UNIT 8

SORT / MERGE

SORT/MERGE

- **SORT Statement**
- **MERGE Statement**
- **SORT PROCEDURES**
- **RELEASE/RETURN Statements**

Figure 8-1 SORT/MERGE

SORT Statement

- **The SORT statement accepts records, sorts them according to specified keys, and makes the sorted results available for further processing.**

Format 1:

SORT file-name-1 ON ASCENDING/DESCENDING KEY data-name-1 USING file-name-2 GIVING file-name-3.

Format 2:

SORT file-name-1 ON ASCENDING/DESCENDING KEY data-name-1 INPUT PROCEDURE IS Procedure-name-1[THRU Procredure-name-2] USING file-name-2 GIVING file-name-3.

Format 3:

SORT file-name-1 ON ASCENDING/DESCENDING KEY data-name-1 INPUT PROCEDURE IS Procedure-name-1[THRU Procredure-name-2] USING file-name-2 OUTPUT PROCEDURE IS Procedure-name-3[THRU Procredure-name-4] GIVING file-name-3.

Figure 8-2 SORT Statement

Notes:

The SORT Statement accepts records from one or more files. Sorts them according to the specified key(s), and makes the sorted records available either through an OUTPUT PROCEDURE or in an output file. The SORT Statement can appear any where in the procedure division except in the declarative portion.

File-name-1

The name given in the SD entry that describes the records to be sorted.

No pair of file-names in a SORT statement can be specified in the same SAME SORT AREA , or Same SORT-MERGE AREA clause. File-names associated with the giving clause (file-name-3…) cannot be specified in the SAME AREA clause.

File-names associated with the giving clause (file-name-3…) can be specified in the SAME AREA clause.

ASCENDING / DESCENDING KEYphrase

This Phrase specifies that records be to be processed in ascending or descending sequence (depending on the phrase specified), based on the specified sort keys.

When the GIVING phrase is specified , all the sorted records I the file-name-1 are automatically transferred to the output files (file-name-3…).

MERGE Statement

The MERGE statement combines two or more identically sequenced files(that is, files that have already been sorted according to an identical set of ascending/descending keys) on one or more keys and makes records available in merged order to an output procedure or output file.

Format:

```
>>___MERGE__file-name-1____ _____ ___ __ASCENDING__ ___ _______ __data-name-1__| __|_>

>___ _____________________________________________________ __USING__file-name-2_______>
      |__ _________________ __SEQUENCE__ ____ _alphabet-name-1_|
          |_COLLATING____|                  |_IS_|

     <_____________________
>_____file-name-3__|_____________________________________________________________________>

>___ __OUTPUT PROCEDURE___ ___ __procedure-name-1__ _____________________________ _ _><
      |_                              |_IS_|                    |_ _ THROUGH_ procedure-name-2_| _|
      |                                                           |_THRU____|                    |
      |             <_________________                                                          |
      |_ GIVING___file-name-4__| ____________________________________________________________|
```

Figure 8-3 MERGE Statement

Notes:

The MERGE statement combines two or more identically sequenced files(that is, files that have already been sorted according to an identical set of ascending/descending keys) on one or more keys and makes records available in merged order to an output procedure or output file.

A MERGE statement can appear anywhere in the Procedure Division except in a Declarative Section.

The file names given must be in the SD entry.

When the MERGE statement is executed, all records contained in file-name-2, file-name-3,…., are accepted by the merge program and then merged according to the key(s) specified.

SORT PROCEDURES

- **Procedures can add, delete, alter or edit the records**
- **With SORT ….INPUT PROCEDURE you can specify processing to be performed on the records before they are sorted**
- **With SORT …..OUTPUT PROCEDURE you can specify processing to be performed on the records after they are sorted**
- **In an input procedure the RELEASE statement is used to place a record into the file to be sorted**
- **In an output procedure the RETURN statement is used to extract a record from the sorted file**

Figure 8-4 SORT PROCEDURES

Notes:

INPUT PROCEDURE Phrase

This phrase specifies the name of a procedure that is to select or modify input records before the sorting operation begins.

The input procedure can consist of any procedure needed to select, modify or copy the records that are made available one at a time by the RELEASE statement to the file referenced by file-name-1. The range includes all statements that are executed as the result of a transfer of control by CALL, EXIT, GO TO, and PERFORM statements in the range of the input procedure, as well as all statements in declarative procedures that Sare executed as a result of the execution of statements in the range of the input procedure. The range of the input procedure must not cause the execution of any MERGE, RETURN, or SORT statement.

If an input procedure is specified, control is passed to the input procedure before the file referenced by file-name-1 is sequenced by the SORT statement. The compiler inserts a return mechanism at the end of the last statement in the input procedure. When control passes the last statement in the input procedure, the records that have released to the file referenced by file-name-1 are sorted.

OUTPUT PROCEDURE Phrase

This phrase specifies the name of a procedure that is to select or modify output records from the sorting operation.

