LBYARCH
Course Introduction

2024-2025-T3
De La Salle University
College of Computer Studies
Department of Computer Technology

Outline

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- Introduction
- Learning Outcome
- Major Course Output
- Grading System
- Learning Plan
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- Class Layout

About Me

Jonathan Cempron

Education:

- BS Computer Science major in Computer Systems Engineering, DLSU
- MS Computer Science, DLSU

Research

- Computer Vision
- Computer Architecture

Contact Information

- Via canvas inbox
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LBYARCH

- fundamentals of assembly language programming
- supplement the learning of computer organization and computer architecture (CSARCH2).
- Two types of assembly language:
  - CISC-based x86-64
  - RISC-based RISC-V
- Instruction set architecture concepts:
  - addressing modes,
  - registers, and
  - instruction sets
- Interfacing between the high-level language (C) and assembly language (x86)

CSARCH2

CSARCH2

- Computer Architecture concepts
- Data representation
- Components and operations of computing components.
- Includes CPU, Memory, Cache, I/O

LBYARCH

- Assembly language programming
- Use computer architecture concepts

Learning Outcome

LO1. Explain the difference between CISC-based and RISC-based instruction set architecture.

LO2. Explain the x86-64 and RISC-V software architecture.

LO3. Explain the function of each basic x86-64 and x86-64 instruction.

LO4. Code a working x86-64 assembly language program.

LO5. Code a working x86-to-C interface program.

LO6. Code a working RISC-V assembly language program.

Major Course Output

Departmental Exam

Laboratory Exercises

- Discovery Series
- Lab Activities

Programming Project

Grading System

Assessment Task	**Weight**
Departmental Exam	20%
Laboratory Exercises (Discovery Series)	40%
Average of Programming Projects	40%
Passing / TOTAL	**60** / 100%

60% passing

Learning Plan

Topic	Week	Activities
Assembly Programming Concepts and x86 integer Programming	1-5	Lecture, Discussion, Lab Exercises
Machine Project 1	6	Demonstration Presentation
X86 Floating Point Programming	7	Lecture, Discussion, Lab Exercise
Exam	8	Synchronous Exam
Interfacing C to x86	9	Lecture, Discussion, Lab Exercise
Machine Project 2	10	Demonstration Presentation
RISCV Assembly language	11-13	Lecture, Discussion, Lab Exercises

References

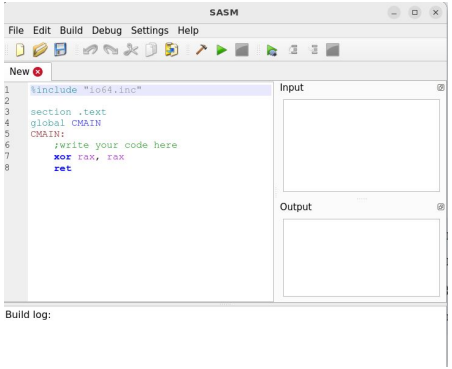
Online x86-64 instruction reference manual: https://www.felixcloutier.com/x86/

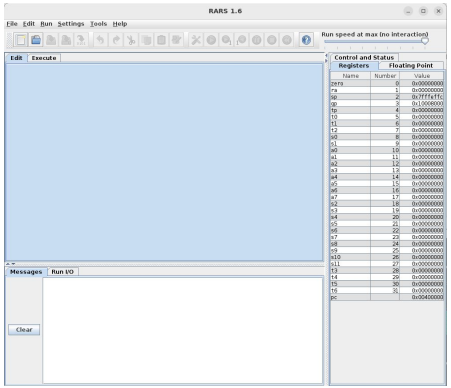
Intel Corporation (2023). Intel64 and IA-32 Architectures Software Developer's Manual, Volume 1: Basic Architecture & Volume 2: Instruction Set Reference. Retrieved from https://software.intel.com/content/www/us/en/develop/articles/intel-sdm.html

RISC-V Organization (2020). RISC-V Instruction Set Manual Volume 1, Unprivileged Spec v.20191213. Retrieved from https://riscv.org/technical/specifications/

Hennessy, J.L., & Patterson D.A. (2021). Computer Organization and Design: A Hardware/Software Approach (RISC-V Edition) 2nd Edition. Cambridge, MA: Elsevier/Morgan Kaufmann Publishers.

Tools





- SASM: https://dman95.github.io/SASM/english.html
- RARS https://github.com/TheThirdOne/rars/releases/tag/v1.6

Class Policies

1.) Grades are considered final 24 hours after they are posted or returned.

2.) Academic honesty, please. Cheating and code plagiarization automatically warrant a 0.0 for the course and will be reported to the SDFO office.

3.) Make-up exam (if needed) should be taken immediately. A delay of more than 2 days means you will not take the exam anymore. Case-to-case basis may apply. Deductions may apply.

4.) Submission of the associate dean's approved absence slip can be submitted within one week AFTER the make-up exam.

5.) Deductions (40%) apply to all late submission

6.) Attendance is recorded

Lab Pair

- Find your Pair
- Canvas > People > Lab Group

- Automatic Random Assign after May 8

Class Layout

Tuesdays	Online	Lecture	
		Discovery Series (Objective)	Independent
Fridays	Face 2 Face	Lab Activity (Programming)	Pair
		Discovery Series (Programming)	Independent

Online Lab Activities

- Starting Friday May 16, Next Week
- First 2 weeks of classes was announced as full online
- Via zoom
- 10 breakout rooms,
- 1 room for your pair
- Required open microphone
- Required screen sharing
- Marked absent otherwise, submissions will be marked 0

Canvas Navigation

- Always use Module Section
- DISREGARD Grades in cavas