

## ECE 429 / 629 Homework #2

1. Suppose you have a program with three non-overlapping parts. I.e.,  $E = t + u + v$ , where  $E$  is the total execution time and  $t$ ,  $u$ , and  $v$  are the three parts. Two of these parts,  $u$  and  $v$ , are sped up by factors  $s_u$  and  $s_v$ , respectively.
  - a. Write the equation for the total speedup as a function of the two individual speedups.
  - b. Suppose  $t$ ,  $u$ , and  $v$  take up 20%, 60%, and 20%, respectively, of the processor time before speedup. Suppose  $u$  is sped up by 10x and  $v$  by 20x. What is the total speedup?
2. Problem 2.3 in the text.
3. Problem 2.6 in the text.

Text: Hennessy and Patterson, *Computer Architecture: A Quantitative Approach*, 3<sup>rd</sup> edition, Morgan Kaufmann, 2003.