

**FRINT<r>**

Floating-point round to integral value (predicated)

Round to an integral floating-point value with the specified rounding option from each active floating-point element of the source vector, and place the results in the corresponding elements of the destination vector. Inactive elements in the destination vector register remain unmodified.

<r>	Rounding Option
N	to nearest, with ties to even
A	to nearest, with ties away from zero
M	toward minus Infinity
P	toward plus Infinity
Z	toward zero
I	current FPCR rounding mode
X	current FPCR rounding mode, signalling inexact

It has encodings from 7 classes: [Current mode](#) , [Current mode signalling inexact](#) , [Nearest with ties to away](#) , [Nearest with ties to even](#) , [Toward zero](#) , [Toward minus infinity](#) and [Toward plus infinity](#)

**Current mode**

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	1	1	0	0	1	0	1	size	0	0	0	1	1	1	1	0	1	Pg														

**FRINTI <Zd>.<T>, <Pg>/M, <Zn>.<T>**

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
if size == '00' then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer g = UInt(Pg);
integer n = UInt(Zn);
integer d = UInt(Zd);
boolean exact = FALSE;
FPRounding rounding = FPRoundingMode(FPCR[]);
```

**Current mode signalling inexact**

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	1	1	0	0	1	0	1	size	0	0	0	1	1	0	1	0	1	Pg														

**FRINTX <Zd>.<T>, <Pg>/M, <Zn>.<T>**

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
if size == '00' then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer g = UInt(Pg);
integer n = UInt(Zn);
```

```
integer d = UInt(Zd);
boolean exact = TRUE;
FPRounding rounding = FPRoundingMode(FPCR[]);
```

### Nearest with ties to away

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	1	1	0	0	1	0	1	size	0	0	0	1	0	0	1	0	1	Pg	Zn					Zd							

**FRINTA** <Zd>.<T>, <Pg>/M, <Zn>.<T>

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
if size == '00' then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer g = UInt(Pg);
integer n = UInt(Zn);
integer d = UInt(Zd);
boolean exact = FALSE;
FPRounding rounding = FPRounding_TIEAWAY;
```

### Nearest with ties to even

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	1	1	0	0	1	0	1	size	0	0	0	0	0	0	1	0	1	Pg							Zn						Zd

**FRINTN** **<Zd> .<T> , <Pg>/M, <Zn> .<T>**

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
if size == '00' then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer g = UInt(Pg);
integer n = UInt(Zn);
integer d = UInt(Zd);
boolean exact = FALSE;
FPRounding rounding = FPRounding_TIEEVEN;
```

## Toward zero

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	1	1	0	0	1	0	1	size	0	0	0	0	1	1	1	0	1	Pg							Zn						Zd

**FRINTZ** <Zd>.<T>, <Pg>/M, <Zn>.<T>

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
if size == '00' then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer g = UInt(Pg);
integer n = UInt(Zn);
integer d = UInt(Zd);
boolean exact = FALSE;
FPRounding rounding = FPRounding_ZERO;
```

## Toward minus infinity

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	1	1	0	0	1	0	1	size	0	0	0	0	1	0	1	0	1	Pg							Zn						Zd

**FRINTM** <Zd>.<T>, <Pg>/M, <Zn>.<T>

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
if size == '00' then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer g = UInt(Pg);
integer n = UInt(Zn);
integer d = UInt(Zd);
boolean exact = FALSE;
FPRounding rounding = FPRounding_NEGINF;
```

## Toward plus infinity

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	1	1	0	0	1	0	1	size	0	0	0	0	0	1	1	0	1	Pg						Zn						Zd	

**FRINTP** <Zd>.<T>, <Pg>/M, <Zn>.<T>

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
if size == '00' then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer g = UInt(Pg);
integer n = UInt(Zn);
integer d = UInt(Zd);
boolean exact = FALSE;
FPRounding rounding = FPRounding_POSINF;
```

## Assembler Symbols

<Zd>	Is the name of the destination scalable vector register, encoded in the "Zd" field.
------	---

**<T>** Is the size specifier, encoded in “size”:

size	<T>
00	RESERVED
01	H
10	S
11	D

<Pg>	Is the name of the governing scalable predicate register P0-P7, encoded in the "Pg" field.
------	--

<Zn>	Is the name of the source scalable vector register, encoded in the "Zn" field.
------	--

## Operation

```

CheckSVEEnabled();
constant integer VL = CurrentVL;
constant integer PL = VL DIV 8;
constant integer elements = VL DIV esize;
bits(PL) mask = P[q, PL];

```

```

bits(VL) operand = if AnyActiveElement(mask, esize) then Z[n, VL] else
bits(VL) result = Z[d, VL];

for e = 0 to elements-1
    if ActivePredicateElement(mask, e, esize) then
        bits(esize) element = Elem[operand, e, esize];
        Elem[result, e, esize] = FPRoundInt(element, FPCR[], rounding,
Z[d, VL] = result;

```

## Operational information

This instruction might be immediately preceded in program order by a MOVPRFX instruction. The MOVPRFX instruction must conform to all of the following requirements, otherwise the behavior of the MOVPRFX and this instruction is unpredictable:

- The MOVPRFX instruction must be unpredicated, or be predicated using the same governing predicate register and source element size as this instruction.
- The MOVPRFX instruction must specify the same destination register as this instruction.
- The destination register must not refer to architectural register state referenced by any other source operand register of this instruction.

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