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THE PERIODICAL MANAGEMENT SYSTEM

By

D.R.Kulkarni, R.R.Bharucha & U.A.Ghiya

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ABSTRACT

A computerized Periodical Management System has been developed and implemented for the Library of the Physical Research Laboratory. The system monitors various procedures related to procurement of periodicals. It also processes the information related to periodicals and presents it in the form of comprehensive reports. Thus the system leads to better management of periodicals as well as better service to the users. The system has been made operational on the Computer System IBM 360/44 under the operating system 44 PS.

Keywords :

1.   Library Automation

2.   Periodical Management System

3.   Information System

I. INTRODUCTION

Library services can be classified in three broad categories, viz. i) to procure the information ii) to process the information and record it in an easily accessible form iii) to disseminate it to the users. To obtain the latest information the Library generally subscribes to a large number of relevant periodicals. Any break or delay in getting these periodicals in time is serious, because the information is not available to the readers and sometimes it is extremely difficult to fill up the gaps. It, therefore, becomes the primary function of the Library management to see that the regular and timely supply of periodicals is ensured by completing the necessary formalities for the uninterrupted supply of periodicals much in advance and by setting up prompt follow up actions in case the periodicals are not received in time. To do this the Library staff is required to keep track of each and every issue of the periodical received in the Library and then send reminders for issues not received.

These tasks can become quite complex due to various reasons as given below :

The large number of periodicals subscribed by the Library are published with varying periodicals. The procurement sources are also different such as vendors, publishers, exchange or gift copies. Mode of procurement also varies; sea-mail, air-mail, accelerated surface post, air-freight etc. As a result the periodicals of the same frequency would be received in the Library during the span of more than three-to-four months.

Many conference proceedings are published first as issues of periodicals and are then later on brought out in a book form. If track is not kept of this, the Library ends up by obtaining both the publications.

Many periodical issues are special issues in which the entire issue is devoted to the in-depth study of a particular topic. It is necessary to keep track of such special issues, review issues, issues devoted to a bibliography of a certain subject etc., to render better service to the users.

The Library periodically compiles a "Catalogue of periodicals received in the PRL Library" with the details of back volumes, missing volumes etc. alongwith an institutional index and a subject index. This compilation done manually is very time-consuming.

All these tasks would further become unwieldy and enormously difficult if the number of periodicals is quite large. The mechanization of the system through the use of modern computers can prove to be an important asset for the Library service. Besides monitoring these functions efficiently and effectively the information system for the periodicals can generate many comprehensive reports giving a complete overall picture of the activity. These reports would be extremely useful in giving better service to the users and in monitoring the budget for the periodicals. Needless to mention that they also provide important guidelines for the future planning.

In this technical report we describe the Periodical Management System (hereafter referred to as PMS) developed

and implemented for the Library in the Physical Research Laboratory. The Library keeps records of 560 periodicals (pertaining mainly to space physics, plasma physics, nuclear physics, electronics and other related topics) and of which 350 are currently being subscribed. The system is at <u>present operational</u> on the System IBM 360/44 under the operating system 44PS. The PMS is coded in FORTRAN IV and contains approximately 7000 statements. It is a completely dis-based system and uses the direct-access method available under 44 PS to get the record.

It may be emphasized here that the PMS we have developed is a complete system in the sense that it helps the Library staff in all the three types of services mentioned in the beginning of the Chapter. It assists not only in procuring but also in processing and eventually in disseminating the information from the periodicals. The preliminary report of this work has been presented at the CSI Convention (Proc. of CSI Convention, Vol.III (1980), pp.42) at Bombay in February 1980.

The structure of the PMS:

The PMS has been designed around the seven disk-based files given below :

1) File CONSUBFL : This file contains the country file and the subject file. These files in turn contain the names of the countries and subjects covered by the periodicals in the Library.

2) File JRNLNMFL : Each record in the file would correspond to a periodical containing the relevant details of the same such as the name, code etc.

3) File PUBLNMFL : Each record would correspond to a publish-
er or to a vendor and would contain the necessary de-
tails required for the postal correspondence.

4) File BKVLFL : Each record would contain the back volume
details and other information required to procure a
periodical.

5) File CRVLFL : Each record would contain the payment de-
tails of the current year and the details of the current
volume of a periodical.

6) File NXVLFL : It would contain the details of the next
volume and also the payment details of the next year
for a periodical.

7) File REMINDER : This file would contain the necessary in-
formation to send the reminder letters to a publisher
or a vendor.

The structure of the PMS is shown in the Figure-1.

