CS F342 LAB PLAN: 1st SEM 2020-21

Lab No.	Learning Objectives	Topics to be covered
1-2	Introduction to MIPS; Understanding System calls and arithmetic operations	Installing and launching SPIM (QTSPIM); System Calls and User Input + Add/Sub; manual Disassembly - reversing given MIPS byte code (binary) to assembly; Understanding Pseudo instructions
3	Understanding mul/div operations and FP instructions	FP operations; multiply/divide using HI/LO registers; conversion across numeric datatypes; representing characters
4	Understanding control instructions; loop constructs in MIPS	Code Labels and Jump instructions; Logical operations; shift operations; loops: sentinel control loop & counter control loop; R-I-J type instructions
5	Exploring arrays and strings with MIPS	Array and string manipulation in MIPS; load/store instructions (for integers as well as floating point numbers);
6-7	Understanding function calls and exception handling	basics on function calls; advanced function calls and exception handling in MIPS assembly; recursive function calls
8-9	Representing structures	Dynamic memory allocation using sbrk syscall; structure representation in MIPS
10-11	Exploring sorting techniques using MIPS	Various sorting techniques: bubble sort, merge sort etc.
12	To get hands-on exposure to pipelined execution	Multi-cycle datapath and control path implementation

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