Approved: [signature]

Department of: Accountancy

Date: 1-26-89

NORTHERN ILLINOIS UNIVERSITY

SOFTWARE ANALYSIS: A COMPARATIVE STUDY

A Thesis submitted to the

University Honors Program

in Partial Fulfillment of the

Requirements of the Baccalaureate Degree

With University Honors

Department of Accountancy

by

Karen M. Landwer

DeKalb, Illinois

August, 1989

JOURNAL OF THESIS ABSTRACTS

THESIS SUBMISSION FORM

AUTHOR: Karen M. Landwer

THESIS TITLE: SOFTWARE ANALYSIS: a Comparative Study

THESIS ADVISOR: Dr. William Cummings

ADVISOR'S DEPT: Accountancy

DATE: December 18, 1988

HONORS PROGRAM: Northern Illinois University

NAME OF COLLEGE: College of Business

PAGE LENGTH: 44

BIBLIOGRAPHY (YES OR NO): No

ILLUSTRATED (YES OR NO): No

COPIES AVAILABLE (HARD COPY,MICROFILM,DISKETTE):

IS YOUR THESIS OR ANY PART BEING SUBMITTED FOR PUBLICATION? YES__ NO X

IF ANY PART HAS BEEN ACCEPTED FOR PUBLICATION, PLEASE INDICATE WHERE

SUBJECT HEADINGS: (CHOOSE FIVE KEY WORDS) Introduction, Spreadsheets Word Processing, Flowcharting, Conclusion

ABSTRACT (100-200 words):

Computers are becoming the language of the future. Software currently used and software of the future was investigated. Fifty questionnaires were sent, to the 'Big 8', selected second tier firms, and various companies. The two most popular spreadsheets, word processing, and flowcharting packages were compared to each other. The findings showed Lotus 123 as the best spreadsheet, Flowcharting II by Patton and Patton as the best flowcharting package, and Wordstar for Word Processing. Northern's Accountancy program is preparing its students for a successful career from a computer standpoint. The survey confirmed that the desireable skills are being taught.

For Office Use:

THESIS NUMBER:

Name of Company _____

Your Name _____ Position _____

Below is a survey that is concerned basically with the applications of software used for Accounting purposes. When answering, please limit those answers to the Accounting applications only.

1. What types of microcomputer software are you currently using? (Please rank them by frequency of use, with "1" being the most commonly used software.)

_____ Lotus 123

_____ D Base

_____ Paradox

_____ Computer assisted auditing software

_____ Other (please list any others that apply)

_____ General Ledger

_____ PC Excel

2. From the software listed above, what are the applications of that particular software? (Please list all that apply and be as specific as possible)

3. From the software and applications listed above in 1 and 2, what do you feel any of the weaknesses of the software are in those particular applications?

4. Do you forsee any changes of software from the types you are currently using? If so, please list what software would be replaced, what software would then be used, and what the applications of the new software would be.

5. When recruiting recent college graduates, what computer skills do you look for in new hires? (Please rank them with "1" being considered most desireable.)

6. Once on the job, how do you find the computer skills of the average new hire? How much training is given to new staff persons in the computer area? If you find training is needed, what types of training is given in the first year of employment?

As a part of the Senior Honor experience, a Capstone project will be completed. In this project, the software currently used and the software of the future will be investigated. The concentration will be on Accountancy uses of the software. In order to accumulate the data, a questionnaire will be sent to the Big Eight accounting firms as well as some smaller public accounting firms and some industries.

A questionaire will be composed with the purpose of discovering what software is used and what applications it is used for. Also questioned is what the company feels is the future of the software currently in use and if it will be replaced in the near future. In concluding the survey, it will ask what the firm feels are the appropriate skills necessary for any new hires in the company in terms of their computer skill. This question will allow myself and the Department of Accountancy to determine if Northern is indeed completely preparing their students for the real world.

After receiving the questionnaires back, totals on the kinds of software used and the applications of that software will be determined. Then comes the fun part. The differing software used for the same applications will be compared. The comparison will include the capabilities of the graphics, the ease of reference as well as the presentation of the data. Some easily understandable examples will be used to allow my finished comparisons to be useful. After comparing the results, the strengths and the weaknesses of the programs will be the final results.

The results of the survey were used in selecting the software to be evaluated. The software applications for word processing, flow charting and spreadsheet packages varied between companies. The following applications were the most common responses.

SPREADSHEETS

- Analyzing information
- Time reporting
- Schedules
- Random and systematic number generations
- Budgets
- Projections
- Tax accruals
- Financial modeling
- Complicated calculations

WORD PROCESSING

- Memos and reports
- Documentation
- Client mailing lists
- Documentation

FLOW CHARTING

- Internal control flowcharts
- Charts and graphics for audit support

The results of the comparisons have chosen what appears to be the superior software. In the flowcharting section, Flowcharting II by Patton and Patton was chosen for its displays and ease of use. In the word processing, Wordstar was chosen for its on screen menus and Word Perfect was not chosen for its template. In spreadsheets, Lotus 123 is still the most widely used spreadsheet and familiarity does allow Lotus to be used without extensive complications.

Spreadsheets are the essential tools of an accountant. The spreadsheets are versatile enough to allow almost any function to be performed. With the endless variety of applications available, the least used functions are the graph and macro commands.

SPREADSHEETS

Lotus

In general, Lotus has more user-friendly menus. In attempting to use a command that is not frequently used, Lotus allows the user to scan the available choices for the various functions.

The spreadsheets are printed without the constraints of the lines of the cells. This allows the spreadsheet the ability to have a more professional and polished appearance. In terms of using the spreadsheet for presentation of information, there are fewer distractions in the actual sheet.

Excel

In using Excel, the menus were not as easily accessed. When attempting to use the various functions, the menus were not complete enough to understand which command was the proper one.

The spreadsheet itself is printed with lines and the location of those lines. This creates the effect of the information being cluttered.

GRAPHS

Lotus

Lotus allows more options to be utilized at one time. The graphs allow more space to be taken up by legends, titles and

axis descriptions. The extra functions allow the user to create a more complete graph by having various explanations printed directly on the face of the graph.

The inconvenience of Lotus and its graph function comes with the actual graphing. The x range and all the data ranges must be entered onto the graph and then after the graph is created, the data is altered to allow the proper display. Lotus will not automatically set the axis' to the proper dimensions for the data. The manipulations must be altered and then the graph can be reviewed. Once a chart is completed and the chart type is changed, the altering process begins again.

Excel

Excel's graphing function creates very professional graphs. The problem came when trying to fit the extras onto the graph. For the information that was being used, Excel would not allow a legend to be displayed without covering part of the graph or having the legend take up more of the page than the graph itself. That lack of explanation makes the Excel graph the weaker graph.

Creating the graph itself is simple. Excel has 44 pre-set graphs and allows the user to simply choose the worksheet involved and then choose the graph. Excel takes care of the rest. The graphs can be modified and then saved to be used as a pre-set graph at a later date. The graphs are pre-set to automatically determine the scale and the numbers that should fall along the various axis's. Even though the graphics

themselves are more advanced, the overall effectiveness is not as informative.

MACROS

Lotus

Macro programs are tough to use on Lotus. The macro itself is set up like a program. Most users of spreadsheets are more software adept than program adept. If a user runs into problems in programming the macro, they are very difficult to trouble-shoot. The actual macro program itself is entered using the standard brackets and tildes. The execution of the program is very complex also. If the programming part went right, only half of the battle is won. In order to execute the macro, the macro must be properly named and saved. These two tasks are less than simple for the beginner. The macros are very confusing and sometimes are more frustrating than key-punching the same data.

Excel

Macro programming with Excel is simple. When creating a macro, the user simply selects "Macro" and "Record". Then the keystrokes are performed and recorded. In order to execute the macro, the user selects "Macro" and "Play". That is all that Excel requires for a program.

CONCLUSION

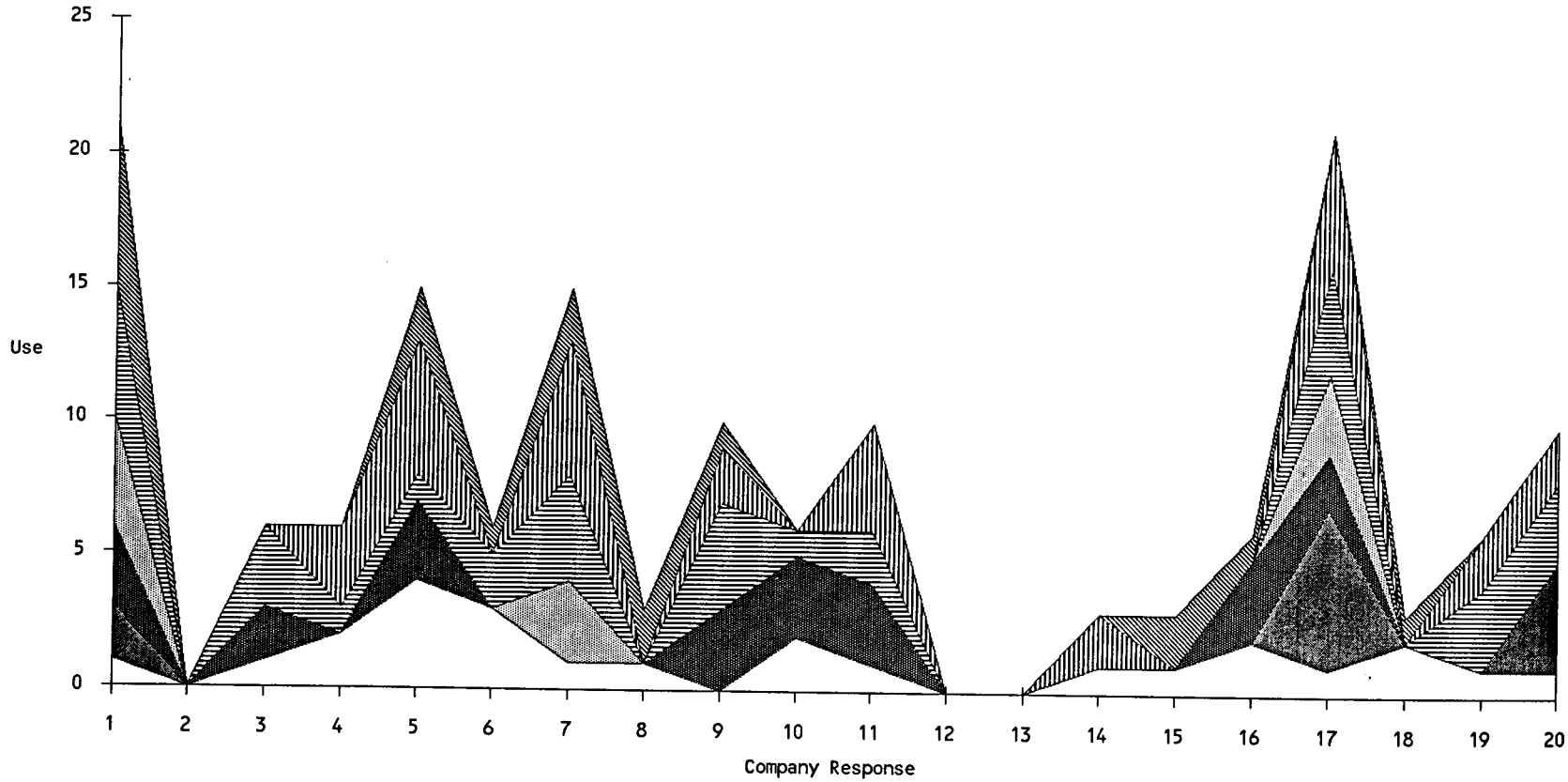
Excel offers the user more simplicities than Lotus. The time put into learning all of Excel's capabilities are obviously its downfall. The survey results show Lotus as being **THE**

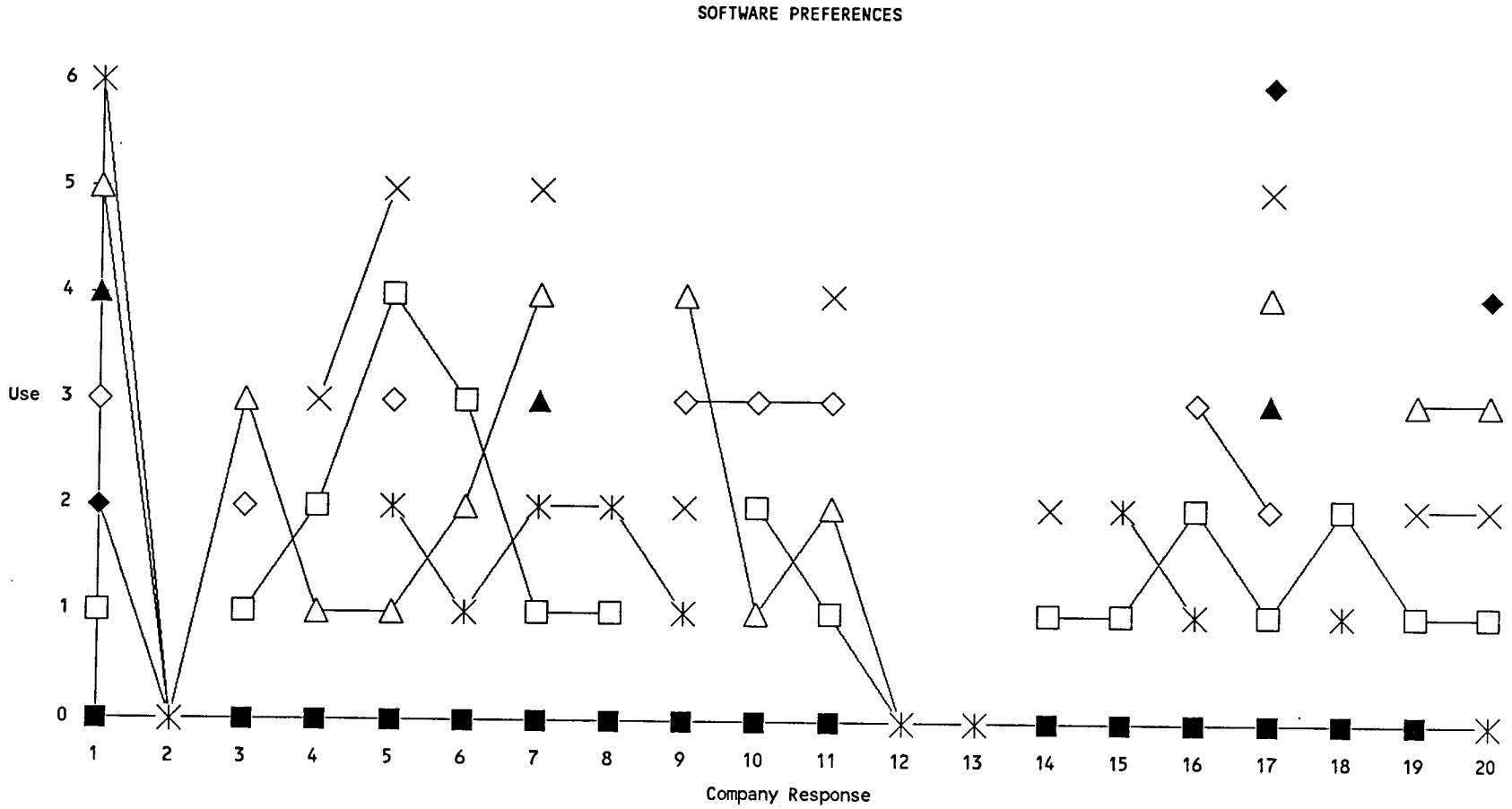
spreadsheet to use and that is the spreadsheet that many enter their professional careers feeling comfortable with.

