5-1967

Automated Circulation Control for the Utah State University Library

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AUTOMATED CIRCULATION CONTROL FOR THE UTAH STATE UNIVERSITY LIBRARY

by

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A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Applied Statistics & Computer Science

Approved:

UTAH STATE UNIVERSITY
Logan, Utah

1967

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INTRODUCTION

This package of programs is a result of the U.S.U. Library incorporating an automated control on the circulation of their books, which would provide the library with a daily record of all books in circulation, or not available for circulation, and send notices when books were overdue.

Because of the long-range program of the Data Processing Department of the University, it was decided to develop the software for this project rather than purchase the hardware.

The then existing hardware included the IBM 1401 computer (4K), 1402 card reader, 1403 on line printer, and a card sorter. The only additional hardware required by the Data Processing Department was the "read punch feed" feature on the card reader.

This report includes information for operating the programs involved in processing the data. Any information required in setting up the data collection system may be obtained from the U.S.U. Library.

These programs were developed to be compatible with the previously mentioned hardware and were used until the data processing facilities of the University were updated. All programs were written in the SSPS II symbolic language.

DESCRIPTION OF SYSTEM

When a book is received by the library, the cataloging department assigns the classification and author number to the book. The master card is then punched and remains with the book throughout its circulation. The format of the master card is outlined in the appendix.

The book is then placed on the shelf in the library ready for circulation. The procedure up to this point is the same as any method of library circulation control with the exception of the master card.

When a student wishes to borrow a book, he takes it from the shelf and presents it with his library card at the circulation desk. At this point the charge and discharge cards are made by the IBM 357 and the checkout procedure is complete. It the borrower does not have a plastic identification card, his identification number (hereafter refered to as ID) is entered through the manual data card rather than with the plastic data card. The charge cards are sent to the computer center for processing and the discharge cards go with the books. A check point is set up at the exit of the library and each book leaving must have the appropriate discharge card with it. Some documents and periodicals are exceptions and checkout slips are provided for them manually.

When the book is returned, the discharge card is removed, the Julian date is entered in Col 76-80 and sent to the computer center. The book is then checked for a hold, and if a hold has not been requested, it is re-shelved ready for the next

user. When a hold has been requested, the person is notified and is given a time period to pick up the book. If no reply, the book is shelved.

At the computer center, the cards are sorted by call number and merged together by call number, ID, and date due; any that match up are selected from the system. When this file is complete, the process is repeated running this new file against the existing master file. An updated master file and list is produced at this time. Also, any overdue or unmatched cards are pulled, and all cards which match up and are not overdue are cleared from the system.

The new overdue cards are now merged into the overdue file and the unmatched discharge cards are run against the updated overdue file. The cards for books which were returned late and the fine not paid are merged into the file. The unmatched cards are selected and the cards for books returned late with the fines paid are cleared from the system.

The master file is now current with a card for every book not available for public circulation, except books which are overdue and not returned, these cards are in the overdue file.

The overdue file is current with the matching charge and discharge cards for books returned late and the fine not paid as well as any books overdue and not yet returned. Matching cards should be pulled at the library as fines are paid.

The unmatched discharge cards have been selected, and should be returned to the library.

The overdue notices may be printed at any time. A record of the notices sent is maintained in the overdue file and is updated each time notices are printed. Only three notices are sent per book, however, more may be printed if desired.

When it is desired to send notices, a new deck of cards is produced fro.n the overdue file. Cards are produces only for the books which have received less than three notices. This deck is sorted by ID and run against a name and address file, (N/A). The notices are printed book within student, so all the books for one student are printed on the same notice.

It is possible to print a list of all students owing fines by following a similar procedure only to do this all cards in the overdue file are reproduced, sorted by ID, and run against the name and address file.

The library maintains only the overdue file and unmatched discharge cards.

OPERATING INSTRUCTIONS

LIB10

This program is to prepare the data for the system. It is used only on the cards of new users. When an identification number is entered manually into the IBM 357, zeros are entered into columns 10-18 and the ID number goes into 19-27. To be compatible with the rest of the system the ID must be moved into columns 10-18. The necessary cards are found by sorting on column 10.

Load the program with the I/O and "A" switches on, blank cards of the appropriate color are on the punch side, the program batch processes.

LIB15

This program is to sequence check the cards. There are 39 columns involved in the sequence, 10 of which may be alphabetic or numeric, so the time required to sort manually is impractical. Program LIB15 was written to cut the time required to put the transaction cards into order and correct any invalid characters.

Sort the cards alphabetically from 42-38 then numerically from 32-28 and 53. This puts them in rough order by author and classification mumber; and separates them into charge and discharge files. The charge file represents the books which have been checked out since the last run and the discharge those which have been returned.

Load the program with switches I/O and "A" on. All three of the pockets are

used; NR and 1 are both in sequence, the 8/2 is not. The program batch processes so, clear the pockets, load the 8/2 pocket on the read side and press check restart and start on the reader console. The cards will again come out in three pockets. Continue this procedure until no cards come out in the 8/2 pocket. Each of these small decks of cards are in sequence by book number, ID, type borrower, and date. These cards are not ready to be merged into one sequenced file.

There will be a few validity stops, usually in column 9.

LIB20

LIB20 merges the cards into sequence and pulls matched cards. This program may be used anytime it is desired to merge cards into sequence. The first time the program is used is to merge the output of LIB15. Keeping the charge and discharge cards separate merge them into sequence.

Load the program with I/O and "A" on, starting with the two smallest decks and working to the largest. When both the charge and discharge files are in sequence, the two are merged together, with the discharge cards processed through the punch side.

The NR and NP pockets are used for the matched cards, (books which have been checked out and returned since the last run), the 8/2 pocket contains the merged transactions in sequence to be run against the master file. This program batch processes but because of the card delay structures two blank cards must follow the read side and four the punch, to get the last data card processed and into the proper pocket. When merging cards as this program does, it is necessary to internally slow the program down; this was accomplished by counting to 500 every time a read on the punch side is followed with a read on the read side.

The program batch processes so when all the cards have been read, non-process run-out the cards on both sides, push the start reset button on the reader console load the new data and press start.

LIB30

The purpose of LIB 30 is twofold.

1. It provedes a current listing of all books not on the shelves for circulation.

2. It provides a current list of all books checked out to students or non-university personnel and currently overdue.

The Utah State University Library requires six copies of these lists which are produced by using three part paper and making two copies per page.

A control card is used to determine whether the program is being used for the circulation or overdue list.

Col 1-8	Date to appear on the list
9	W for weekly circulation run
	O for overdue run
10-14	The Julian date for the last day books were returned and are being processed.
Example:	If the run was being made on October 11, 1966, then the cards would include up through and including October 10, or 66283 and the list would not appear in the library until October 12, 1966, or 10/12/66. So the control card for the daily circulation would be 10/12/66w66283 and 10/12/66o66283 for the overdue run.

To make the daily run, the output from Program LIB20 is loaded on the punch side followed by four blank cards, the program is loaded on the read side followed by the control card, then the master file data and one blank card.

All pockets are used

NR, NP the matched transactions to be cleared from the system

1 The new overdue books

4 The books which have been returned and do not match up or were returned late and the fine not paid

8/2 the updated master file.

To make the overdue list, the cards from the 1 pocket are loaded on the punch side followed by four blank cards and the overdue file is loaded on the read side behind LIB20 followed by two blank cards, all cards should fall into the 8/2 pocket. When this pass is finished LIB30 is loaded with the overdue control card, the 8/2 pocket is loaded on the read side with one blank card, the 4 pocket from the previous LIB30 run is loaded on the punch side followed by four blank cards. The 8/2 pocket is now the updated overdue file, the 4 pocket contains the unmatched discharge cards and is returned to the library with the lists. This is an error condition. The unmatched discharge cards which are returned to the library are usually a result of one column in the charge and discharge cards not matching, these will clear by changing the column to match and send it through again. This condition will also be produced if the Computer Center does not receive the charge card; if so, the cards may be destroyed unless a fine is due. These conditions should not exist.

Np and Nr are used to clear the system of books with fines paid. Once both

cards have reached the overdue file, (book returned late and fine not paid), the cards should be taken from the system at the library when the fine is paid.

LIB40

Used to update the notices sent. The program is loaded on read side and the overdue file on the punch side followed with four blank cards. When the machine stops, load the overdue file behind LIB40 on the read side and load the punch side with blank cards. This produces a new card file of overdue notices to be sent. This file should now be sorted on columns 18-11 to be put in sequence by student number. If a list of overdue notices sent is wanted in sequence by book number, make the list before the sort.

LIB50

To print the notices, load the N/A file behind LIB50, the sorted output of LIB40 on the punch side, and the notices on the printer with appropriate carriage tape, the I/0 switch may be turned off.

LIB60

This makes a list of students owing fines. Reproduce the overdue file sort on columns 18-11 and load on punch side followed by four blank cards. The program and N/A are loaded on the read side with I/0 off. The list will be by student and list all cards under his number. If the book has been returned late and the fine not paid two lines for that book will be printed, if not, only one.

LIB80

The purpose of LIB80 is to merge new N/A cards into the file. Sort the new cards on ID and place in punch hopper followed by 4 blank cards. Load N/A file behind program with I/O off. The 8/2 pocket is the updated file and the NR is any change of address and may be discarded.

LIB90

Check the N/A file for sequence. Sort columns 30-29 and run the same as LIB15.

SUMMARY

The original approach was to have two basic programs, current and overdue, which were to be ready when the read punch feed feature was installed. The feature didn't operate as was expected and introduced some timing problems. Changes confounded each other to the extent that it seemed more feasible to start over with a knowledge of how the read punch feed operated. It was found that there were still two basic operations but of a different nature than the original two. The two operations were now defined as data preparation and file updating. Printing of overdue notices was handled separatly.

