## PACDA, PACDZA

Pointer Authentication Code for Data address, using key A. This instruction computes and inserts a pointer authentication code for a data address, using a modifier and key A.

The address is in the general-purpose register that is specified by <Xd>.

The modifier is:

- In the general-purpose register or stack pointer that is specified by <Xn|SP> for PACDA.
- The value zero, for PACDZA.

### Integer
**(FEAT_PAuth)**

| 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 |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | Z | 0 | 1 | 0 | Rn | Rd |

### PACDA (Z == 0)

```
PACDA <Xd>, <Xn|SP>
```

### PACDZA (Z == 1 && Rn == 11111)

```
PACDZA <Xd>
```

```
boolean source_is_sp = FALSE;
integer d = UInt(Rd);
integer n = UInt(Rn);

if !IsFeatureImplemented(FEAT_PAuth) then
    UNDEFINED;

if Z == '0' then // PACDA
    if n == 31 then source_is_sp = TRUE;
else // PACDZA
    if n != 31 then UNDEFINED;
```

### Assembler Symbols

<Xd>    Is the 64-bit name of the general-purpose destination register, encoded in the "Rd" field.

<Xn|SP>    Is the 64-bit name of the general-purpose source register or stack pointer, encoded in the "Rn" field.

### Operation

```
if source_is_sp then
    X[d, 64] = AddPACDA(X[d, 64], SP[]);
else
    X[d, 64] = AddPACDA(X[d, 64], X[n, 64]);
```

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