Jump Addressing

In MIPs, a jump like j 20 doesnt mean go to byte address 20. The 20 refers to the 20th instruction - it's an instruction index, not a byte address. Since each instruction is 4 bytes, MIDs multiplies that number by 4 (or shift left by 2) to get the actual byte address.

Jump instructions only store 26 bits for the target address, not the full 32. To work around this, MIPs shifts the 26-bit target address left by 2 bits (giving 28 bits), then fills the upper 4 bits using the current PC's top 4 bits. This creates the full 32-bit address.

So for example, j 20 becomes 20+4 = 80, then MIPs combines that with the PC's top 4 bits to complete the jump address.