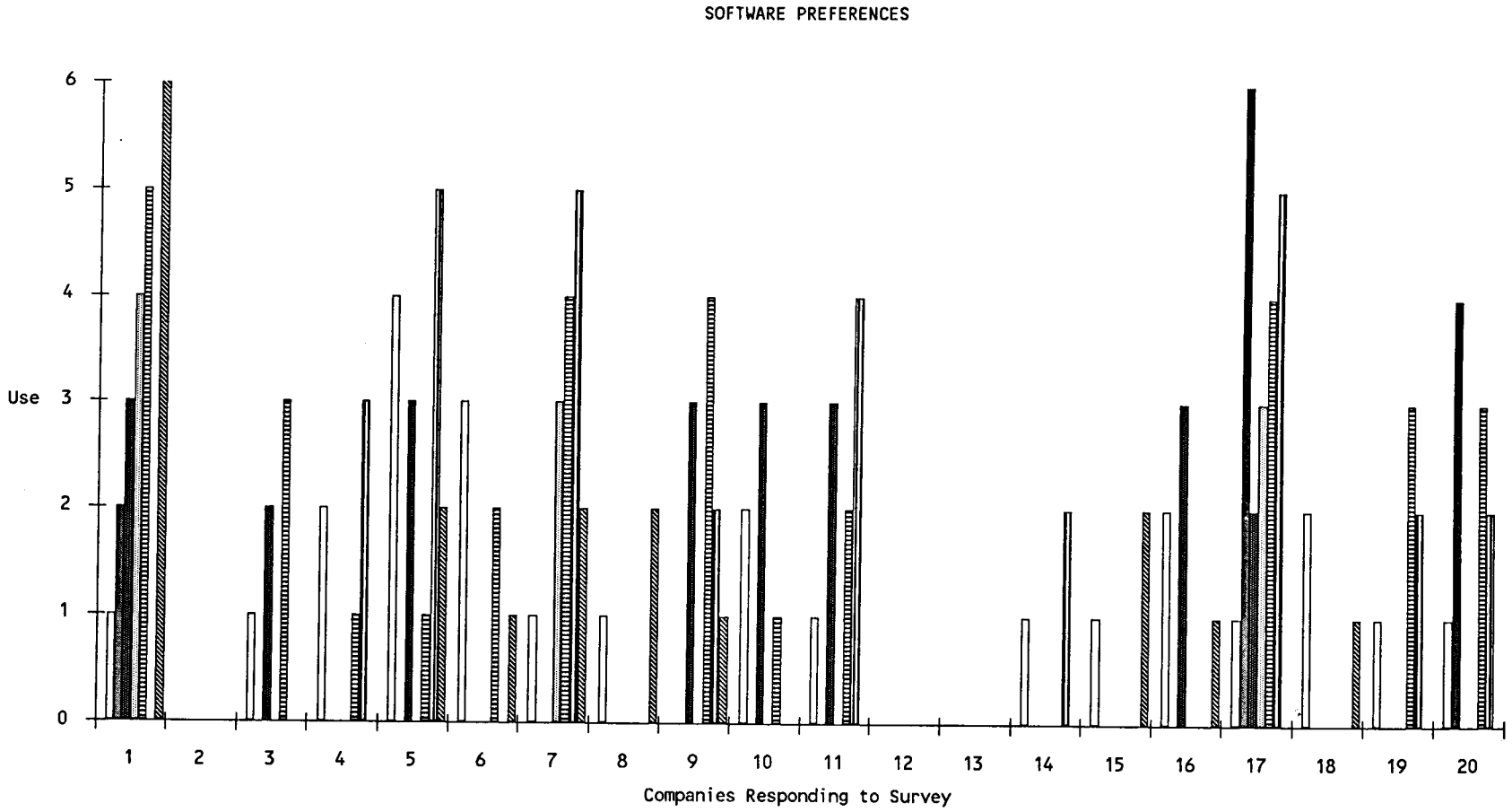
From the comparison of the two spreadsheets, the frustrations found with learning to use Excel do not seem to out weigh the familiarity that Lotus functions allow.

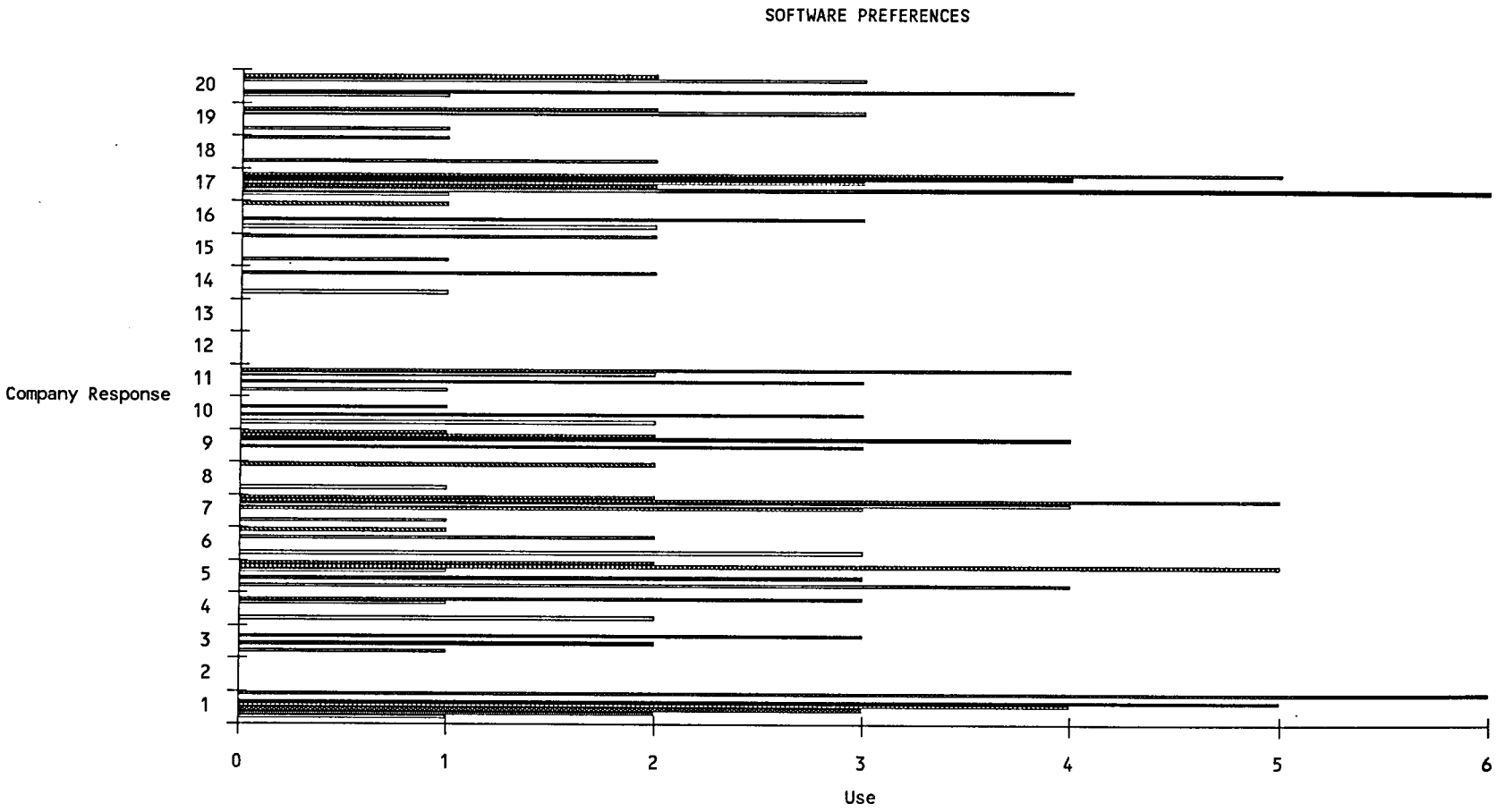
	A	B	C	D	E	F	G	H	I	J	K
1							Computer				
2							Assisted				
3							Auditing	General			
4			Lotus 123	PC Excel	D Base	Paradox	Software	Ledger	Other		
5		~~~~~									
6	1	Arthur Andersen & Co.	1	2	3	4	5		6	(WP)	
7	2	Arthur Young			X			X		(WP)	
8	3	Carson Pirie Scott & Co.	1		2		3				
9	4	Checkers Simon & Rosner	2				1	3			
10	5	Coopers & Lybrand	4		3		1	5	2	(Supercalc 4)	
11	6	Crowe Chizek & Co. CPA's	3				2		1	(FAST!)	
12	7	Deloitte Haskins & Sells	1			3	4	5	2	(Multimate)	
13	8	Evangelical Health Systems	1						2	(Multimate)	
14	9	Friedman, Elsenstein & Co.			3		4	2	1	(Supercalc $)	
15	10	Grant Thornton	2		3		1				
16	11	Household International	1		3		2	4			
17	12	IC Industries, Inc.		X				X		(WP)	
18	13	Illinois Dept of Revenue								X	
19	14	Kemper Financial Services	1					2			
20	15	Litton Corporate Audit	1						2	(FlowchartingII)	
21	16	Marshall Field's	2		3				1	(Smart)	
22	17	Northern Illinois Gas Co.	1	6	2	3	4	5			
23	18	Peoples Gas Light and Coke	2						1		
24	19	Touche Ross	1				3	2			
25	20	Veatch, Rich & Nadler	1	4			3	2		X	
26		~~~~~									
27			16	3	8	3	12	9	9		

