Introduction to the Course

Taimur Shahzad

Instructor information

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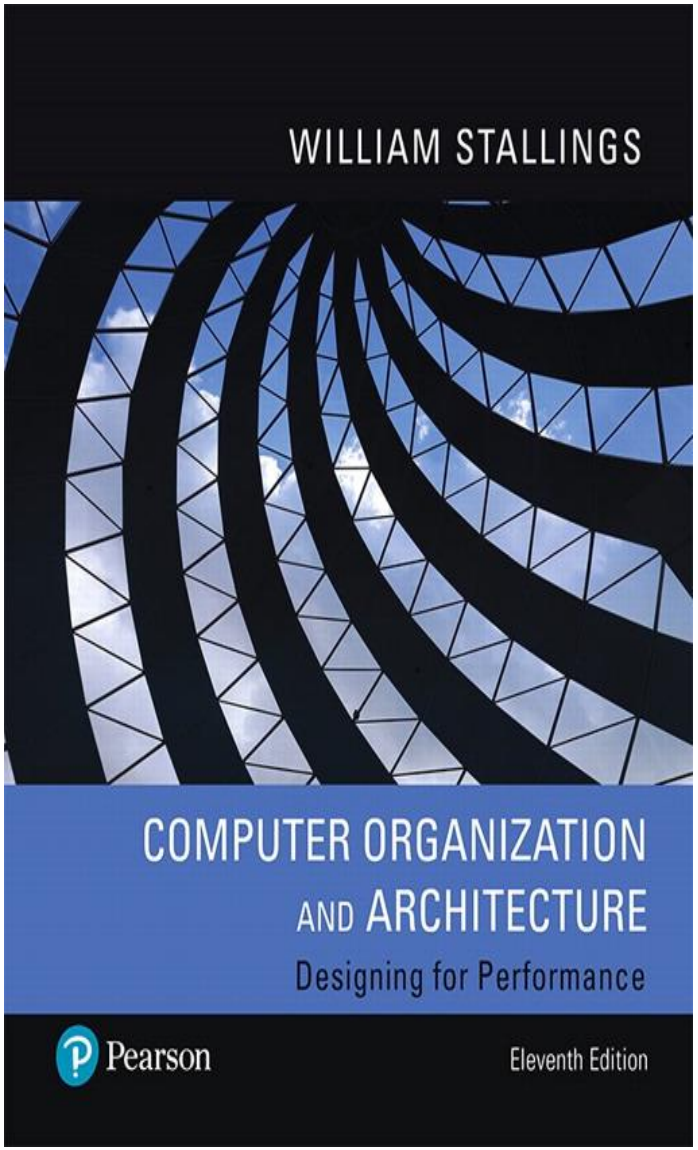
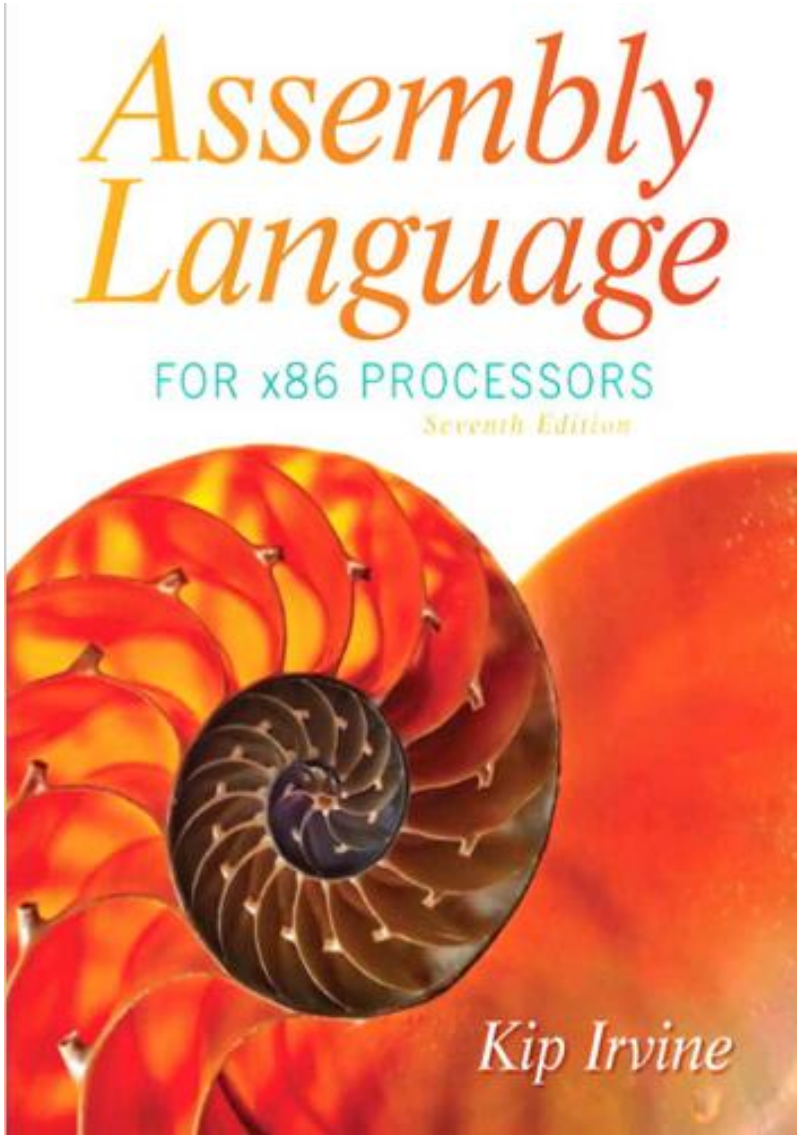
Course Introduction

