## BFI

Bitfield Insert copies a bitfield of <width> bits from the least significant bits of the source register to bit position <lsb> of the destination register, leaving the other destination bits unchanged.

This is an alias of [BFM](#). This means:

- The encodings in this description are named to match the encodings of [BFM](#).
- The description of [BFM](#) gives the operational pseudocode, any constrained unpredictable behavior, and any operational information for this instruction.

| 31 | 30 29 | 28 27 26 25 24 23 22 | 21 | 20 19 18 17 16 15 | 14 13 12 11 10 | 9 8 7 6 5 | 4 3 2 1 0 |
|----|-------|----------------------|-----|-------------------|----------------|-----------|-----------|
| sf | 0 1 | 1 0 0 1 1 0 | N | immr | imms | != 11111 | Rd |
| | opc | | | | | Rn | |

**32-bit (sf == 0 && N == 0)**

        BFI <Wd>, <Wn>, #<lsb>, #<width>

is equivalent to

        BFM <Wd>, <Wn>, #(-<lsb> MOD 32), #(<width>-1)

and is the preferred disassembly when `UInt(imms) < UInt(immr)`.

**64-bit (sf == 1 && N == 1)**

        BFI <Xd>, <Xn>, #<lsb>, #<width>

is equivalent to

        BFM <Xd>, <Xn>, #(-<lsb> MOD 64), #(<width>-1)

and is the preferred disassembly when `UInt(imms) < UInt(immr)`.

**Assembler Symbols**

<Wd>       Is the 32-bit name of the general-purpose destination register, encoded in the "Rd" field.

<Wn>       Is the 32-bit name of the general-purpose source register, encoded in the "Rn" field.

<Xd>       Is the 64-bit name of the general-purpose destination register, encoded in the "Rd" field.

| | |
|---|---|
| <Xn> | Is the 64-bit name of the general-purpose source register, encoded in the "Rn" field. |
| <lsb> | For the 32-bit variant: is the bit number of the lsb of the destination bitfield, in the range 0 to 31. |
| | For the 64-bit variant: is the bit number of the lsb of the destination bitfield, in the range 0 to 63. |
| <width> | For the 32-bit variant: is the width of the bitfield, in the range 1 to 32-<lsb>. |
| | For the 64-bit variant: is the width of the bitfield, in the range 1 to 64-<lsb>. |

**Operation**

The description of [BFM](#) gives the operational pseudocode for this instruction.

**Operational information**

If PSTATE.DIT is 1:

- The execution time of this instruction is independent of:
  - The values of the data supplied in any of its registers.
  - The values of the NZCV flags.
- The response of this instruction to asynchronous exceptions does not vary based on:
  - The values of the data supplied in any of its registers.
  - The values of the NZCV flags.

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