SOFTWARE PREFERENCES

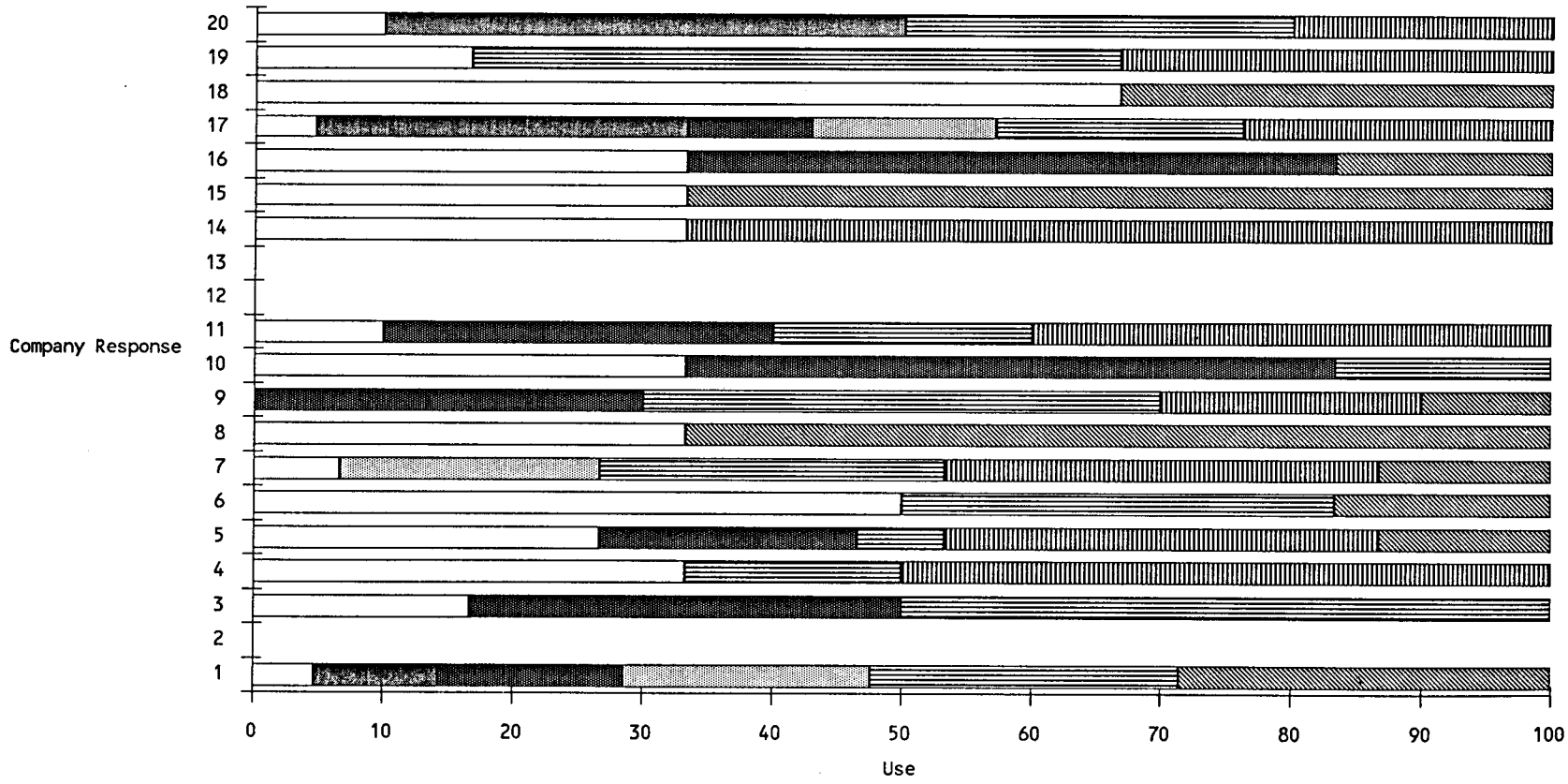


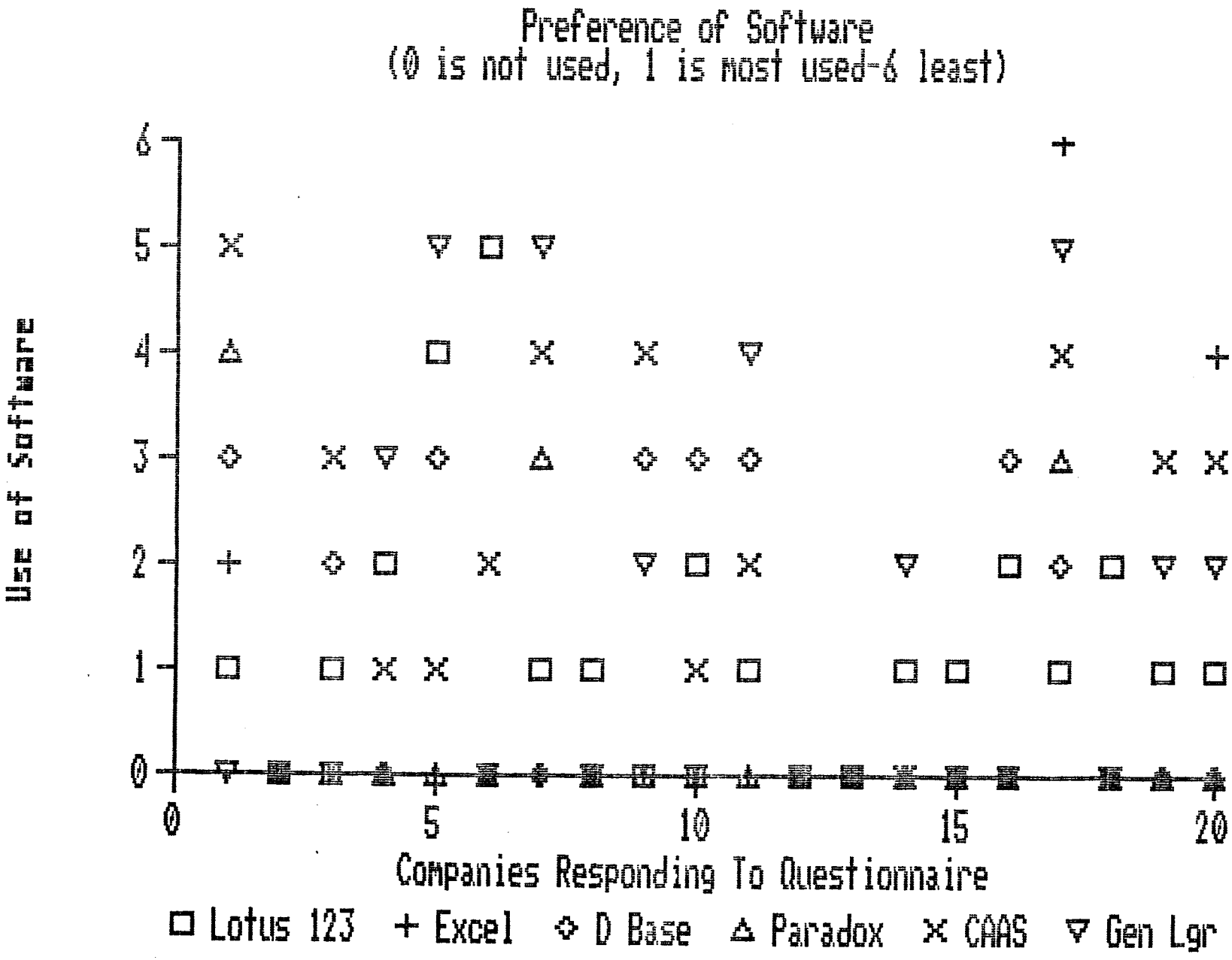

SOFTWARE PREFERENCES
Use
0
1
2
3
4
5
6
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Company Response

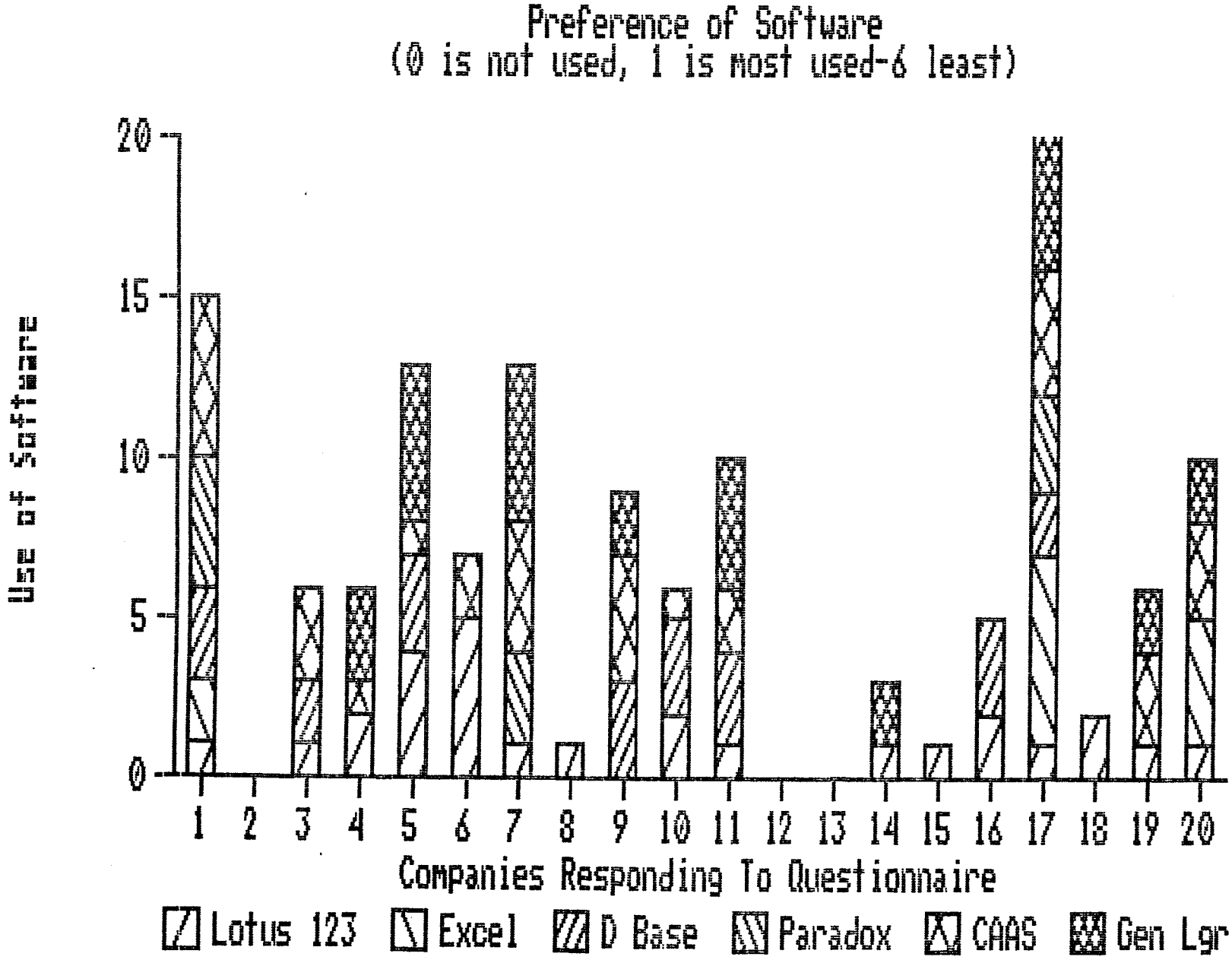

SOFTWARE PREFERENCES
Use
0
1
2
3
4
5
6
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Companies Responding to Survey

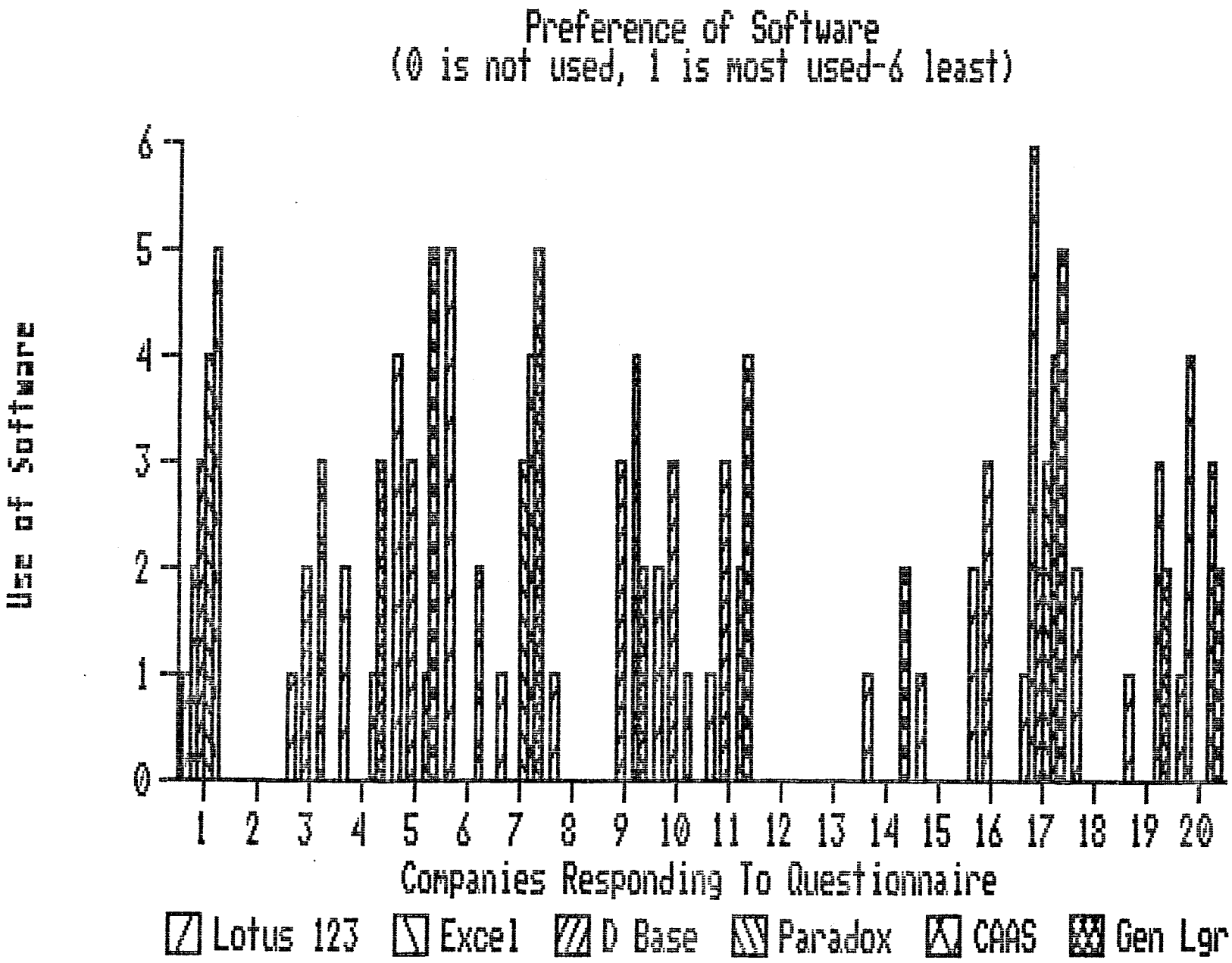

SOFTWARE PREFERENCES
Company Response
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
Use