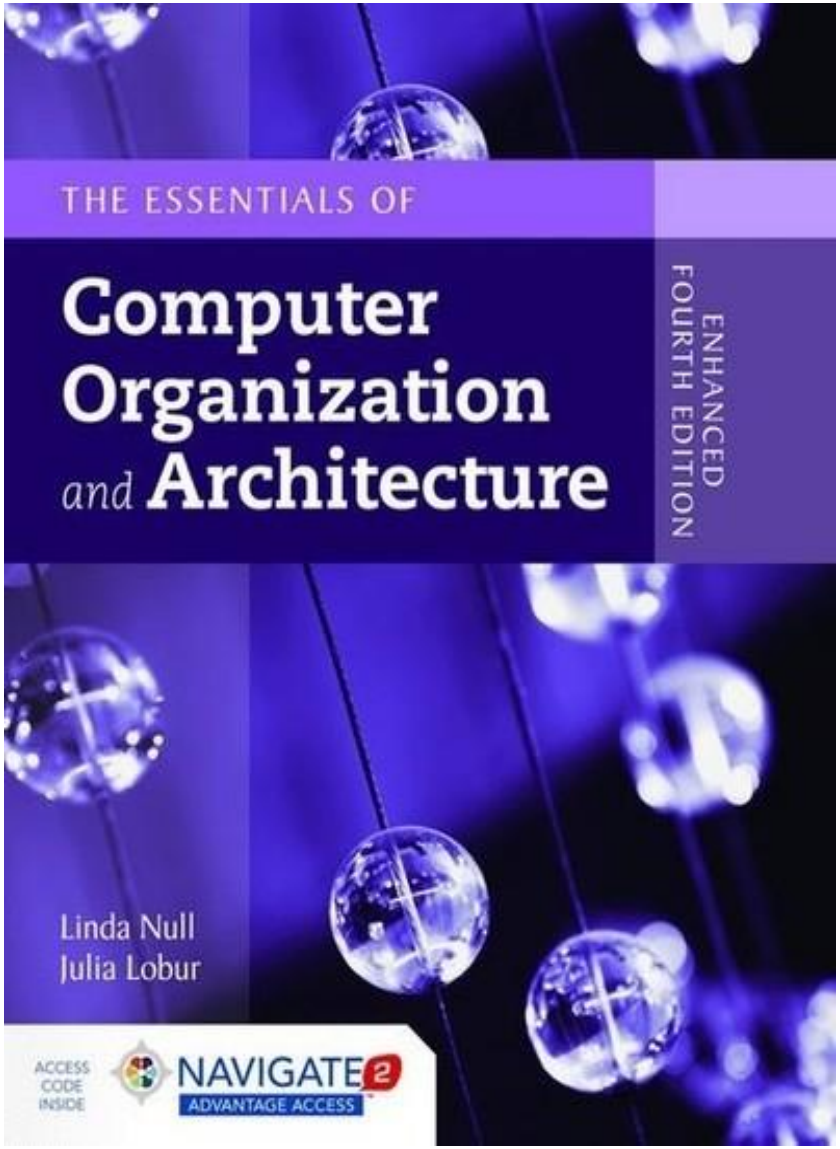
- Comprises of two components with
  - Microprocessor and
  - Assembly Language