THE STRUCTURE OF THE PMS
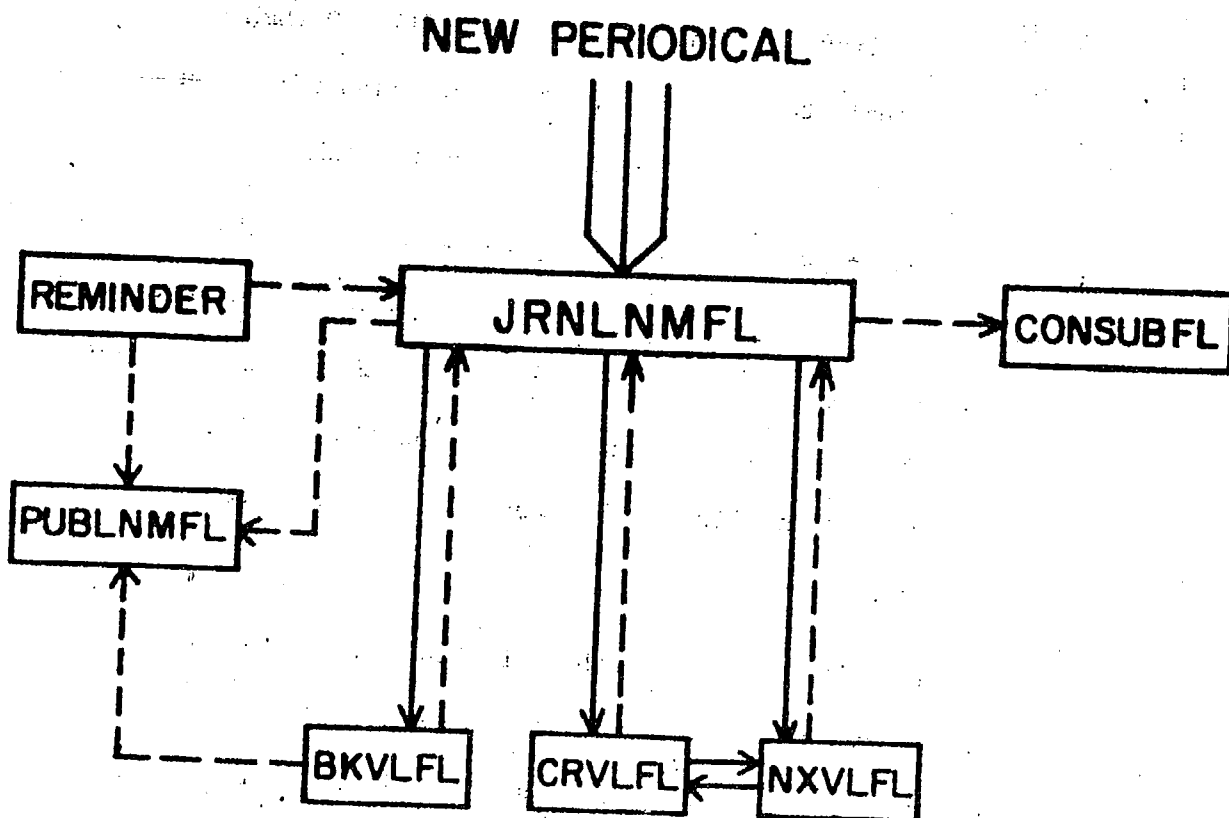
As shown in the figure the new periodical in the PMS can enter only through the file JRNLNMFL. There are two types of links shown in the figure. The solid line indicates the strong link and the dotted line denotes the weak link. It is assumed that the file at the head of the arrow is linked to the one at the tail of the arrow. The strong link implies that no search time is required to locate the record in the linked file once you are in the file to which it is linked. Similarly the weak link implies that the search of the record in the linked file would be possible using the key available in the file to which it is linked. In other words the strong link means much faster access to the record compared to the weak link.

It is shown in the figure-I that the files BKVLFL, CRVLFL and NXVLFL are strongly linked to the file JRNLNMFL, whereas the file JRNLNMFL is only weakly linked to these files. The files CRVLFL and NXVLFL are linked strongly to each other. Thus the files which would be used frequently have been strongly linked in the PMS.

The file PUBLNMFL may be seen to be linked weakly to the file BKVLFL due to the publisher code available in its record. The publisher code is the key of the record for the file PUBLNMFL as described later. However, the file BKVLFL is not seen to be linked to the file PUBLNMFL. The absence of any link would mean much larger search time to locate the record.

In fact it would be worth noting that the files CONSUBFL and PUBLNMFL have no link, strong or weak with any other file in the PMS. Therefore, they are called independent files. This fact would be of great significance in updating these files,

and in maintaining the integrity of the system. In other words the changes in the independent files would not be transferred to the records in the other files where they might be used. This causes the inconsistency in the information of the same item in the system.

The file REMINDER is quite unique in the sense that its records have been generated using the information either obtained or derived from the contents of six other files. Therefore, the accuracy of its records would depend on the consistency in these files. Once generated this file deserves very careful handling.

Finally it may be mentioned that the PMS which is implemented in the batch-mode environment would obviously have some operational constraints due to the inherent nature of batch-processing mode. However, we feel confident that gradually with the experience gained in the usage of the PMS, the library staff would be able to extract maximum benefits out of the PMS.

The Sections II to VII describe in details the seven files in the PMS and the various reports obtained from the PMS. The chapter 8 briefly discusses some of the salient points in the operational considerations of the PMS. The Appendix-I gives the list of subroutines developed for the PMS. The Appendix-II briefly describes the functions of the subroutines used in the PMS.

II. THE FILE CONSUBFL

The very first step in the development of the PMS is to form the two files viz. i) the country file and ii) the subject file.

The country file : This file contains the name of the various countries from which the periodicals are received and their corresponding unique numeric codes. The numeric code, consisting of two digits, would be any number from 1 to 98. The number 99 is not assigned to any country and is reserved for the numeric code of the vendor. This enables us to treat a vendor and a publisher on the equal footing so far as the storage is concerned. In other words we include both the vendors and the publishers in the same file PUBLNMFL described in Section IV.