SOFTWARE PREFERENCES

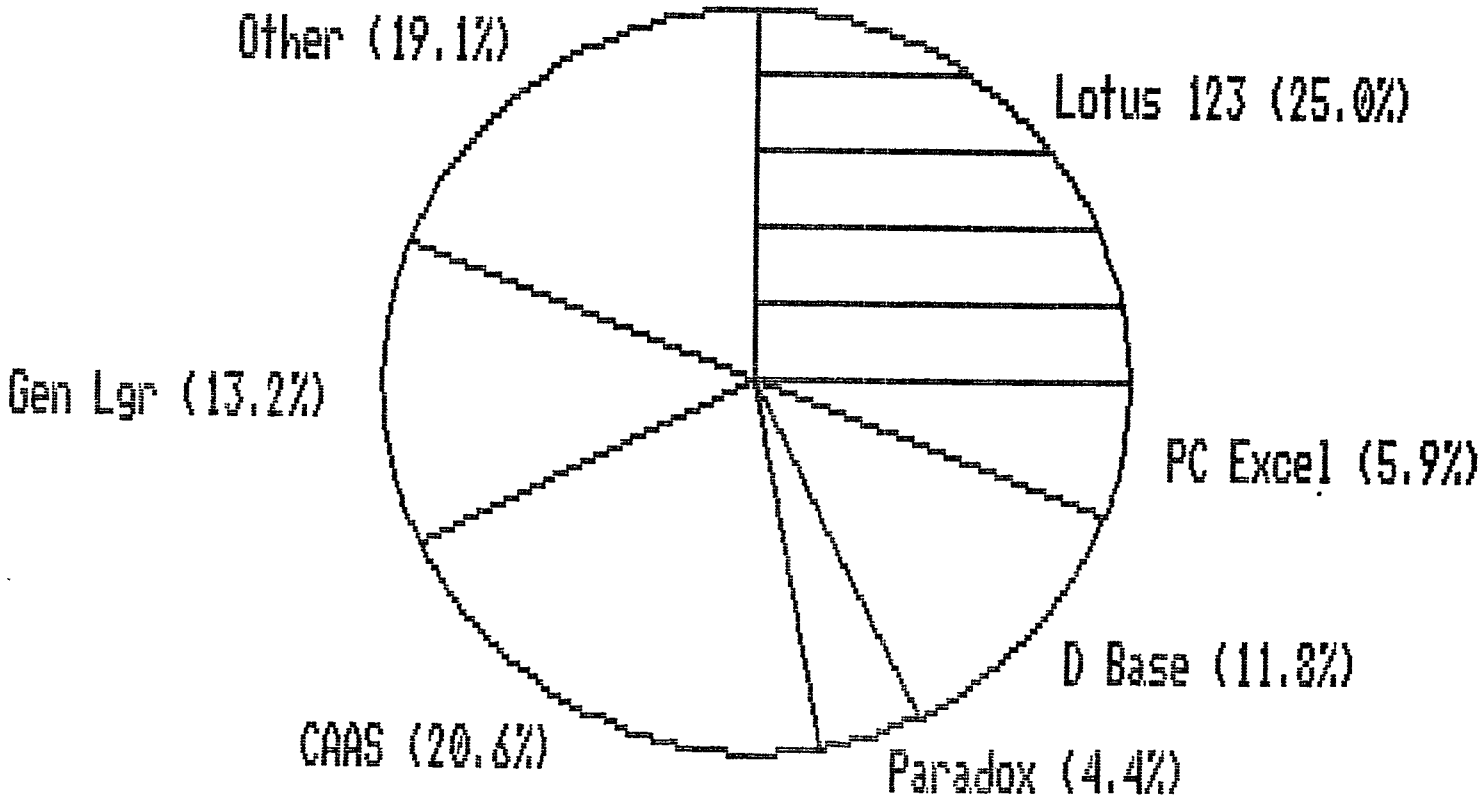


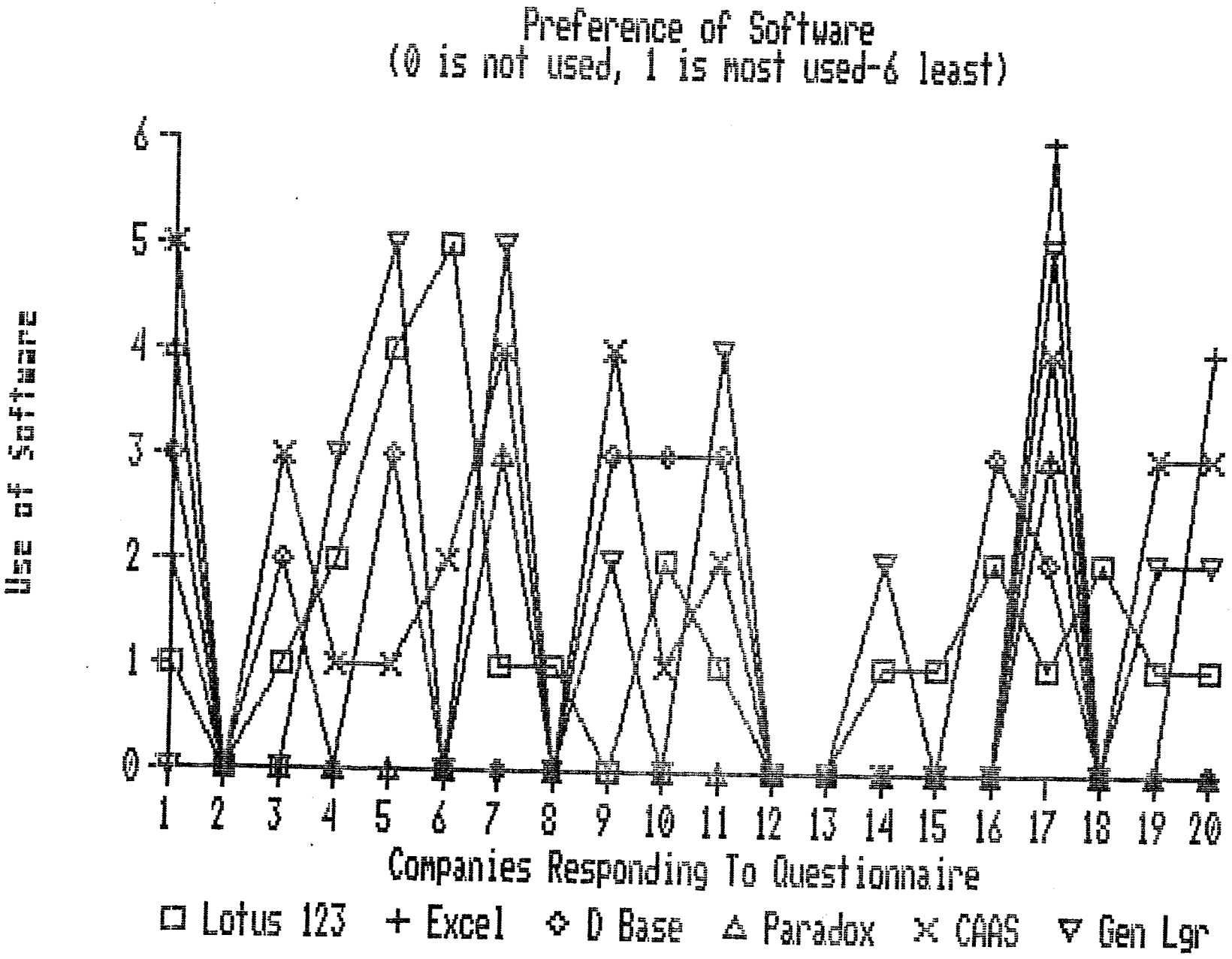

Preference of Software
(0 is not used, 1 is most used-6 least)
Use of Software
6
5
4
3
2
1
0
0
5
10
15
20
Companies Responding To Questionnaire
Lotus 123
Excel
D Base
Paradox
CAAS
Gen Lgr


Preference of Software
(0 is not used, 1 is most used-6 least)
Use of Software
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Companies Responding To Questionnaire
Lotus 123
Excel
D Base
Paradox
CAAS
Gen Lgr


Preference of Software
(0 is not used, 1 is most used-6 least)
Use of Software
0
1
2
3
4
5
6
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Companies Responding To Questionnaire
Lotus 123
Excel
D Base
Paradox
CAAS
Gen Lgr

Preferences of Software
Percentages of Companies' Usage




Preference of Software
(0 is not used, 1 is most used-6 least)
Use of Software
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Companies Responding To Questionnaire
Lotus 123
Excel
D Base
Paradox
CAAS
Gen Lgr

	A	B	C	D	E	F	G	H
1								
2								
3			Desired Asset					
4			Cost of Desired Asset			$88,779		
5			Class of ACRS			5		
6			Year placed in Service			1986		
7								
8		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total Cost
9								
10	ACRS	$17,756	$28,409	$17,046	$10,227	$10,227	$5,114	$88,779
11								
12	Straight-	$8,878	$17,756	$17,756	$17,756	$17,756	$8,878	$88,779
13	Line							

Desired Asset	TRUCK
Cost of desired asset	$88,779
Class of ACRS	5
Year placed in Service	1986

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total Cost
ACRS	$17,756	$28,409	$17,046	$10,227	$10,227	$5,114	$88,779
Straight-Line	$8,878	$17,756	$17,756	$17,756	$17,756	$8,878	$88,779

Desired Asset	CAR
Cost of desired asset	$22,899
Class of ACRS	5
Year placed in Service	1987

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total Cost
ACRS	$4,580	$7,328	$4,397	$2,638	$2,638	$1,319	$22,899
Straight-Line	$2,290	$4,580	$4,580	$4,580	$4,580	$2,290	$22,899

Desired Asset	FURNITURE
Cost of desired asset	$45,968
Class of ACRS	5
Year placed in Service	1989

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total Cost
ACRS	$9,194	$14,710	$8,826	$5,296	$5,296	$2,648	$45,968
Straight-Line	$4,597	$9,194	$9,194	$9,194	$9,194	$4,597	$45,968

The word processing packages being compared are Word Perfect and Wordstar. In comparing the two various differences and similarities were found.

File Management

WordPerfect

The merge function allows the user to merge two files together to consolidate information. The software also allows a user to delete, rename, or copy a file. These functions are vital to proper document management within a system. The software has the ability of revealing the contents of the file before the file is retreived.

Within the file, the software has the ability to automatically generate an index, create a table of contents and check the spelling. With all these functions in the software, it is easier for the user to track the specific information within the file as well as the location of that information.

The words within the file can be underlined or displayed in boldface print. Also, lines can be centered or justified to the left or the right. The need to move parts of the file from one palce to another can be accomplished with simply moving the section, in its entirety, to the place it is desired.

Wordstar

Wordstar has a merge command that allows the user to merge information from one file into another. The software also allows

a user to delete, copy, or rename a file.

The software has the ability to create a table of contents and an index. Also, it has the ability to check the spelling within the file.

The software has the ability to underline words or display them in boldface. It can center a line and even create a line with right or left justification. Also, if words or whole pages need to be in a different place, the software can move them as a unit.

On Screen Help

Word Perfect

The most difficult part of a software package is becoming familiar with the functions. With Word Perfect, it is necessary to have a template for the function keys in order to know what their function is.

Wordstar

The on screen menus lead the user to the functions desired by simply using the control button and the letter of the desired funciton off the main menu. Once off the main menu, a submenu of the functions is displayed. Then with only the touch of another key, the function is performed.

Other Functions

Word Perfect

The abilities of Word Perfect include a math feature and a statistical feature. The math can add, subtract, divide,

multiply, percentage, and total. The statistical feature allows the user to align the right and left margins of numbers while aligning the decimal points. Also, the decimal points can be centered with the numbers aligned. With this feature, it can be used to prepare simple financial statements or used to balance a checkbook.

Also, the software is capable of creating macros. The macro is a procedure that is used over and over again without going through all the commands. In the word processing package it could be used for the preparation of simple financial statements.

In word processing a proposal, the Word Perfect software offers footnote, thesaurus and outlining functions. These functions can be extremely useful in creating the finished product of a research paper or any type of proposal.

The data entered into a particular file can be sorted by alphabet or by numerics. This allows the user to sort data into an order that can be significantly more useful.

For an organization to document its flow of authority, the software offers boxes and lines for a chart. With this feature, the organizational chart can be formed.

Also, Word Perfect offers a screen splitting function. By using this function, the screen is split into two parts and the user is able to cut and paste the two documents together.

The Word Perfect package is part of a library that is integrated to allow the user to use the files in the word processing function as well as with a spreadsheet and other functions.

Wordstar

Currently, Wordstar does not have these abilities.

The word processing packages compared are both well written software. Word Perfect has the drawback of the function template in order to have a quick reference to the functions. Wordstar has the on-screen menus to help guide the user. Word Perfect has more functions and the ability to be integrated with the remaining software in the Word Perfect library. Overall, Word Perfect is the better software because it has more functions and can be integrated with the rest of the library.

The flowcharting packages being compared are Patton and Patton's Flowcharting II and Interactive Easyflow. The two softwares were compared on functions available, the ease of use, and the hard copy output.

Booting Up

Flowcharting

The Flowcharting disk is simply booted up from the A prompt with typing "flow".

Easyflow

Upon attempting to boot up the system, Easyflow was difficult. The package has a program disk and a device disk. The system cannot be booted up unless the disks are installed on a floppy or a hard disk. For some printers, the information will not fit on a single floppy. If a hard disk is not available, this will cause some problems.

Flowcharting Space

Flowcharting

The screen has the capabilities to shrink the whole flowchart to allow the user to view exactly what the chart will look like. This function is also very useful in planning a flowchart by allowing the space to be allocated to the various sections of the chart.

The flowchart itself is 200 spaces horizontally and 66 lines (a page) vertically.

Easyflow

The Easyflow package has the capabilities to "zoom-in" and "zoom-out", yet the whole chart is never shown. Without seeing

the whole flowchart, the user does not know what the chart looks like until it is printed. This will cause many extra prints and many extra changes to be made.

The flowchart itself is made up of grids. The grids each have a location of a letter and a number. The flowchart is a square sixteen grids. The flowcharting space is larger than that offered by the Flowchart package.

Shapes

Flowcharting

The flowcharting displays the shapes on the screen for easy use. The shape is chosen, and the sizes available are shown before the shape is displayed. Multiple copy documents can be displayed as actual multiple shapes. Each copy is treated as a shape and can be numbered and can be connected from each individual copy. This is very useful in showing the direct flow of the documents.

When it comes to deleting a shape, a shape and the lines connected to the shape can be deleted separately.

Easyflow

In order to chose a shape, the letters must be typed in for that shape. Without a formula sheet, a shape might not ever be found. In order to change the size, a "s" must be typed in for a small and a "l" for a large shape. Not all shapes are offered in more than one size. If a document needs to be shown in multiple, the number of forms shown must be indicated. The maximum number of forms is four. The four copies are considered a part of the same shape and cannot be numbered nor have a line connected to

each. If a particular form is more than four copies and each copy is used in a different place, the flow will not be accurately documented.

If a shape is to be deleted, all the lines connected to it are also deleted.

Text

Flowchart

Text can be placed in a shape or simply as an annotation or remark on the flowchart. It can be centered on the flowchart or in the shape.

The titles on the chart are shown across the top. This allows the user to place the titles where they will explain the most.

Easyflow

Text can only be placed within a shape. Any added remarks must be added within an annotation shape. The text is automatically centered within the shape.

Titles are a seperate function of the flowchart. This does not allow viewing of the titles in respect to the rest of the flowchart. In order to view the titles and the whole chart, it must be printed.

Lining

Flowcharting

The lining option offers four types of lines: dotted, solid, thick solid, and double solid. The lines can go anywhere and connect to a shape as many times as there are space. Also, the line can go two different places.

Easyflow

The lining option only offers two types: dotted and solid. A line can only connect two shapes. The line will not go more than one place nor will it connect a shape more than once per side of the shape.

