

CMS HISTORY

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*Left
Computer Center*

CMSC

DATA PROCESSING

CENTER

CENTRAL MISSOURI STATE COLLEGE

ANNUAL REPORT SUPPLEMENT

DATA PROCESSING CENTER

March 1967

Director of Data Processing

Jon Rickman

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Introduction

This special progress report of the Central Missouri State College Data Processing Center presents the Center's present operations, recent developments, and growth trends in academic areas. The role of the Data Processing Center has been greatly expanded since its origin as the IBM Office in 1957. Academic programs, operations, and processes are becoming increasingly complex and therefore need a simplified presentation for those who are interested and concerned with our goals.

The report is broken down into three parts with each part having its own introductory comments.

- Part I. Academic Programs
- Part II. Administrative Operations
- Part III. Data Processing Center Staff

Part I. Academic Programs

The present academic programs and the new proposed programs which are related to the Data Processing Center are given on the following pages. Shown are the proposed Functional Major and Minor in Computer Science leading to B. S. Degree, the new Industrial Arts Drafting Two-Year Degree, and the present Data Processing Two-Year Degree. Other course offerings not leading to a degree are also shown. The proposed computer science degrees are now approved by the Mathematics Department and the Mathematics and Science Division. They need only approval by the curriculum committee.

The proposed Computer Science Degree will be a big step for the center since it is the first four-year computer oriented program offered at C.M.S.C. Also, the first Data Processing Workshop will be offered this coming summer.

The growth in the number of students taking data processing courses is shown on pages 9 and 10.

Proposed New Program in Mathematics

Functional Major in Computer Science on B. S. Degree

<u>Required Courses</u>		<u>Sem. Hours</u>
Math 14-11	Introduction to Basic FORTRAN Programming	1
Math 11-21	Algebra and Trigonometry	3
Math 11-41	Calculus and Analytical Geometry I	3
Math 11-42	Calculus and Analytical Geometry II	3
Math 11-43	Calculus and Analytical Geometry III	3
Math 11-44	Calculus and Analytical Geometry IV	3
Math 11-45	Calculus and Analytical Geometry V	3
Math 21-21	Theory of Equations	3
Math 24-11	Introduction to Computer Programming	3
or		
Bus 23-35	Basic Computer Programming	
Math 24-12	Computer and Programming Systems	3
Math 33-11	Statistics	3
Math 34-10	Systems Analysis	3
Math 33-12	Statistics and Probability	3
Math 27-11	Introduction to Abstract Algebra	3
Math 31-51	Differential Equations	3
Math 31-60	Applied Advanced Calculus	3
Math 34-11	Numerical Analysis I	3
Math 34-13	Applied Computer Projects	2
Bus 33-70	Programming Business Applications	3
Bus 33-80	Advanced Computer Programming	3
		54

Proposed Minor in Computer Science
B. S. Degree

<u>Required Courses</u>		<u>Sem. Hours</u>
Math 11-41	Calculus and Analytical Geometry I	3
Math 11-42	Calculus and Analytical Geometry II	3
Math 11-43	Calculus and Analytical Geometry III	3
Math 14-11	Introduction to Basic FORTRAN Programming	1
Math 24-11	Introduction to Computer Programming	3
or		
Bus 23-35	Basic Computer Programming	
Math 24-12	Computer and Programming Systems	3
Math 33-11	Statistics	3
or		
Bus 23-00	Business Statistics I	
Math 34-10	Systems Analysis	3
		3
		22

New Curriculum Proposals

Computer Oriented Courses Recommended

in the Mathematics Department

<u>Course Number</u>	<u>Course Name and Description</u>	<u>Sem. Hours</u>
Math 14-11 (new)	Introduction to Basic FORTRAN Programming.....1 An introductory course in coding a defined algorithm into the computer FORTRAN language.	1
Math 24-11	Introduction to Computer Programming.....3 A study of digital computer systems and programming of a digital computer using problem-oriented and machine languages. Involves extension of course Math 14-11 and extensive applications using the above mentioned languages.	3
Math 24-12 (new)	Computer and Programming Systems.....3 An examination of the computer as a system. Information storage and retrieval by use of on-line storage devices. Introduction to numerical control concepts.	3
Math 34-10 (new)	Systems Analysis.....3 A study of systems and models, including random number processes, (Monte Carlo Process) and Queuing Concepts. Combining these concepts into model building techniques.	3
Math 34-11 (new desc.)	Numerical Analysis I.....,.....3 Finite differences interpolation, numerical differentiation and integration, solution of linear systems, non-linear equations, numerical solution of ordinary differential equations, and numerical treatment of empirical data. Computational techniques stressed and extensive quantity of problems to be solved on a digital computer.	3
Math 34-12 (new)	The Computer as a Research Tool.....1 This introductory course gives the senior college or graduate student a method to solve research problems that can be expressed numerically. Not open to Mathematics and Computer Science majors or minors.	1

Curriculum Proposals in Mathematics (con't)

<u>Course Number</u>	<u>Course Name and Description</u>	<u>Sem. Hours</u>
Math 34-13 (new)	Applied Computer Projects..... Application of the computer within the student's area of concentration. Prerequisite: Math 14-11 or Math 34-12.	2
Math 44-11 (new)	Numerical Analysis II..... Extension of topics of Numerical Analysis I, errors and error analysis, computational methods of Matrix Algebra and linear algebra, eigenvalues and eigenvectors numerical solution to partial differential equations and curve-fitting. Extensive quantity of problems to be solved on a digital computer. Prerequisites: Math 34-11.	3

Industrial Design Drafting

Two-Year Program

This new program in 1966-67 involves two computers oriented courses of which the following is new.

IA&T 21-40	Computer Drafting Systems..... The use of computers and electronic plotters for the solution of machine design problems by the conversion of mathematical data to a graphical form. Prerequisite: Bus 16-10.	3 hours
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Present Two-Year Program in Business Data Processing

Course Requirement for the degree.

FIRST YEAR

<u>Course Number</u>	<u>Course Name</u>	<u>Hours</u>
Engl 10-20	Freshman English	3
Engl 10-30	Freshman English	3
Bus 11-00	Elementary Accounting	3
Bus 11-01	Elementary Accounting	3
Math 11-01	Introduction to Algebra	3
Bus 13-00	Introduction to Business	3
Bus 16-00	Introduction to Unit-Record Equipment	3
Bus 16-10	Introduction to Computer Programming	3
Bus 26-00	Unit-Record Equipment Application	3
	Electives	4
Hper	Applied Physical Education	1½
		<hr/> 32½

SECOND YEAR

<u>Course Number</u>	<u>Course Name</u>	<u>Hours</u>
Hist 13-20	America and the Modern World	3
Bus 13-11	Mathematics for Business Analysis	3
Bus 21-10	Cost Accounting	3
Bus 23-00	Business Statistics I	3
Bus 23-10	Business Organization and Management	3
Bus 26-10	Computer Programming	3
Bus 26-11	Computer Programming III	3
Bus 26-20	Business Systems and Design	3
Bus 26-30	Data Processing Field Project	2-5
	Electives	2-5
Hper	Applied Physical Education	1½
		<hr/> 29½-32½