The subject file : This file contains the name of the subject groups and their numeric codes. All the subjects covered by the periodicals in the library have been classified in the broad subject groups. Each of the subject group has been assigned a unique two digit numeric code. The numeric code would be any number from 1 to 99. Though each periodical is assigned only one numeric code, it is possible that it may be classified under many other subject groups. This fact is taken into account while generating the file JRNLNMFL in Section XXX.

The file CONSUBFL has been formed by using the country file as its first record and the subject file as its second record. Thus the file contains only two records, each of size 3600 bytes. In the file the country names and subject group names have been arranged alphabetically. At the time of generation, it has been ensured that each numeric code

is within the proper range and is not repeated.

As the file is small, no separate routine is developed
to update it. For any modification, addition or deletion,
it would be necessary to generate the file again with the
necessary changes in the basic input data. As this file is
independent and has no links to any other files the modifi-
cations in the files JRNLNMFL and PUBLNMFL caused due to
update operations in this file should be performed independ-
ently without delay. The file is generated using the sub-
routine CSFILE which is turn calls the subroutine SHSORT.
The function of the subroutine SHSORT is briefly described
in the Appendix - II.

III. THE FILE JRNLNMFL

This is the most important file in the PMS. Its record contains the code of the periodical, the name of the periodical and the other subject codes under which it can be classified. The code of the periodical is the key of the record. As seen in the first Chapter, it is through this file that one can have access to the important files like BKVLFL, CRVLFL, NXVLFL etc. Any new periodical to be introduced in the PMS has to be first added in this file. In other words the file serves as the only 'gate' to enter the PMS. This fact, to a great extent, helps to ensure the overall integrity of the system by systematically monitoring the update operations for the important files.

1. **The code of the periodical** : The periodical code has two parts, viz i) numeric and ii) alphabetic. The numeric code consisting of six digits is formed using the two digits from each of its subject code, country code and the periodicity code respectively. The subject code and the country codes have been discussed in Section II. The periodicity code is obtained by measuring the periodicity of the periodical taking one week as a unit. For example the monthly periodical will have a periodicity code 04 while yearly will have the code 52.

The alphabetic code will have maximum six alphabetic letters selected from the name of the periodical. Generally these letters may be the initials of the words in the name. However they may be the meaningful abbreviations of the words if that helps in identifying the periodical easily.

To give an example the periodical code 220404 CJES has a subject code 22 (referring to Geology), a country code 04

(referring to Canada), a periodicity code 04 (it being a
monthly) and an alphabetic code standing for its name 'Canadian
Journal of Earth Sciences'.

2. The name of the periodical : The complete name of the
periodical not exceeding 100 characters is read in two part,
each of maximum 50 characters. These parts can be joined in
a single string if required. The two parts of the name would
help to print the name in two lines if so desired.

3. Other subject groups : Very often a periodical can be
classified as belonging to more than one subject group. It
is, therefore, expected that in the subjectwise list of
periodicals, the same periodical would appear under all those
subject groups. Therefore besides the subject code that is in-
corporated in the code of the periodical, maximum five other
subject codes could be assigned to the periodical separately.

The file JRNLNMFL has a provision of maximum 999 records
in it, each of size 161 bytes. The first five records being
the header records containing the general information, the file
can accommodate maximum 994 periodical records. In the file
the records have been sorted in the ascending order of the
codes of the periodicals. Consequently it is possible to see
that the file gets divided in few blocks corresponding to each
subject group. The record number of the first number in each
block is obtained and stored in the header records from 2 to 5
alongwith its subject code. Subsequently this information would
be used to search the record in the file by block search
manner. The first header record contains the general informat-
ion such as the number of periodicals available in the file,
the number of subject groups covered by them, the size of each

record, etc.

The file is generated using the subroutine JRNMFL which also uses the following subroutines.

a) Sub. FMTINT

b) Sub. FMTERR

c) Sub. SHSORT

d) Sub. EXNOCH

e) Sub. CHECK

f) Sub. SKIPI

The functions of these subroutines have been briefly described in the Appendix - II.

Besides the information described above, each periodical record in the file would also store the recαd numbers of the records of the same periodical in the files BKVLFL and CRVEFL. At the time of generation of the file, these two record numbers are initialized to zero for every periodical. Later as and when the records in the files BKVLFL and CRVLFL would be introduced, the file JRNLNMFL would note the record numbers and store them appropriately. In other words the file JRNLNMFL not only indicates if the record of the periodical in the files BKVLFL and CRVLFL exists, but it also tells where the record is stored in the corresponding file, thereby eliminating the search time for the records in these two files completely. As stated in the first Chapter this makes the files BKVLFL and CRVEFL strongly linked to the file JRNLNMFL. It would be pointed out in the Section VI that the file NXVLFL has also been linked strongly to the file JRNLNMFL.

The file JRNLNMFL can be updated by adding new members or by modifying or deleting the existing ones using the sub-

routine UDJNF. In case, there is a change in the code of the periodical, the same would be effected simultaneously in the corresponding records of the periodical in the files BKVLFL, CRVLFL and NXVLFL. The subroutine UDJNF uses the same subroutines as listed for the subroutine JRNMFL. The contents of the records in the file can be listed out using the subroutine LSTJNF which also uses the subroutine EXNOCH.

