

IX.3.5A INTRODUCTION TO THE PROCESSED DATA BASE READ/WRITE SOURCE CODE DESCRIPTION

Purpose

The Processed Data Base (PDB) can be accessed using the Processed Data Base read/write routines. These routines include the routines which create, read, write, change and delete time series. A time series is uniquely identified by the time series identifier and the data type.

The efficient access to the PDB depends on the following assumptions:

- o the PDB is ordered to correspond with the Forecast Component Segments
- o most write accesses will be requested by the Preprocessor Component
- o most read accesses will be requested by the Forecast Component

Access Method

The read/write routines use four methods to access a time series:

- o In-Core Buffer - The Read/Write Routines keep the last few time series accessed of some data types the In-Core Buffer. This is the first place to check for a time series by the read routine. The data types and the actual number of each to be kept is specified for each user through the Processed Data Utility Program.
- o Sequential pointers - The Read/Write Routines keep track of the last record accessed in each file. The next sequential record is the second check by the read routine. This method is not used for time series written by the Forecast Component since they are typically written in one Segment and read for user by a subsequent downstream Segment.
- o Sequential pointer by data type - The most recent record read of each data type points to the next time series of the same data type in the file. This is the first method of access by the write routine.
- o Index file - The final access method uses the index file. A hashing algorithm is applied to the time series identifier and data type to determine the record number of the index where the pointer to the time series can be found. The time series identifier and data type are compared to those in the index file. If they do not match then an overflow area is searched.

The file to be accessed is determined by the Data Type Index. This index is kept In-Core during execution. It contains the data type code and the logical unit of the file for each data type. Section

IX.4.4B-PRDPARM [[Hyperlink](#)] contains a more complete description of the Data Type Index.

Work Array Size

A work array is needed by the routines that read from the PDB and write data to the PDB. The size of the work array can be computed as follows:

$$LWORKM = ((LENHED + NXBUF + NTSVAL - 1) / LRECLT + 1) * LRECLT$$

where LWORKM is the minimum length of the work array
LENHED is the length of the time series header
NXBUF is the number of words in the extra buffer array
NTSVAL is the number of time series data values
LRECLT is the logical record length of time series records

The value of variables LENHED and LRECLT can be obtained from common block PDATAS.

NTSVAL can be computed as follows:

$$NTSVAL = 24 / ITIME * NPERIT * NUMDAY$$

where ITIME is time series data time interval
NPERIT is the number of data values per time interval
NUMDAY is number of days of data