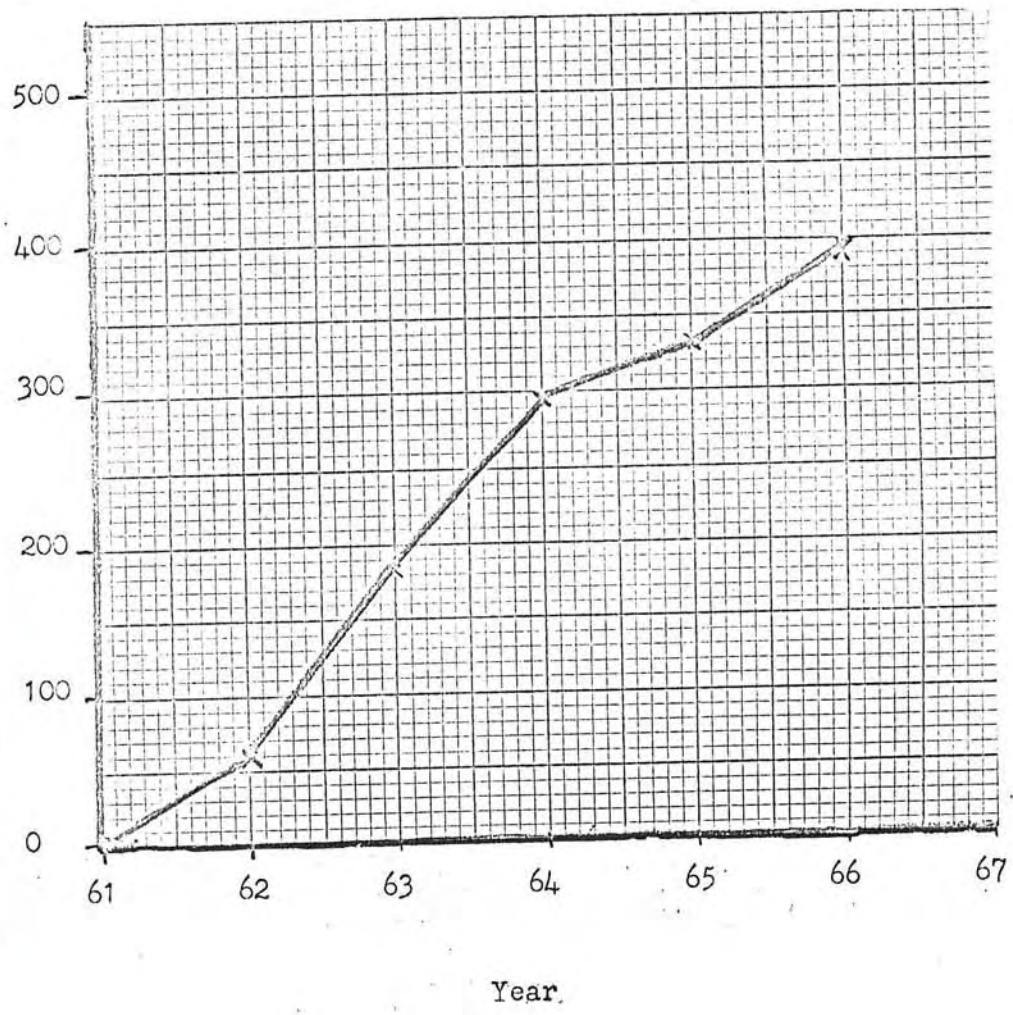
Data Processing Courses

<u>Course No.</u>	<u>Course Name and Description</u>	<u>Sem. Hours</u>
Bus 16-00	Introduction to Unit Record Equipment..... A study of the functions of an operation of the key-punch, sorter, reproducer, collator, and accounting machines. Includes instruction in basic machine wiring.	3
Bus 16-10	Introduction To Computer Programming..... This course includes principles of electronic computing on card systems and machine language programming.	3
Bus 26-00	Unit Record Equipment Applications..... A thorough study of card layout, flow charting, and machine wiring of selected unit-record applications. Prerequisite: Bus 16-00.	3
Bus 26-10	Computer Programming II..... An introduction to the use of the electronic digital computer in the processing of business data. Course will include procedure analysis, flow charting, programming in symbolic language, and actual operating experience on the IBM 1620 Computer. Prerequisite: Bus 16-10.	3
Bus 26-11 (new desc.)	Computer Programming III..... Introduction to a high-level problem-oriented language. Emphasizes programming in COBOL. Prerequisite: Bus 26-10.	3
Bus 26-20	Business Systems and Design..... Principles of system analysis and procedure, and flow charting business applications. Prerequisites: Bus 16-00 and Bus 16-10.	3
Bus 26-30	Data Processing Field Project..... An individual project to be completed by the student on the type of application encountered in a business. Prerequisites: Bus 16-00 and Bus 16-10.	2-5

Courses for the General Management Business Student

<u>Course Number</u>	<u>Course Description</u>	<u>Sem. Hours</u>
Bus 23-35 (new desc.)	Basic Computer Programming..... Basic machine and programming concepts which apply to most digital computers are presented. Course emphasizes programming in a basic assembly language.	3
Bus 33-30 (new desc.)	Data Processing In Business..... In this course the student studies high speed electromechanical and computing equipment used in the processing of data. Heavy emphasis is placed on methods and terminology in modern data processing facilities.	3
Bus 33-70 (new desc.)	Programming Business Applications..... More advanced programming techniques than found in course 23-35. Students learn and use a third level problem-oriented language (COBOL). Introduction to problems of information retrieval. Prerequisites: Bus 23-35 or Math 24-11.	3
Bus 33-80	Advanced Computer Programming..... An introduction to the use of the electronic digital computer in the processing of management data. Course will cover such topics as sales forecasting techniques, inventory control and simulation, and Management Operating Systems. Prerequisites: Math 14-11 and Bus 23-01.	3

Graph of Enrollment Trends
in
C.M.S.C. Data Processing and Computer Science



Enrollment
in D.P.
Computer
Science
Classes

Administrative Computer Runs

<u>SYSTEM</u>	<u>IBM 1620 RUNS</u>	<u>IBM 1401 RUNS</u>
Payroll	0	17
Budget	0	6
Institutional Research	1	4
Testing	2	1
Scheduling	7	3
Library	10	2
Revenue	6	7
Housing	1	6
Student Records	0	11
Student Reports	<u>2</u>	<u>21</u>
	29	76

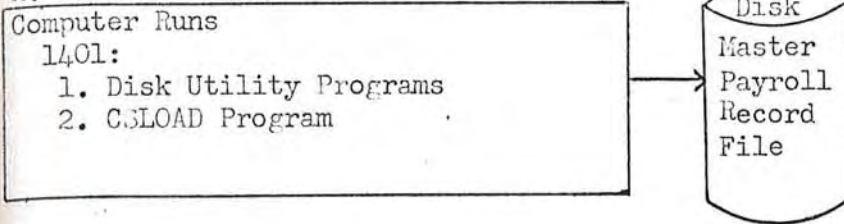
GRAND TOTAL.....105

This is the basic core of the program library. Manual and backup procedure programs were not counted even if they were in the program library. Academic, Research, and Demonstration programs are not in the library.

