|  |  |  |
| --- | --- | --- |
| Cases | Input | Output |
| A | MSB = 0 | Fill zeros |
| B | MSB = 1 | Fill ones |

The sign extend was made using several 2 to 1 multiplexers for bits 10 to 31, selecting either 0 or 1 based on the most significant bit of the input, which is the concatenation of DR and SB from the Instance Register.

Sign extend keeps the sign of the input, keeping it either positive or negative, and is then inputted as the displacement for the Program Counter.