The lines are re-routed in the most direct and convenient fashion. The re-routing is convenient for the aestetics of the chart, but the process is slow. When a line is connected to a shape and the shape is deleted, the lines connected to the shape are automatically deleted also.

Relocation

Flowcharting

Blocks can be moved by using a relocate function. The largest problem with relocating shapes is relocating the lines that connect the shapes.

Easyflow

When blocks are moved, the lines connecting the shapes are also moved.

Printing

Flowcharting

Print can be expanded, compressed, and/or rotated. The print can also be set up to be printed on a laser printer. The print is allowed to continue to form a flowchart without connecting seperate sheets. The shapes are very distinct, as they are formed by lines and not symbols.

Easyflow

Print cannot be rotated to allow a complete flowchart to be

printed on 8 1/2" by 11" paper. If a flowchart did utilize all sixteen grids and was printed compressed, it would be four pages horizontally. An option that is allowed is printing with or without arrows on the lines. The arrows are not typed in during the flowcharting process and are left as a print option.

The shapes are formed by symbols and are not very distinct.

Overall, both packages simplify the task of flowcharting. The flowcharts can be put on a disk for future reference and easy revision. The user friendliness of the Flowcharting package was superior to the Easyflow. The Easyflow package was frustrating and did not produce a nicer flowchart. The Flowcharting charts are easier to follow simply by the whole chart being on one page. From the facts gathered, the Patton and Patton's Flowcharting II is found to be the superior software.

The field of responses was judgementally selected from the list of companies recruiting accountancy majors on the Northern Illinois University campus. Chosen, were the "Big Eight" public accounting firms, selected second tier firms and various industries. The questionnaire was sent to the following 50 companies. From the 50 questionnaires sent out, 20 were completed and returned. The companies that returned the questionnaires are marked with "*" by their names.

Allstate Insurance Company
Altschuler, Melvoin & Glasser
Amoco Corporation
* Arthur Andersen
Baxter Travenol Laboratories, Inc.
Blackman, Kallick & Bartlestein
* Carson Pirie Scott
* Checkers, Simon and Rosner
Chicago Mercantile Exchange
Comptroller of the Currency
Continental Bank
* Coopers and Lybrand
Creative Business Solutions
* Crowe, Chizek and Company
* Deloitte, Haskins and Sells
Ernst and Whinney
* Evangelical Health Systems
Federal Bureau of Investigation
* Marshall Field's
Ford Motor Credit Company
* Friedman, Eisenstein, Raemer and Schwartz
Frost, Ruttenberg and Rothblatt
General Electric Credit Corporation
Goldstein, Pierce & Company
* Grant Thornton
Hartmarx
Heller Financial
* Household International
* IC Industries
* Illinois Department of Revenue
* Kemper Financial
Laventhol and Horwath
* Litton Industries

McGladrey, Hendrickson & Pullen
Motorola
Mueller and Company
Murphy, Hauser, O'Conner and Quinn
National Futures Association
* Northern Illinois Gas
Northwestern Mutual Life Insurance
Pannell Kerr Forster
Peat, Marwick and Mitchell Company
* Peoples' Gas, Light and Coke Company
Price Waterhouse
Philip Rootberg
Seidman and Seidman
Selden, Fox and Associates
* Touche Ross and Company
* Veach, Rich & Nadler
* Arthur Young

When asked what the weaknesses of the software are, the time and training required for use is the answer. This includes the difficulty of interpreting manuals and the learning curve of use. Basically, the software does what it is intended to do. Even when the software performs as expected, some companies do feel that documentation is also a weakness.

The future of software is the interfacing of all software to tie the whole system together. Also, as expected, the upgrades of the current software will be implemented when available.

When recruiting recent college graduates, the most desirable skills are spreadsheets, database, and word processing skills; general PC knowledge and familiarity is desired. The emphasis on software does center on spreadsheets and specifically Lotus 123. Some companies feel that knowledge of hardware and programming is a plus. Some companies look for formal education of applications and job experience using software applications. In general, most students entering the work world are properly prepared.

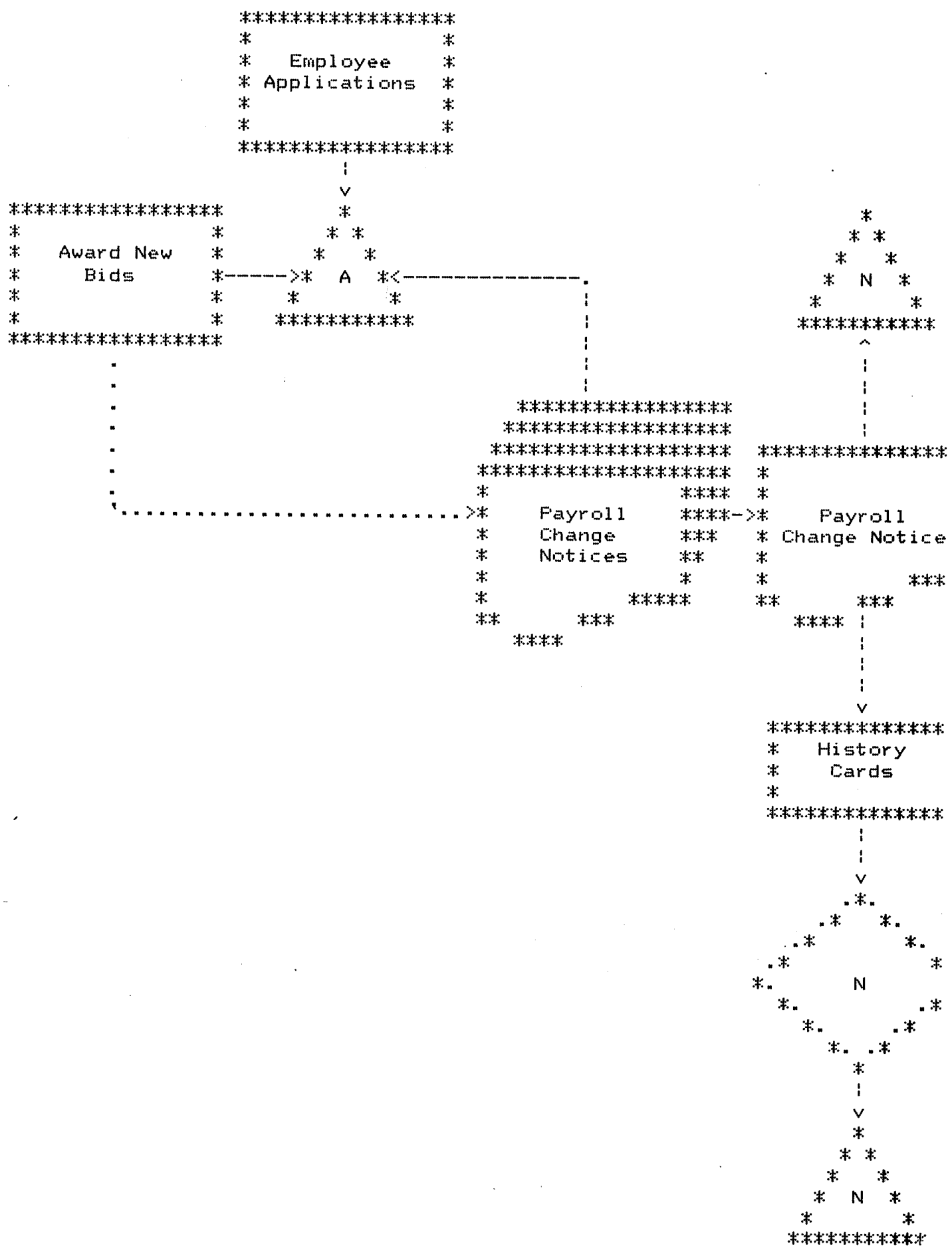
Once on the job, the skill levels vary. A week training session is the usual amount of training. Some formal training sessions are as long as five weeks and others are non-existent. This training covers basic PC and specific training in the companies particular software uses. If the training in the sessions is not adequate, other internal and external seminars are offered. Many companies expect a certain level of familiarity and expertise. If these levels are not met at time of employment, self study is expected. Some companies feel that the level is poor because it is centered on a basic classroom application approach, and not in-depth enough to fully utilize the computer capabilities. When new hires are expected to have a certain level of expertise, the training is given on an application specific basis on the job.

This project has enabled me to become even more user friendly. I experminted with more software than I otherwise would have had access to use. I feel that the results of the survey showed what we, at Northern Illinois University, already believe; Northern is turning out Accountancy majors who are prepared for the job market, especially in terms of their computer expertise.

I would like to conclude with a special thanks to Dr. Bill Cummings. Without Dr. Bill, I would have never truly believed that "Profanity is the language of programmers." Thank you.

UPPER LEFT CORNER

Personnel



LOWER LEFT CORNER

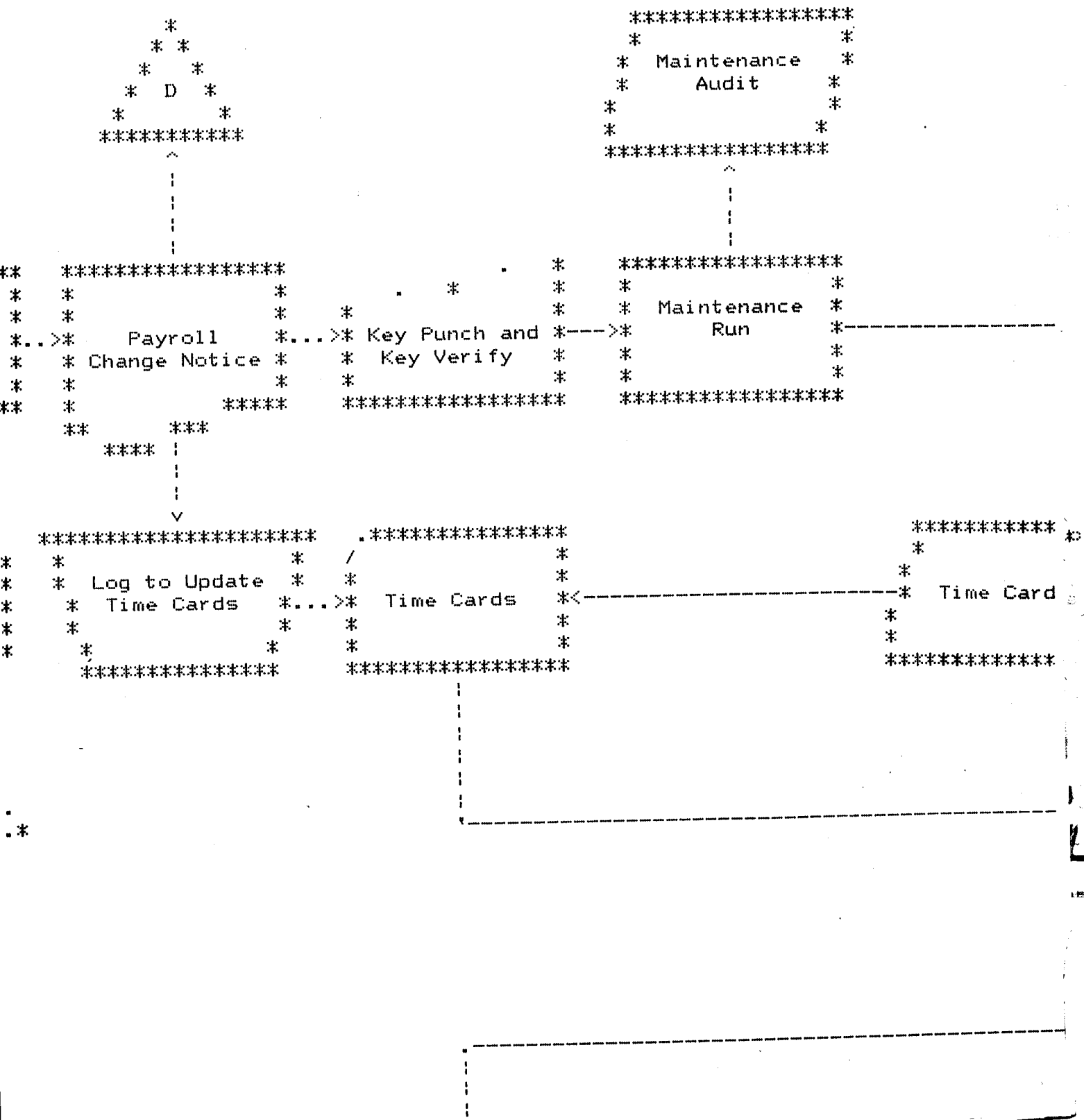
```
**************
*
*  Disposed
*
**************
```