Using the files CONSUBFL and JRNLNMFL the following lists of the periodicals could be obtained through the subroutine JRNREP.

a) Alphabetic list
b) Subjectwise list
c) Countrywise list
d) Periodicitywise list

The subroutine JRNFREP uses subroutines SHSORT and SORT to get these lists.

IV. THE FILE PUBLNMFL

This is an independent file containing the information regarding various publishers of the periodicals received by the library. Each publisher will have one record giving the code of the publisher, the name and the postal address of the publisher, its file number as maintained by the library, the subscription number, if any, etc. This information would be quite necessary in having postal correspondence with the publisher.

i) <u>Publisher Code:</u> The publisher code would also have two parts. The numeric part contains the country code of two digits corresponding to the country to which it belongs. The alphabetic part consisting of at most six letters is usually formed by taking the initial letters of the words in the name of the publisher. Any meaningful abbreviation of the name which may help in identifying the publisher relatively with more ease could also be adopted. For example the publisher code 18 RSASC has a numeric code 18 corresponding to the country name Sweden and the alphabetic code RSASC which stands for the name of the publisher as 'Royal Swedish Academy of Sciences'.

In this file the information of various vendors through whom many periodicals are received has also been kept. As the number of vendors is very small (six in our case) it is not necessary to form a separate file for them. We have introduced the information of the vendors in the file PUBLNMFL with country code equal to 99 for all of them, even though they may belong to different countries.

In other words the numeric code 99 identifies that it is a vendor and not a publisher. The other information for the vendor is exactly similar as given for the publisher.

ii) <u>The name and the address of the publisher/vendor:</u> The name and the postal address of the publisher is read as a string of maximum 150 characters. The string has been broken into maximum five parts, the first part being the name of the publisher/vendor, These parts help in printing the name and the address in five different lines in the way as it usually appears in the beginning of the letter.

iii) <u>The subscription number:</u> Generally a publisher may give a subscription number to a customer. Quoting the subscription number in the correspondence usually brings a prompt response from the publisher. Sometimes a publisher may give more than one subscription number to the same customer, based on the different modes of procurements (such as air-mail, sea-mail, etc.) he may choose to have for various periodicals published or procured by the same publisher/vendor.

The file PUBLNMFL has a provision of maximum 500 records, each of size 235 bytes. The first five records are header records. This means maximum 495 publisher records can be accommodated in the file. The publisher records are arranged in the ascending order of their codes in the file. As a result the file gets divided into different blocks each belonging to a unique country. The record number of the first member in each block has been stored alongwith its country code in the header records from 2 to 5.

As in the case of the file JRNLNMFL, this helps for the quick search of the publisher record in the file with the publisher code as a key. The first header record contains the information such as the number of publishers available in the file, the number of countries they cover, the name of the file, the size of each record etc.

The file is generated using the subroutine PBNMFL which in turn uses the subroutine FMTINT and SHSORT described in Appendix-II. Updating the file by addition of new members or by modification or deletion of existing ones is done through the subroutine UDPNF which uses sub-routines SKIPI and SHSORT.

As shown in the figure 1, this file is independent in the sense that it has no link to other files in the PMS. As a result if the publisher code for any publisher is changed in the file PUBLNMFL, the same change would not be transferred to the records in other files by the PMS. Those records may have to be updated independently.

The contents of the records in the file can be listed out using the subroutine LSTPNF.

Using the files CONSUBFL, JRNLNMFL and PUBLNMFL, the following reports could be obtained by the subroutine PUBREP.

a) Alphabetic list of publisher

b) The countrywise list of publishers

c) The list of periodicals published by various publishers.

The subroutine PUBREP makes use of the subroutines FMTINT, SORT and SHSORT to get the above reports.

V. THE FILE BKVLFL

This is an another important file in the PMS. Each record
of this file contains the general information of the periodi-
cal as well as the details of its back volumes available with
the Library.

i) General Information : This includes the information such
    as the key of the record which is the code of the periodi-
    cal, the publisher code, the vendor code if any, the status
    of the periodical (i.e. current, newly subscribed, dis-
    continued, merged etc.), the form of the periodical
    (issue form or book form), if it is in the book form, its
    classification number, if it is gratis , if it is preserv-
    ed in the library as bound volumes, the mode of procure-
    ment (i.e. air-mail, sea-mail, air-freight etc.) etc. In
    addition it includes all the title changes. If the
    periodical is a translated version, the name of the
    original periodical is also retained in the record.

ii) Back Volume Information : This gives the information re-
    garding the year since when the back volumes of the
    periodical are available in the Library, the year upto
    which they are available in the case of discontinued
    periodicals, the other details such as the starting volume
    number, the ending volume number, the volume numbers
    which may be missing or incomplete, the issue numbers·
    missing in the incomplete volumes etc.

In other words this file contains the complete informat-

ion of the periodicals which can be compiled to form a
catalogue of the periodicals useful both to the users
as well as the library staff for the ready reference.

