Subject: Replace IOSTAT_END and IOSTAT_EOR by functions
From: Van Snyder

1 Introduction

In Public Comment #8, Rob James observed that at least one processor provides several values for the *scalar-int-variable* in the IOSTAT= specifier of a data transfer statement to indicate the end-of-file condition, and similarly for the end-of-record condition. A single constant that a program can use to test for each condition is therefore inadequate, unless it is accepted that the revised standard should invalidate existing processors. This was discussed in section 2.9 of the comment that accompanied the US TAG ballot on the registration of the committee draft.

There are at least three possibilities. One is to replace the IOSTAT_END and IOSTAT_EOR constants in 13.8.3.2 by array constants. A second is to replace them by intrinsic functions. A third is to do nothing. The second was proposed in paper 02-319r2 at meeting 163, and that paper passed. This paper provides the edits to implement both possibilities (just in case we continue to want to do it, but change our mind about how to do it).

Malcolm has observed that the intrinsic-function solution makes it difficult for a user to determine what value represents an end-of-file condition. Consider the case of a processor that uses a single value to represent the end-of-file condition:

```
DO i = -huge(0), -1
  IF ( iostat_end(i) ) exit
END DO
IF ( i == 0 ) STOP "Couldn't find value for end-of-file"
```

The problem for the multiple-value processor is ickier.

Richard Maine and Malcolm have both opined that array values are ugly for the user. One needs to write `any( iostat_end == iostat)` instead of merely `iostat_end == iostat`.

2 Edits for the intrinsic function case

Edits refer to 02-007r3. Page and line numbers are displayed in the margin. Absent other instructions, a page and line number or line number range implies all of the indicated text is to be replaced by associated text, while a page and line number followed by + (-) indicates that associated text is to be inserted after (before) the indicated line. Remarks are noted in the margin, or appear between [and] in the text.

[Editor: "the value ... argument" ⇒ "a negative integer value to the iostat argument that would cause the result value of the IOSTAT_END intrinsic function (13.7.54$\frac{1}{3}$) to be true".] 201:21-22

[Editor: "the value ... `iostat`" ⇒ "a negative integer value to the iostat argument that would cause the result value of the IOSTAT_EOR intrinsic function (13.7.54$\frac{2}{3}$) to be true".] 201:23

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(3) With a processor-dependent negative integer value that would cause the result value of the IOSTAT_END intrinsic function (13.7.54$\frac{1}{3}$) to be true if an end-of-file condition occurs and no error condition occurs, or 216:12-15

(4) With a processor-dependent negative integer value that would cause the result value of the IOSTAT_EOR intrinsic function (13.7.54$\frac{2}{3}$) to be true if an end-of-record condition occurs and no error condition or end-of-file condition occurs. This value shall be different from any value that causes the result value of the IOSTAT_END intrinsic function (13.7.54$\frac{1}{3}$) to be true

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13.7.54$\frac{1}{3}$ IOSTAT_END (IOSTAT) 319:27+

Description. Determine whether the argument value indicates an end-of-file condition.

Class. Elemental function

Argument. IOSTAT shall be of type integer.

Result Characteristics. Default logical.

Result Value. The result has the value true if and only if I is a value of the *scalar-int-variable* in an IOSTAT= specifier that indicates an end-of-file condition (9.10.2).

13.7.54$\frac{2}{3}$ IOSTAT_EOR (IOSTAT)

Description. Determine whether the argument value indicates an end-of-record condition.

Class. Elemental function

Argument. IOSTAT shall be of type integer.

Result Characteristics. Default logical.

Result Value. The result has the value true if and only if I is a value of the *scalar-int-variable* in an IOSTAT= specifier that indicates an end-of-record condition (9.10.3).

[Editor: Delete 13.8.3.2 and its subsidiary subclauses.] 353:28-354:9

[Editor: "the value ... module" ⇒ "a value that would cause the result value of the IOSTAT_EOR intrinsic function (13.7.54$\frac{2}{3}$) to be true".] 451:32

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3 Edits for the array named constant case

[Editor: Insert "one of the elements of" after "of" twice.] 201:21,23

[Editor: Insert "one of the elements of" after "of" twice.] 216:12,14

[Editor: "a" ⇒ "the".] 216:14

[Editor: "the ... scalar" ⇒ "one of the elements of the default integer rank-one array".] 354:2

[Editor: "This value" ⇒ "The value of every element of this array".] 354:4

[Editor: "the ... scalar" ⇒ "one of the elements of the default integer rank-one array".] 354:6

[Editor: "This value" ⇒ "The value of every element of this array"; insert "the value of any element of" after "of".] 354:8

[Editor: Insert "one of the elements of" after "of".] 451:32