

Data Processing Systems Analysis & Design

second edition

Robert J. Condon



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Robert J. Condon
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Preface

This text is designed specifically for the college student who has had an introductory course in data processing or computer technology and is now taking his first course in systems analysis. In it we discuss how a company organizes itself to use data processing equipment more effectively, and teach the use of the various tools employed by the systems analyst in the creation of better systems. The text, which is divided into four parts, is designed to teach the student the nature of the systems development cycle and how to use systems tools in each phase of the cycle.

Part 1 explains the use of data processing systems in today's business environment and defines the roles played by people in an organization in planning, designing, testing, and implementing a new system. It also describes hardware and software currently used.

Part 2 introduces elementary systems techniques and tools. The use of charting, operations research, and forms design are explained fundamentally. At this stage the reader should have a working knowledge of the basic systems tools, and understand their practical use in subsequent parts.

The third part details the key steps in the systems development cycle: feasibility study, systems design, and testing and conversion. Related techniques are interspersed so that the student may learn the technique at the particular stage of systems development when it is used most frequently. Data gathering is discussed with feasibility studies; systems documentation is associated with systems design and with testing and conversion; documentation and systems controls also are covered.

The final part deals with some of the practical applications and considerations in systems analysis: systems management, project planning, and management information systems.

Effective computer systems require an understanding of the interrelationship of each phase of systems development and a mastery of the systems analyst's tools. More importantly, they require a realization that systems are carried out by people—and understanding people, their working habits and their needs is the greatest asset a systems analyst can possess.

Robert J. Condon

Contents

PREFACE, xii

Part I

Systems Analysis in Business

Chapter 1	SYSTEMS DEVELOPMENT, 5 What is a System? 5 Development of Systems, 7 Steps in the Systems Development Cycle, 14 Roles in Systems Development, 20
Chapter 2	HARDWARE AND SOFTWARE, 29 Computer Systems, 29 Basic Storage Media, 34 Updating Files, 41 Input/Output Devices, 45 Keying Devices, 45 Operating Systems, 50 User Programs, 51 Vendor Written Programs, 51 Scanning Devices, 51 Output Devices, 53
Chapter 3	SYSTEMS APPLICATIONS, 60 Business Systems, 60 Accounts Receivable Systems, 61 Accounts Receivable—A Manual System, 63 Accounts Payable Systems, 66 Payroll Systems, 66 Inventory Systems, 67 General Accounting Systems, 69 Unique Systems Requirements, 70
Chapter 4	DIRECT ACCESS AND TELEPROCESSING METHODS, 73 Direct Access System, 73 Direct Access Hardware, 75 File Organization, 80 Teleprocessing, 83 Real-Time Systems, 85

Part II
Systems Techniques

Chapter 5	BASIC TOOLS IN SYSTEMS ANALYSIS: I, 95 The Basic Tools, 95 Systems Flowchart, 96 The Programming Flowchart, 108 Decision Tables, 113 Gantt Charting, 119 Charts and Graphs, 120
Chapter 6	BASIC TOOLS IN SYSTEMS ANALYSIS: II, 123 Operations Research, 123 Linear Programming, 124 PERT Charting, 132
Chapter 7	DATA GATHERING AND INTERVIEWING, 148 Sources of Data, 149 Process of Data Gathering, 151
Chapter 8	FORMS DESIGN, 164 Designing Input Forms, 165 Using Special Forms, 169 Designing Output Documents, 171 Multiple-Part Output Forms, 174 Designing a Turn-around Document, 174 Designing Punched Cards, 179 Some Elementary Techniques in Forms Design, 180 Forms Control, 182
Chapter 9	PROBLEM DEFINITION AND SOLUTION, 188 The Fire Fighting Environment, 188 Problem Definition, 189 Types of Systems Solutions, 190 Organizational Solutions, 190 People Solutions, 191 Hardware Solutions, 192 Software Solutions, 193 Procedural Solutions, 193 Forms Solutions, 194 Combined Solutions, 194

Part III Developing the System

- Chapter 10 **THE FEASIBILITY STUDY, 203**
 Selecting Areas for Systems Studies, 203
 Types of Feasibility Studies, 205
 Initiating a Feasibility Study, 206
 Conducting the Feasibility Study, 208
 Feasibility Report, 210
 Making Presentations, 212
- Chapter 11 **SYSTEMS DESIGN, 219**
 Initiating Systems Design, 219
 Designing the Overall Process, 221
 Segmenting the System into Workable Modules, 222
 Organizing the Data Base, 222
 Specifying the Programs to Achieve the Systems
 Objectives, 223
 Designing Input/Output Documents, 223
 Designing Controls for the System, 224
 Documenting the System, 224
 Designing the Master File, 225
 Systems Reviews, 227
 Problems in File Design, 227
- Chapter 12 **SYSTEMS TESTING AND CONVERSION, 231**
 Testing a System, 233
 Program Testing, 234
 String Testing, 234
 Systems Testing, 234
 Scope of a Conversion, 235
 Preliminary Conversion Plan, 237
 Post Conversion Tasks, 241
- Chapter 13 **DOCUMENTATION IN DATA PROCESSING, 244**
 Program Documentation, 245
 Operations Documentation, 249
 User Documentation, 252
 Management Documentation, 253
 Systems Documentation, 253
 Project Documentation, 254

- Chapter 14 **DATA CONTROL METHODS, 257**
Types of Control, 257
Data Control, 258
Group Control Totals, 264
Controls in On-Line Systems, 266
Programming Controls, 266
File Security, 267
Processing Control, 270
Auditing Controls, 270