Programs 10, 15, 20, and 90 all fall in the data preparation while 30, 40, and 80 come under file updating. Programs 50 and 60 are for printing the overdue notices.

The delay feature on the card reader leaves the last cards in the machine, and when using standard last card tests, they must be placed in the files manually. The delay is the reason blank cards are placed behind data, this allows all data cards to fall into the proper pockets.

There are a number of limitations to this system. The biggest problem is that the U.S.U. hardware was card oriented and this type of problem could be handled more efficiently with tapes or discs. When a new card is read, the previous card must fall into a pocket and you don't know which pocket until the new card has been read. This was the motive for going with the punch read feed, so to pull

matched cards, possible matches were read from opposite sides. This results in the repeated handling of decks and merging. Cleared cards are pulled whenever a match is sensed in an attempt to keep the number of cards handled at a minimum.

Another problem is that the N/A file is continuously growing and is never purged.

The expense of machine time was found to be too great to run daily. It was found that updating twice and sending overdue notices once a week was less expensive and more efficient than the previous manual methods.

RECOMMENDATIONS

It is the author's feeling that a more desirable system might be set up as follows. All the transactions to be processed at one time could be dumped onto a tape in a format requiring only one compare. Then the software could be used to put the file in sequence. Because of the 11, 12 punch set up on the charge discharge cards this would place the 2 card images next to each other on the tape. With 4 tape drives one pass could be made on this tape (Tape A) and a new master file would be dumped on Tape B, and a list simultaneously made of the file, Tape C would get all overdue transactions, and D would get the error conditions (unmatched discharge). The matched cards would be ignored and therefore be cleared from the system. The overdue notices could be printed from Tape C when ever desired.

When the Computer Center updated to the Honeywell 1200, this approach was taken and with some modifications it appears to be working satisfactorily.

APPENDIXES

Appendix A - Equipment Needed

Library Card for Borrower Identification

357 IBM Data Collection System

- 357 Card and Badge Reader
- 358 Control
- 026 Key punch (cabled to the 358)
- 354 Cartridge Reader

Sorter

IBM 1401 (4K) Computer

IBM 1402 Card Reader with Read Punch Feed

1403 Printer

Current file of all Users Number and Addresses on Cards

Overdue Notice Form Cards

Appendix B - Listing of Output

USU LIBRARY CIRCULATION LIST 05/03/67

PAGE NO.005

CALL NUMBER	I.D.	DATE DUE
1330000000J316----------	969346900	05/17/67
1330700000C22742--------	924540000	05/10/67
1330700000R3451962------	400000259	05/15/67
1330700000T191----------	954907300	05/18/67
1331000000R336G136847----	969346900	05/23/67
1333000000M767----------	400000791	05/11/67
1333000000M767----------	100343863	02/17/67
1333230000V868C2--------	969346900	05/23/67
1334000000C22-----------	947266900	05/24/67
1334000000D24-----------	969346900	05/23/67
1334000000J138----------	995370120	05/09/67
1334000000M582----------	947266900	05/24/67
1334000000M582----------	960898700	05/15/67
1334000000M965----------	555555555	08/19/66
1334000000ST28C2137627---	995370120	05/09/67
1334000000SU64----------	995370120	05/09/67
1334000000T492----------	988862300	05/06/67
1334000000W932----------	995370120	05/09/67
1334090000L47V1---------	947266900	05/24/67
1334090000L47V2---------	960898700	05/15/67
1338000000C317S---------	917510800	05/08/67
1338000000C317S---------	955185200	05/17/67
1338000000H519----------	956405100	05/21/67
1338000000R345----------	100012964	05/04/67
1338000000R345N185044----	100012964	05/04/67
1338000000SCH44C2-------	946258400	05/18/67
1338000000SCH44---------	100012964	05/04/67
1338000000W655127424----	100012964	05/04/67
1338100000R345----------	400000812	05/15/67
1338100000R345----------	100012964	05/04/67
1339000000W585U163488---	955185200	05/17/67
1339000000M134G---------	972206250	05/23/67
1340000000G41-----------	909854200	05/24/67
1340000000K955----------	400000771	05/15/67
1340000000M855----------	909854200	05/24/67
1340820000M334----------	909854200	05/24/67
1342000000W439----------	924052400	05/12/67
1343830000B641----------	929354200	05/18/67
1345000000AM18----------	963319800	05/09/67
1350000000H228----------	964325800	05/22/67
1350000000K6745T7815----	555555555	01/25/67
1350000000K6745C2-------	927493300	05/23/67
1350000000K6745---------	964325800	05/22/67

Overdue notice

UTAH STATE UNIVERSITY LIBRARY
OVERDUE NOTICE

Please come to the Library to see about the following material which is overdue:

1350000000 K674S---First
1530000000 C766----Second
1682400000 A133C2--First
1960000000 J9811----Second
9811000000 A522-----Final

NAME
ADDRESS

Appendix C - Card and Tape Formats

MASTER CARD

Columns	Punch	Description
1	1	Transaction code
2	12-11-1	Function
3-11	1-9	Badge Reader
12	12-11-1	Function
13-21	blanks	Cartridge Reader
22		Document Code
	1	Dewey Decimal
	2	Government Document
23-47		Call Number
23-32		Dewey Decimal Class Number Fill with 0
33-47		Group Number Fill with -
48	12-11-3	Function
49	12-11-4	Function

Charge and Discharge Cards

Columns	Punch		Description
1-8	mo/da/yr		Date Due
9	1		Card Code
10			Type of Borrower
	1		Faculity
	2		Staff
	3		Collaborators
	4		Non-University
	5		Bindery
	6		Reserve
	9		Student
11-18			Borrower Identification
19			Type
20-27			Identification
28			Document Code
29-52			Call Number
53			Card Type
	12		Charge
	11		Discharge
54	11		Control
55-59	yrday		Julian date due
75	x	Discharge only	Fine paid
76	yrday		Julian date returned

