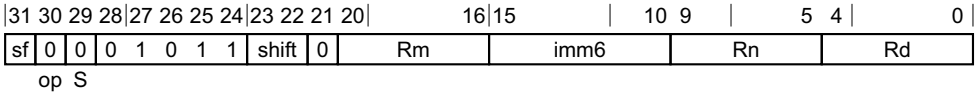
C5.6.5 ADD (shifted register)

Add (shifted register): `Rd = Rn + shift(Rm, amount)`



32-bit variant (sf = 0)

```
ADD <Wd>, <Wn>, <Wm>{, <shift> #<amount>}
```

64-bit variant (sf = 1)

```
ADD <Xd>, <Xn>, <Xm>{, <shift> #<amount>}

integer d = UInt(Rd);
integer n = UInt(Rn);
integer m = UInt(Rm);
integer datasize = if sf == '1' then 64 else 32;
boolean sub_op = (op == '1');
boolean setflags = (S == '1');

if shift == '11' then ReservedValue();
if sf == '0' && imm6<5> == '1' then ReservedValue();

ShiftType shift_type = DecodeShift(shift);
integer shift_amount = UInt(imm6);
```

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 first general-purpose source register, encoded in the "Rn" field.

`<Wm>` Is the 32-bit name of the second general-purpose source register, encoded in the "Rm" 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 first general-purpose source register, encoded in the "Rn" field.

`<Xm>` Is the 64-bit name of the second general-purpose source register, encoded in the "Rm" field.

`<shift>` Is the optional shift type to be applied to the second source operand, defaulting to LSL and

LSL when shift = `00`

LSR when shift = `01`

ASR when shift = `10`

RESERVED when shift = `11`

`<amount>` For the 32-bit variant: is the shift amount, in the range 0 to 31, defaulting to 0 and encoded in the "imm6" field.

`<amount>` For the 64-bit variant: is the shift amount, in the range 0 to 63, defaulting to 0 and encoded in the "imm6" field.

Operation

```
bits(datasize) result;
bits(datasize) operand1 = X[n];
bits(datasize) operand2 = ShiftReg(m, shift_type, shift_amount);
bits(4) nzcv;
bit carry_in;

if sub_op then
    operand2 = NOT(operand2);
    carry_in = '1';
else
    carry_in = '0';

(result, nzcv) = AddWithCarry(operand1, operand2, carry_in);

if setflags then
    PSTATE.<N,Z,C,V> = nzcv;

X[d] = result;
```