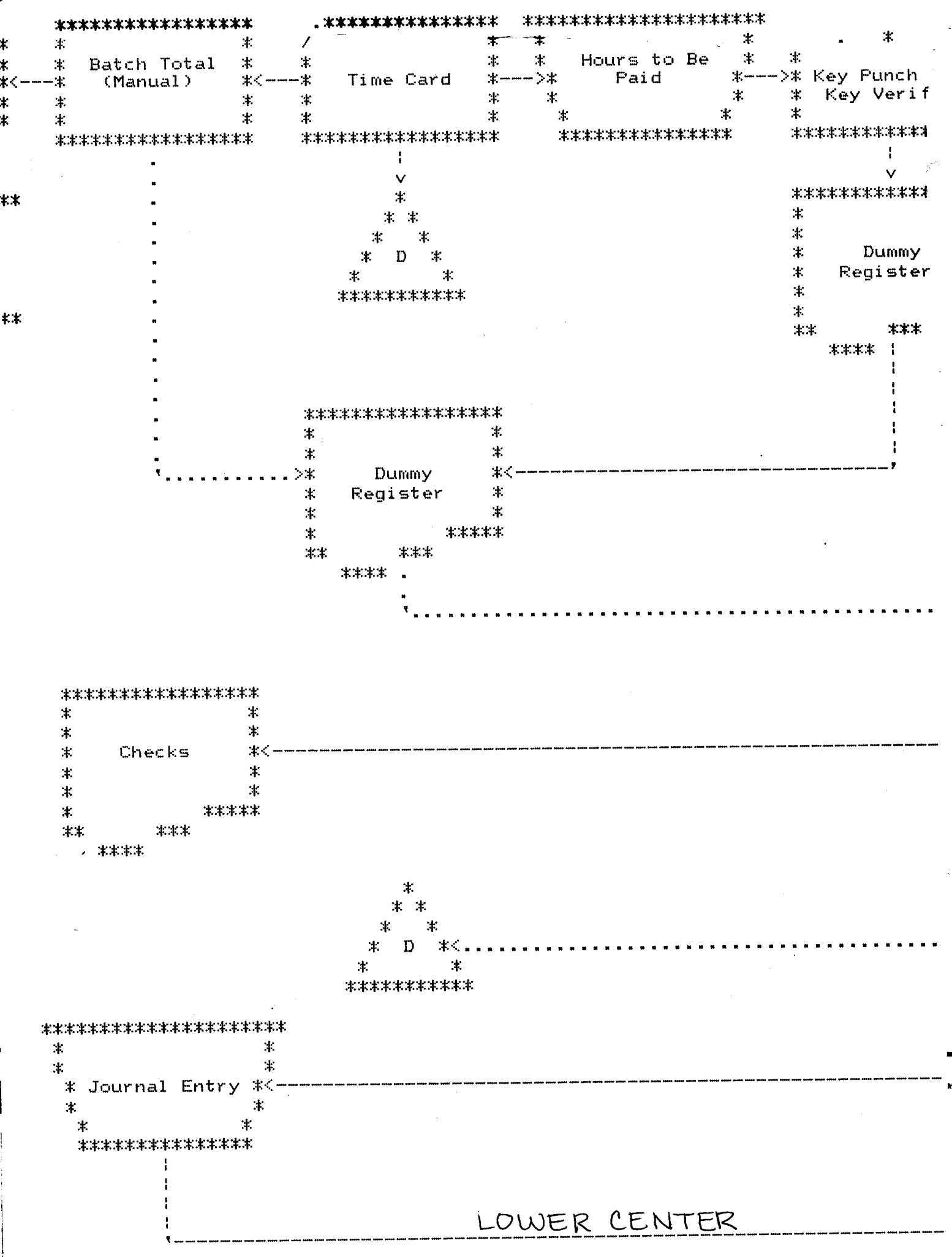
```
****************
* Compare Batch
*   Total to
*     Dummy
* Register, if
*    Ok run
****************
```

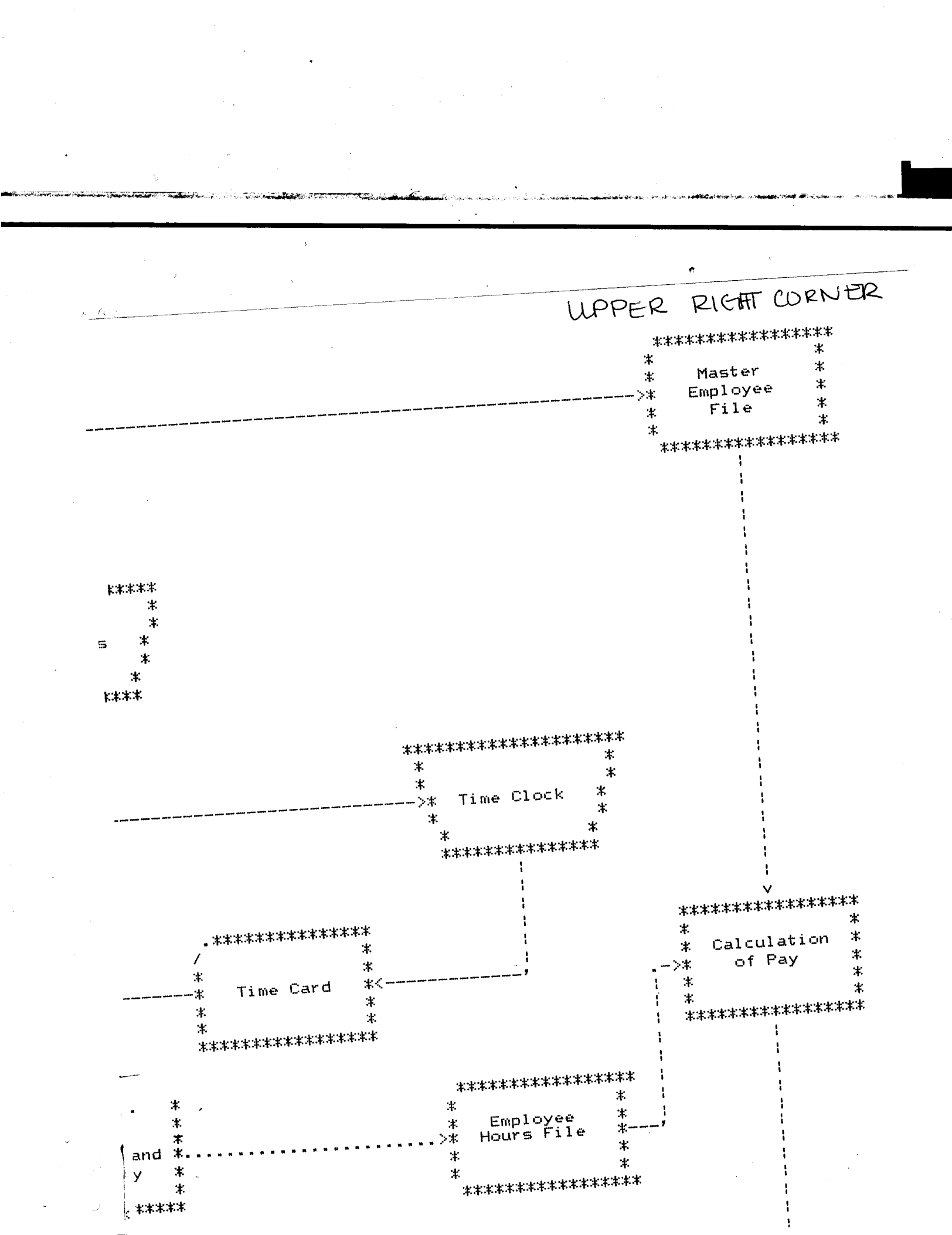
Payroll Cycle

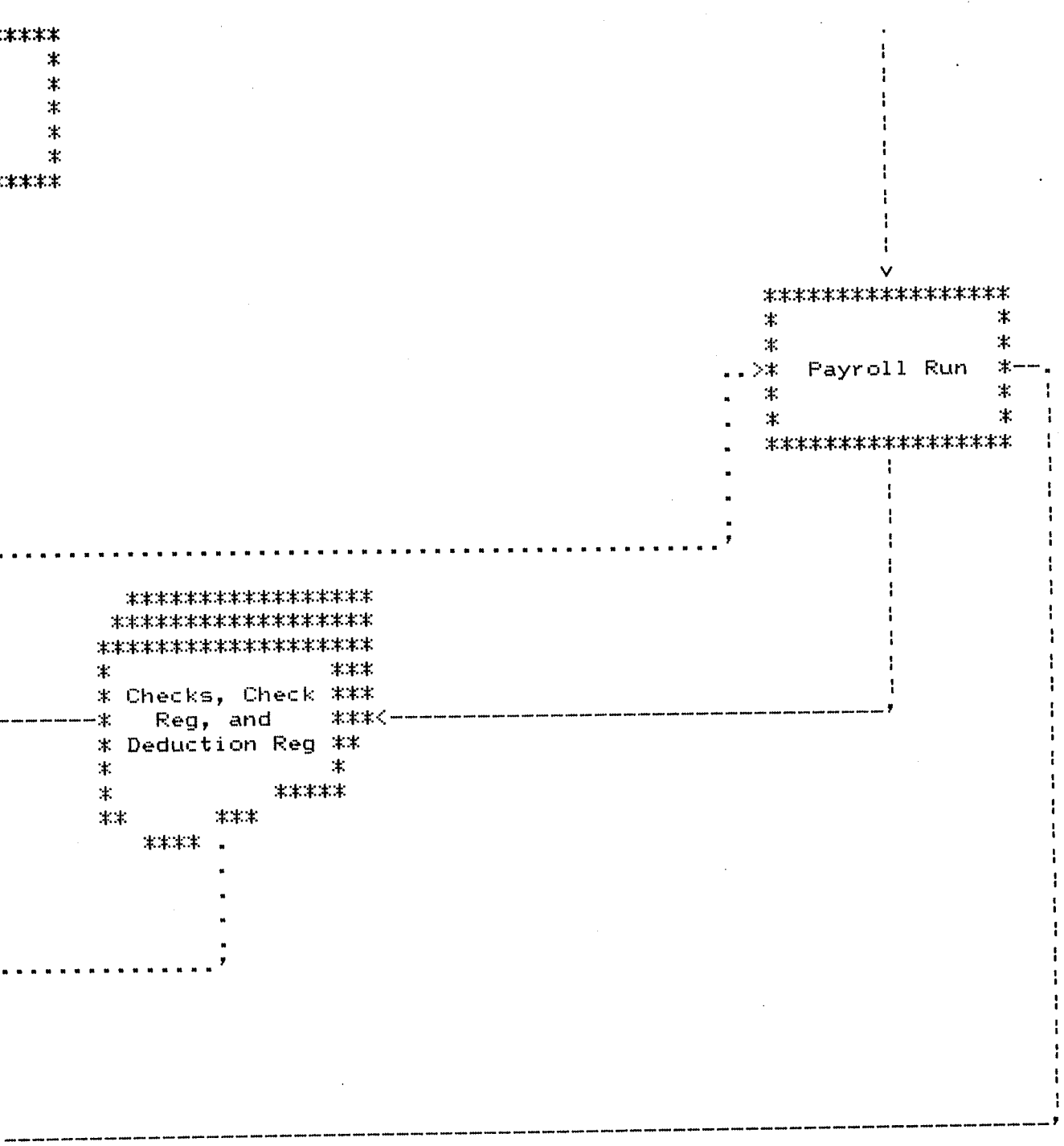
Payroll | Data Processing | General Accounting | Departm

LEFT MIDDLE
TOP

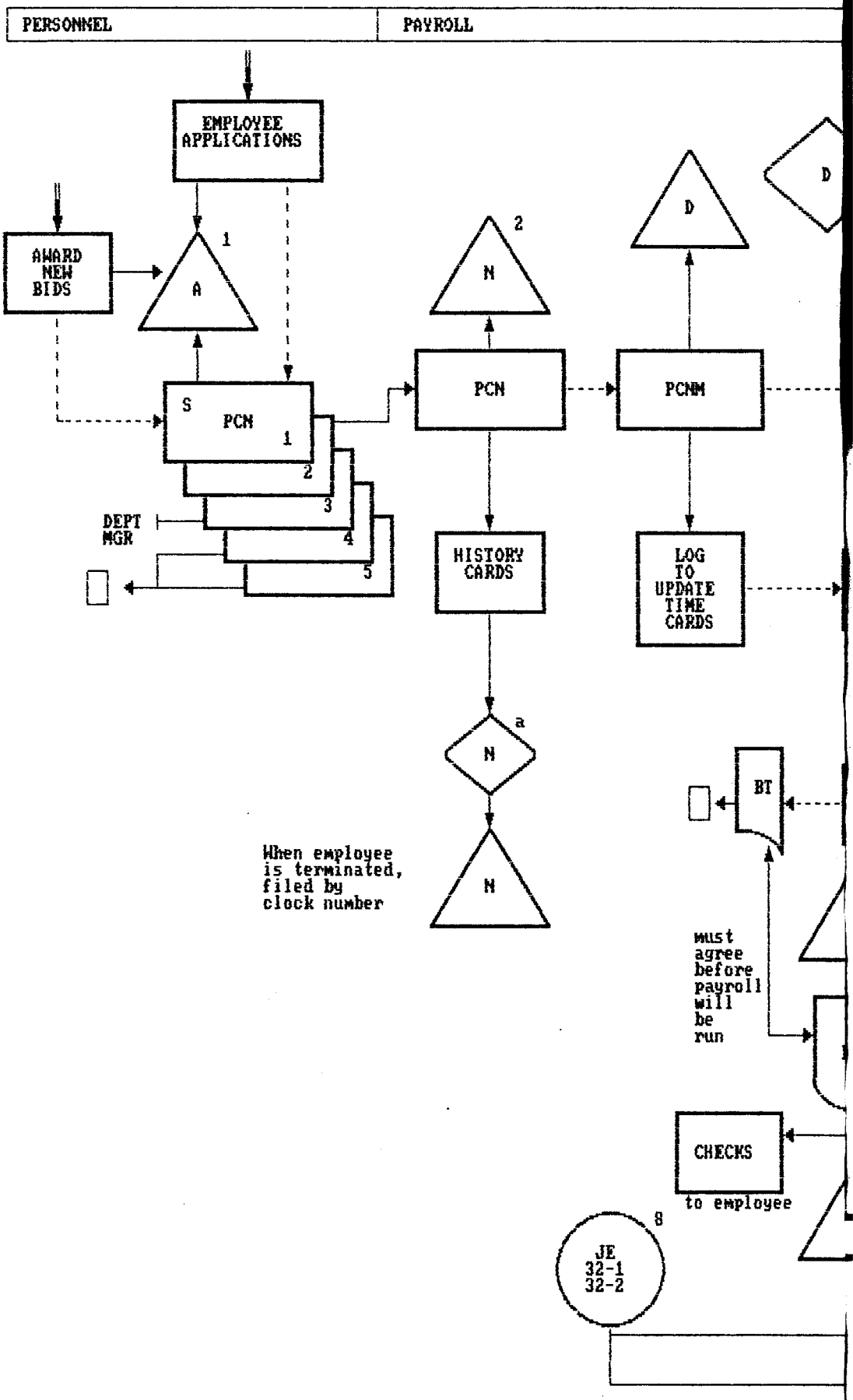



Batch Total
(Manual)
Time Card
Hours to Be
Paid
Key Punch
Key Verif
D
Dummy
Register
Dummy
Register
Checks
D
Journal Entry
LOWER CENTER


UPPER RIGHT CORNER
Master Employee File
Time Clock
Time Card
Calculation of Pay
Employee Hours File