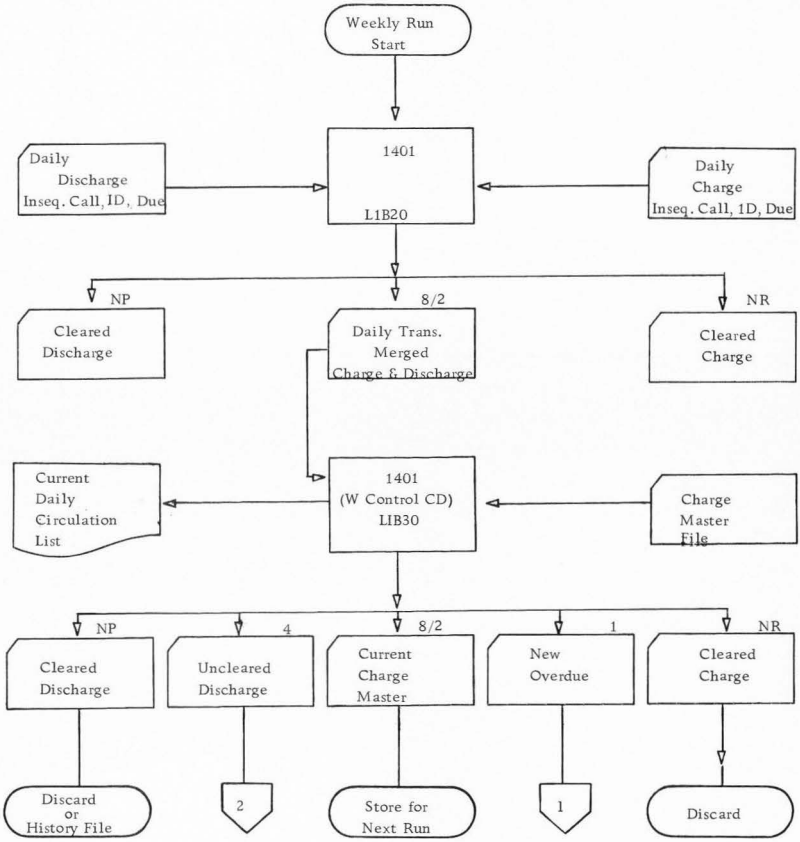
N/A File Format

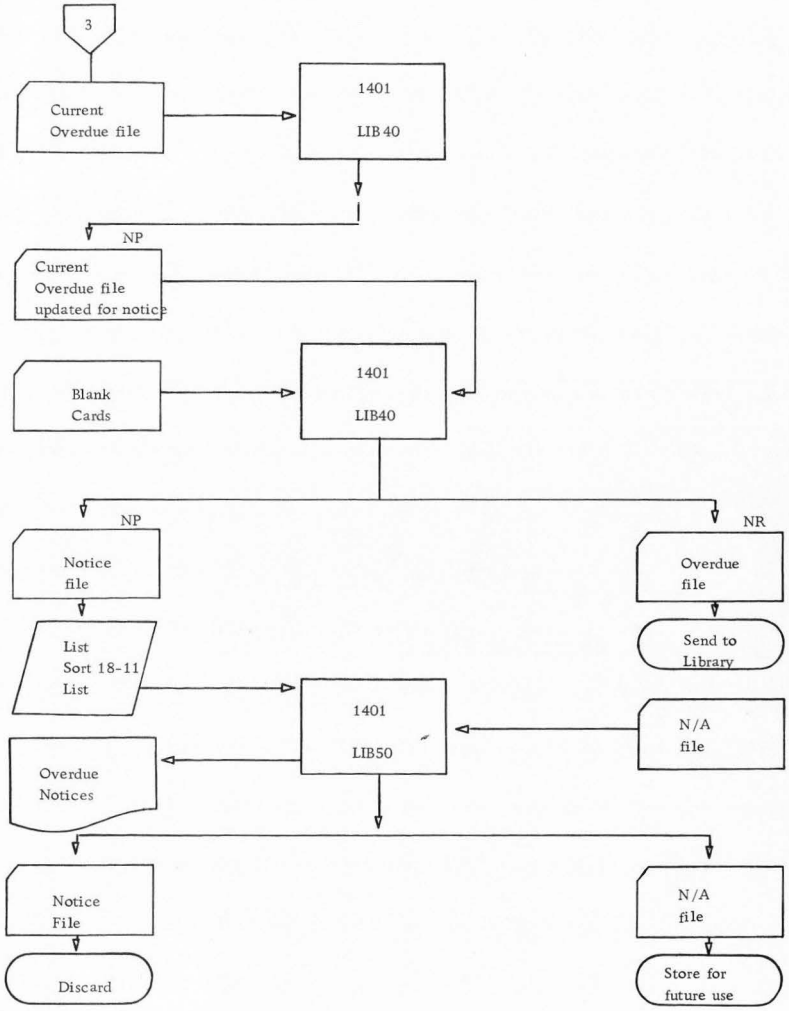
Column	Description
1-22	Name
23-30	Identification
31-49	School Address
50-73	Home Address
74-80	Telephone

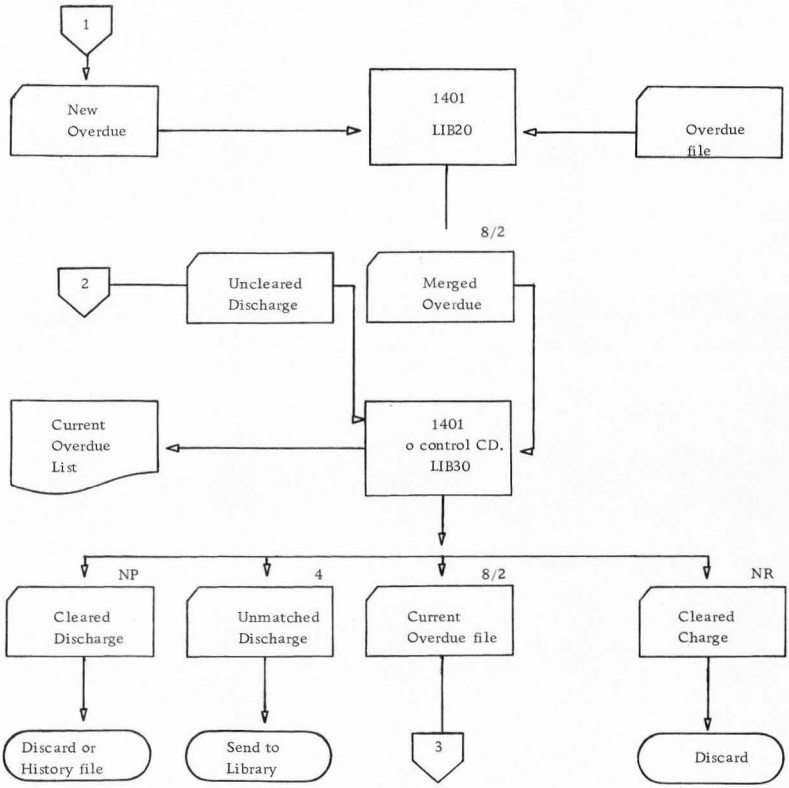
Tape LIB50

Standard carriage control punches for start and end of forms.

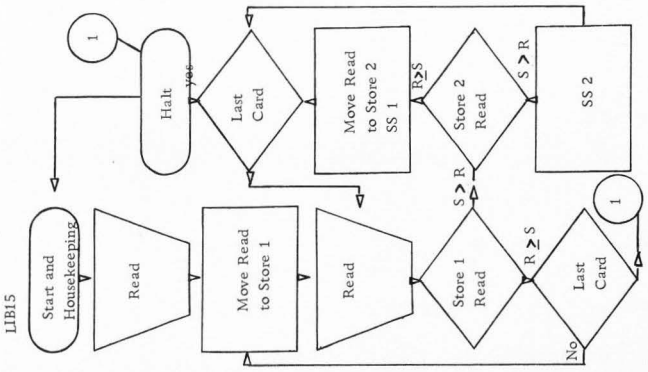
Appendix D - Flow Chart of System

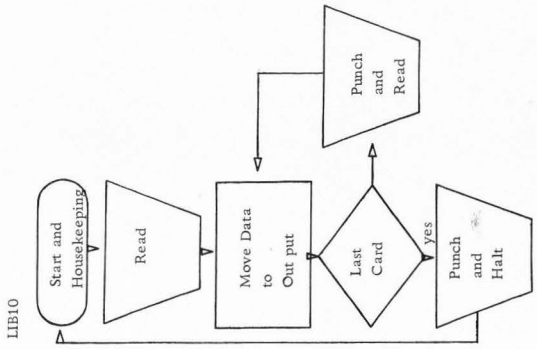



3
Current Overdue file
1401 LIB 40
NP
Current Overdue file updated for notice
Blank Cards
1401 LIB40
NP
NR
Notice file
Overdue file
List Sort 18-11 List
Send to Library
1401 LIB50
N/A file
Overdue Notices
Notice File
N/A file
Discard
Store for future use


1
New Overdue
1401 LIB20
Overdue file
8/2
2
Uncleared Discharge
Merged Overdue
Current Overdue List
1401 o control CD. LIB30
NP
4
8/2
NR
Cleared Discharge
Unmatched Discharge
Current Overdue file
Cleared Charge
Discard or History file
Send to Library
3
Discard

Appendix E - Flow Chart and Listing of Programs

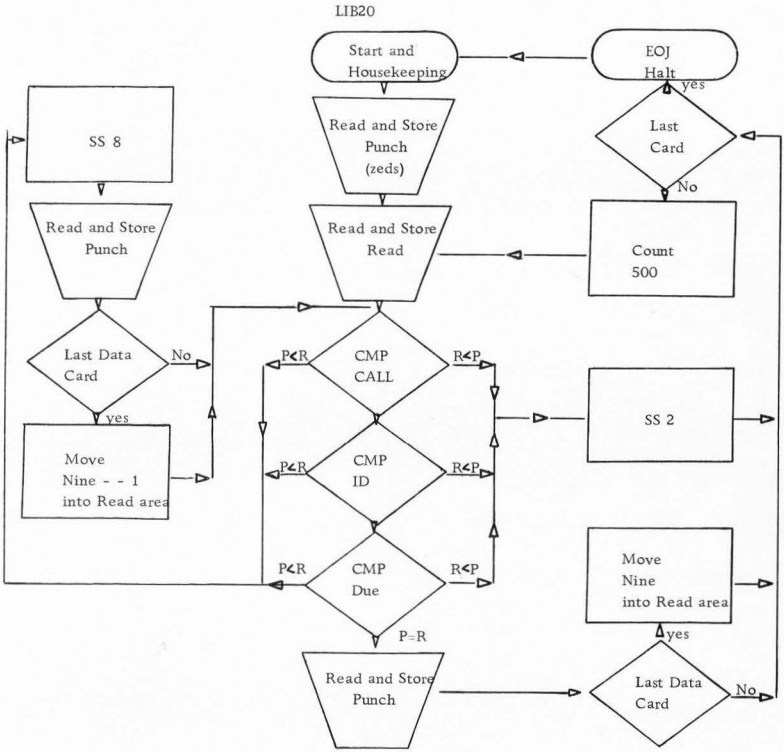




```
10001  * PROGRAM TO MOVE ID NUMBER FROM 19-27                    LIB10
10003  * TO 11-18.  LOAD PROGRAM FOLLOWED BY                    LIB10
10005  * CARDS TO BE CHANGED, BLANK CARDS ON                     LIB10
10007  * PUNCH SIDE.  PROGRAM WILL BATCH PROCESS.                LIB10
10010  START CS 0180                                            LIB10
10020        CS                                                 LIB10
10030        SW 0001                                            LIB10
10040        R                                                  LIB10
10050  MOVE  MCW0080       0180                                 LIB10
10060        SW 0110                                            LIB10
10070        MCW0027       0118                                 LIB10
10080        CW 0110                                            LIB10
10090        B  PUNCH                  A                        LIB10
10100          5MOVE                                            LIB10
10110  PUNCH P                                                  LIB10
10120        H  START                                           LIB10
10130        NOP                                                LIB10
10140        ENDSTART                                           LIB10
```

```
15001  * PROGRAM TO SEQUENCE CHECK THE DATA                              LIB15
15003  * FILES BY CALL, ID AND DAY DUE.  LOAD                           LIB15
15005  * PROGRAM FOLLOWED BY DATA FILE.  POCKETS                        LIB15
15007  * NR AND 1 ARE IN SEQUENCE WITH POCKET,                          LIB15
15008  * 8/2 IS NOT.  PROGRAM BATCH PROCESSES                           LIB15
15009  * SO LOAD 8/2 AND START.                                         LIB15
15010  INIT  CS 0080                                                   LIB15
15020        SW 0001                                                   LIB15
15030        MCWZERO       ST23                                        LIB15
15040        MCWZERO                                                   LIB15
15050        MCWZERO                                                   LIB15
15060        MCWZERO                                                   LIB15
15070        MCWZERO                                                   LIB15
15080        MCWZERO                                                   LIB15
15090        MCWZERO                                                   LIB15
15100        MCWZERO                                                   LIB15
15110        MCWZERO                                                   LIB15
15120        MCWZERO                                                   LIB15
15130        MCWZERO                                                   LIB15
15140        MCWZERO                                                   LIB15
15150        R                                                         LIB15
15160  B100  MCW0059       STN3                                        LIB15
15170        MCW                                                       LIB15
15180        MCW                                                       LIB15
15190  B125  B  EOJ                        A                           LIB15
15200        R                                                         LIB15
15210        C  0052       STN2  -002                                  LIB15
15220        B  B100                     T                           LIB15
15230        B  B200                     U                           LIB15
15240        C  0018       STN1  -009                                  LIB15
```

```
15250          B  B100                    T                    LIB15
15260          B  B200                    U                    LIB15
15270          C  0059        STN3                             LIB15
15280          B  B100                    T                    LIB15
15290          B  B200                    U                    LIB15
15300          B  B100                                         LIB15
15310  B200    C  0052        ST22  -002                       LIB15
15320          B  B250                    T                    LIB15
15330          B  B275                    U                    LIB15
15340          C  0018        ST21  -009                       LIB15
15350          B  B250                    T                    LIB15
15360          B  B275                    U                    LIB15
15370          C  0059        ST23                             LIB15
15380          B  B250                    T                    LIB15
15390          B  B275                    U                    LIB15
15400  B250    MCW0059        ST23                             LIB15
15410          MCW                                             LIB15
15420          MCW                                             LIB15
15430          SS B125                    1                    LIB15
15440  B275    SS B125                    2                    LIB15
15450  EOJ     H  INIT                                         LIB15
1546018STN1    DCW*                                            LIB15
1547027STN2    DCW*                                            LIB15
1548005STN3    DCW*                                            LIB15
1549018ST21    DCW*                                            LIB15
1550027ST22    DCW*                                            LIB15
1551005ST23    DCW*                                            LIB15
1552009ZERO    DCW*                                            LIB15
15530          ENDINIT                                         LIB15
```