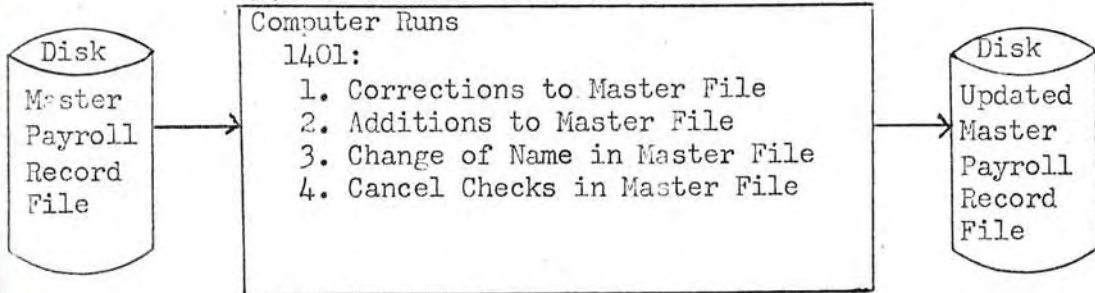
PAYROLL OPERATIONS IN DATA PROCESSING CENTER

(An all new system with all new programs)

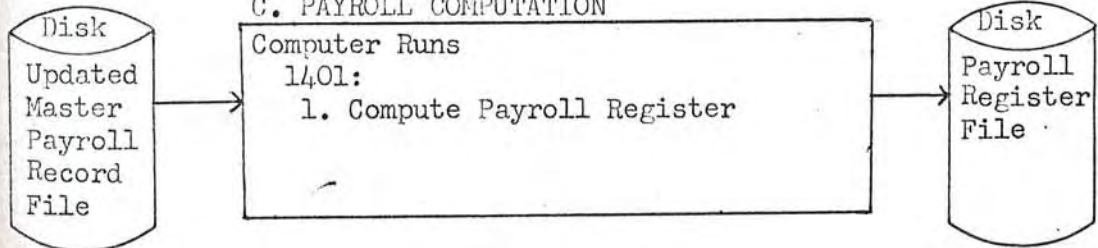
A. FILE CREATION



B. PRE-PAYROLL FILE UPDATE

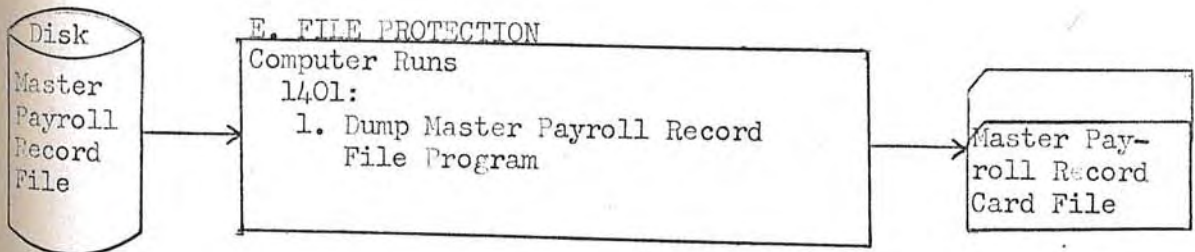
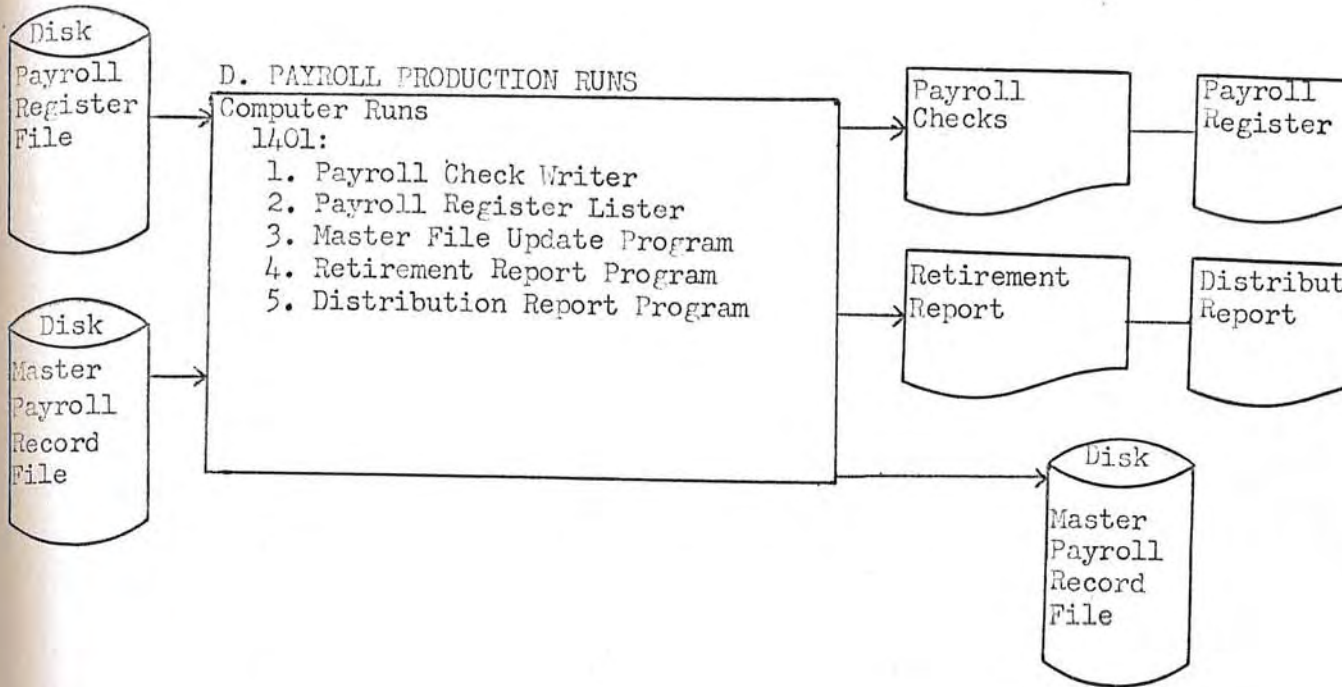


