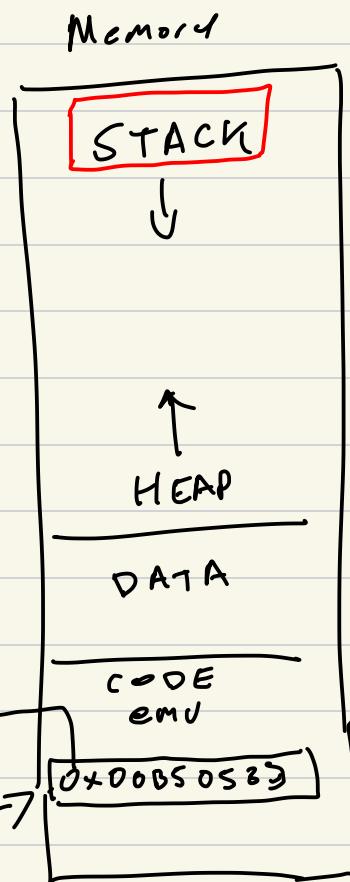


CS631-01 RISC-V Emulation

RISC-V
Processor



RISC-V
Emulation (code)

Struct



process'
state

RISC-V Emulator Implementation

Incremental approach

- ① Identify an instruction ADDI
- ② Identify instruction format
i-type
- ③ Implement of add to current implementation
- ④ Decode IW
get fields
- ⑤ Construct an immediate
from IW
- ⑥ Updating state
update rd
update memory
update pc

init stack

emulated
SP

STACK

rv-state
regS(32)

PC
Stack

8191

?

0

new instruction formats

immediates

jump and branches

Memory

JAL

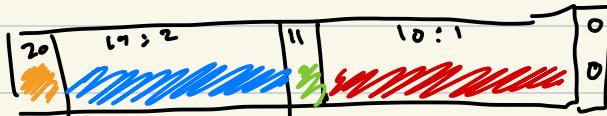
J-type immediate

jal
call
j

IW



imm21



int64_t = imm64 = sign-ext(imm21, 20);

B-type

beq r\$1, r\$2, label

LW IW rd, offset(r\$1)
uint64_t base

target.addr = base + offset

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