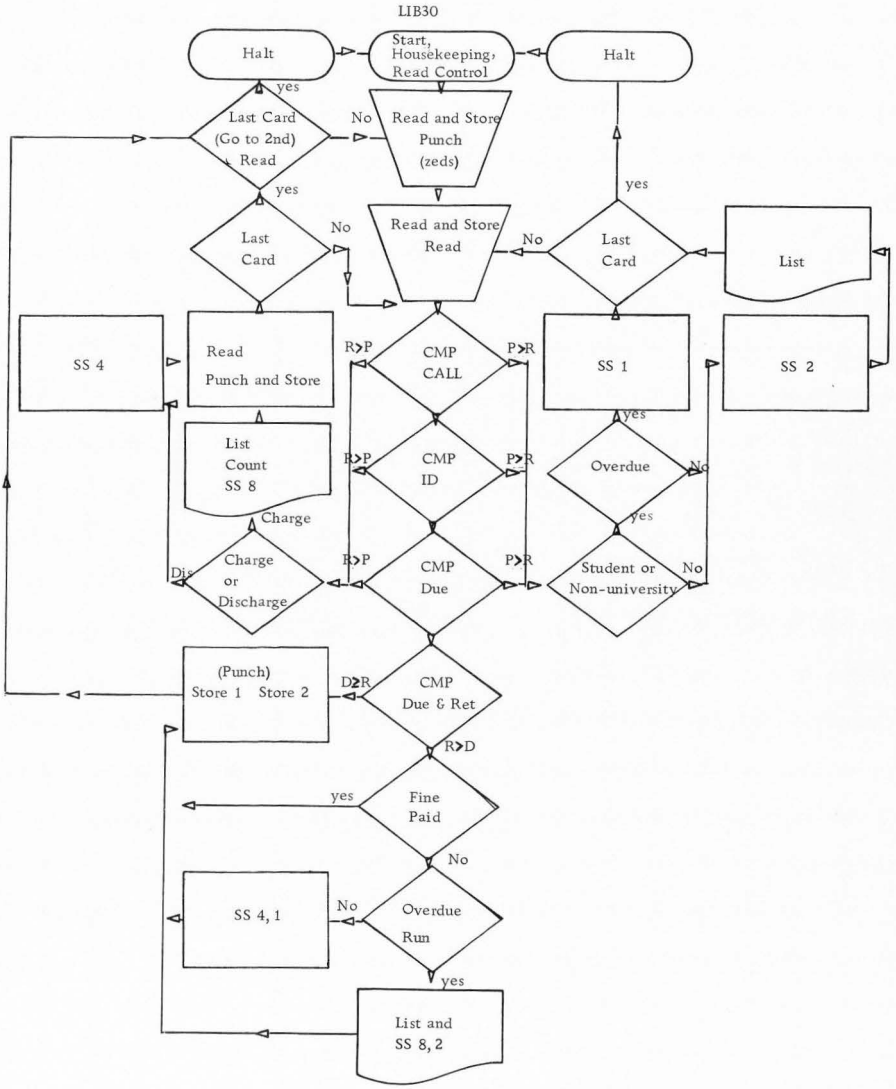

LIB20
Start and Housekeeping
EOJ Halt
SS 8
Read and Store Punch (zeds)
Last Card
yes
No
Read and Store Punch
Read and Store Read
Count 500
Last Data Card
No
yes
P<R
CMP CALL
R<P
SS 2
Move Nine - - 1 into Read area
P<R
CMP ID
R<P
Move Nine into Read area
P<R
CMP Due
R<P
P=R
yes
Read and Store Punch
Last Data Card
No

```
20010  * PROGRAM TO MERGE CARDS AT ANY PHASE                          LIB20
20020  * DAILY USE IS TO MERG THE DAILY DISCHARGE WITH               LIB20
20030  * DAILY CHARGE CARDS.  ALSO USED TO MERG POCKETS              LIB20
20040  * 1 AND 4 FROM LIB30.  THESE ARE OVERDUE AND                  LIB20
20050  * UNMATCHED CARDS.                                            LIB20
20060  * SELECTS MATCHED CARDS IF NOT OVERDUE. LOAD                  LIB20
20070  * PROGRAM FOLLOWED BY LARGEST DECK AND TWO BLANK              LIB20
20080  * CARDS.  PUT THE SMALLEST DECK ON THE PUNCH                  LIB20
20090  * SIDE FOLLOWED BY TWO BLANK CARDS.  MERG                     LIB20
20100  * SMALLEST DECKS FIRST WHEN PUTTING EACH TYPE                 LIB20
20110  * IN SEQUENCE.  PROGRAM REQUIRES NO CONTROL                   LIB20
20120  * CARD AND WILL BATCH PROCESS                                 LIB20
20130  INIT  CS 0332                                                LIB20
20140        CS                                                      LIB20
20150        CS                                                      LIB20
20160        CS                                                      LIB20
20170        SW 0001                                                 LIB20
20180        P                          R                            LIB20
20190        MCW0080       PS25                                      LIB20
20200        MCW                                                     LIB20
20210        MCW                                                     LIB20
20220        MCW                                                     LIB20
20230        MCW                                                     LIB20
20240        P                          R                            LIB20
20250        MCW0080       PS15                                      LIB20
20260        MCW                                                     LIB20
20270        MCW                                                     LIB20
20280        MCW                                                     LIB20
20290        MCW                                                     LIB20
20300  RR    R                                                       LIB20
```

```
20310         B  EOJ                          A                    LIB20
20320         B  *      +005 0002                                  LIB20
20330         B  *      +008                                       LIB20
20340         MCWNINE         0052                                 LIB20
20350         MCW0080         RS15                                 LIB20
20360         MCW                                                  LIB20
20370         MCW                                                  LIB20
20380         MCW                                                  LIB20
20390         MCW                                                  LIB20
20400 CMP     C  PS23   -002 RS13  -002  CALL                      LIB20
20410         B  RLESS                   T                         LIB20
20420         B  PLESS                   U                         LIB20
20430         C  PS22   -009 RS12  -009  ID                        LIB20
20440         B  RLESS                   T                         LIB20
20450         B  PLESS                   U                         LIB20
20460         C  PS23   +005 RS13  +005  DAY DUE                   LIB20
20470         B  RLESS                   T                         LIB20
20480         B  PLESS                   U                         LIB20
20490         C  PS23   +005 PS25         IS BOOK OVERDUE          LIB20
20500         B  *      +005             UYES                      LIB20
20510         B  B300                     NO                       LIB20
20520         B  B300         PS24       XIS FINE PAID             LIB20
20530         SS                         8NO                       LIB20
20540         SS B300                    2                         LIB20
20550 PLESS   SS                         8                         LIB20
20560         P                          R                         LIB20
20570         A  *      -006 COUNT                                 LIB20
20580         C  COUNT        N500                                 LIB20
20590         B  *      -018             /                        LIB20
20600         MCWBLANKS       COUNT                                LIB20
20610         B  *      +005 0002                                  LIB20
```

```
20620          B   *       +008                                          LIB20
20630          MCWNINE     -001 0052                                     LIB20
20640          MCWPS15          PS25                                     LIB20
20650          MCW                                                       LIB20
20660          MCW                                                       LIB20
20670          MCW                                                       LIB20
20680          MCW                                                       LIB20
20690          MCW0080          PS15                                     LIB20
20700          MCW                                                       LIB20
20710          MCW                                                       LIB20
20720          MCW                                                       LIB20
20730          MCW                                                       LIB20
20740          B   CMP                                                   LIB20
20750   RLESS  SS  RR                          2                         LIB20
20760   B300   P                               RBOOK CLEARED             LIB20
20770          A   *       -006 COUNT           PAUSE NEED FOR           LIB20
20780          C   COUNT        N500            CD TO REACH              LIB20
20790          B   *       -018                /STACKER BEFORE           LIB20
20800          MCWBLANKS        COUNT           READ                     LIB20
20810          B   *       +005 0002                                     LIB20
20820          B   *       +008                                          LIB20
20830          MCWNINE     -001 0052                                     LIB20
20840          MCWPS15          PS25                                     LIB20
20850          MCW                                                       LIB20
20860          MCW                                                       LIB20
20870          MCW                                                       LIB20
20880          MCW                                                       LIB20
20890          B   RR      -011                                          LIB20
20900   EOJ    H   INIT                                                  LIB20
2091003COUNT   DCW*          000                                         LIB20
2092003BLANKSDCW*            000                                         LIB20
```

```
2093003W500  DCW*       500                                          LIB20
2094009      DCW*                                                    LIB20
2095018RS12  DCW*                                                    LIB20
2096027RS13  DCW*                                                    LIB20
2097021      DCW*                                                    LIB20
2098005RS15  DCW*                                                    LIB20
2099009      DCW*                                                    LIB20
2100018      DCW*                                                    LIB20
2101027      DCW*                                                    LIB20
2102021      DCW*                                                    LIB20
2103005PS15  DCW*                                                    LIB20
2104009      DCW*                                                    LIB20
2105018PS22  DCW*                                                    LIB20
2106027PS23  DCW*                                                    LIB20
2107021PS24  DCW*                                                    LIB20
2108005PS25  DCW*                                                    LIB20
2109026NINE  DCW*       999999999999999999999998                     LIB20
21100        ENDINIT                                                 LIB20
```


