CS321
Autumn 2020
ESE

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: 28 November 2020/ 10:30PM

Submissions must be sent to the following link (Document A1, A2, A3 and A4-Single file) and File , A3.circ (use roll number as the filename);

https://docs.google.com/forms/d/1ikENnCsxOgpmCMti2pEbTym78_UkljwI26349EFppsg/edit

Submissions must be also uploaded to the following link in a single zip file (use roll number as the filename);

https://u.pcloud.com/#page=puplink&code=vnU7ZUUS5NFPH8t77xfNdTXPY9LSB9F87

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.

Assignments:

A1: Write a critical analysis report on design strategy of Cache Memory for Computer performance Improvement: including Cache Hierarchy, Cache Associativity and Cache Write Policies: Pros & Cons.

[25 Points]

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A2: Explain how to extend the MIPS pipelined processor to handle the j instruction (jump instruction). Give particular attention to how the pipeline is flushed when a jump takes place.

[20 Points]

A3: Design an experiment which conveys one of the concepts in CS321. Clearly state the aim of the experiment, method of solving , and solution. Create a logic-sim set up and simulate the same to convey the concept and include screen shots in the assignment file(Also submit *.circ file;use file name:Rollno_A3.circ

[30 Points]

A4: Amdahl's law assumes that the problem size is kept constant- by adding more processors the same problem gets solved faster. Assuming a sequential program with appropriate parameters (with X portion that can be parallelized). Do a case study analysis. Include graphical analysis in your study (for example number of processors vs. speed up etc.). Include the program that you are writing for the analysis in the answer sheet.

[25 Points]