LDSMAXB, LDSMAXAB, LDSMAXALB, LDSMAXLB

Atomic signed maximum on byte in memory atomically loads an 8-bit byte from memory, compares it against the value held in a register, and stores the larger value back to memory, treating the values as signed numbers. The value initially loaded from memory is returned in the destination register.

- If the destination register is not WZR, `LDSMAXAB` and `LDSMAXALB` load from memory with acquire semantics.
- `LDSMAXLB` and `LDSMAXALB` store to memory with release semantics.
- `LDSMAXB` has neither acquire nor release semantics.

For more information about memory ordering semantics, see *Load-Acquire, Store-Release*.
For information about memory accesses, see *Load/Store addressing modes*.
This instruction is used by the alias STSMAXB, STSMAXLB.

Integer
(FEAT_LSE)

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
0 0	1 1 1	0	0 0	A	R	1	Rs	0	1 0 0	0 0	Rn	Rt
size									opc			

LDSMAXAB (A == 1 && R == 0)

```
LDSMAXAB <Ws>, <Wt>, [<Xn|SP>]
```

LDSMAXALB (A == 1 && R == 1)

```
LDSMAXALB <Ws>, <Wt>, [<Xn|SP>]
```

LDSMAXB (A == 0 && R == 0)

```
LDSMAXB <Ws>, <Wt>, [<Xn|SP>]
```

LDSMAXLB (A == 0 && R == 1)

```
LDSMAXLB <Ws>, <Wt>, [<Xn|SP>]
```

```
if !IsFeatureImplemented(FEAT_LSE) then UNDEFINED;

integer t = UInt(Rt);
integer n = UInt(Rn);
integer s = UInt(Rs);

boolean acquire = A == '1' && Rt != '11111';
boolean release = R == '1';
boolean tagchecked = n != 31;
```

Assembler Symbols

<Ws>	Is the 32-bit name of the general-purpose register holding the data value to be operated on with the contents of the memory location, encoded in the "Rs" field.
<Wt>	Is the 32-bit name of the general-purpose register to be loaded, encoded in the "Rt" field.
<Xn|SP>	Is the 64-bit name of the general-purpose base register or stack pointer, encoded in the "Rn" field.

Alias Conditions

Alias	Is preferred when
STSMAXB, STSMAXLB	`A == '0' && Rt == '11111'`

Operation

```
bits(64) address;
bits(8) value;
bits(8) data;

AccessDescriptor accdesc = CreateAccDescAtomicOp(MemAtomicOp_SMAX, acqu

value = X[s, 8];
if n == 31 then
    CheckSPAlignment();
    address = SP[];
else
    address = X[n, 64];

bits(8) comparevalue = bits(8) UNKNOWN;    // Irrelevant when not execu
data = MemAtomic(address, comparevalue, value, accdesc);

if t != 31 then
    X[t, 32] = ZeroExtend(data, 32);
```

Operational information

If PSTATE.DIT is 1, the timing of this instruction is insensitive to the value of the data being loaded or stored.

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