LIB30
Halt
Start, Housekeeping, Read Control
Halt
yes
Last Card (Go to 2nd) Read
No
Read and Store Punch (zeds)
yes
Last Card
No
Read and Store Read
No
Last Card
yes
List
SS 4
Read Punch and Store
R>P
CMP CALL
P>R
SS 1
SS 2
List Count SS 8
R>P
CMP ID
P>R
Overdue
No
yes
Charge
Dis
Charge or Discharge
R>P
CMP Due
P>R
Student or Non-university
No
yes
(Punch) Store 1 Store 2
D≥R
CMP Due & Ret
R>D
yes
Fine Paid
No
SS 4, 1
No
Overdue Run
yes
List and SS 8, 2

```
20010  * PROGRAM TO UPDATE MASTER AND OVERDUE FILES.                    LIB30
20020  * CONTROL CARD AS FOLLOWS COL 1-8 DATE MO/DY/YR                 LIB30
20030  * COL 9 W FOR DAILY OR WEEKLY , O FOR OVERDUE                   LIB30
20040  * COL 10:14 JULIAN DATE, YR DAY OF YR FOR THE                   LIB30
20045  * LAST RETURN DATE TO BE PROCESSED.  THE CONTROL                LIB30
20050  * CARD FOR THE OVERDUE RUN OF JULY 1, 1966                      LIB30
20055  * MIGHT BE 07/01/66066180                                       LIB30
20060  * THE 8/2 POCKET FROM LIB20 IS PUT ON THE PUNCH                 LIB30
20070  * SIDE FOLLOWED BY FOUR BLANK CARDS. THE PROGRAM                LIB30
20080  * FOLLOWED BY CONTROL CARD AND MASTER FILE                      LIB30
20090  * FOLLOWED BY 1 BLANK CARD IS LOADED ON READ.                   LIB30
20100  * NORMAL POCKETS ARE MATCHED CLEARED BOOKS.                     LIB30
20110  * POCKET 2 ARE THE NEW OVERDUE BOOKS ON WEEKLEY                 LIB30
20120  * RUN, UNUSED ON OVERDUE, POCKET 4 UNMATCHED                    LIB30
20130  * AND UNPAID FINES ON WEEKLY UNMATCHED ON                       LIB30
20140  * OVERDUE.  POCKET 8/2 UPDATED FILES                            LIB30
20150  INIT  CS 0332                                                  LIB30
20160        CS                                                       LIB30
20170        CS                                                       LIB30
20180        CS                                                       LIB30
20190        CW SW1                                                   LIB30
20200        SW 0001          0010                                    LIB30
20210        SW 0028          0055                                    LIB30
20220        SW 0076          0201                                    LIB30
20230          MBLANKS        PNO                                     LIB30
20240        R                                                        LIB30
20250        B  W             0009          W                         LIB30
20260        B  O             0009          O                         LIB30
20270          MER            0225                                    LIB30
20280        W                                                        LIB30
```

```
20290          H  INIT                                          LIB30
20300  W         MHW           H1     -015                      LIB30
20310          B  *       +012                                  LIB30
20320  O       SW SW1                                           LIB30
20330            MHO         H1     -015                      LIB30
20340            M0008       H1                               LIB30
20350          CC                                  1            LIB30
20360            MAB050      EXO    +003                      LIB30
20370          B  OVFL    +018                                  LIB30
20380  AB050   DSA*          B050                               LIB30
20390  B050      M0014       DATE                               LIB30
20400          P                                   R            LIB30
20410            M0080       PS25                               LIB30
20420            M                                              LIB30
20430            M                                              LIB30
20440            M                                              LIB30
20450            M                                              LIB30
20460          P                                   R            LIB30
20470  RP        M0080       PS15                               LIB30
20480            M                                              LIB30
20490            M                                              LIB30
20500            M                                              LIB30
20510            M                                              LIB30
20520          B  EOJ                              A            LIB30
20530          R                                               LIB30
20540          B  LR          0002                             LIB30
20550  RR        M0080       RS15                               LIB30
20560            M                                              LIB30
20570            M                                              LIB30
20580            M                                              LIB30
20590            M                                              LIB30
```

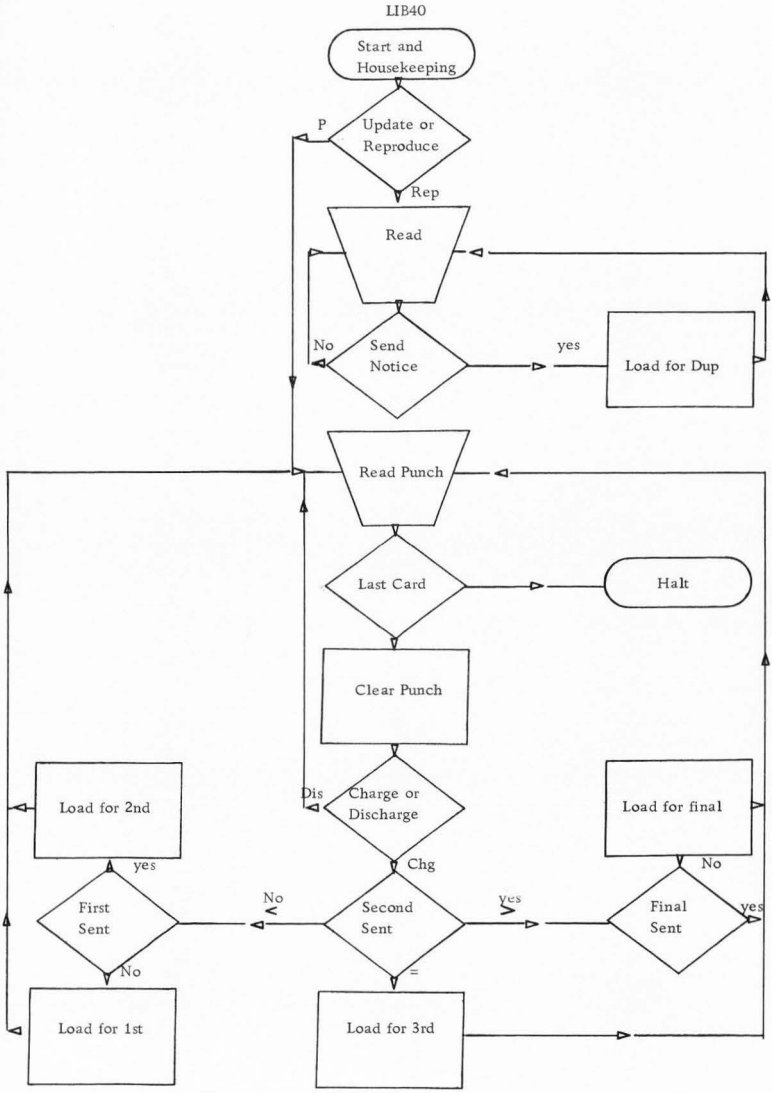
```
20600  CMP    C  PS23  -002 RS13  -002  CALL                    LIB30
20610         B  RLESS                   T                       LIB30
20620         B  PLESS                   U                       LIB30
20630         C  PS22  -009 RS12  -009  ID                      LIB30
20640         B  RLESS                   T                       LIB30
20650         B  PLESS                   U                       LIB30
20660         C  PS23  +005 RS13  +005  DAY DUE                 LIB30
20670         B  RLESS                   T                       LIB30
20680         B  PLESS                   U                       LIB30
20690         C  PS25       PS23  +005  OVERDUE                 LIB30
20700         B  *     +005              T                       LIB30
20710         B  B100                                            LIB30
20720         B  *     +013 RS11  +001 9FINE                     LIB30
20730         B  *     +005 RS11  +001 4FINE                     LIB30
20740         B  B100                                            LIB30
20750         B  B100       PS24        X                       LIB30
20760         BWZB400       SW1         1                       LIB30
20770         SS                        4                       LIB30
20780         SS                        1                       LIB30
20790  B100     MPS15       PS25                                 LIB30
20800            M                                               LIB30
20810            M                                               LIB30
20820            M                                               LIB30
20830            M                                               LIB30
20840         P                         R                       LIB30
20850         B  LP    +011 0002                                 LIB30
20860         B  RP                                              LIB30
20870  PLESS  B  B200       PS25  -001  CHARGE CARD              LIB30
20880         SS                        4UNMATCHED DISCHARGE    LIB30
20890         P                         R                       LIB30
20900  B150   B  LP         0002                                 LIB30
```

```
20910          MPS15       PS25                                    LIB30
20920          M                                                   LIB30
20930          M                                                   LIB30
20940          M                                                   LIB30
20950          M                                                   LIB30
20960          M0080       PS15                                    LIB30
20970          M                                                   LIB30
20980          M                                                   LIB30
20990          M                                                   LIB30
21000          M                                                   LIB30
21010       B  CMP                          EXIT                   LIB30
21020  B200 SS                             8MERG AND PRINT         LIB30
21030          MPS23  -002 0227             CHARGE                 LIB30
21040          MPS22  -009 0241                                    LIB30
21050          MPS21  -001 0251                                    LIB30
21060          M0251       0315                                    LIB30
21070          6                           R                       LIB30
21080       B  OVFL                        :                       LIB30
21090       A  *        -006 COUNT          PAUSE TO LET           LIB30
21100       C  COUNT        N500            PUNCH REACH            LIB30
21110       B  *        -018                /POCKET                LIB30
21120          MBLANKS     COUNT                                   LIB30
21130       B  B150                                                LIB30
21140 RLESS BWZB250         SW1         1                          LIB30
21150       B  B300         RS11   +001 9                         LIB30
21160       B  B300         RS11   +001 4                         LIB30
21170       SS                          2                          LIB30
21180          MRS13  -002 0227                                    LIB30
21190          MRS12  -009 0241                                    LIB30
21200          MRS11  -001 0251                                    LIB30
21210          M0251       0315                                    LIB30
```

```
21220          B  EOJ                                A                    LIB30
21230            3                                                         LIB30
21240          B  LR     +011 0002                                        LIB30
21250          B  OVFL   +011                        :                    LIB30
21260          B  RR                                                      LIB30
21270  B250    B  RLESS  +024 RS15  -001  OVERDUE CHARGE CARD             LIB30
21280          SS                                   2OVERDUE DISCHARGE   LIB30
21290          R  RLESS  +024                        CARD                 LIB30
21300  B300    C  DATE         RS13  +005  OVERDUE                        LIB30
21310          B  *      +005                       T                    LIB30
21320          B  RLESS  +024                        NO                   LIB30
21330          SS                                   1YES                 LIB30
21340          B  EOJ                               A                    LIB30
21350          R                                                          LIB30
21360          B  LR           0002                                       LIB30
21370          B  RR                                                      LIB30
21380  B400      MAB450        B200  -001                                 LIB30
21390          B  B200                                                    LIB30
21400  B450      MACMP         B200  -001                                 LIB30
21410          SS RR     -014                       2                    LIB30
21420  OVFL      MAB150        EXO   +003                                 LIB30
21430          B  *      +008                                             LIB30
21440            MARR        EXO   +003                                 LIB30
21450          CC                                   1                    LIB30
21460            MH1         0251                                       LIB30
21470            M0251       0315                                       LIB30
21480          W                                                          LIB30
21490          CC                                   J                    LIB30
21500            MH2         0251                                       LIB30
21510          A  *      -006 PNO                                         LIB30
21520          MCSPNO        0211                                       LIB30
```