C. PAYROLL COMPUTATION



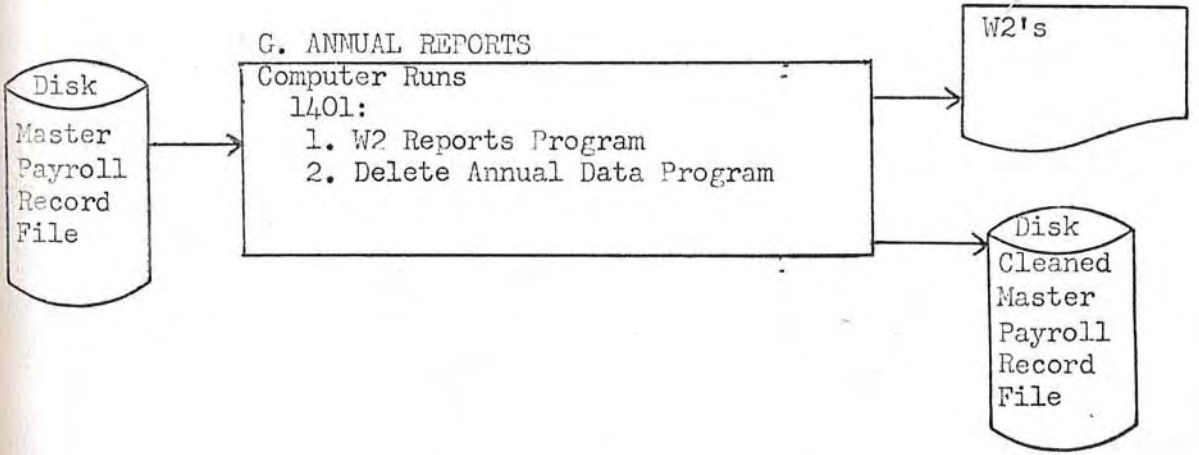
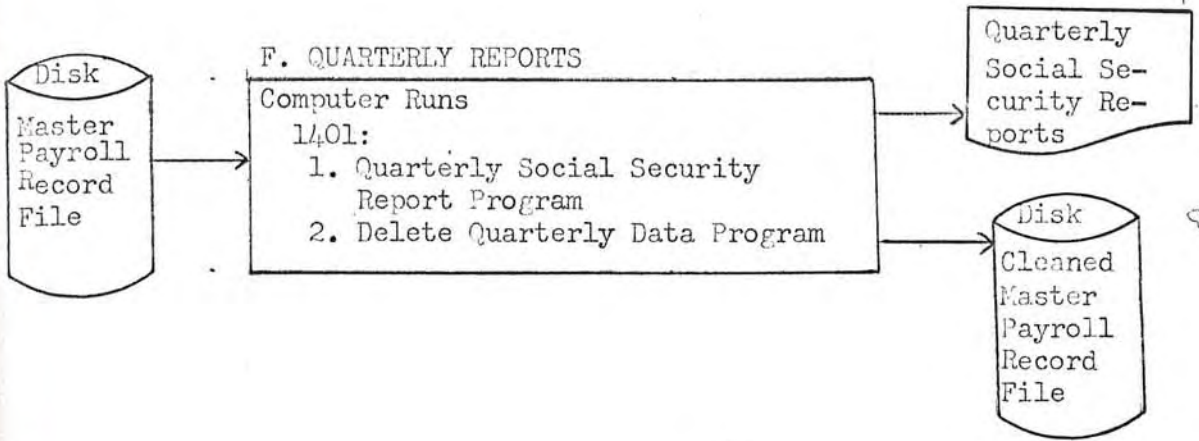
PAYROLL OPERATIONS CONTINUED

(All new programs)



PAYROLL OPERATIONS CONTINUED

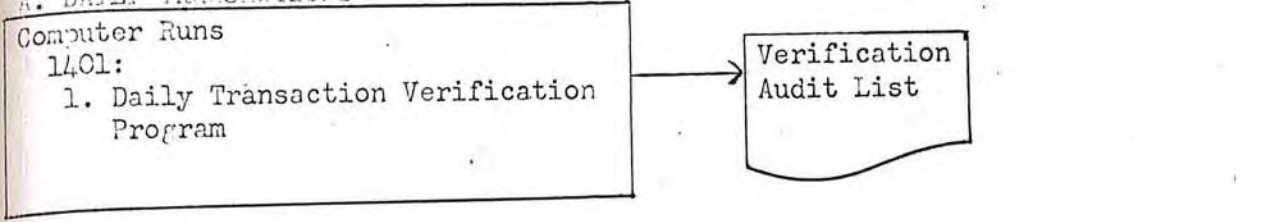
(All new programs)



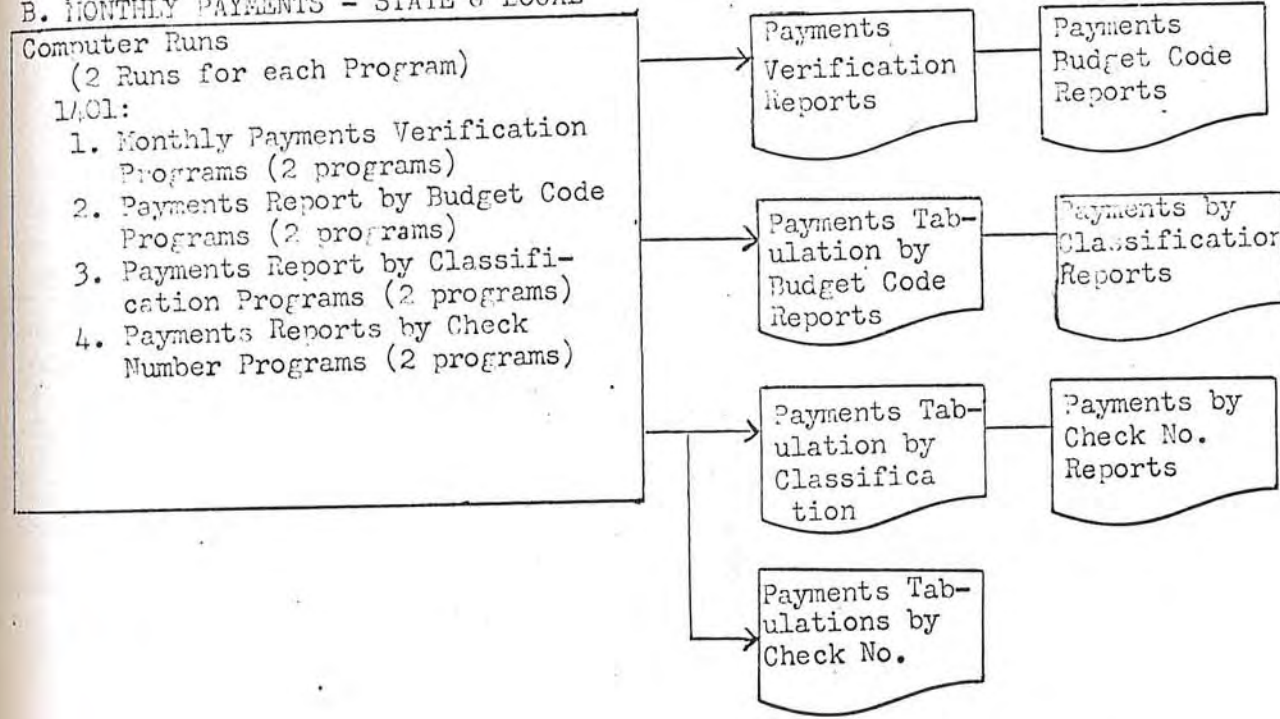
BUDGET OPERATIONS

(All new programs)

