Lab 1 report

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实验目的与内容

> 熟悉 RISC 指令集（龙芯 LA32R 指令集以及 RV32I 指令集）的部分指令及编码格式，以便后续在硬件层面上实现这些指令。

逻辑设计

> 任务 1：斐波那契数列

```
li.w $r2, 9
andi $r1, $r1, 0
andi $r3, $r3, 0
andi $r4, $r4, 0
andi $r5, $r5, 0
addi.w $r3, $r3, 1
addi.w $r4, $r4, 1
addi.w $r1, $r1, 2
a:
bge $r1, $r2, exit
addi.w $r5, $r4, 0
addi.w $r4, $r3, 0
add.w $r3, $r4, $r5
addi.w $r1, $r1, 1
b a
exit:
addi.w $r3, $r3, 0
```

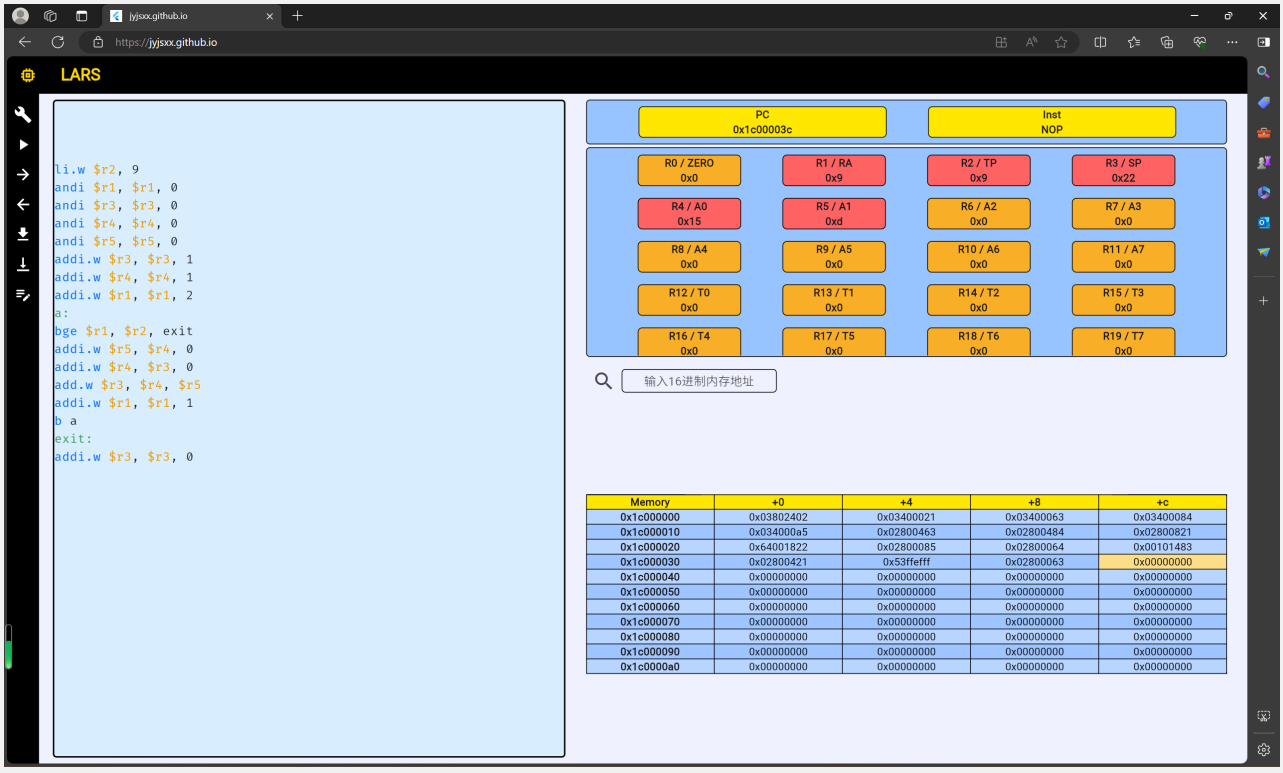
> 任务 2：大整数处理

```
li.w $r2, 80
andi $r1, $r1, 0
andi $r3, $r3, 0
andi $r4, $r4, 0
andi $r5, $r5, 0
andi $r6, $r6, 0
andi $r7, $r7, 0
andi $r8, $r8, 0
addi.w $r4, $r4, 1
addi.w $r6, $r6, 1
addi.w $r1, $r1, 2
a:
bge $r1, $r2, exit
```