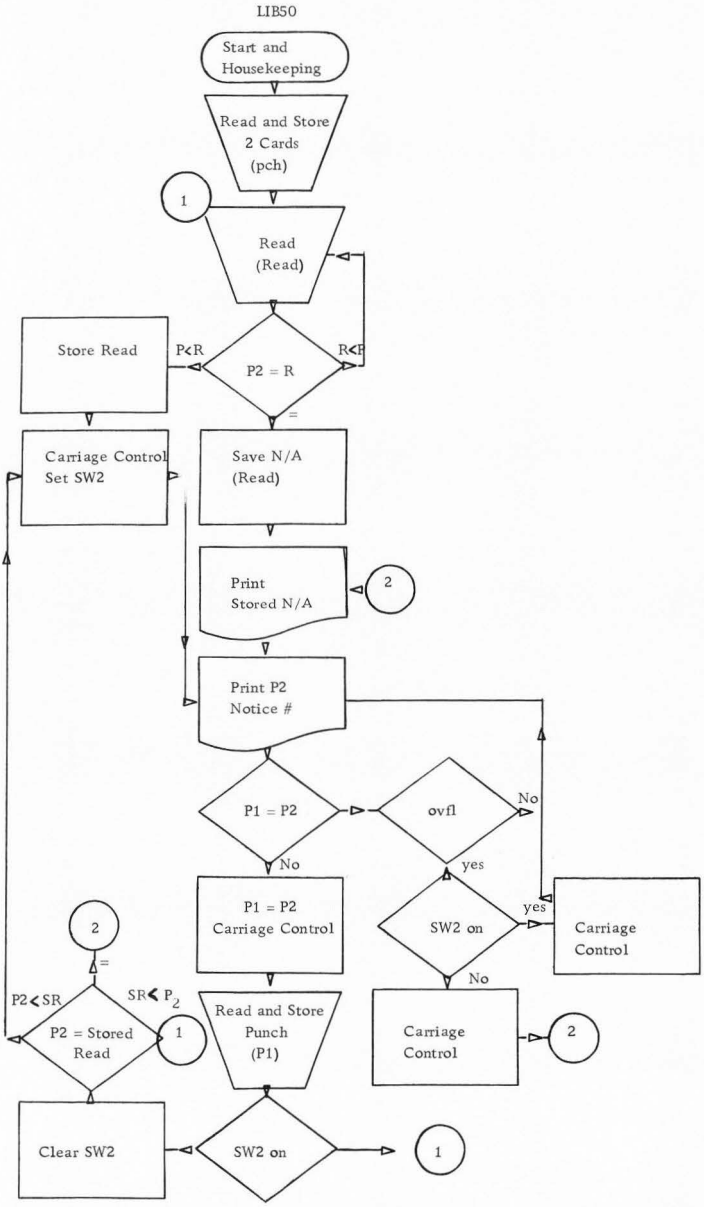
```
21530           M0251       0315                                    LIB30
21540         W                                                     LIB30
21550         CS 0315                                               LIB30
21560         CS                                                    LIB30
21570         SW 0201                                               LIB30
21580         CC                                 K                  LIB30
21590  EXO    B  0000                                               LIB30
21600  LP       MAB150       EXLP  +003                             LIB30
21610         B  *      +008                                        LIB30
21620           MARP       EXLP  +003                             LIB30
21630           MNINE  -001 0052                                   LIB30
21640  EXLP   B  0000                                               LIB30
21650  LR       MARR       EXLR  +003                             LIB30
21660         B  *      +008                                        LIB30
21670           MAB300     EXLR  +003                             LIB30
21680           MNINE      0052                                   LIB30
21690  EXLR   B  0000                                               LIB30
21700  EOJ    CC                          1                        LIB30
21710         H  INIT                                               LIB30
2172005DATE   DCW*                                                  LIB30
2173003PNO    DCW*                                                  LIB30
2174003COUNT  DCW*                                                  LIB30
2175003N500   DCW*       500                                       LIB30
2176003BLANKSDCW*                                                   LIB30
2177018ER     DCW*       CHECK CONTROL CARD                        LIB30
2178017HW     DCW*       DAILY CIRCULATION                         LIB30
2179017HO     DCW*            OVERDUE                              LIB30
2180005       DCW*                                                  LIB30
2181032       DC *       USU LIBRARY                    LI         LIB30
2182012H1     DC *       ST                                        LIB30
2183032       DCW*       PAGE NO.     CALL NUMBER                  LIB30
```

```
2184019H2     DC *          I.D.    DATE DUE                          LIB30
2185009RS11   DCW*                                                    LIB30
2186018RS12   DCW*                                                    LIB30
2187027RS13   DCW*                                                    LIB30
2188021       DCW*                                                    LIB30
2189005RS15   DCW*                                                    LIB30
2190009       DCW*                                                    LIB30
2191018       DCW*                                                    LIB30
2192027       DCW*                                                    LIB30
2193021       DCW*                                                    LIB30
2194005PS15   DCW*                                                    LIB30
2195009PS21   DCW*                                                    LIB30
2196018PS22   DCW*                                                    LIB30
2197027PS23   DCW*                                                    LIB30
2198021PS24   DCW*                                                    LIB30
2199005PS25   DCW*                                                    LIB30
2200026NINE   DCW*       999999999999999999999998                     LIB30
22010  AB150  DSA*           B150  +008                               LIB30
22020  ARR    DSA*           RR                                       LIB30
22030  ARP    DSA*           RP                                       LIB30
22040  AB300  DSA*           B250  -009                               LIB30
22050  AB450  DSA*           B450                                     LIB30
22060  ACMP   DSA*           CMP                                      LIB30
22070015W1    DC *                                                    LIB30
22080         ENDINIT                                                 LIB30
```