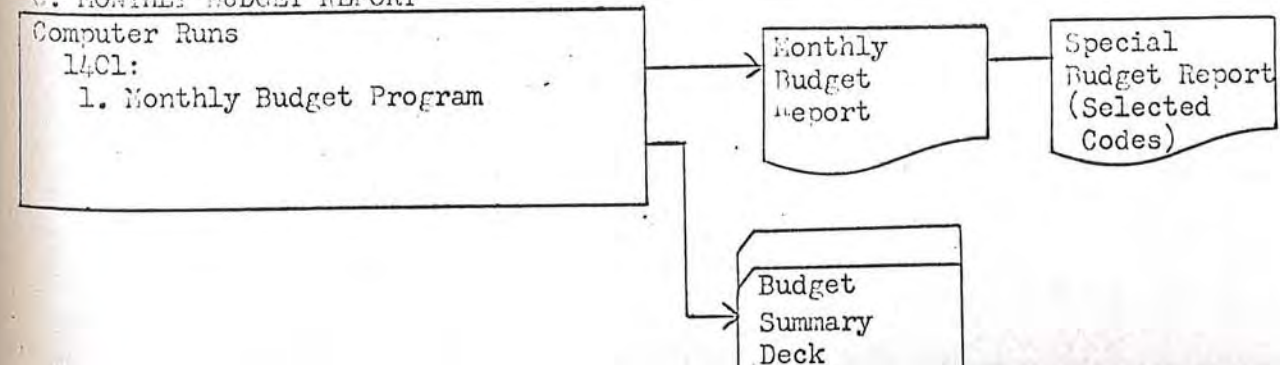
A. DAILY TRANSACTIONS



B. MONTHLY PAYMENTS - STATE & LOCAL

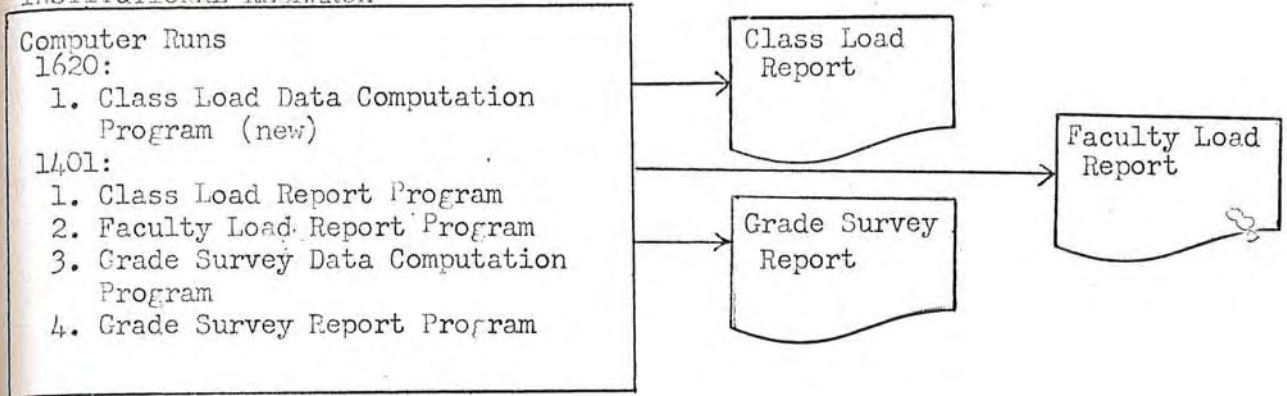


C. MONTHLY BUDGET REPORT

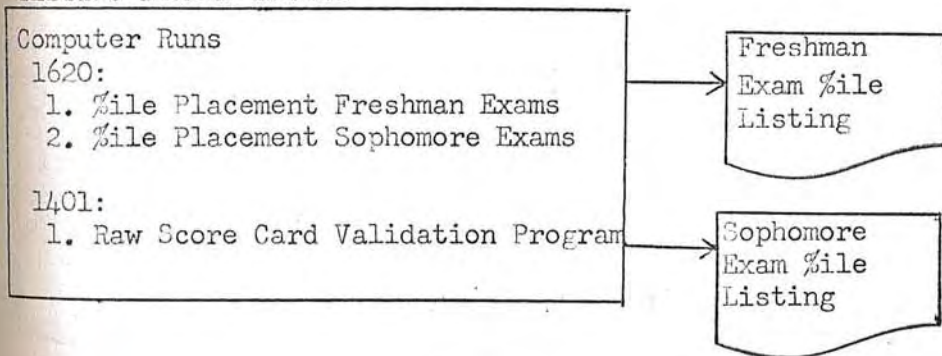


INSTITUTIONAL RESEARCH AND TESTING OPERATIONS

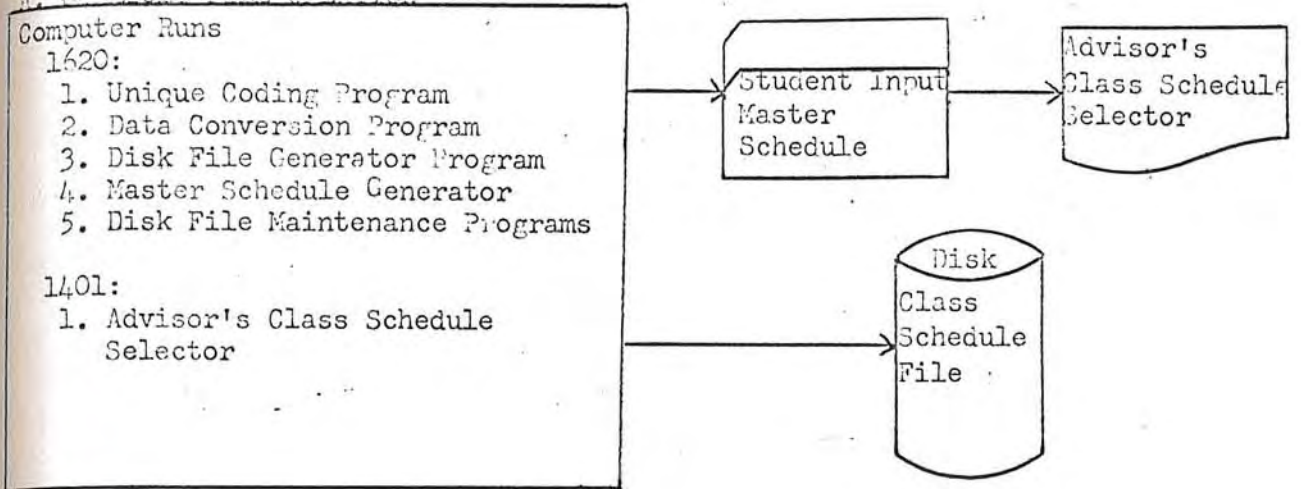
INSTITUTIONAL RESEARCH



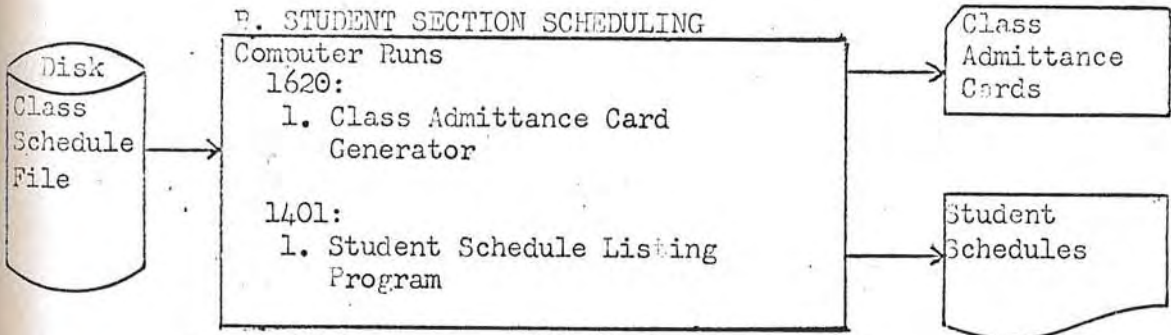
