Department of Computer Science and Engineering

National Institute of Technology Calicut
Kozhikode - 673 601, Kerala, India
CS2093 HARDWARE LABORATORY
Tentative Course Details – Winter Semester 2020-21

Lecture/Lab Hours:

Lecture Slot : S
Lecture Hours : Thursday 2.00 PM - 5.00 PM

Instructors

Name : Jayaraj P B, Saidalavi Kalady, Jay Prakash, S Sheerazuddin, Saritha Murali, Apsara B S

Lab Schedule:

Prerequisites: NIL

1	Introduction to X86 Architecture
2	X86 Instruction Set
3	Introduction to NASM
4	Integer Handling
5	String Handling
6	Procedure
7	Floating Point

Syllabus:

Theory (20 Hours)

Introduction to 8086 Microprocessor; Architecture of 8086, Memory addressing, Assembly Language Programming using 8086, Instruction set of 8086, Data movement Instructions, Arithmetic and logic instructions, Program control instructions, String handling instructions, procedures, recursions, floating point instructions, Basics of SIMD programming.

Memory and I/O interfacing, interfacing with 8255- Programmable peripheral interface, 8279 – programmable keyboard interface, 8254 timer interface - 16550 UART interface - ADC/DAC interfaces. Interrupts, hardware interrupts, Programmable interrupt controller 8259, Interrupt examples. Direct Memory Access, Basic DMA operation, 8257 DMA controller, Bus interface, ISA, VESA, PCI, USB

Introduction to NASM assembler, Sections in NASM, variables declarations, Basic instruction set, Basic I/O operations in NASM, Linux system calls, Interrupts, Linux 0x80h interrupt, Subprograms in NSAM, Arrays and strings, Using C Library functions in NASM, executing NASM programs, Sample programs, Floating point operations, SIMD operations.

Practical (25 Hours)

1. 80X86 Assembly language programming:
Integer operations, Operations on arrays, Recursive subroutines, String manipulation, Floating point operations, SIMD operations
2. Familiarization of PC hardware and troubleshooting

References:

1. Peter Abel IBM PC Assembly Language and Programming (5/e), Prentice Hall, 2001.
2. Barry B Brey, Intel Microprocessors: Architecture and Programming, Prentice Hall, 2008.
3. NASM Tutorial compiled by CSED NITC

Grading - Exams and Daily Evaluations:

Tentative Schedule for CS2093D Hardware Lab			
Sl No	**Date of the Lab Session**	**Submission**	**Maximum Marks**
		Theory/Quiz/Exam 40 Marks	
1	To be Decided	Theory/Quiz/Exam 1	8
2		Theory/Quiz/Exam 2	8
3		Theory/Quiz/Exam 3	8
4		Theory/Quiz/Exam 4	8
5		Theory/Quiz/Exam 5	8
		Major Evaluation 30 marks	
6		Evaluation 1 (Integer Arithmetic)	10
7		Evaluation 2(Strings)	10
8		Evaluation 3(Floating Point)	10
		Minor evaluation 10 Marks	
9		Evaluation 1(Integer Arithmetic)	10
10		Evaluation 2(Strings)	
11		Evaluation 3(Floating Point)	
		Test	20

N. B: The Schedule of Quiz/ Portions and Date of Examination will be informed weekly well in advance.

Grading Policies:

- Grading will be absolute.
- Here is a tentative grade distribution: 90-100: S; 80-89: A; 70-79: B; 60-69: C; 50-59: D; 40-49: E; <40: F.
- Absence for exams/quizzes without prior written permission from the instructor will be equivalent to zero marks in the corresponding exam/quiz.
- All issues regarding valuation of exams must be resolved within one week after the marks are announced.

Standard of Conduct:

Each student is expected to adhere to high standards of ethical conduct, especially those related to cheating. Any academic dishonesty will result in zero marks in the corresponding exam or quiz and will be reported to the department council for record keeping and for permission to assign F grade in the course.`https://minerva.nitc.ac.in/sites/default\\/files/attachments/news/Academic-Integrity_new_0.pdf`