

FORTRAN 77 Language Reference

- [Previous: EXTERNAL](#)
- [Next: FUNCTION \(External\)](#)

FORMAT

The FORMAT statement specifies the layout of the input or output records.

label FORMAT (*f*)

Parameter	Description
<i>label</i>	Statement number
<i>f</i>	Format specification list

The items in **f** have the form: *label* FORMAT (*f*)

[*r*] *desc*

[*r*] (*f*)

<i>r</i>	A repeat factor
<i>desc</i>	An edit descriptor (repeatable or nonrepeatable). If r is present, then d must be repeatable.

The repeatable edit descriptors are:

I	F	E	D	G
Iw	FW	EW	DW	GW
Iw.d	FW.d	EW.d	DW.d	GW.d
O	A	EW.d.e	DW.d.e	GW.d.e

OW	AW	Eew.dE	DW.dEe	GW.dEe
ow.d	L			
Z	LW			
ZW				
zw.d				

Here is a summary:

- I, O, Z are for integers (decimal, octal, hex)
- F, E, D, G are for reals (fixed-point, exponential, double, general)
- A is for characters
- L is for logicals

The nonrepeatable edit descriptors are:

- '**a1a2 an**' single quote-delimited character string
- "**a1a2 ... an**" double quote-delimited character string
- **nHa1a2 ... an** Hollerith string
- \$
- /
- :
- **[k]R** (*k* defaults to 10)
- **[k]P** (*k* defaults to 0)
- B, BN, and BZ
- S, SU, SP, and SS
- **Tn** and **nT**
- **TL[n]** and **TR[n]** (*n* defaults to 1)
- **[n]X** (*n* defaults to 1)

See "[Formatted I/O](#)" for full details of these edit descriptors.

Description

The **FORMAT** statement includes the explicit editing directives to produce or use the layout of the record. It is used with formatted input/output statements and **ENCODE/DECODE** statements.

Repeat Factor

r must be a nonzero, unsigned, integer constant.

Repeatable Edit Descriptors

The descriptors I, O, Z, F, E, D, G, L, and A indicate the manner of editing and are repeatable.

w and **e** are nonzero, unsigned integer constants.

d and **m** are unsigned integer constants.

Nonrepeatable Edit Descriptors

The descriptors are the following:

(**"**), (**\$**), (**'**), (**/**), (**:**), **B**, **BN**, **BZ**, **H**, **P**, **R**, **Q**, **S**, **SU**, **SP**, **SS**, **T**, **TL**, **TR**, **X**

These descriptors indicate the manner of editing and are **not** repeatable:

- Each **ai** is any ASCII character.
- *n* is a nonzero, unsigned integer constant.
- *k* is an optionally signed integer constant.

Item Separator

Items in the format specification list are separated by commas. A comma can be omitted before or after the slash and colon edit descriptors, between a **P** edit descriptor, and the immediately following **F**, **E**, **D**, or **G** edit descriptors.

In some sense, the comma can be omitted anywhere the meaning is clear without it, but, other than those cases listed above, this is nonstandard. **u**

Variable Format Expressions @

In general, any integer constant in a format can be replaced by an arbitrary expression enclosed in angle brackets:

```
1 FORMAT( < e > )
```

The **n** in an **nH...** edit descriptor cannot be a variable format expression.

Restrictions

The **FORMAT** statement label cannot be used in a **GO TO**, **IF-arithmetic**, **DO**, or alternate return.

Warnings

For **explicit** formats, invalid format strings cause warnings or error messages at compile time.

For formats in variables, invalid format strings cause warnings or error messages at runtime.

For variable format expressions, of the form <e>, invalid format strings cause warnings or error messages at compile time or runtime.

See ["Runtime Formats "](#) for details.

Examples

Example 1: Some A, I, and F formats:

```
      READ( 2, 1 ) PART, ID, HEIGHT, WEIGHT
1      FORMAT( A8, 2X, I4, F8.2, F8.2 )
      WRITE( 9, 2 ) PART, ID, HEIGHT, WEIGHT
2      FORMAT( 'Part:', A8, ' Id:', I4, ' Height:', F8.2,
&          ' Weight:', F8.2 )
```

Example 2: Variable format expressions:

```
      DO 100 N = 1, 50
      ...
1      FORMAT( 2X, F<N+1>.2 )
```

- [Previous: EXTERNAL](#)
- [Next: FUNCTION \(External\)](#)
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