作业(1)：Quantative Approach, ISA & ILP

截至时间：2022.10.28/周五 23:59:59
提交方式：超算习堂（https://easyhpc.net/course/157）

Q1-Sol:

a. $1/(0.8 + 0.20/2) = 1.11$

b. $1/(0.7 + 0.20/2 + 0.10 \times 3/2) = 1.05$

c. fp ops: $0.1/0.95 = 10.5\%$, cache: $0.15/0.95 = 15.8\%$

Q2-Sol:

a. $1/(0.2 + 0.8/N)$

b. $1/(0.2 + 8 \times 0.005 + 0.8/8) = 2.94$

c. $1/(0.2 + 3 \times 0.005 + 0.8/8) = 3.17$

d. $1/(.2 + \log N \times 0.005 + 0.8/N)$

e. $d/dN \ (1/((1-P) + \log N \times 0.005 + P/N) = 0)$

Q3-Sol:

a. Execution Time $= I \times CPI \times$ Cycle Time
Speedup $= (I \times 6/5 \times 1)/(I \times 11/8 \times 0.6) = 1.45$

b. $CPI_{5\text{-stage}} = 6/5 + 0.20 \times 0.05 \times 2 = 1.22$,
$CPI_{12\text{-stage}} = 11/8 + 0.20 \times 0.05 \times 5 = 1.425$
Speedup $= (1 \times 1.22 \times 1)/(1 \times 1.425 \times 0.6) = 1.17$