To insert the record in the file BKVLFL, the key of the
record i.e. the periodical code is first searched in
the file JRNLNMFL. If it is found, the record is added
in the file BKVLFL and its record number is stored back
in the file JRNLNMFL. As the entry to the PMS is always
through the file JRNLNMFL, this scheme eliminates the
search time for the records in the file BKVLFL completely.
In other words the file BKVLFL is strongly linked to the
file JRNLNMFL as stated in the Section - I. If the
periodical code is not found in the file JRNLNMFL, the
record would not be added in the file BKVLFL. As in the
files JRNLNMFL, CONSUBFL and PUBLNMFL, the records in
the file BKVLFL are not arranged in any particular order.
In fact they appear in the file in the same order in
which they are fed into it.

In case a particular record is deleted from the file
BKVLFL, it cannot be condensed as the files JRNLNMFL,
PUBLNMFL etc. because it would greatly disturb its links
with the file JRNLNMFL. As a result any deletion of
the record from the file would cause empty gaps in it.
The PMS would keep track of these gaps and their record
numbers.

That the file PUBLNMFL is weakly linked to the file BKVLFL
is clear from the fact that the record of the file BKVLFL
contains the publisher code which is the key of the

record in the file PUBLNMFL. However it may be noted that the file BKVLFL is not linked to the file PUBLNMFL.

The file is generated with the help of the subroutine BACVOL which uses the subroutines FMTINT, FMTERR, CHECK and SKIPI described in the Appendix - II. The file has a provision of maximum 995 records, each of size 1130 bytes. The first record being the header record, the file can accommodate maximum 994 periodical records. The header record stores the information such as the number of periodical records available in the file, the number of gaps in the files and their record numbers the size of each record etc.

The addition of new members, the modification or deletion of existing ones would be possible through the subroutine UDBKVL using the same subroutines as listed for the subroutine BACVOL. The deletion of the record of the file BKVLFL will automatically initialize the corresponding record number stored in the file JRNLNMFL to be zero by the PMS, indicating that this record is not available in the file BKVLFL. In adding a new record, it is first attempted to accommodate it in the empty gaps present in the file.

The contents of the records in the file BKVLFL can be listed out using the subroutine CATLOG which also calls the subroutines SHSORT and SORT.

Using the files CONSUBFL, JRNLNMFL, PUBLNMFL and BKVLFL, it is possible to obtain the catalogue of all the periodicals received in the library through the subroutine CATLOG.

Besides the fact that this catalogue can be prepared in incredibly short time, it is always accurate and up-to-date whenever it is prepared.

Further the files JRNLNMFL and BKVLFL are being used to obtain the following lists of periodicals through the subroutine JRNREP.

a)   Vendorwise list

b)   Mode of despatch list

c)   Statuswise list

d)   Formwise list

e)   Gratis list

f)   Periodicals which need not be preserved

g)   The periodicals which are translated from other periodicals.

VI. THE FILE CRVLFL AND NXVLFL

In the management of periodicals, the most important
task would be the management of current issues. It is of
utmost importance to see that they are received without
any break and once received are properly processed and
preserved for the easy access to the users. To ensure
this, the PMS helps the library staff in number of ways.
It gives the warning messages for the renewals of the
periodicals well in advance, prepares the reminder
letters whenever they are due, lists the issues of
special categories (i.e. special issues, review issue,
index issue, proceedings issue etc.) time to time, indi-
cates the completion of volumes etc. It also keeps the
complete details of the payment transactions for all the
periodicals subscribed by the library. The files CRVLFL and
NXVLFL stores the necessary information to serve the user
through the PMS.

Each record in the files CRVLFL and NXVLFL pertains to a
periodical currently being received in the library. The
record in the file CRVLFL contains the payment details of
the current year and the details of the current volume.
The record in the file NXVLFL contains the payment details
of the next year and the details of the next volume.

The necessity of these two files is mainly caused due to
large overlaps existing for the current and next payment
and volume details. Invariably the payment for the next
year is generally made much before the end of current

year. Similarly in the case of volumes, it is possible that the issues belonging to next volume number may arrive much before current volume is completed.

i) <u>Payment Details:</u> This includes the payment period, the number of payment documents available (viz. main payment document, supplementary payment document, credit note received etc.); the details of these documents such as the amount paid or received the currency code, the mode of payment (viz. cheque, demand draft, exchange note, money order etc.), the number and date the document bears, the date on which the document has been despatched etc. It also includes the additional information indicating if the subscription is extended; if yes, by how many issues, if the warning message for the renewal has been given, if the payment for the next year has been made so on and so forth.

ii) <u>Details of the volumes</u> : It includes the volume number, the volume year, the number of issues received, the number of issues not received, the next expected issue and the details of all these issues. The details of the issue may include the issue number, the part number, the issue date, the date on which it is received, the category of the issue and the description of the issue belonging to the special category. For the issues that are not received and the next expected issue, the additional information regarding the number of reminders sent and their responses has also been recorded. The code of the periodical, of course, serves as the key of the record.

The records in the files CRVLFL and NXVLFL are added in

the same way as described in the case of file BKVLFL. As soon as the record is entered in the file, its record number is stored in the file JRNLNMFL. The structure of these two files is exactly similar to that of the file BKVLFL. The record numbers corresponding to the same periodical in the files CRVLFL and NXVLFL are same. Thus both the files gets strongly linked to the file JRNLNMFL.