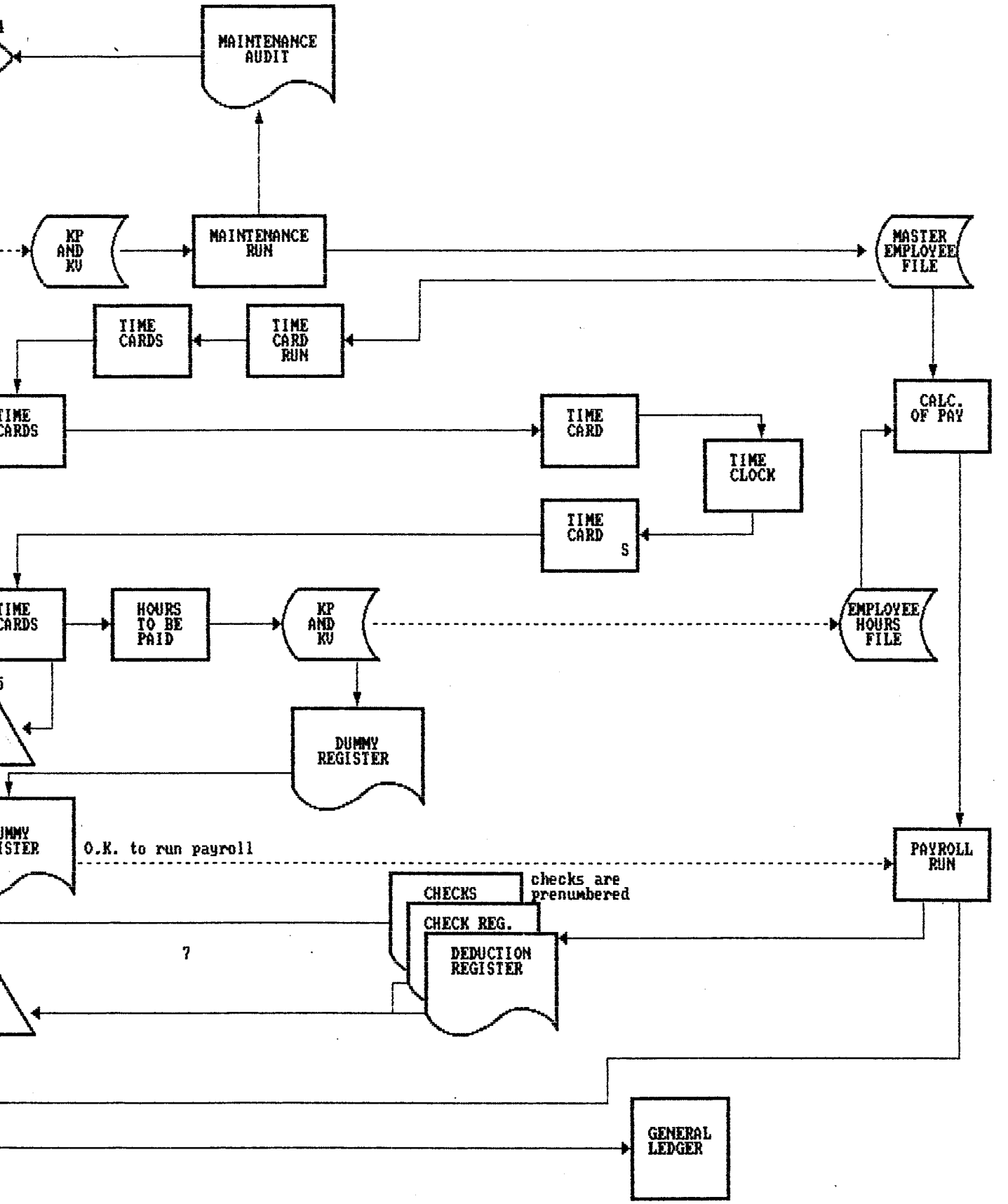
LOWER RIGHT
CORNER



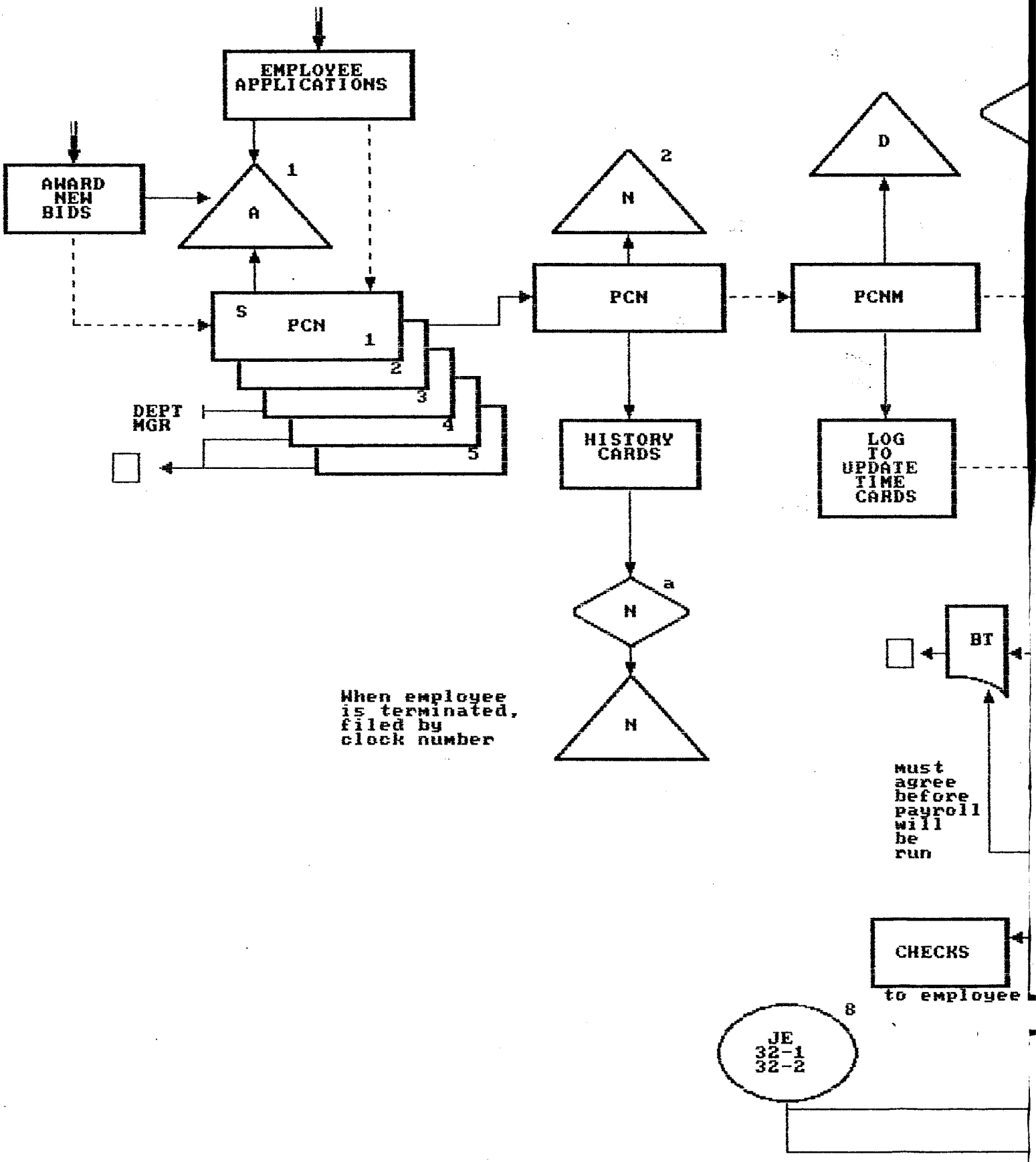
PERMANENT	1	2	8	5 7
TEMPORARY				

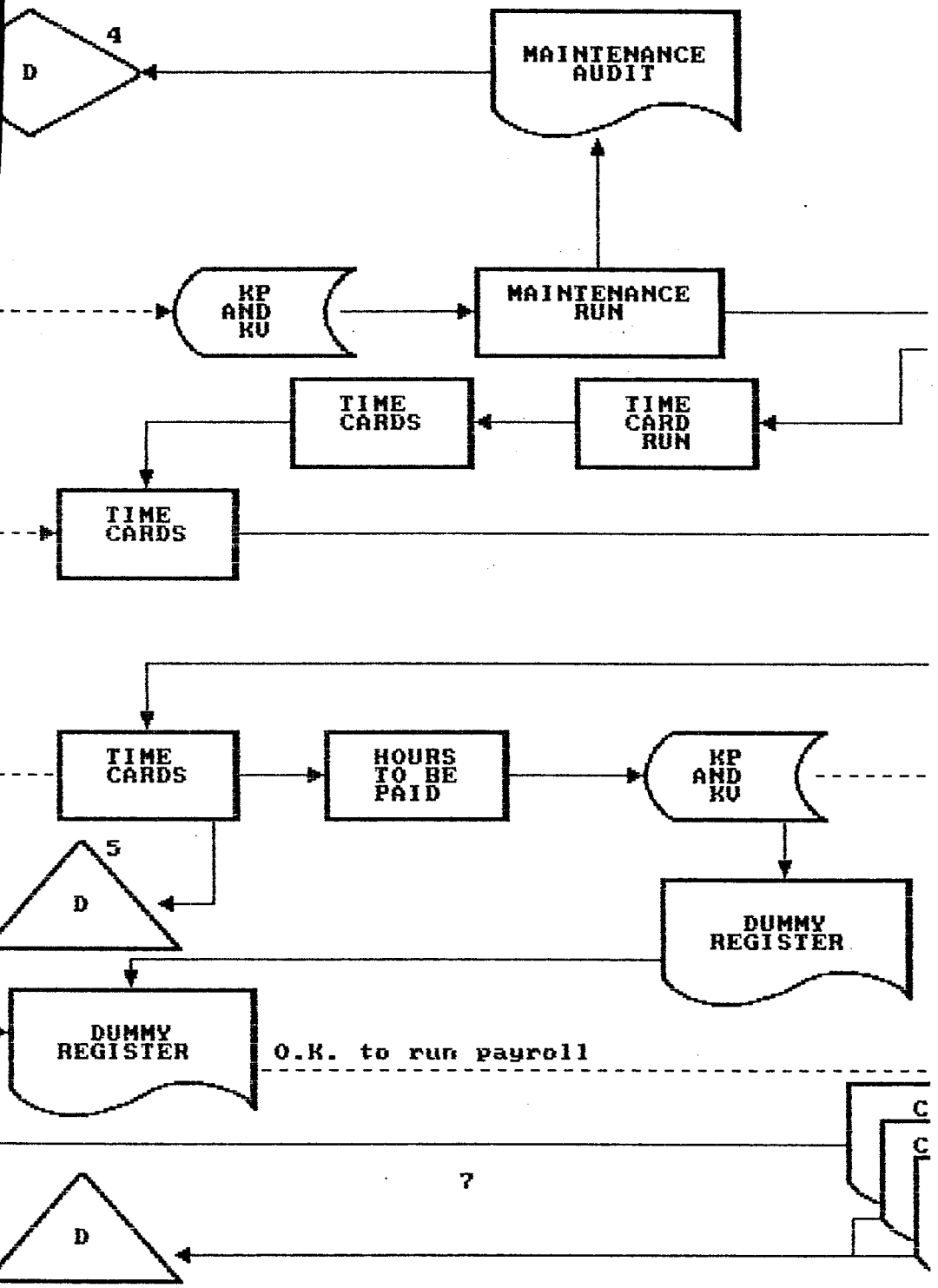
[redacted]
PAYROLL CYCLE
[redacted]
KML 7/12/88
FILENAME: [redacted]

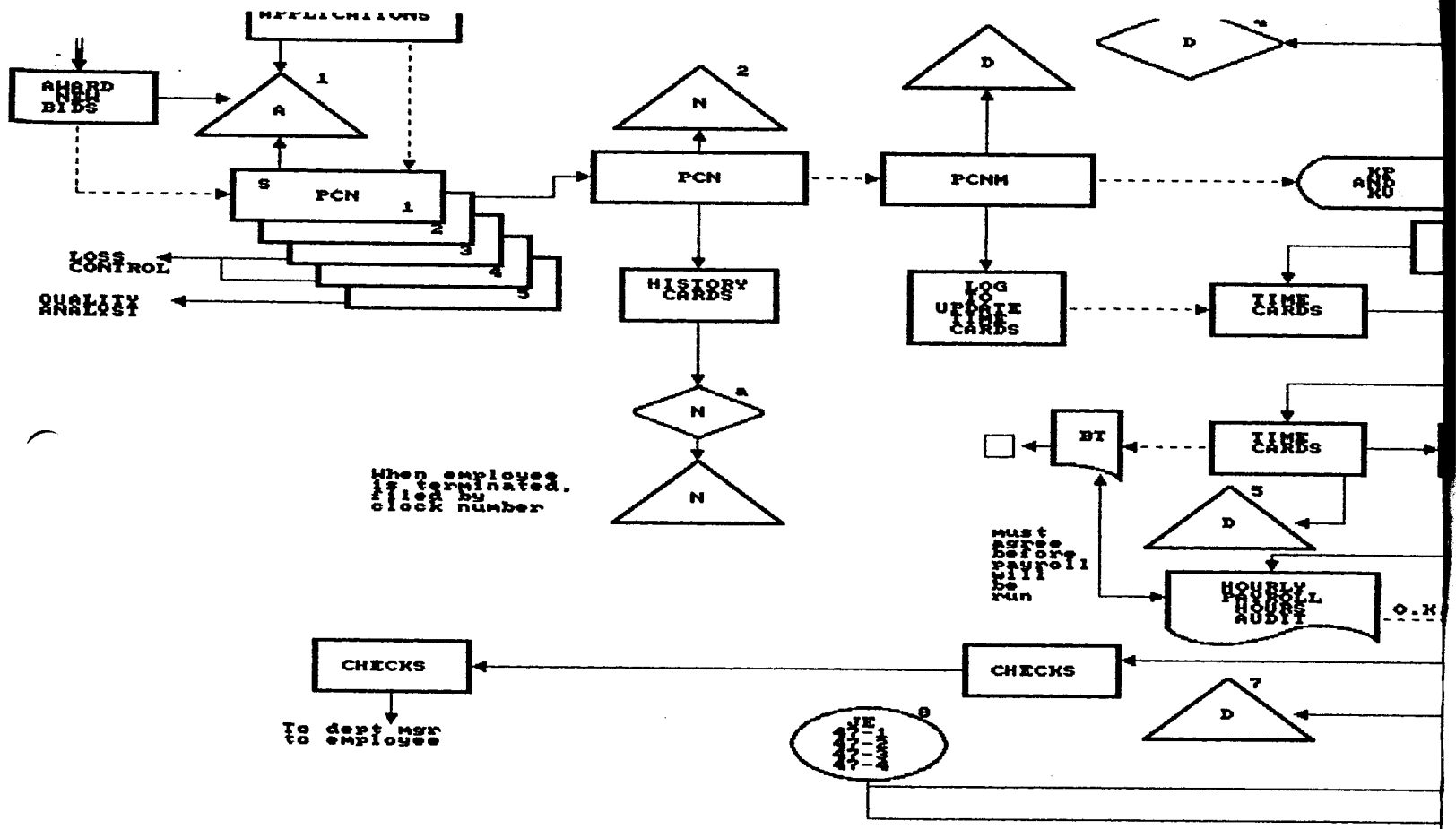
	DATA PROCESSING	GENERAL ACCY	DEPARTMENT MANAGER SHOP	[redacted]



