

Chapter 20

RISC-V Assembly Programmer's Handbook

This chapter is a placeholder for an assembly programmer's manual.

Table 20.1 lists the assembler mnemonics for the **x** and **f** registers and their role in the standard calling convention.

| Register | ABI Name | Description | Saver |
|----------|----------|-----------------------------------|--------|
| x0 | zero | Hard-wired zero | — |
| x1 | ra | Return address | Caller |
| x2 | sp | Stack pointer | Callee |
| x3 | gp | Global pointer | — |
| x4 | tp | Thread pointer | — |
| x5 | t0 | Temporary/alternate link register | Caller |
| x6–7 | t1–2 | Temporaries | Caller |
| x8 | s0/fp | Saved register/frame pointer | Callee |
| x9 | s1 | Saved register | Callee |
| x10–11 | a0–1 | Function arguments/return values | Caller |
| x12–17 | a2–7 | Function arguments | Caller |
| x18–27 | s2–11 | Saved registers | Callee |
| x28–31 | t3–6 | Temporaries | Caller |
| f0–7 | ft0–7 | FP temporaries | Caller |
| f8–9 | fs0–1 | FP saved registers | Callee |
| f10–11 | fa0–1 | FP arguments/return values | Caller |
| f12–17 | fa2–7 | FP arguments | Caller |
| f18–27 | fs2–11 | FP saved registers | Callee |
| f28–31 | ft8–11 | FP temporaries | Caller |

Table 20.1: Assembler mnemonics for RISC-V integer and floating-point registers.

Tables 20.2 and 20.3 contain a listing of standard RISC-V pseudoinstructions.