Both the files have a provision of maximum 600 records, each of size 3624 bytes. The first record is the header record and hence the files can accommodate maximum 599 periodical records. The header record contains the number of periodical records available in the file, the number of empty gaps (see the file BKVLFL) in the file and the corresponding record numbers.

The file CRVLFL is generated using the subroutine GENCVF which uses the following other subroutines.

a)	Sub.	FMTERR	f)	Sub.	DTSEQ
b)	Sub.	CHECK	g)	Sub.	WRTREC
c)	Sub.	SKIPI	h)	Sub.	NEWDT
d)	Sub.	EXPDT	1)	Sub.	RDCVDT
e)	Sub.	CHKDT			

These subroutines are briefly described in Appendix -II.

The file NXVLFL is being generated only as an update operation whenever its contents are available. For that the file CRVLFL keeps the details of the next volume (i.e. the volume number and the volume year) as derived from the details of the current volume and also indicates if any issues in the next volume are received. Any input

meant for the file NXVLFL is first verified in the file CRVLFL and then added in the file NXVLFL. Thus the entry to the file NXVLFL is always through the file CRVLFL. It may be worth noting at this stage that the files CRVLFL and NXVLFL are strongly linked in both the ways.

The addition of new members and the modification or the deletion of the existing ones has been possible through the subroutine UDCRVL exactly in the same fashion as for the file BKVLFL. However the update operations for these files are much more flexible. To be explicit, it is possible to enter only the payment details or only the volume details independently in the record. This provision is absolutely necessary if one wants to enter the payment details of the next year when possibly the next volume is not being received by the library. Similarly the details of the next volume may be required to be recorded much before the payment for the next year is due.

The subroutine UDCRVL calls the subroutine RDREC in addition to all the subroutines required by the subroutine GENCVF.

The volume details of both the files are constantly getting updated as and when the details of the newly arrived issues are being fed into them. The addition of newly received issues is made through the subprogram INSERT. This is a very important program so far as the daily operations are concerned. It not only inserts the new issues in the files but also prepares the details of the

next expected issue. It updates the details of the issues
not received in the files based on the newly entered
issues. It can delete the details of any issue if they are
wrongly entered. It can also add some issues especially
the first issue in the list of not received manually if
so required.

The subroutine INSERT uses the following subroutines.

a)   Sub. FMTINT

b)   Sub. FMTERR

c)   Sub. CHECK

d)   Sub. CHKDT

e)   Sub. DTSEQ

f)   Sub. RDREC

g)   Sub. WRTREC

h)   Sub. NEWDT

i)   Sub. SKIPI

The listing of the contents of all the records or only
those records specified by the user can be obtained
through the subroutine LSTCVE using the subroutine
RDREC. The listing contains the records from both the
files CRVLFL and NXVLFL.

Various reports can be obtained using the files JRNLNMFL,
CRVLFL and NXVLFL. The subroutine VOLUME gives three
different reports using three subroutines viz. i) VOLCOM
ii) VOLSPE iii) RENEW.

The subprogram VOLCOM can give two reports. The first
report would contain the list of those volumes which are
completed. In this report, it gives the details of all

the issues in the volume. The fact that these details
fr the completed volume have been given once would be
noted by the system. As a result those volumes will not
appear in the next report. However, it is possible to
include them in the next report again if so desired. The
second report gives the list of all the volumes (complete
as well as incomplete) in the file. The report contains
the details of all the issues (i.e. received, not
received, not recorded etc.) for all the volumes. Both
the reports can be obtained either using all the records
in the file or only those records specified by the user.
In any case the reports will list the volumes contained
in both the files CRVLFL and NXVLFL.

The subprogram VOLSPE lists all the issues in both the
files, belonging to the special category alongwith the
description if any. The issues once listed in the report
would be normally excluded in the next report. However
they may again be included in the subsequent reports if
so desired. As in the case of the subroutine VOLCOM,
the reports can be obtained either using all the records
in the files or only those record numbers corresponding
to the desired periodicals.

The subroutine RENEW gives the warning messages for the
renewals of the periodicals. These messages can be
obtained as early as four months in advance. Once the
renewal message for the periodical has been given, the
same would not appear again unless desired so.

The subprogram LSTISS gives the list of all the issues

received on a particular day. This list is being used for the display on the library notice board. The subroutine LSTISS uses the subroutines SHSORT and SORT.

The subroutine VOLUME uses the following subroutines.

a) FMTINT b) SORT c) VOLCOM d) VOLSHE e) RENEW
f) SHSORT g) WRTREC h) RDREC i) CHKDT j) DTSEQ
k) NEWDT

Finally it may be stated that the PMS has a provision of only two volumes running simultaneously. As a result the current volume will remain in the file CRVLFL as long as the volume in the file NXVLFL is not complete. Once the issues belonging to second next volume number starts arriving, the room for the same should be made available in the file CRVLFL. The details of the current volume, even if it is incomplete are then removed from the file CRVLFL and are added in the file BKVLFL. The list of incomplete volumes in the file BKVLFL would be appropriately updated by the PMS.

VII. THE FILE REMINDER

As stated in the previous Chapter, the PMS prepares reminder letters to be sent either to the publishers or to the vendors. For a given issue the PMS can send maximum three reminder letters. Based on the periodicity of the periodical and its mode of procurement, the first reminder will be sent. The second reminder will be sent after an interval of one month if there is no response to the first reminder. Similarly the third and the last reminder will be sent again after an interval of one month. The file REMINDER contains all the information necessary to prepare the reminder letters.

