by email or by person is not accepted.

Course Topics:

- Introduction
- Integer representation/Integer arithmetic
- Assignment statements, logical and arithmetic instructions, Directives, variables, I/O, if-else, while, for, do-while loops, shift/rotate, logical statements
- load/store, pointers, arrays
- Stack, Simple functions, tracking nested calls, call frames, array arguments, return values
- Machine language, assembly, disassembly
- Logic 1, 2, 3
- Single MIPS CPU, Pipelines MIPS, Performance, Power
- Interrupts/signals
- Storage technology, Memory hierarchy, Cache, Virtual memory basics, I/O basics.

Learning Outcomes:

At the end of this course students will be able to

- ☐ Translate C/C++ code into assembly language
- ☐ Perform simple optimizations by hand
- ☐ Trace and debug at the assembly level
- ☐ Understand and extend simple CPU implementations
- ☐ Understand basic interrupt/exception handling
- ☐ Make simple performance estimates for assembly code

Attendance

You are responsible for all information given out in class. If you are unable to attend a regular class period, make sure you find out from a classmate about the lecture and handouts.

If you are unable to attend a class period when a test is scheduled, you *must* contact the instructor **before the test**. If you are unable to take a test for medical reasons, you must have proof from a doctor, the health center etc. Otherwise, you will get a zero on that test.

All students must give advance notice of 3 days you will be absent. No personal excuse (travelling, birthday, etc.) are allowed. You are required to present doctor's note for sick absence.

Religious and Cultural Holidays

The students wishing to observe religious and cultural holidays when such observances require students to be absent from class activities. It is the responsibility of the student to inform the instructor, in writing, about such holidays during the first two weeks of the class each semester. If such holidays occur during the first two weeks of the semester, the student must notify the instructor, in writing, at least three days before the date that they will be absent.

Academic Integrity Policy

Cheating and plagiarism are **serious** violations of the academic code of conduct. Students who have been found to be cheating will be notified by the professor. Furthermore their act will be reported to the Office of

Student Conduct (OSC). Please consult the departmental policy on plagiarism/cheating at <http://cs.sfsu.edu/plagiarism.html>.

All projects, unless otherwise specified, are individual projects. This means that you're expected to work on them on your own, and not in collaboration with other students. You may do preliminary planning with other students in the early stages of the project, or help a friend debug her/his project. However, if the code in your projects is found to be very similar, this is considered cheating, even if you worked together to produce the code.

Submitting someone else's work as your own is considered cheating. Letting someone else submit your work as her/his own is also considered cheating, and will be treated equally.

If you wrote your code on your own, you must be able to explain its details. If you are unable to explain the details of code that you turned in, I consider this a strong indication that you did not write the code on your own; in that case, I have the option of giving you a zero on that assignment, and reporting the incident to the department chair.

Depending on the seriousness of the offense, students caught cheating could be assigned an "F" in the course.

Disclosures of Sexual Violence (Title IX) SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the Dean of Students. To disclose any such violence confidentially, contact:

- The SAFE Place – (415) 338-2208; psyserve.sfsu.edu/content/safe-place
- Counseling and Psychological Services Center – (415) 338-2208; psyserve.sfsu.edu

Disability Access

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The [Disability Programs and Resource Center](#) (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472) or by email to dprc@sfsu.edu.

CSC 256 Tentative Calendar Spr 2023

Note: chapter numbers refer to lecture slides, not textbook

Quizzes and exams may be rescheduled due to teaching progress. Will be informed on Canvas for more information.

Week	Days	Topic
1	Mon	Ch 0 introduction
	Wed	Ch 1 Integer representations/arithmetic
2	Mon	Ch 1 Int arithmetic Ch 2 System view
	Wed	Ch 2 Assignment, arithmetic
3	Mon	Ch 2 Assignment, arithmetic
	Wed	Ch 2 Directives
4	Mon	Ch 2 Variables, ALU, IO
	Wed	Ch 2 if-else, for loop
5	Mon	Ch 2 while loop, logical instrs
	Wed	Ch 2 shift/syscall, Review
6	Mon	Ch 3 load/stores
	Wed	Ch 3 load/stores
7	Mon	Spring Break No Class
	Wed	Spring Break No Class
8	Mon	Ch 3 pointers, arrays
	Wed	Ch 3 pointers, arrays
9	Mon	Ch 3 pointers, arrays
	Wed	Review, Sample Exam Posted
10	Mon	Ch 4 the stack, simple functions
	Wed	Ch 4 the stack, simple functions
11	Mon	Ch 4 simple functions, nested calls
	Wed	Final Project Posted Ch 5 machine language
12	Mon	Ch 5 machine language
	Wed	Ch 5 disassembly
13	Mon	Ch 7 Simple MIPS CPU
	Wed	Ch 7 Simple MIPS CPU
14	Mon	Ch 7 Simple MIPS CPU
	Wed	Ch 9 Digit Circuit
15	Mon	Ch9 Digit Circuit
	Wed	Ch 8 Cache 2,
16	Mon	Ch 8 Cache 2
	Wed	Review

