CSE 331

Computer Organizations

Homework 1

Due Date 04/11/2022 Friday 17:00

1. A compiler designer wants to improve the performance of a machine for one specific program. The program has the following properties:

	R-type (x10°)	I-Type (x10 ⁶)	J-Type (x10°)
Program instructions	50	30	20

	R-type	I-Type	J-Type
Required Cycles	2	4	3

Assume you can improve only one type with 50%. Which type do you prefer for improvement and how many times can you improve the whole program in the end?

Total number of cycles (x106):

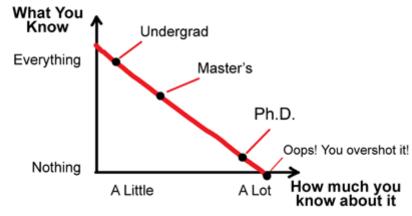
R-type: 50 * 2 = 100 I-type: 30 * 4 = 120 J-type: 20 * 3 = 60

Since the most costly one is I-type it should be improved.

Old total cycle count: 100 + 120 + 60 = 280New total cycle count: 100 + 120 * 0.5 + 60 = 220

So the improvement done is 100*(280-220)/280 = 21.4%

What You Know vs How much you know about it



JORGE CHAM @ 2008