The file REMINDER contains the details of the issue not received, the periodical code, the publisher code, the vendor code, the reminder number, the responses and despatch dates of earlier reminders if any and the payment details to ensure the prompt response. The issue details would include the volume number, the issue number, the part number and the issue date. For every issue for which the reminder is due, there would be one record in the file REMINDER.

The file REMINDER is generated using two subroutines, viz.
i) REMIND   ii) RMND23

The subroutine REMIND scans the files CRVLFL and NXVLFL and collects the details of those issues for which the first reminder is due. In other words, the records of the file REMINDER corresponding to the first reminder

letter are generated by the subroutine REMIND. The fact that the reminder for a particular issue has been record- ed in the file would be noted by the system to avoid the inclusion of the same in the next run. The subroutine RE- MIND uses the following subroutines to prepare the records of the file REMINDER.

a)   EXPDT   b)   RDREC   c)   WRTREC   d)   DTSEQ

e)   NEWDT   f)   SORT   g)   SHSORT

The subroutine RMND 23 generater those records in the file REMINDER for which the second or the third reminder may be due. These records are prepared by scanning the file REMINDER. The despatch dates and the responses of the earlier reminders are examined to see if the next reminder is due. If it is due, the corresponding separate record is formed in the file REMINDER. The subroutine RMND23 uses the same subroutines as required by the sub.REMIND.

The file has a provision of 250 records, each of size 235 bytes. The first record is the header record, It may be noted that there is no key to search the record in the file. The record number in the file is, therefore, used to get an access to any record. As a result the file cannot be condensed in case some records are deleted from it. This would cause the empty gaps in the file as in the case of files BKVLFL, CRVLFL and NXVLFL. The PMS should keep track of these gaps and their record numbers, to be filled later by the new records added in the file. The first header record contains the informat- ion such as the number of records in the file, the number of letters prepared so far, the number of letters sent

to each vendor, the number of gaps and their record
numbers etc.

The reminders in the form of letters would be finally
obtained using the records in the file REMINDER with
the help of subroutines LTOPUB and LTOVEN. The sub.
LTOPUB would address letters only to publishers whereas
the sub. LTOVEN would address them only to vendors. It
has been decided that as a rule the first reminder would
be normally sent to the vendors if any one and the
second and third reminder letters would be addressed to
the publishers. However, it would be possible to send
any specific reminder to any specific addressee if user
desires so. All the records addressed to the same
addressee would form only one letter. A provision has
also been made to enable the user to exclude some re-
cords in the file REMINDER while preparing the reminder
letters.

The records in the file REMINDER get updated based on
various responses to the reminder letters sent previously.
All the responses have been classified into few categories.
Each category has been given a numeric code of two digits.
Based on the response received, the REMINDER file is
updated using the subroutine UDRMND. If the response,
in any way, indicates the possibility of getting the issue
sometime later, the corresponding record is updated and
retained in the file for sending further reminder letters.
If the response is negative, the record is deleted from
the file. As stated above the update operations are per-
formed using the actual record number as the key. It is

therefore of utmost importance that the latest contents of file should be used for the update operations.

Before the reminder letters are prepared using the subroutines LTOPUB and LTOVEN, the reminder file has been scanned by the subroutine SCNRMN to verify that all the issues for which the reminders are due have not been received in the library by looking into the files CRVLFL and NXVLFL. Thus the records of the issues which are already received get automatically deleted from the REMINDER file.

The subroutine LSTRMN lists the contents of the records of the file REMINDER along with their record numbers which serve as key to the records in the file.

VIII. GENERAL OPERATIONAL CONSIDERATIONS OF THE PMS

The detailed operational consideration of the PMS would be discussed in the operational manual of the PMS. However some general consideration has been described in this Section.

To insert a new periodical in the PMS following steps would be normally required.

1. Find the subject group to which it belongs. If it forms a new subject group, update the file CONSUBFL (second record) by including the new subject group along with its numeric code (see Section - II).

2. Find the country code to which it belongs. If the country is not available in the country file, update the file CONSUBFL (first record) by including the new country name alongwith its numeric code (See Section - II).

3. Find the periodicity Code of the new periodical. (See Section - III).

4. Form the periodical code for the new periodical. (See Section - III).

5. If its publisher and vendor are not available in the file PUBLNMFL, update the file by adding them with appropriate codes (See Section - IV).

6. Add the new periodical record in the file JRNLNMFL (See Section - III).

7. Add the record of the new periodical in the file BKVLFL with the available information (See Section - V).

8. Add the record of the new periodical in the file CRVLFL.

9. Insert the details of the issues of the periodical in the file CRVLFL and NXVLFL immediately as soon as they are received. (See Chapter - VI).

Another most important operational consideration would be to ensure that the overall integrity of the system has been maintained. Although most of the burden would be shouldered by the PMS by virtue of its structure, the files CONSUBFL and PUBLNMFL which are independent deserve special attention. Any change in the country code or the subject code in the file CONSUBFL and any change in the publisher code in the file PUBLNMFL would not be passed on to the records in other files simultaneously as no other file has been linked to these files. All the records affected by these changes have to be modified independently without fail, otherwise the integrity of the system would be greatly disturbed.