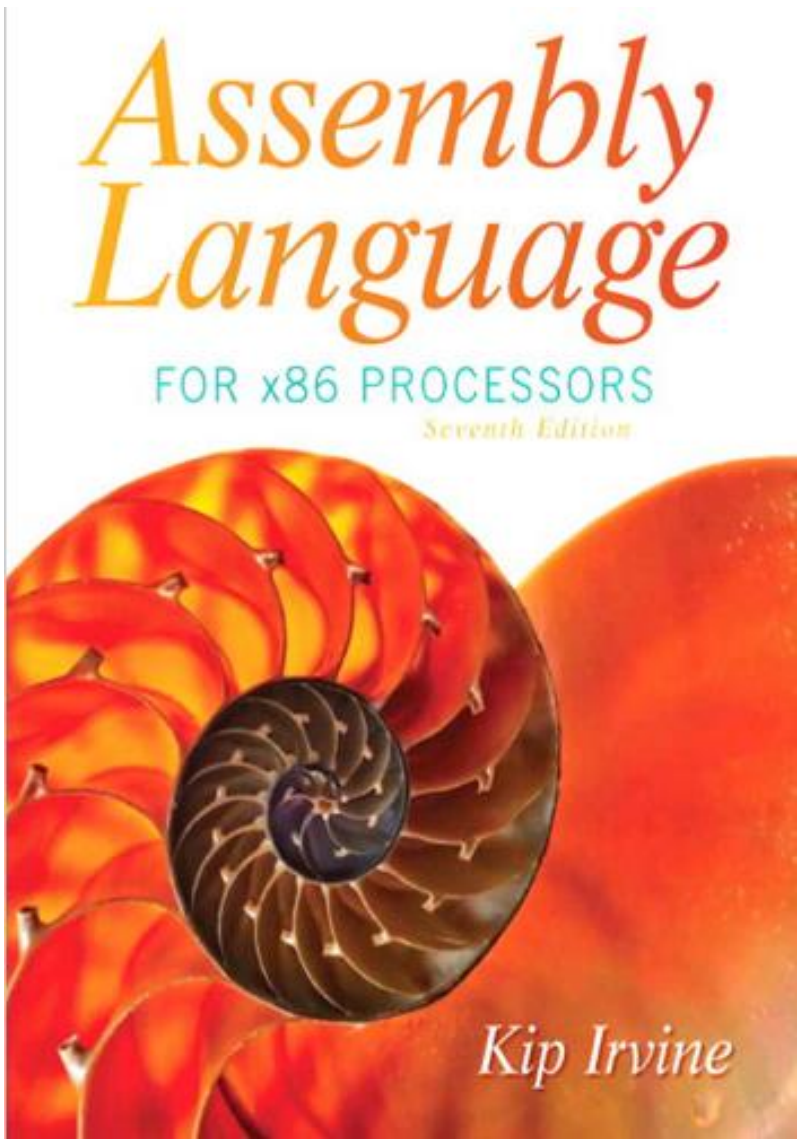
Text Books


WILLIAM STALLINGS
COMPUTER ORGANIZATION
AND ARCHITECTURE
Designing for Performance
Pearson
Eleventh Edition


