CS321
Autumn 2020
MSE

Indian Institute of Technology Patna

Department of Computer Science and Engg

CS321: Computer Architecture

Total marks: 100

Instructions

Attempt all the questions. Marks are given in [ ].

Submit by date: 4th October 2020/ 10:00AM

Submissions must be sent to the following link (Document A1-A7 -Single file) here:

https://docs.google.com/forms/d/1WlhgyBJUwDT8xzdnu2VTaWNYI7tk0fJsNrFdzHjaKVQ/edit

Submissions must be also uploaded with document solution (A1-A7-Single doc/pdf) and Files (A2.asm to **A6.asm) in a single zip file here:**

https://u.pcloud.com/#page=puplink&code=6Ft7ZpVEGVE1UoKmGPxuewyXIKhL4uhM7

- **Make appropriate assumption if required. Do not send any response to the personal emails of the instructor. If you do so, your paper will not be evaluated.**
- **Zero marks will be given solutions copied from others/ texts from elsewhere or close similarity to peers**

Assignments:

A1: Write a critical analysis report on different Computer Architecture models (Von Neumann, Dataflow, and Stack machine)

[15 Points]

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A2: Identify a unique problem that you are familiar and write an 8085 assembly level language program to solve. Simulate the solution using 8085 assembler and include screen shots outputs in the assignment file(Also submit *.asm file; use filename Roll_no_ A2.asm). comment each instruction in the asm file.

[15 Points]

A3: Identify a unique problem that you are familiar and write an 8086 assembly level language program to solve. Simulate the solution using MASM assembler and include screen shots outpus in the assignment file(Also submit *.asm file; use filename Roll_no_ A3.asm). Comment each instruction in the asm file.

[15 Points]

A4: Illustrate with examples different addressing modes in 8086. Create an ASM file clearly showing the use of different addressing modes and simulate the same using MASM and include screen shots clearly showing the different addressing modes in the assignment file(Also submit also Rollno_A4.asm file; use file name:Rollno_A4.asm)

[20 Points]

A5: Design an experiment which introduces string manipulation Instructions **REP, MOVS, CMPS, SCAS, LODS, and STOS**. Create an ASM file clearly showing the use of above instructions and simulate the same using MASM and include screen shots in the assignment file(Also submit also *.asm file; use file name:Rollno_A5.asm).

[15 Points]

A6: In a given 8086 -based system, 8255 interfaced at port address 3000H and PORT A used for monitoring the temperature. Write an Assembly language program to monitor port A continuously for the temperature of 64H degrees. If it reaches 64H, sends it to port address B. Show clearly the interfacing diagram and write an assembly level language for the above task. use file name:Rollno_A6.asm for the code.

[10 Points]

A7: A simple interrupt handler does multiple steps(save processor registers; execute device code; restore processor registers; enable interrupts, return to original program;). Taking an

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example simulate a software interrupt process using MASM. Show the steps using screen shots in the assignment answer file clearly showing (mark using call-outs) relevant registers, IP, and SP.

[10 Points]