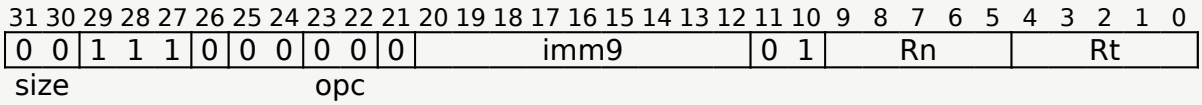
STRB (immediate)

Store Register Byte (immediate) stores the least significant byte of a 32-bit register to memory. The address that is used for the store is calculated from a base register and an immediate offset. For information about memory accesses, see *Load/Store addressing modes*.

It has encodings from 3 classes: Post-index , Pre-index and Unsigned offset

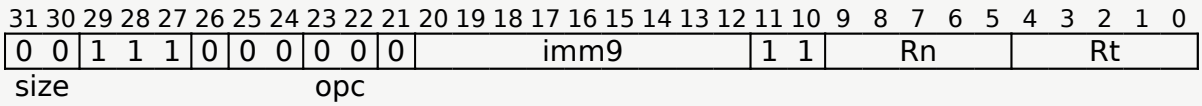
Post-index




```
STRB <Wt>, [<Xn|SP>], #<simm>
```

```
boolean wback = TRUE;
boolean postindex = TRUE;
bits(64) offset = SignExtend(imm9, 64);
```

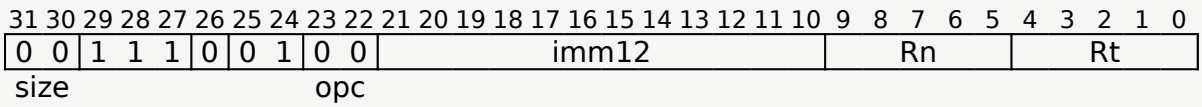
Pre-index




```
STRB <Wt>, [<Xn|SP>, #<simm>]!
```

```
boolean wback = TRUE;
boolean postindex = FALSE;
bits(64) offset = SignExtend(imm9, 64);
```

Unsigned offset




```
STRB <Wt>, [<Xn|SP>{, #<pimm>}]
```

```
boolean wback = FALSE;
boolean postindex = FALSE;
bits(64) offset = LSL(ZeroExtend(imm12, 64), 0);
```

For information about the constrained unpredictable behavior of this instruction, see *Architectural Constraints on UNPREDICTABLE behaviors*, and particularly *STRB (immediate)*.

Assembler Symbols

<Wt>	Is the 32-bit name of the general-purpose register to be transferred, 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.
<simm>	Is the signed immediate byte offset, in the range -256 to 255, encoded in the "imm9" field.
<pimm>	Is the optional positive immediate byte offset, in the range 0 to 4095, defaulting to 0 and encoded in the "imm12" field.

Shared Decode

```
integer n = UInt(Rn);
integer t = UInt(Rt);

boolean tagchecked = wback || n != 31;

boolean rt_unknown = FALSE;
Constraint c;

if wback && n == t && n != 31 then
    c = ConstrainUnpredictable(Unpredictable_WBOVERLAPST);
    assert c IN {Constraint_NONE, Constraint_UNKNOWN, Constraint_UNDEF,
    case c of
        when Constraint_NONE    rt_unknown = FALSE;    // value stored
        when Constraint_UNKNOWN rt_unknown = TRUE;    // value stored i
        when Constraint_UNDEF   UNDEFINED;
        when Constraint_NOP     EndOfInstruction();
```

Operation

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

boolean privileged = PSTATE.EL != EL0;
AccessDescriptor accdesc = CreateAccDescGPR(MemOp_STORE, FALSE, privile

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

if !postindex then
    address = address + offset;

if rt_unknown then
    data = bits(8) UNKNOWN;
else
    data = X[t, 8];
Mem[address, 1, accdesc] = data;
```

```
if wback then
    if postindex then
        address = address + offset;
    if n == 31 then
        SP[] = address;
    else
        X[n, 64] = address;
```

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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