

第7次作业

1. (1) 延时最长的作为 T_{pipe}

根延迟可忽略, $T_{pipe} = 2ns$; 考虑延迟, 取 $T_{pipe} = 2.1ns$ 更为合适

$$(2) \frac{1}{S} = \frac{T_{pipe} \times CPI_{pipe}}{T_{cycle} \times CPI_{cycle}} = \frac{2.1}{7} \cdot \frac{N+4}{N} = 0.3 \frac{N+4}{N} \quad (\text{时间比})$$

$$\text{加速比 } S = \frac{N}{0.3(N+4)}$$

(3) 设分为 K 级

$$\frac{1}{S} = \frac{T_{pipe} \times CPI_{pipe}}{T_{cycle} \times CPI_{cycle}} = \frac{\frac{7}{K} + 0.1}{7} \cdot \frac{N+K-1}{N} = \frac{(7+0.1K)(N+K-1)}{7KN}$$

$$\text{加速比 } S = \frac{7KN}{(7+0.1K)(N+K-1)}$$

当 $K \rightarrow \infty$ 时, 加速比为 0