

## EEL 6764 Principles of Computer Architecture

### Homework #1

## 1 Problems

**Total points:** 250

1. Decide whether each of the following questions is true or false. Add brief explanation (1-2 sentences) to get all credits. (10pt each)
  - (a) Hardware enhancements that improve performance always increase energy-efficiency.
  - (b) The reliability of the system is limited by the weakest component even if some components are made 10X more reliable.
  - (c) You can afford to not pay attention to Amdahl's law because it is not applicable anymore.
  - (d) The operating clock frequency of a processor is a good metric to measure its performance.
  - (e) The future of performance improvement will be mostly dependent on parallelization of programming rather than blindly adding multiple cores in chip.
2. Complete the following problems at the end of chapter 1 of the textbook.

1.8 (20 pts), 1.9 (60 pts), 1.12(b-d) (35 pts), 1.14 (55 pts), 1.16(a-b) (30 pts)

## 2 Requirement

- All homeworks should be done and submitted individually.
- Show all steps to get full points.
- Writing and drawings if necessary must clear and readable. Otherwise, substantial loss of points may occur.
- You must submit your solutions electronically via Canvas.
- The file for your solutions must be in PDF or MS-Word DOCX format.