Assembly
Language
FOR x86 PROCESSORS
Seventh Edition
Kip Irvine

Text Books


THE ESSENTIALS OF
Computer Organization and Architecture
ENHANCED FOURTH EDITION
Linda Null
Julia Lobur
ACCESS CODE INSIDE
NAVIGATE 2
ADVANTAGE ACCESS


Assembly Language
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Computer Organization Book

- Ch1: Data Representation
- Ch2: Computer Evolution and Performance
- Ch4: Cache Memory
- Ch6: External Memory
- Ch7: Input/output
- Ch12: Instruction Sets

Assembly Language Book

- Ch3: Basic Assembly Language Elements
- Ch4: Data Transfer and Arithmetic instructions
  Addressing Modes
- Ch5: Procedures → Built in
- Ch6: Conditional Processing
- Ch7: Integer Arithmetic
- Ch8: Advanced Procedures
- Ch9: Strings and Arrays

Course Learning Outcomes

CLO	Description
C1	Explain the basic characteristics of a microprocessor and its applications.
C2	Explain a comprehensive understanding of 80X86 instruction set.
C3	Describe the basic architecture of the IA-32 processor.
C4	Solve a given problem by writing programs in assembly language.

Microprocessor

Assembly Lang

Grade	**A**	**A-**	**B+**	**B**	**B-**	**C+**	**C**	**C-**	**D**	**F**
Marks	90 - 100	85 - 89	80 - 84	75 - 79	70 - 74	65 - 69	60 - 64	55 - 59	50 - 54	<50
Cr. Point	4.0	3.7	3.3	3.0	2.7	2.3	2.0	1.7	1.3	0.0

Lab working

- Journey → in lectures
- Application → with solutions
- Verification → Home work
- Assessment → Home work Checking

Lab #	Topics Covered	
Lab # 01	Data Representation: Conversions in Java	
Lab # 02	Instruction set architecture (16 bits): Design and Working	
Lab # 03	Debug Tool and Usage of software Interrupt (INT command)	
Lab # 04	Assembly Language Introduction; MASM configuration; Usage of Dumpregs; Input and Output in Assembly using Call WriteTYPE and Call ReadTYPE	
Lab # 05	Data Types in Assembly: BYTE, WORD and DWORD	
Lab # 06	Data Transfer and Arithmetic Instructions; Flag affected by arithmetic; Data Related operators	
Lab # 07	Array Processing (Direct, Indexed and Indirect); LOOP and Nested LOOP	
Lab # 08	Introduction to Procedures; User defined Procedures; Procedures having flexibility	
Lab # 09	Boolean Operations: AND, OR, NOT, XOR, TEST and CMP	
Lab # 10	Flow Control and Conditional Jump Instructions: Signed Vs. Unsigned	
Lab # 11	Implementation of HLL Control Structures	
Lab # 12	Shift: Logical and Arithmetic; Signed and Unsigned Shift; Rotate Instructions (Left or Right and Others)	
Lab # 13	Multiplication Instructions; MUL and IMUL; Applications of Multiplication	
Lab # 14	Division Instructions; DIV and IDIV; Applications of Division	
	Terminal Examination	

Quiz and Assignment Policy

- Four Quizzes (Unannounced/announced)
  - 2-2 Before Exams (Midterm and Terminal)
- Four Theory Assignments (announced)
- Four Lab Assignments
  - Will be done in Lab
- Marks based on Effort noticed by instructor.
- Note:Lab Terminal will be Project

Thanks!