TESTING BUREAU SYSTEM



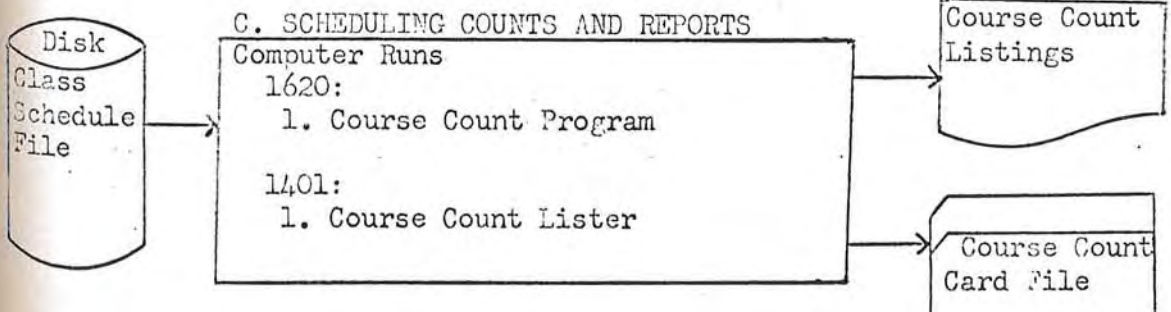
A. SCHEDULE FILE CREATION

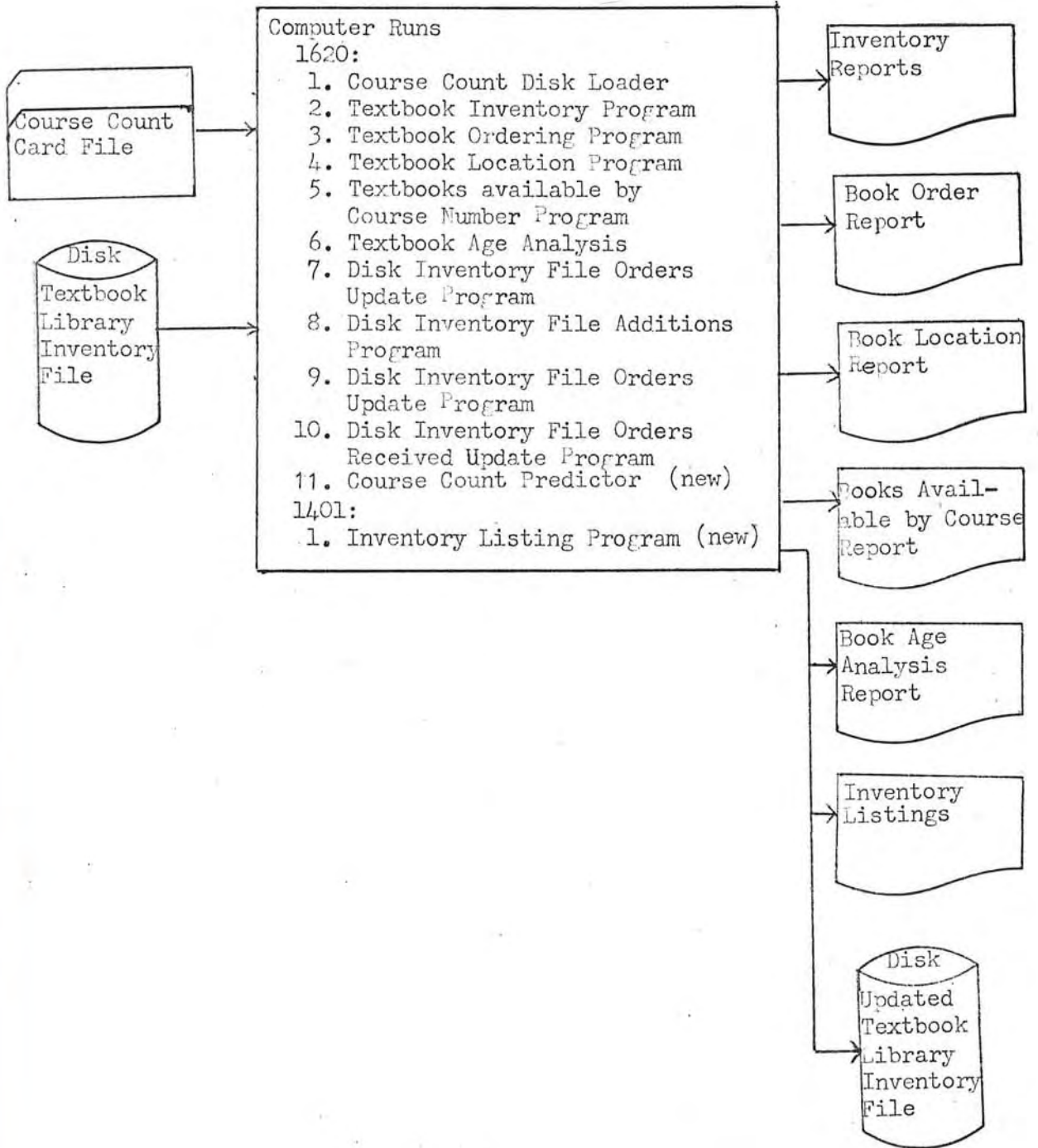


B. STUDENT SECTION SCHEDULING



C. SCHEDULING COUNTS AND REPORTS

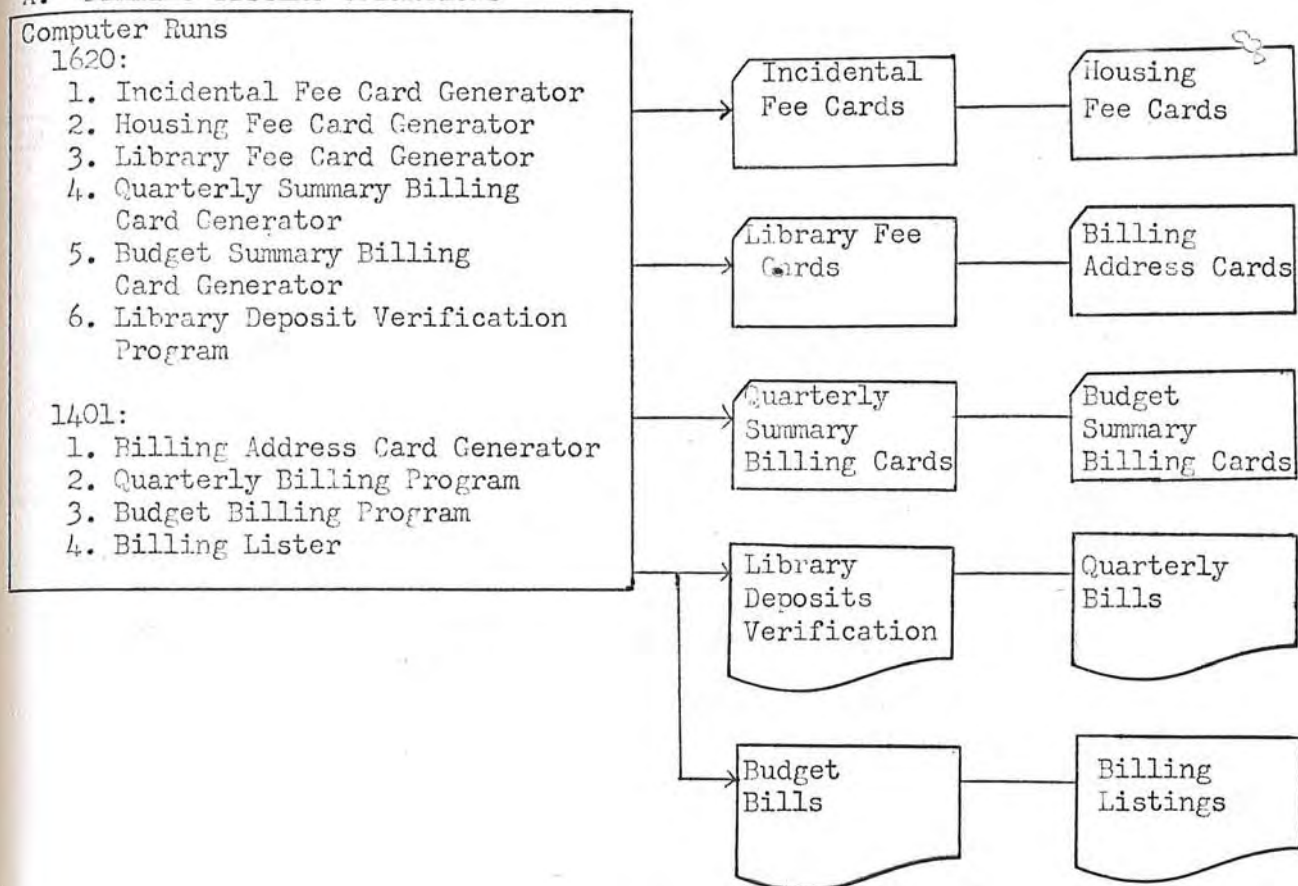




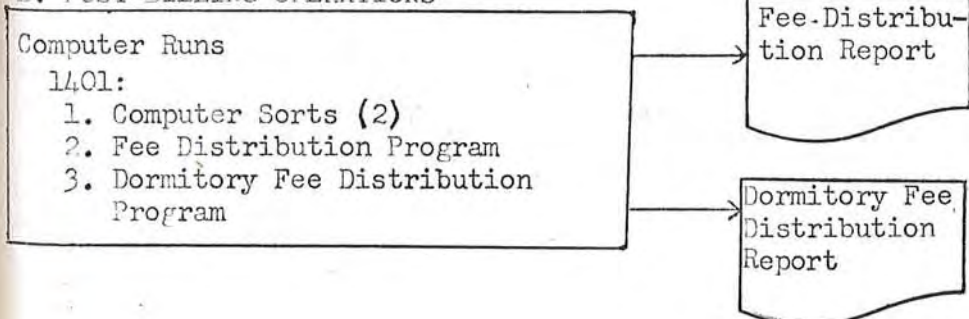
REVENUE OPERATIONS IN DATA PROCESSING CENTER

(All new programs)

