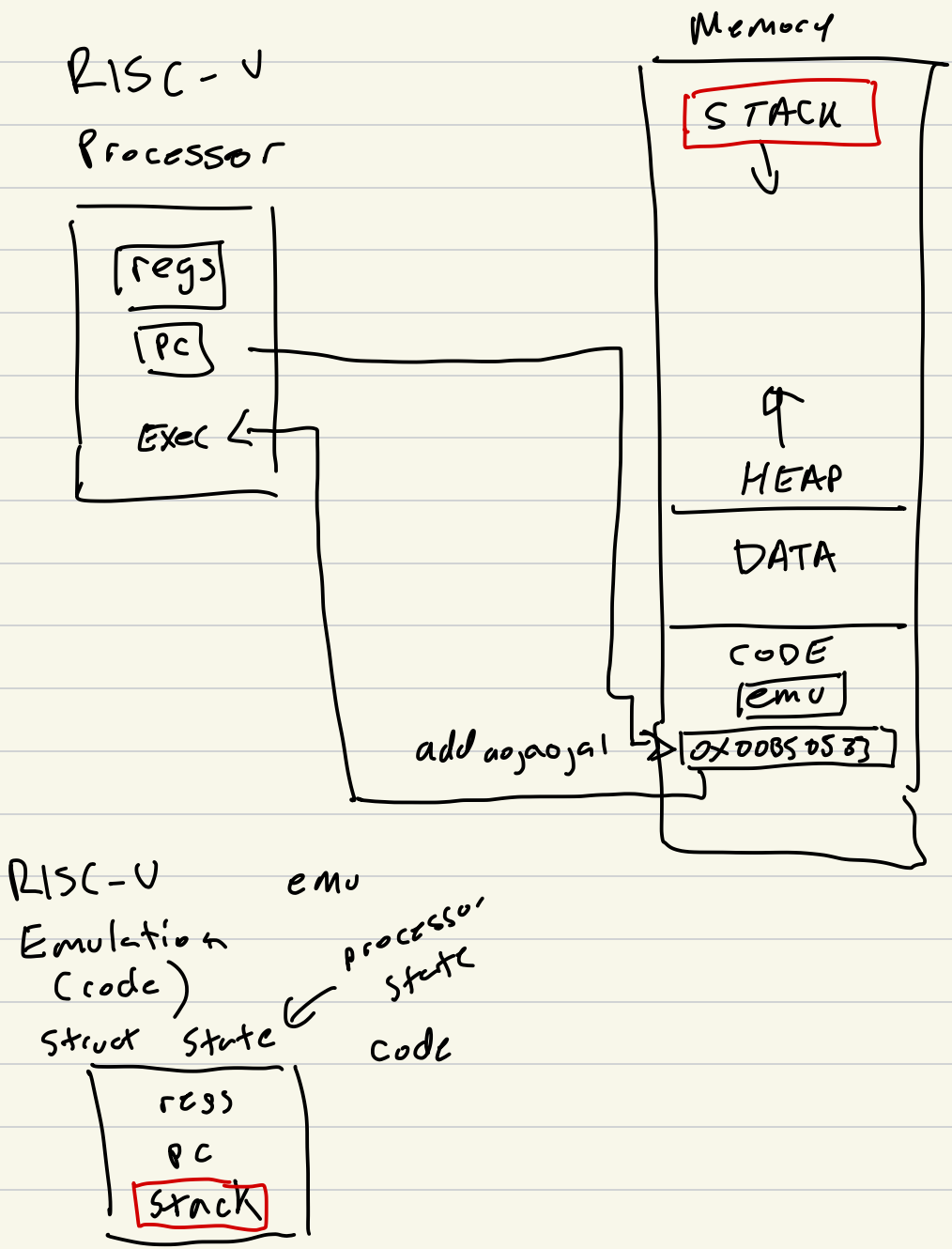
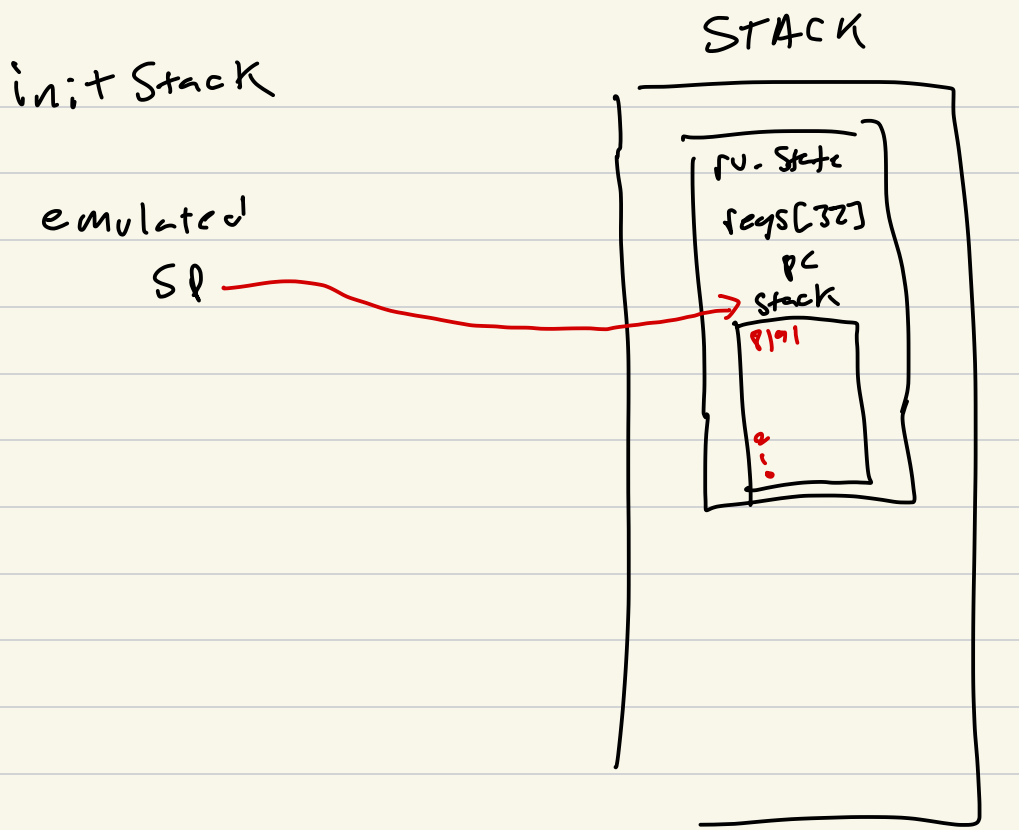
CS 631-02 RISC-V Emulation



