

ICS LAB3 report

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Part1.Optimization ideas

Idea one:Matrix rapid power

利用矩阵快速幂，可以优化到 \log_2^n 层循环，可以占用较小的内存空间及循环次数实现求解，但计算矩阵乘法代码行数开销较大。

Idea two:Table look-up

打表。平均行数：3

Idea three:Consider loop node

发现从20开始，之后每隔128位数循环一次，如 $F[21]=F[149]=326$ 。可以借此将范围缩小至0~148内，可缩小Idea1时间开销，缩小Idea2空间开销。

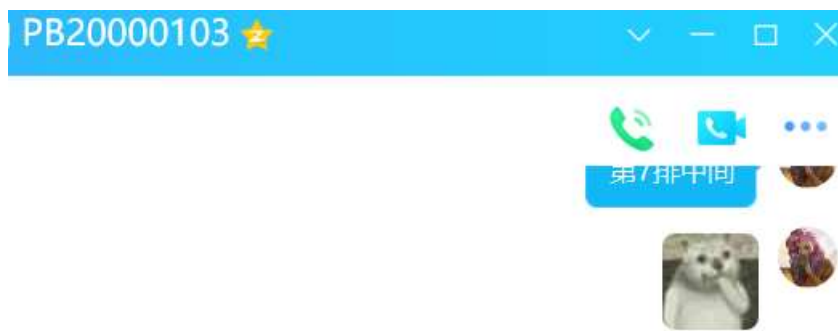
Part2.Photo display

n=21:

Registers			Memory		
R0	x3115	12565	❗ ▶ x3000	xE2FF	58111 LEA R1,DATASTORE
R1	x3100	12544	❗ ▶ x3001	x1040	4160 ADD R0, R1, R0
R2	x0000	0	❗ ▶ x3002	x6E00	28160 LDR R7, R0, #0
R3	x0000	0	❗ ▶ x3003	xF025	61477 LOOP HALT
R4	x0000	0	❗ ▶ x3004	x0000	0
R5	x0000	0	❗ ▶ x3005	x0000	0
R6	x0000	0	❗ ▶ x3006	x0000	0
R7	x0146	326	❗ ▶ x3007	x0000	0
PSR	x8001	32769 CC: P	❗ ▶ x3008	x0000	0
PC	x3003	12291	❗ ▶ x3009	x0000	0

Part3.Connect with the classmate

I got in touch with the classmate that with student number PB20000103.



Part4.summarize

It was a very interesting experiment!