

Princeton University
 COS 217: Introduction to Programming Systems
 ARMv8 Registers

General Registers

| Name | Bits 63-0 | Bits 31-0 | Description | Call Convention |
|------|-----------|-----------|-----------------------------------|-----------------|
| r0 | x0 | w0 | Argument 0, scratch, return value | caller-saved |
| r1 | x1 | w1 | Argument 1, scratch | caller-saved |
| r2 | x2 | w2 | Argument 2, scratch | caller-saved |
| r3 | x3 | w3 | Argument 3, scratch | caller-saved |
| r4 | x4 | w4 | Argument 4, scratch | caller-saved |
| r5 | x5 | w5 | Argument 5, scratch | caller-saved |
| r6 | x6 | w6 | Argument 6, scratch | caller-saved |
| r7 | x7 | w7 | Argument 7, scratch | caller-saved |
| r8 | x8 | w8 | Indirect result location (XR) | |
| r9 | x9 | w9 | Scratch | caller-saved |
| r10 | x10 | w10 | Scratch | caller-saved |
| r11 | x11 | w11 | Scratch | caller-saved |
| r12 | x12 | w12 | Scratch | caller-saved |
| r13 | x13 | w13 | Scratch | caller-saved |
| r14 | x14 | w14 | Scratch | caller-saved |
| r15 | x15 | w15 | Scratch | caller-saved |
| r16 | x16 | w16 | Intra-procedure call (IP0) | |
| r17 | x17 | w17 | Intra-procedure call (IP1) | |
| r18 | x18 | w18 | Platform register (PR) | |
| r19 | x19 | w19 | Local variable | callee-saved |
| r20 | x20 | w20 | Local variable | callee-saved |
| r21 | x21 | w21 | Local variable | callee-saved |
| r22 | x22 | w22 | Local variable | callee-saved |
| r23 | x23 | w23 | Local variable | callee-saved |
| r24 | x24 | w24 | Local variable | callee-saved |
| r25 | x25 | w25 | Local variable | callee-saved |
| r26 | x26 | w26 | Local variable | callee-saved |
| r27 | x27 | w27 | Local variable | callee-saved |
| r28 | x28 | w28 | Local variable | callee-saved |
| r29 | x29 | w29 | Frame pointer (FP) | |
| r30 | x30 | w30 | Procedure link register (LR) | |

Special Registers

| Name | Bits 63-0 | Bits 31-0 | Description |
|--------|-----------|-----------|--|
| zr | xzr | wzr | Zero register |
| sp | sp | wsp | Stack pointer |
| pc | pc | | Program counter |
| pstate | | pstate | Processor state; contains the N, Z, C, and V condition flags |