Lab1 Report

Student 1 Name: Zhuang Li Student 1 Number: 1000311628
Student 2 Name: Gujiang Lin Student 2 Number: 1000268239

Question 1:

	Ideal CPI	CPI with Hazard	Performance Drop
Question 1	1.0	2.07	107%
Question 2	1.0	1.53	53%

$$Performance\ Drop_{w/\ hazard} = \frac{CPI_{w\ hazard} - CPI_{w/o\ hazard}}{CPI_{w/o\ hazard}}$$

$$Performance\ Drop_{Q1} = \frac{CPI_{w\ hazard} - CPI_{w/o\ hazard}}{CPI_{w/o\ hazard}} = \frac{2.07-1}{1} \simeq 107\%$$

$$Performance\ Drop_{Q2} = \frac{CPI_{w\ hazard} - CPI_{w/o\ hazard}}{CPI_{w/o\ hazard}} = \frac{1.53-1}{1} \simeq 53.\%$$

Question 2:

We use –g as the compilation flag to prevent any undesired optimization
For question 1, we can see 7 2-clock-cycle stalls, within each iteration of for loop.

Assemble code 400250 to 400268 in mbq1.c is 3 RAW 2-clock-cycle stalls is from the comparison C code line 12 “j < 10000000”.

Assemble code 400280 to 40028c in mbq1.c is 1 RAW 2-clock-cycle stalls is from the comparison C code line “c = a + b”.

Assemble code 400290 to 4002a8 in 3 RAW 2-clock-cycle stalls is from the comparison C code line 12 “++j”.

Therefore we should have arounf 7*loop number = 70000000 2-clock-cycle stalls and around 0 1-clock-cycle stalls.