LIB40
Start and Housekeeping
P
Update or Reproduce
Rep
Read
No
Send Notice
yes
Load for Dup
Read Punch
Last Card
Halt
Clear Punch
Dis
Charge or Discharge
Chg
Load for 2nd
yes
First Sent
No
Load for 1st
No
<
Second Sent
>
yes
=
Load for 3rd
Load for final
No
Final Sent
yes

```
20010 * PROGRAM TO UPDATE NOTICE NUMBER RUN PRIOR TO                    LIB40
20020 * LIB 50 PUT OUTPUT OF LIB30 ON PUNCH SIDE                       LIB40
20030 * FOLLOWED BY 4 BLANK CARDS.  LOAD PROGRAM. NO                   LIB40
20040 * CONTROL CARD NEEDED.                                          LIB40
20050 * LOAD UPDATED DECK ON READ SIDE PRESS START.                   LIB40
20060 * OUTPUT OF SECOND PASS IS LISTED THEN SORTED                   LIB40
20070 * COL 18-11 FOR LIB50                                          LIB40
20080 INIT  CS 0180                                                   LIB40
20090       CS                                                        LIB40
20100       CW SW1                                                    LIB40
20110       SW 0001                                                   LIB40
20120       B  B200                          A                        LIB40
20130       R                                                         LIB40
20140 B100  B  B100  -001 0065                                        LIB40
20150       B  B100  -001 0068           1                            LIB40
20160       MCW0080      0180                                         LIB40
20170       B  *     +005                A                            LIB40
20180         5B100                                                   LIB40
20190       P                                                         LIB40
20200       H  INIT                                                   LIB40
20210 B200  P                            R                            LIB40
20220       B  EOJ           SW1         1                            LIB40
20230       B  LAST          0002                                     LIB40
20240       MCWBLANKS        0168                                     LIB40
20250       B  *     +006 0076                                        LIB40
20260       P  B200  +002                R                            LIB40
20270       C  0068          T11                                      LIB40
20280       B  B300                      U                            LIB40
20290       B  B500                      T                            LIB40
20300       MCWT11   -003 0167                                       LIB40
20310       P  B200  +002                R                            LIB40
20320 B300  C  0065          T11   -003                               LIB40
20330       B  B400                      S                            LIB40
20340       MCWT11   -003 0165                                       LIB40
20350       P  B200  +002                R                            LIB40
```

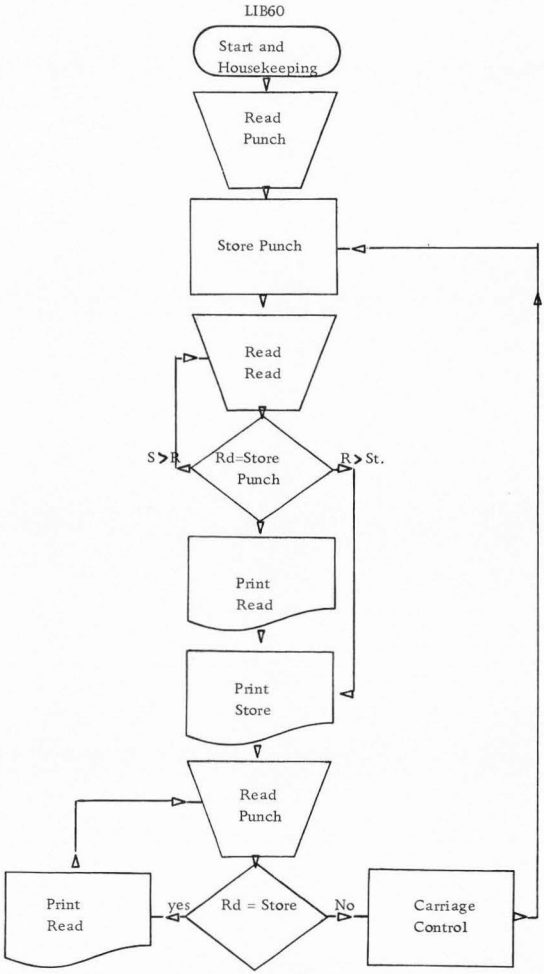
```
20310          P  B200  +002                R                    LIB40
20320  B300    C  0065        T11   -003                         LIB40
20330          B  B400                     S                    LIB40
20340          MCWT11  -003 0165                                LIB40
20350          P  B200  +002               R                    LIB40
20360  B400    MCWT11  -003 0166                                LIB40
20370          P  B200  +002               R                    LIB40
20380  B500    C  0068        T11   -002                         LIB40
20390          B  B200                     S                    LIB40
20400          MCWT11  -003 0168                                LIB40
20410          P  B200  +002               R                    LIB40
20420  LAST    SW SW1                                           LIB40
20430          B  B200  +018                                    LIB40
20440  EOJ     H  INIT                                          LIB40
2045004T11     DCW*      11                                     LIB40
2046004BLANKSDCW*                                               LIB40
2047001SW1     DC *                                             LIB40
20480          ENDINIT                                          LIB40
```


LIB50
Start and Housekeeping
Read and Store 2 Cards (pch)
1
Read (Read)
Store Read
P<R
P2 = R
R<P
=
Carriage Control Set SW2
Save N/A (Read)
Print Stored N/A
2
Print P2 Notice #
P1 = P2
ovfl
No
yes
No
P1 = P2 Carriage Control
SW2 on
yes
Carriage Control
No
2
=
P2<SR
SR< P2
P2 = Stored Read
1
Read and Store Punch (P1)
Carriage Control
2
Clear SW2
SW2 on
1

```
20580  * PROGRAM TO PRINT OVERDUE NOTICE OUTPUT                          LIB50
20590  * OF LIB40 IS LISTED THEN SORTED COL 18-11.                      LIB50
20600  * AND LOADED ON PUNCH SIDE FOLLOWED BY 4 BLANK                   LIB50
20610  * CARDS.  PROGRAM AND N/A FILE ARE LOADED ON                      LIB50
20620  * READ SIDE.  NO CONTROL CARD NEEDED.  NOTICES                   LIB50
20630  * ARE ON PRINTER WITH TAPE50                                     LIB50
20640  INIT  CS  0332                                                  LIB50
20650        CS                                                        LIB50
20660        CS                                                        LIB50
20670        CS                                                        LIB50
20680        SW  0001        SW2                                       LIB50
20690        P                           R                             LIB50
20700        MCW0018         SP23                                      LIB50
20710        MCW0052                                                   LIB50
20720        MCW0067                                                   LIB50
20730        P                           R                             LIB50
20740        MCW0018         SP13                                      LIB50
20750        MCW0052                                                   LIB50
20760        MCW0067                                                   LIB50
20770        R                                                         LIB50
20780  B100  C   0030        SP23         ID                           LIB50
20790        B   B100  -001               UN/A LESS                    LIB50
20800        B   B300                     TNOTICE LESS                 LIB50
20810        MCW0071         SR4          SAVE N/A                     LIB50
20820        MCW                                                       LIB50
20830        MCW                                                       LIB50
20840        MCW                                                       LIB50
20850  B150  MCWSR1          0258                                      LIB50
20860        W                                                         LIB50
20870        MCWBL2          0238                                      LIB50
```

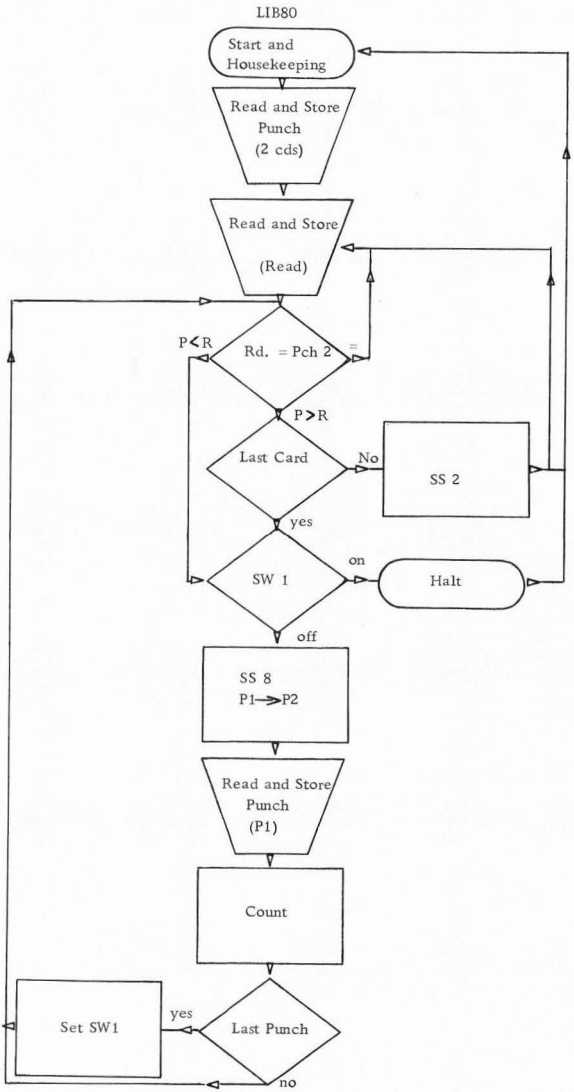
```
20880          B  B175  -007 SR2   +001                          LIB50
20890          MCWSR3        0258                               LIB50
20900          B  B175                                          LIB50
20910          MCWSR4        0258                               LIB50
20920  B175    W                                                LIB50
20930          CS 0258                                          LIB50
20940  B200    MCWSP22       0228                               LIB50
20950          B  B210       SP21  -001                         LIB50
20960          B  B220       SP21                               LIB50
20970          MCWN3         0236                               LIB50
20980            6B250                     R                    LIB50
20990  B210    MCWN1         0236                               LIB50
21000            6B250                     R                    LIB50
21010  B220    MCWN2         0236                               LIB50
21020            6                         R                    LIB50
21030  B250    C  SP13       SP23                               LIB50
21040          MCWSP13       SP23                               LIB50
21050          MCW                                              LIB50
21060          MCW                                              LIB50
21070          MCW0018       SP13                               LIB50
21080          MCW0052                                          LIB50
21090          MCW0067                                          LIB50
21100          B  B260                         S                LIB50
21110          CS 0236                                          LIB50
21120          CC                              1                LIB50
21130          BWZB100 -001  SW2               1                LIB50
21140          SW SW2                                           LIB50
21150          C  SP23       SR2                                LIB50
21160          B  B100 -001                    T                LIB50
21170          B  B350                         U                LIB50
21180          B  B150                                          LIB50
```

```
21190  B260  B  OVFL                    :                          LIB50
21200        B  B200                                              LIB50
21210  B300  MCW0071        SR4          NO N/A                   LIB50
21220        MCW                                                  LIB50
21225        MCW                                                  LIB50
21230        MCW                                                  LIB50
21240  B350  CC                         J                        LIB50
21250        CW SW2                                               LIB50
21260        B  B200                                              LIB50
21270  OVFL  CS 0236                                              LIB50
21280        BWZ*          +008 SW2     1                        LIB50
21290        CC                         1                        LIB50
21300        CC B200                    J                        LIB50
21310        CC B150                    1                        LIB50
2132003SP21  DCW*                                                 LIB50
2133025SP22  DCW*                                                 LIB50
2134008SP23  DCW*                                                 LIB50
2135003      DCW*                                                 LIB50
2136025      DCW*                                                 LIB50
2137008SP13  DCW*                                                 LIB50
2138022SR1   DCW*                                                 LIB50
2139008SR2   DCW*                                                 LIB50
2140020SR3   DCW*                                                 LIB50
2141021SR4   DCW*                                                 LIB50
2142002BL2   DCW*                                                 LIB50
2143006N1    DCW*          FIRST                                  LIB50
2144006N2    DCW*          SECOND                                 LIB50
2145006N3    DCW*          FINAL                                  LIB50
2146001SW2   DCW*                                                 LIB50
21470        ENDINIT                                              LIB50
```