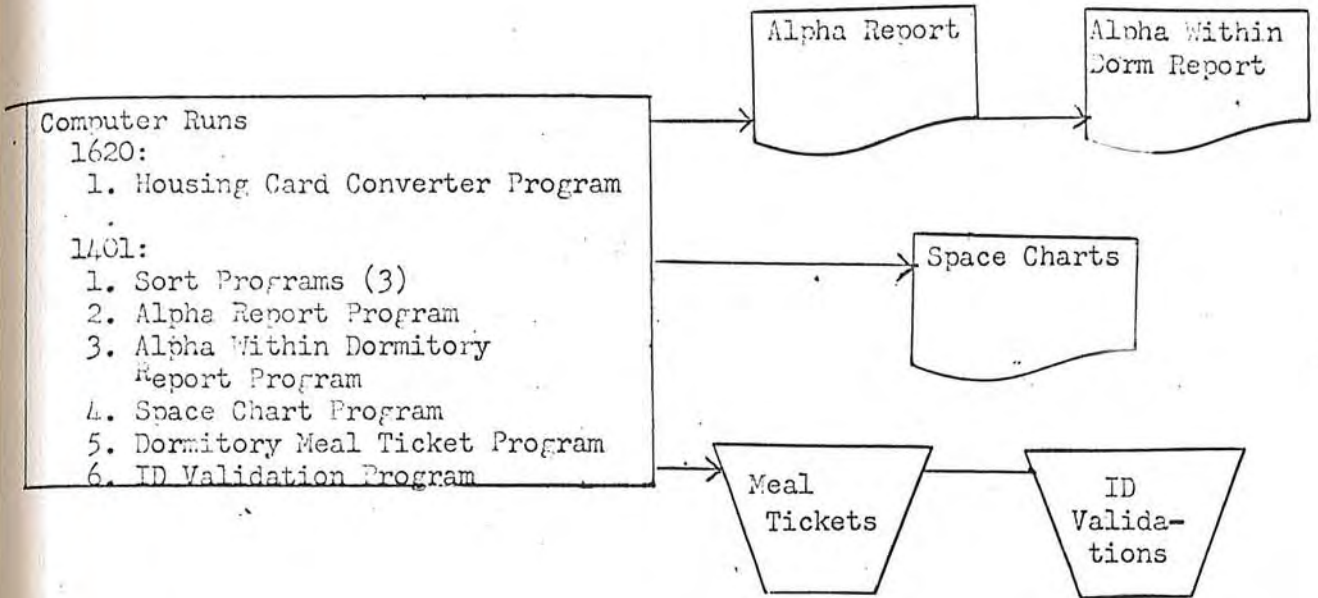
A. BILLING SYSTEMS OPERATIONS



B. POST-BILLING OPERATIONS

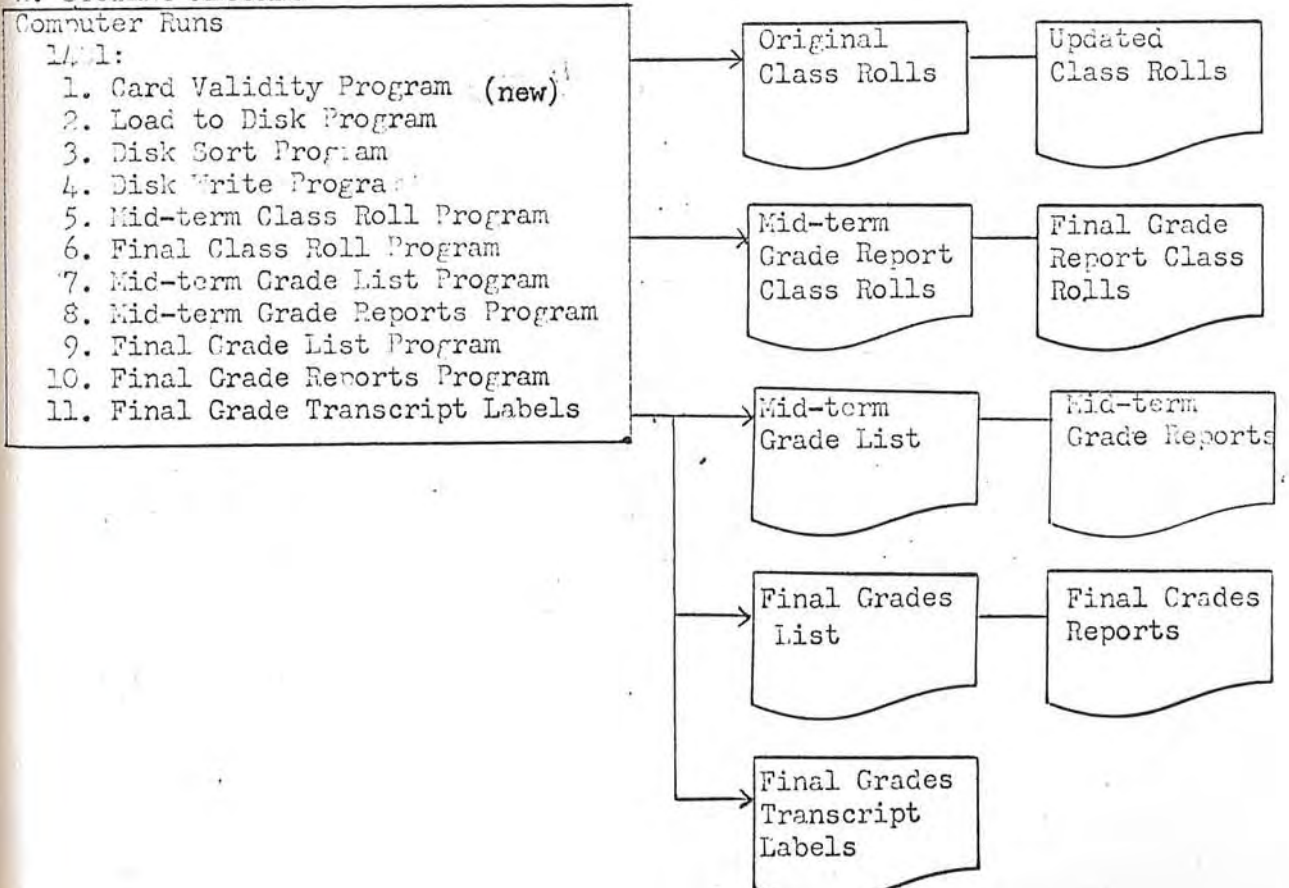


(All new programs)



STUDENT RECORDS AND PERSONNEL REPORTS

A. STUDENT RECORDS



STUDENT RECORDS AND PERSONNEL REPORTS CONTINUED

B. STUDENT PERSONNEL REPORTS

Computer Runs

1620:

1. Student Load Analysis
2. Student Statistical Reports

1401:

1. County Classification Report A
2. County Classification Report B
3. Non-Resident Report A
4. Non-Resident Report B
5. High School Report A
6. High School Report B
7. Degree Report A
8. Degree Report B
9. Major Report A
10. Major Report B
11. Housing Report A
12. Housing Report B
13. Grade Point Average Report Program (6 Runs) (new)
14. Load to Disk Program
15. Disk Sort Program
16. Disk Write Program
17. Home Address List Program
18. Address Label Program
19. Student Directory Program (new)
20. Student by Course Report Program
21. Religious Preference Report

Student
Load
AnalysisStudent
Statistical
ReportA.
B County
Classification
ReportA
B Non-
Resident
ReportA
B High
School
ReportA
B Degree
ReportA
B Major
ReportA
B Housing
ReportGrade Point
Average
Reports (6)Student
DirectoryHome
Address
ListingsAddress
LabelsStudent by
Course
ReportReligious
Preference
Report

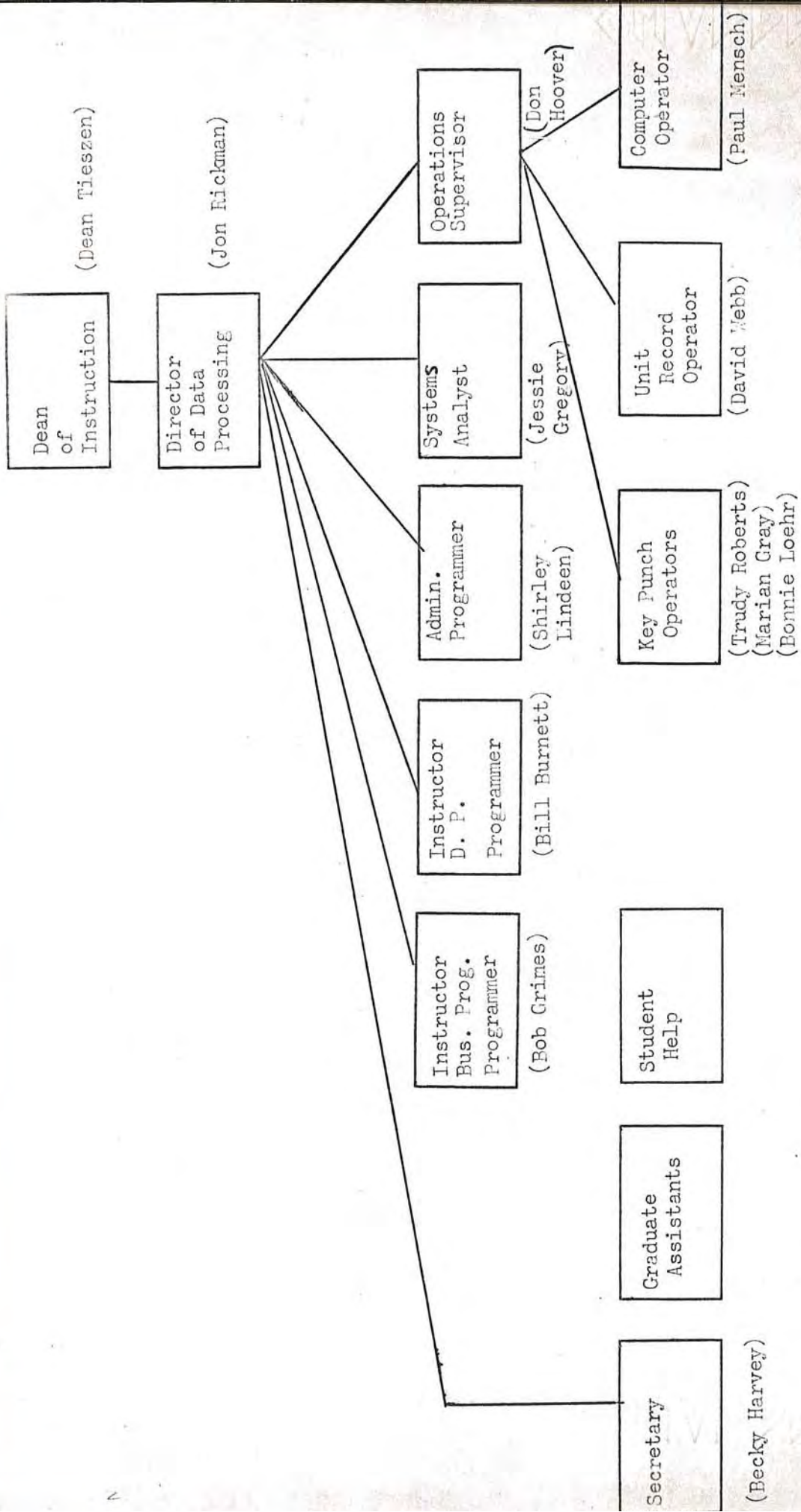
Part III. Data Processing Staff

Growth in Data Processing is many times measured by equipment changes and not by the more important growth of individuals. Personnel in the center have grown from electro-mechanical unit record equipment to computer card systems and on to computer systems with disk files. This not only means a change from instructing machines by board wiring to computer programming but it demands advanced techniques in documentation so that the many individuals concerned with a system can better understand and execute the necessary procedures.

Inherent to complex operations, personnel must specialize in their skills. We have an organization structure in the Data Processing Center which reflects this. We have instructional staff, key punch operators, equipment operators, programmers, and system analysis and design personnel.

It is realized that further specialization must take place as growth occurs. With the many small systems in operation, it has been necessary to assign responsibility for systems to individuals thereby still requiring them to do some designing, programming, and even machine operating rather than assigning people exclusively to their specialty. It is also evident that growth will demand new specialized personnel in file and program library operations, and in computer software maintenance. (Changing and up-dating language translators, sorting, merging, and other utility software.)

Greater teaching loads with new academic programs will also bring about greater specialization.



Full time instructors in Mathematics who teach computer oriented courses are not shown.

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