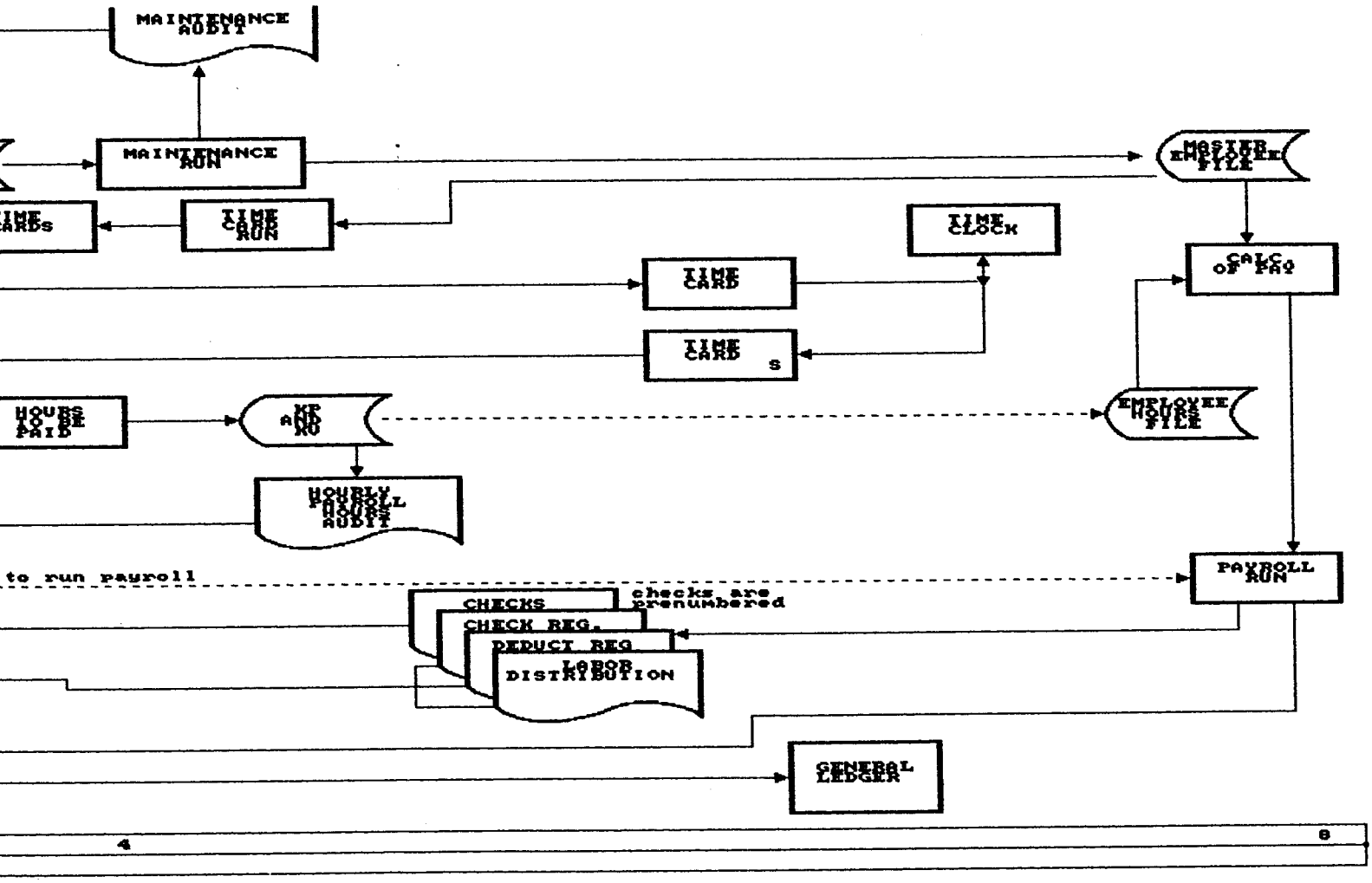
PERSONNEL	PAYROLL

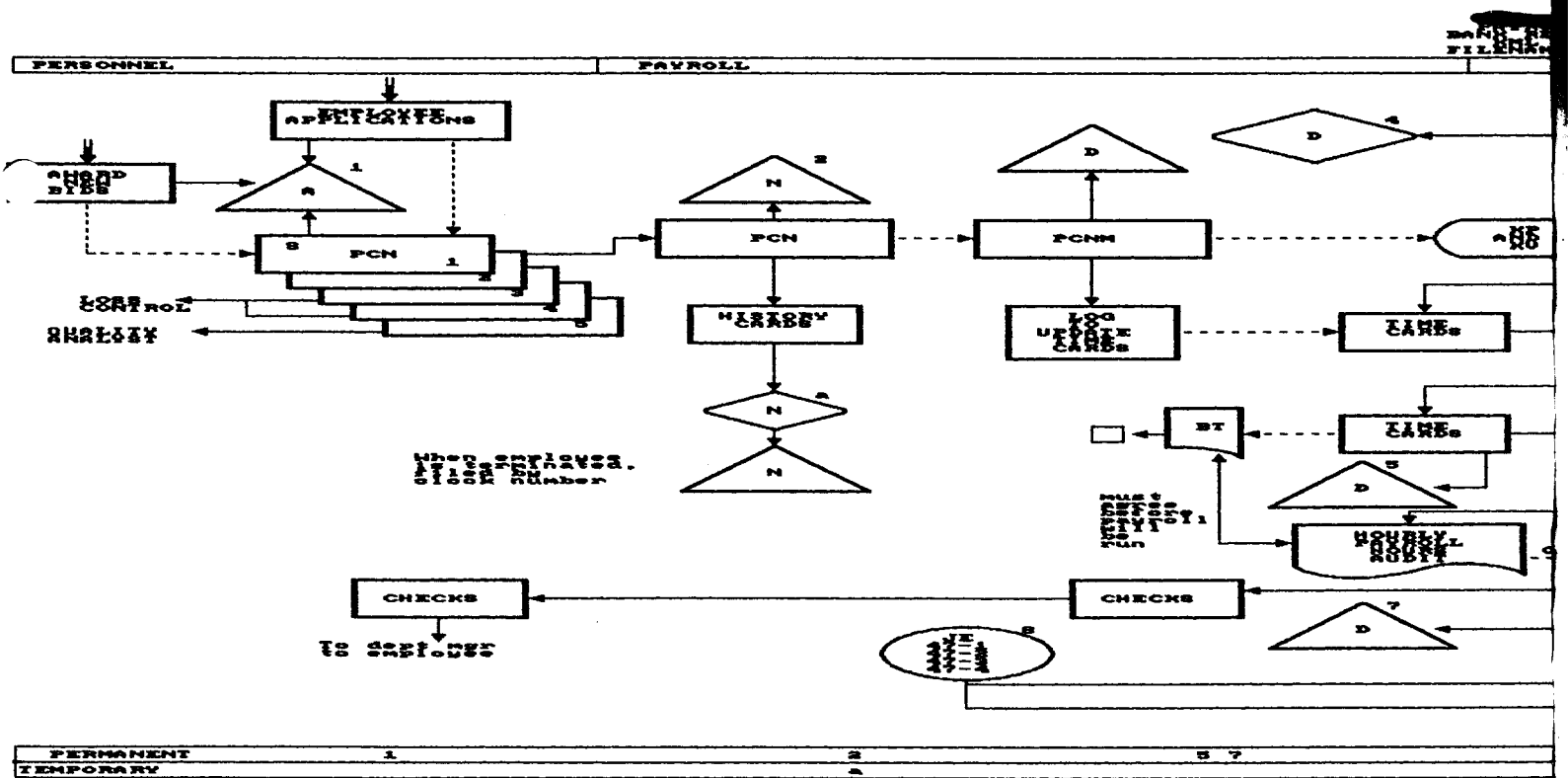


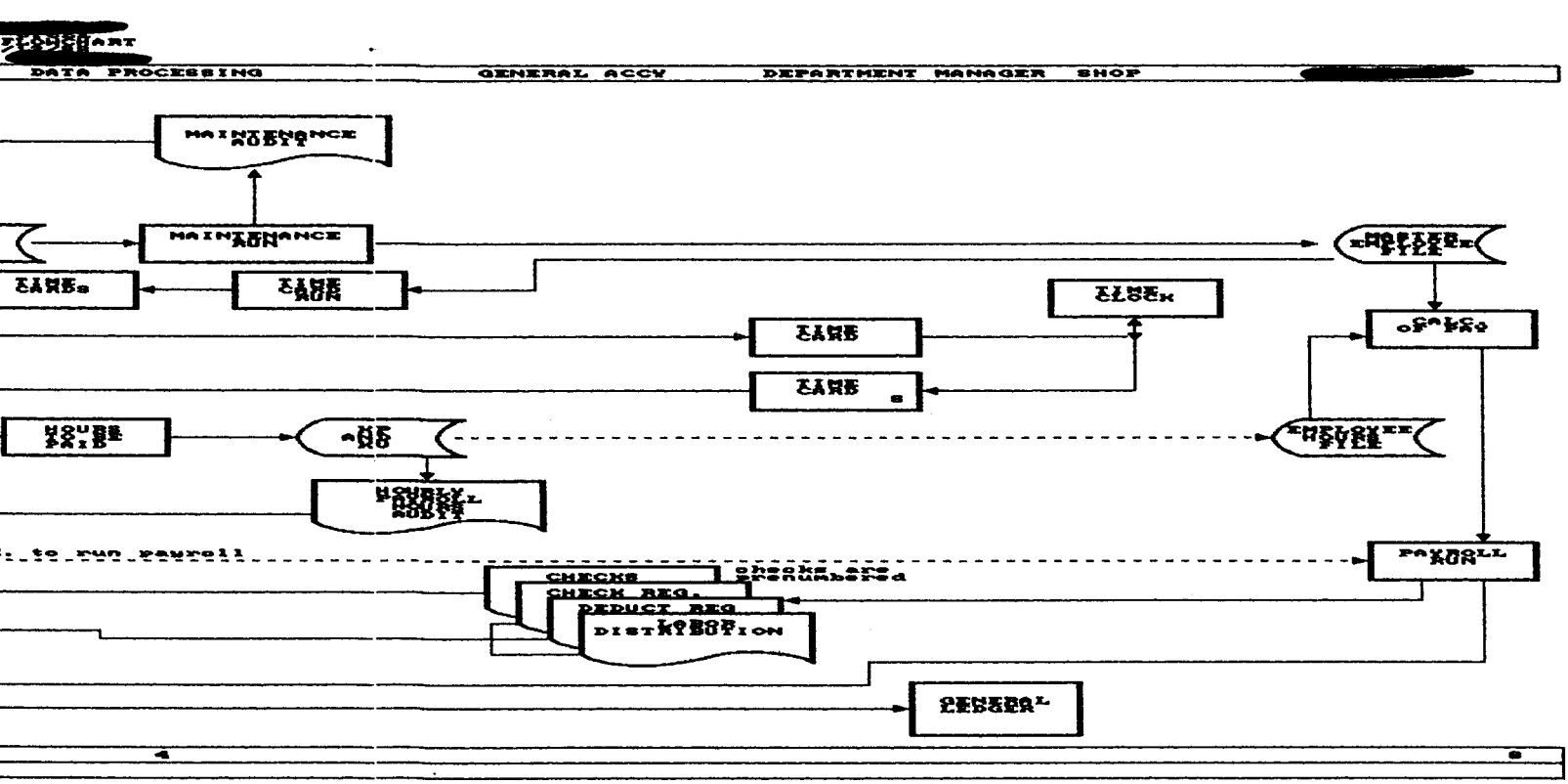

4
D
MAINTENANCE AUDIT
KP AND KU
MAINTENANCE RUN
TIME CARDS
TIME CARD RUN
TIME CARDS
TIME CARDS
HOURS TO BE PAID
KP AND KU
5
D
DUMMY REGISTER
DUMMY REGISTER
O.K. to run payroll
C
C
7
D



PERMANENT	1	2	5 7
TEMPORARY		A	


MAINTENANCE AUDIT
MAINTENANCE RUN
MASTER EMPLOYEE FILE
TIME CARDS
TIME CARD RUN
TIME CLOCK
TIME CARD
CALC OF PAY
TIME CARD S
HOURS TO BE PAID
KE AND NO
EMPLOYEE HOURS FILE
HOURLY PAYROLL HOURS AUDIT
to run payroll
PAYROLL RUN
checks are prenumbered
CHECKS
CHECK REG.
DEDUCT REG
LABOR DISTRIBUTION
GENERAL LEDGER
4
8


PERSONNEL
PAYROLL
CHECKS
CHECKS
PERMANENT
TEMPORARY


DATA PROCESSING
GENERAL ACCV
DEPARTMENT MANAGER
SHOP
MAINTENANCE
CHECKS
CHECK REQ.
DEDUCT REQ
DISTRIBUTION
GENERAL