

第一章作业

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1. 见表 1

级	时间 (s)
1	k
2	Nk/M
3	N^2k/M^2
4	N^3k/M^3

Table 1

2.

$$CPI = \frac{45000 \times 1 + 75000 \times 2 + 8000 \times 4 + 1500 \times 2}{45000 + 75000 + 8000 + 1500} = 1.78$$

$$MIPS = \frac{CR}{CPI \times 10^6} = \frac{400}{1.78} = 224.72$$

$$t = \frac{45000 \times 1 + 75000 \times 2 + 8000 \times 4 + 1500 \times 2}{400 \times 10^6} = 5.75 \times 10^{-4}s$$

3. (a)

$$10 = \frac{1}{(1 - 30\% - 30\% - F_3) + \frac{30\%}{30} + \frac{30\%}{20} + \frac{F_3}{10}}$$

$$\Rightarrow F_3 = 36\%$$

(b)

$$\frac{(1 - \sum_i F_i)T_{old}}{(1 - \sum_i F_i)T_{old} + \sum_i F_i/S_i \cdot T_{old}} = \frac{1 - 30\% - 30\% - 20\%}{(1 - 30\% - 30\% - 20\%) + \frac{30\%}{30} + \frac{30\%}{20} + \frac{20}{10}}$$

$$= 82\%$$

操作	加速比
1	$2/1 = 2$
2	$20/15 = 1.33$
3	$10/3 = 3.33$
4	$4/1 = 4$

Table 2

4. (a) 见表 2
(b) 见表 3

操作	加速比
1	$\frac{1}{1 - \frac{10}{90} + \frac{10}{90}/2} = 1.06$
2	$\frac{1}{1 - \frac{30}{90} + \frac{30}{90}/1.33} = 1.09$
3	$\frac{1}{1 - \frac{35}{90} + \frac{35}{90}/3.33} = 1.37$
4	$\frac{1}{1 - \frac{15}{90} + \frac{15}{90}/4} = 1.14$

Table 3

(c)

$$SP = \frac{1}{\frac{10}{90}/2 + \frac{30}{90}/1.33 + \frac{35}{90}/3.33 + \frac{15}{90}/4} = 2.15$$

5.

$$SP = \frac{1}{1 - 40\% + \frac{40\%}{10}} = 1.56$$