RISC-V Emulator Implementation

Incremental Development

1. Identify an instruction : ADDI
2. Identify the instruction format
   i-type
3. Implement or add to current implementation
4. Decode IW
   get fields
5. Construct immediate
   from IW
6. Update State
   update rd
   update memory
   update PC



new instruction formats

immediates

jumps and branches

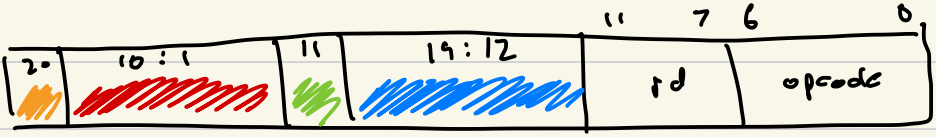
memory

JAL

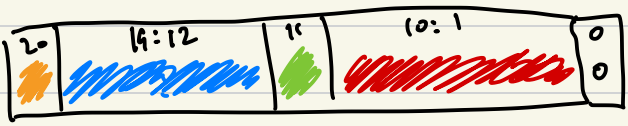
J-type immediate

jal → j, call

IW



imm21



int64_t imm64 = sign_ext (imm21, 20)

B-type

beq rs1, rs2, label

↑ ↑

LW lw rd, offset (rs1)

base

uint64_t target_addr = base + offset

uint64_t value = *((uint32_t *) target_addr);