



Branch

- Branch (or *jump*) instructions change the flow of control by modifying the program counter (PC)
- Conditional and unconditional branches are often handled in parallel with decode or execute
- Conditional branches (B-type) have a 12-bit immediate that is shifted left one bit and sign extended before being added to the PC
 - Jump PC \pm 4KiB (\pm 1K 32-bit instructions or \pm 2K 16-bit compressed instructions)
- Unconditional jumps (J-type) have a 20-bit immediate that is shifted left one bit and sign extended before being added to the PC
 - Jump PC \pm 1MiB (\pm 256K 32-bit instructions or \pm 512K compressed instructions)
 - Jump-and-link-register (JALR) jump to a register specified value, so can jump anywhere in the address space