LIB60
Start and Housekeeping
Read Punch
Store Punch
Read Read
S>R
Rd=Store Punch
R>St.
Print Read
Print Store
Read Punch
Print Read
yes
Rd = Store
No
Carriage Control

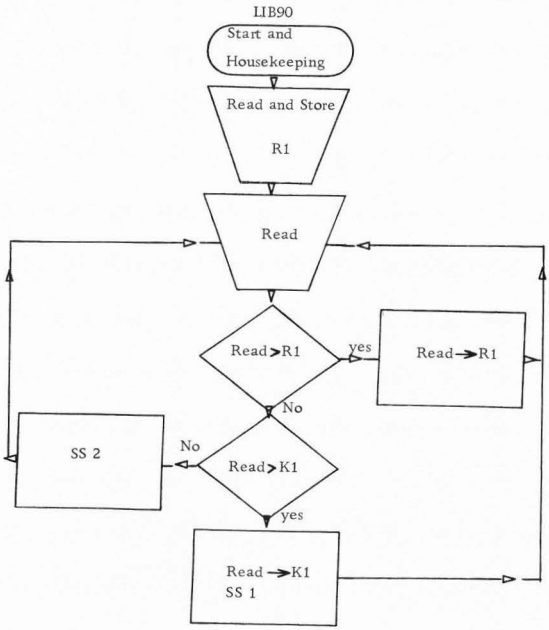
```
60001  * THIS PROGRAM WILL LIST THE OVERDUE FILE                          LIB60
60002  * BY STUDENT.  REPRODUCE THE OVERDUE FILE AND                      LIB60
60003  * SORT ON COL.  18-11.  LOAD SORTED DECK ON                        LIB60
60004  * PUNCH SIDE FOLLOWED WITH 4 BLANK CARDS.                          LIB60
60005  * LOAD PROGRAM AND N/A FILE ON READ SIDE                           LIB60
60006  * FOLLOWED WITH 2 BLANK CARDS.  THE LIST WILL                      LIB60
60007  * BE BY STUDENT AND LIST ALL BOOKS UNDER HIS NUMBER.               LIB60
60008  * IF THE BOOK HAS BEEN RETURNED LATE AND FINE NOT                  LIB60
60009  * PAID 2 LINES WILL BE PRINTED, IF NOT, ONLY ONE.                  LIB60
60010  START CS 0332                                                     LIB60
60020        CS                                                          LIB60
60030        CS                                                          LIB60
60040        CS                                                          LIB60
60050        SW 0001                                                     LIB60
60060  REP   P                                    R                      LIB60
60070        MCW0080        ST1                                         LIB60
60080        MCW                                                        LIB60
60090  READ  R                                                          LIB60
60100        C  0030        ST2    +008                                 LIB60
60110        B  READ                       U                           LIB60
60120        B  *      +005                S                           LIB60
60130        B  Y                                                       LIB60
60140        B  *      +005                :                           LIB60
60150        B  *      +003                                            LIB60
60160        CC                            1                           LIB60
60170        MCW0080        0285                                        LIB60
60180        W                                                          LIB60
60190        CC                            J                           LIB60
60200        MCWST1         0285                                        LIB60
60210        MCW                                                        LIB60
```

```
60220  PR       6                              R          LIB60
60230           C  0018          ST2    +008             LIB60
60240           B  *       +007                 S        LIB60
60250           CC                              L        LIB60
60260           B  READ    -008                          LIB60
60270  X        MCW0080          0285                    LIB60
60280           B  PR                                    LIB60
60290  Y        CC                              L        LIB60
60300           CC                              L        LIB60
60310           B  X                                     LIB60
6032010ST2      DCW*                                     LIB60
6033032         DCW*                                     LIB60
6034032         DC *                                     LIB60
6035006ST1      DC *                                     LIB60
60360           ENDSTART                                 LIB60
```


LIB80
Start and Housekeeping
Read and Store Punch (2 cds)
Read and Store (Read)
P<R
Rd. = Pch 2
=
P>R
Last Card
No
SS 2
yes
SW 1
on
Halt
off
SS 8
P1→P2
Read and Store Punch (P1)
Count
Set SW1
yes
Last Punch
no

```
80001  * MERGES NEW N/A CARDS.  LOAD PROGRAM, N/A                        LIB80
80002  * AND 2 BLANK CARDS ON READ.  NEW CARDS ON PUNCH                  LIB80
80003  * FOLLOWED BY 4  BLANK CARDS.  8/2 POCKET IS THE                  LIB80
80004  * UPDATED FILE, NR IS ANY CHANGES AND MAY                         LIB80
80005  * BE DISCARDED.                                                   LIB80
80010  INIT  CS 0099                                                    LIB80
80020        CW SW1                                                     LIB80
80030        SW 0001          0023                                      LIB80
80040        P                                R                         LIB80
80050        MCW0030          SP2                                       LIB80
80060        P                                R                         LIB80
80070        MCW0030          SP1                                       LIB80
80080  B100  R                                                         LIB80
80090        MCW0030          SR                                        LIB80
80100  B200  C  SR            SP2                                       LIB80
80110        B  B100                          S SELECT CHANGE           LIB80
80120        B  *       +011                  T                         LIB80
80130        B  *       +006                  A                         LIB80
80140        SS B100                          2                         LIB80
80150        BWZB300          SW1             1                         LIB80
80160        SS                               8                         LIB80
80170        MCWSP1           SP2                                       LIB80
80180        P                                R                         LIB80
80190        A  *       -006  COUNT                                     LIB80
80200        C  N5            COUNT                                     LIB80
80210        B  *       -018                  /                         LIB80
80220        MCWBLANKS-005    COUNT                                     LIB80
80230        MCW0030          SP1                                       LIB80
80240        C  SP2           BLANKS                                    LIB80
80250        B  B200                          /                         LIB80
```

```
80260          SW  SW1                                                  LIB80
80270          B   B200                                                 LIB80
80280  B300    B   *       +005              A                          LIB80
80290          B   B100                                                 LIB80
80300          H   INIT                                                 LIB80
8031008BLANKS  DCW*                                                     LIB80
8032008SR      DCW*                                                     LIB80
8033008SP1     DCW*                                                     LIB80
8034008SP2     DCW*                                                     LIB80
8035001SW1     DCW*                                                     LIB80
8036003COUNT   DCW*                                                     LIB80
8037003N5      DCW*        500                                          LIB80
80380          ENDINIT                                                  LIB80
```


LIB90
Start and
Housekeeping
Read and Store
R1
Read
Read>R1
yes
Read→R1
No
SS 2
No
Read>K1
yes
Read→K1
SS 1

```
90001  * CHECKS N/A FILE FOR SEQUENCE.                                  LIB90
90002  * LOAD PROGRAM FOLLOWED BY N/A FILE.                            LIB90
90003  * POCKETS NR AND 1 ARE IN SEQUENCE.                             LIB90
90004  * THE 8/2 IS NOT.                                               LIB90
90010  START CS 0099                                                   LIB90
90020        SW 0001        0023                                       LIB90
90030        R                                                         LIB90
90040  STORE MCW0030        NR                                         LIB90
90050  READ  R                                                         LIB90
90060        C  0030        NR                                         LIB90
90070        B  RLESS                    U                           LIB90
90080        B  STORE                                                 LIB90
90090  RLESS C  0030        K1                                         LIB90
90100        B  SS2                      U                           LIB90
90110        MCW0030        K1                                        LIB90
90120        SS READ                     1                           LIB90
90130  SS2   SS READ                     2                           LIB90
901400 8NR   DCW*                                                     LIB90
901500 8K1   DCW*                                                     LIB90
90160        ENDSTART                                                 LIB90
```