

$\underbrace{00000000000000000000000010010}_{\text{imm}[31:12]} \underbrace{00000}_{\text{rd}} \underbrace{0110111}_{\text{opcode}} = \text{lui } x0, 0x12 = 0x00012037$

$\underbrace{00000000}_{\text{funct7}} \underbrace{01011}_{\text{rs2}} \underbrace{01010}_{\text{rs1}} \underbrace{000}_{\text{funct3}} \underbrace{00010}_{\text{rd}} \underbrace{0110011}_{\text{opcode}} = \text{add } sp, a0, a1 = 0x00b50133$

```
0x00000300  main:  0x21c000ef  jal ra, simple
0x00000304                0x00948433  add s0, s1, s1
0x0000051c  simple: 0x00008067  jalr x0, ra, 0
```

```
0x00000000 f1: 0xfec10113 addi sp, sp, -20
0x00000004      0x00a12823 sw a0, 16(sp)
0x00000008      0x00b12623 sw a1, 12(sp)
0x0000000c      0x00112423 sw ra, 8(sp)
0x00000010      0x01412223 sw s4, 4(sp)
0x00000014      0x01512023 sw s5, 0(sp)
0x00000018      0x010000ef jal ra, f2
0x0000001c      0x00812083 lw ra, 8(sp)
0x00000020      0x01410113 addi sp, sp, 20
0x00000024      0x00008067 jalr zero, ra, 0
0x00000028 f2: 0xffc10113 addi sp, sp, -4
0x0000002c      0x01412023 sw s4, 0(sp)
0x00000030      0x00012a03 lw s4, 0(sp)
0x00000034      0x00410113 addi sp, sp, 4
0x00000038      0x00008067 jalr zero, ra, 0
```