The file REMINDER would also require utmost care in its handling. The following points may be worth remembering before getting reminder letters using the file.

1. Update the file immediately after getting the responses.
2. Always use the latest listing of the file for the purpose of updating.
3. Scan the file to verify that the issues due for reminder letters have not been received in the Library.

Further constant attention must be paid to the file JRNLNMFL. If by any chance this file gets disturbed, the

complete PMS may have to be regenerated. It is, therefore, advisable to keep the latest listing of this file. It would also at a glance, tell if a particular record in the files BKVLFL, CRVLFL or NXVLFL is available and where it is available. It thus helps in getting the contents of the specified records in the above files. It would not be an exaggeration to say that the periodical record deleted from this file would also be lost to the PMS as well.

The frequency with which the various reports can be obtained through the PMS is decided by the library staff based on the distribution of the periodicals in terms of their periodicities, mode of procurement etc. The basic guideline, however, would be to give maxminm service to the users with minimum number of computer runs, as the system has been implemented in the batch-processing environment. Needless to mention that the critical reports may be obtained very often so as to get the important information in time. It may be stated that though the PMS can generate various reports described so far, it may be able to generate many more related reports which might not have been envisaged so far.

Finally it may be mentioned that most of the operational precautions would be required mainly due to the fact that the PMS has to operate in the batch-mode. In the time-sharing terminal-oriented environment there would be much more operational ease to use the system.

APPENDIX - I

The list of subroutines developed for the PMS

I.   The file CONSUBFL

   1. Sub. CSFILE

II. The File JRNLNMFL

   1. Sub. JRNMFL

   2. Sub. UDJNF

   3. Sub. LSTJNF

   4. Sub. JRNREP

III. The file PUBLNMFL

   1. Sub. PBNMFL

   2. Sub. UDPNF

   3. Sub. LSTPNF

   4. Sub. PUBREP

IV. The file BKVLFL

   1. Sub. BACVCL

   2. Sub. UDBKVL

   3. Sub. CATLOG

V.   The Files CRVLFL

   and NXVLFL

   1. Sub. GENCVF

   2. Sub. UDCRVL

   3. Sub. INSERT

   4. Sub. VOLUME

   5. Sub. VOLCM

   5. Sub. VCLSPE

   7. Sub. RENEW

   8. Sub. LSTCVF

   9. Sub. LSTISS

VI. The file REMINDER

   1. Sub. REMIND

   2. Sub. RMND23

   3. Sub. LTOPUB

   4. Sub. LTCVEN

   5. Sub. UDRMND

   6. Sub. SCNRMN

   7. Sub. LSTRMN

VII. Service Subroutines

   1. Sub. FMTERR

   2. Sub. SORT

   3. Sub. CHECK

   4. Sub. SKIPI

   5. Sub. DTSEQ

   6. Sub. WRTREC

   7. Sub. RDREC

   8. Sub. CHKDT

   9. Sub. EXPDT

   10. Sub. NEWDT

   11. Sub. EXNOCH

   12. Sub. RDCVDT

APPENDIX - II

A brief description of the service subroutines

1. Sub. CHECK :- This subroutine checks that all the data cards belonging to the same record will have the same information in the specified columns as in the header card. It also helps in identifying different types of data cards. In case of any discrepancy it gives the meaningful message and skips all the data cards belonging to that record. It uses the subroutine SKIPI.

2. Sub. CHKDT :- This subroutine checks the validity of a given data. In case of any discrepancy, it gives the message accordingly.

3. Sub. DTSEQ :- This subroutine checks the sequence of two given dates.

4. Sub. EXNOCH :- This subroutine finds the number of characters in the name of the periodical. Also it joins the two parts of 50 characters of the name into a single string.

5. Sub. EXPDT :- This subroutine gives the number of days required to get a issue when the date of the previous issue number and the mode of procurement are given.

6. Sub. FMTERR :- It detects the format error encountered in reading the record from the cards. It gives the message and prints the data card in which the error has been detected along with its record number. Later it skips the record completely by skipping the remaining data cards in the card. It uses the subroutine FMTINT and SKIPI.

7. Sub. FMTINT :- This subroutine detects the format error in any input operation. The subroutine is available with the operating system.

8. Sub. NEWDT :- This subroutine gives the new date by adding the specified number of days in the given date.

9. Sub. RDCVDT :- This subroutine reads the record of the files CRVLFL or NXVLFL from the cards and validates it.

10. Sub. RDREC :- This subroutine reads the record of the files CRVLFL and NXVLFL from the disk. It can read the records in various ways. For example it can read only payment details or only the volume details or the whole record depending on the control parameter you feed.

11. Sub. SKIPI :- It skips the data cards until the data card with the specified characters in the columns 79 and 80 are encountered.

12. Sub. SHSORT :- This subroutine sorts the records using maximum 28 characters in the records.

13. Sub. SORT :- This subroutine sorts the records using more than 28 characters in the records.

14. Sub. WRTREC :- This subroutine writes the record of the files CRVLFL and NXVLFL on the disk. As in the case of RDREC, it can write only the payment details or only volume details or the whole record according to the control parameter.

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