The output procedure can consist of any procedure needed to select, modify, or copy the records that are made available one at a time by the RETURN statement in sorted order from the file referenced by file-name-1. The range includes all statements that are executed as the result of a transfer of control by CALL, EXIT, GO TO, and PERFORM statements in the range of the output procedure. The range also includes all statements in declarative procedures that are executed as a result of the execution of statements in the range of the output procedure. The range of the output procedure must not cause the execution of any MERGE, RELEASE, or SORT statement.

If an output procedure is specified, control passes to it after the file referenced by file-name-1 has been sequenced by the SORT statement. The compiler inserts a return mechanism at the end of the last statement in the output procedure and when control passes the last statement in the output procedure, the return mechanism provides the termination of the sort and then passes control to the next executable statement after the SORT statement. Before entering the output procedure, the sort procedure reaches a point at which it can select the next record in sorted order when requested. The RETURN statements in the output procedure are the requests for the next record.

RELEASE Statement

- **The RELEASE statement is only used within the INPUT PROCEDURE of a SORT**
- **The RELEASE statement makes the contents of record-name-1 available to the initial phase of the SORT process**
- **Upon completion of the INPUT PROCEDURE, the sort file consists of all records placed there by the RELEASE statement**

Format:

```
____RELEASE____record-name-1____ _____________________________ _____________________>< 
                                  |_FROM___identifier-1_____________|
```

Figure 8-5 RELEASE Statement

Notes:

The RELEASE statement transfers records from an input/output area to the initial phase of a sorting operation.

The RELEASE statement can only be used within the range of an INPUT PROCEDURE associated with a SORT statement.

Within an INPUT PROCEDURE, at least one RELEASE statement must be specified.

RETURN Statement

- **The RETURN statement is used only within the OUTPUT PROCEDURE of a SORT or MERGE**
- **The RETURN statement acts like a "READ" and makes the next record from the sort/merge processing available to the application**
- **The AT END clause must be specified**

Format:

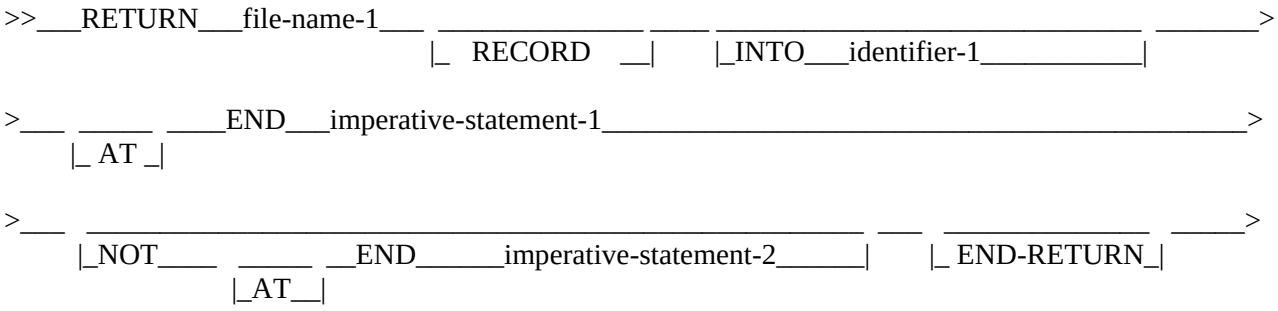

Figure 8-6 RELEASE Statement

Notes:

The RETURN statement transfers records from the final phase of a sorting or merging operation to an OUTPUT PROCEDURE.

The RETURN statement can be used only within the range of an OUTPUT PROCEDURE associated with a SORT or MERGE statement.

EXAMPLE : SORT

```
IDENTIFICATION DIVISION.
PROGRAM-ID. SORTING.
ENVIRONMENT DIVISION.
INPUT-OUTPUT SECTION.
FILE-CONTROL.
        SELECT IN-FILE ASSIGN TO ‘DD1’
        ORGANIZATION IS SEQUENTIAL.
        SELECT WORK-FILE ASSIGN TO ‘DD2’
        ORGANIZATION IS SEQUENTIAL.
        SELECT OUT-FILE ASSIGN TO ‘DD3’
        ORGANIZATION IS SEQUENTIAL.
DATA DIVISION.
FILE SECTION.
FD  IN-FILE.
01  IN-REC.
        02  NUM        PIC     X(2).
        02  NAME       PIC     X(10).
        02  ADDR       PIC     X(10).
        02 FILLER      PIC     X(58).
SD  WORK-FILE.
01  WORK-REC.
        02  WNUM       PIC     X(2).
        02  WNAME      PIC     X(10).
        02  WADDR      PIC     X(10).
        02  FILLER     PIC     X(58).
FD  OUT-FILE.
01  OUT-REC            PIC     X(80).
WORKING-STORAGE SECTION.
PROCEDURRE DIVISION.
        SORT  WORK-FILE ON ASCENDING KEY WNUM USING IN-FILE GIVING OUT-FILE.
        STOP RUN.
```