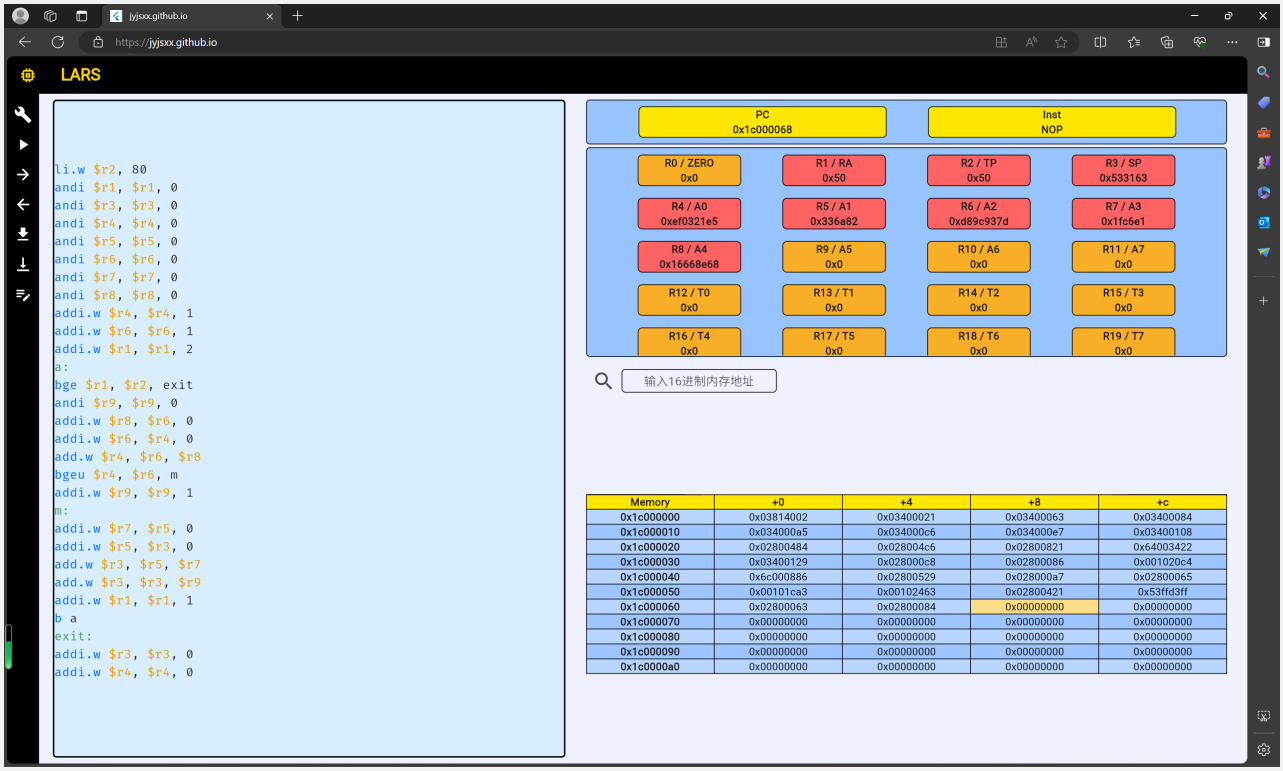
```
andi $r9, $r9, 0
addi.w $r8, $r6, 0
addi.w $r6, $r4, 0
add.w $r4, $r6, $r8
bgeu $r4, $r6, m
addi.w $r9, $r9, 1
m:
addi.w $r7, $r5, 0
addi.w $r5, $r3, 0
add.w $r3, $r5, $r7
add.w $r3, $r3, $r9
addi.w $r1, $r1, 1
b a
exit:
addi.w $r3, $r3, 0
addi.w $r4, $r4, 0
```

结果与分析

任务 1：斐波那契数列



任务 2：大整数处理



任务 3：导出 COE 文件

任务一

C: > Users > Lenovo > Desktop > t1.coe

```
memory_initialization_radix=16;
memory_initialization_vector=
03802402,
03400021,
03400063,
03400084,
034000a5,
02800463,
02800484,
02800821,
64001822,
02800085,
02800064,
00101483,
02800421,
53ffefff,
02800063,
```

任务二

预览 li.md | t1.coe | t2.coe

C: > Users > Lenovo > Desktop > t2.coe

```
memory_initialization_radix=16;
memory_initialization_vector=
03814002,
03400021,
03400063,
03400084,
034000a5,
034000c6,
034000e7,
03400108,
02800484,
028004c6,
02800821,
64003422,
03400129,
028000c8,
02800086,
001020c4,
6c000886,
02800529,
028000a7,
02800065,
00101ca3,
00102463,
02800421,
53ffd3ff,
02800063,
02800084,
```

总结

对龙芯 LA32R 指令集部分指令及编码格式有所熟悉，并掌握了一些使用软件基本技巧。