GCSPUSHX, Guarded Control Stack Push exception return record

The GCSPUSHX characteristics are:

Purpose

Decrements the current Guarded control stack pointer register by the size of a Guarded control stack exception return record and stores a Guarded control stack exception return record to the Guarded control stack.

Configuration

This instruction is present only when FEAT_GCS is implemented. Otherwise, direct accesses to GCSPUSHX are undefined.

Attributes

GCSPUSHX is a 64-bit System instruction.

Field descriptions

This instruction has no applicable fields.

The value in the register specified by <Xt> is ignored.

Executing GCSPUSHX

Rt should be encoded as `0b11111`. If the Rt field is not set to `0b11111`, it is constrained unpredictable whether:

- The instruction is undefined.
- The instruction behaves as if the Rt field is set to `0b11111`.

Accesses to this instruction use the following encodings in the System instruction encoding space:

GCSPUSHX

op0	op1	CRn	CRm	op2

0b01	0b000	0b0111	0b0111	0b100

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if IsFeatureImplemented(FEAT_GCS) &&
GetCurrentEXLOCKEN() && !Halted() && PSTATE.EXLOCK
== '0' then
        EXLOCKException();
    elsif EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT) && (!HaveEL(EL3) ||
SCR_EL3.FGTEn == '1') && HFGITR_EL2.nGCSEPP == '0'
then
        AArch64.SystemAccessTrap(EL2, 0x18);
    else
        GCSPUSHX();
elsif PSTATE.EL == EL2 then
    if IsFeatureImplemented(FEAT_GCS) &&
GetCurrentEXLOCKEN() && !Halted() && PSTATE.EXLOCK
== '0' then
        EXLOCKException();
    else
        GCSPUSHX();
elsif PSTATE.EL == EL3 then
    if IsFeatureImplemented(FEAT_GCS) &&
GetCurrentEXLOCKEN() && !Halted() && PSTATE.EXLOCK
== '0' then
        EXLOCKException();
    else
        GCSPUSHX();
```

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