Part IV

Management Aspects of Data Processing

- Chapter 15 **PROJECT PLANNING AND CONTROL, 284**
Organizing a Project, 284
Scheduling the Events in a Project, 285
Evaluating Progress, 286
Establishing Standards, 287
Project Modifications, 287
Completing the Project, 288

- Chapter 16 **MANAGING THE SYSTEMS AND DATA
PROCESSING AREAS, 291**
Managing the Systems Area, 291
Policies in the Systems Area, 292
Data Processing Area, 293
Data Processing Operations, 293
Data Center Operations, 295
Data Input, 296
Data Center Manager, 297
Budgeting the Resources of the Data Processing
Area, 298
Data Processing and the User Areas, 299
Training Responsibilities of the Systems
Department, 299
Training the Data Processing
Professional, 301
Allocation of Space, 305

- Chapter 17 **MANAGEMENT INFORMATION SYSTEMS, 309**
Management Information Systems, 309
Management's Role, 310
Management's Role in Management
Information Systems, 310

Why Management Information Systems Fail, 311
Phases in Developing a Management Information System, 314
Measuring the Performance of Management Information Systems, 317

INDEX, 325

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I

Systems Analysis in Business

chapter 1

Systems Development

Objectives

This chapter outlines the ways in which the term “system” is used today in business applications. Since businesses constantly change, the steps a business takes to install a new system to meet its changing requirements are discussed.

From the time that a request for a systems change is made until the time the new system is in operation, an organization must plan, design, test, control, and implement the proposed system.

For a system to work properly, management must set goals and provide the means for achieving these goals. The data processing department must design and program the system, and then test it. The operations department must run the new system when it is ready, and constantly check to see that it is performing properly.

WHAT IS A SYSTEM?

Many people freely use the term “system” with no precise definition in mind. “What we need around here is a new system” or “This system isn’t really working” are statements used often with little understanding of effective alternatives. The “system” is blamed for a wide range of business

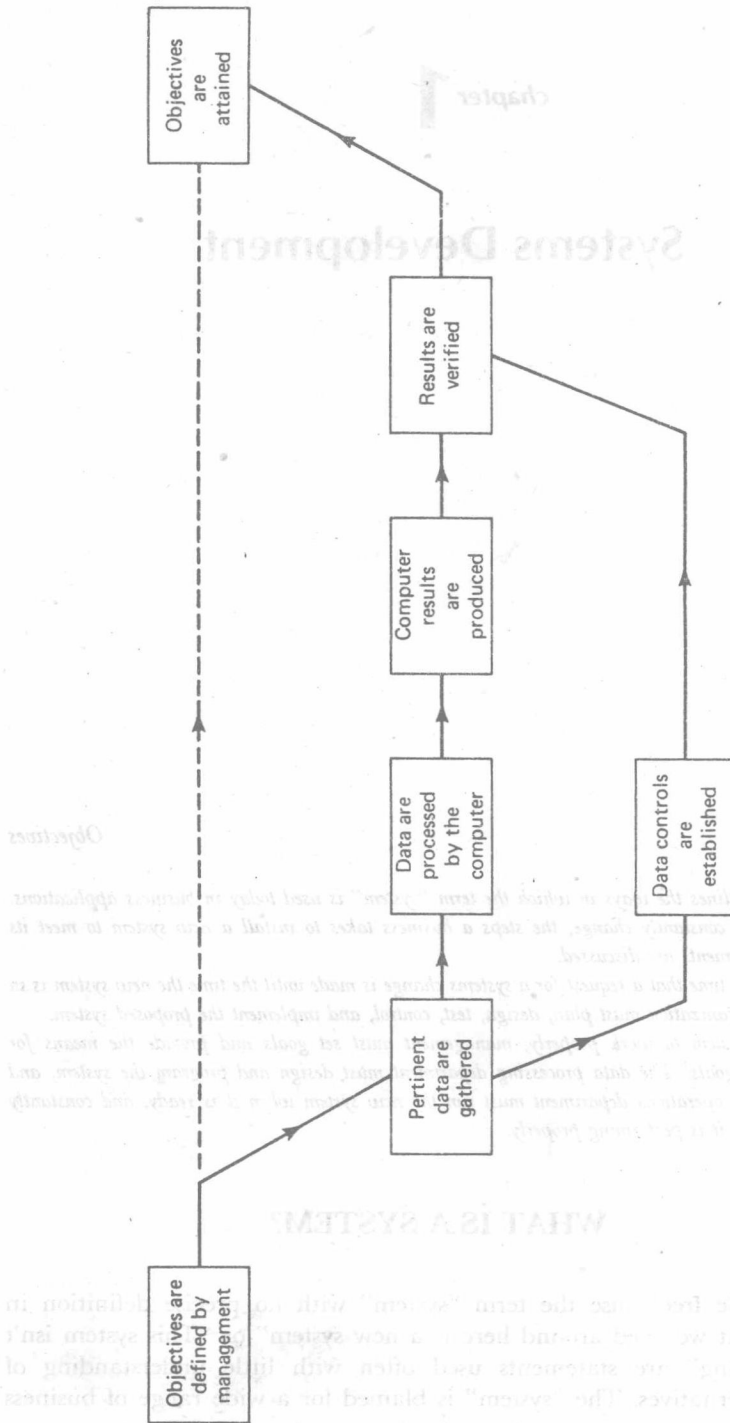


Fig. 1-1. Components of a computer-based system.

problems, and, as will be discussed, a firm's effectiveness is largely dependent upon its data processing systems.

A system may be defined informally as a set of procedures designed to accomplish a predetermined objective. Although the term "systems" is used in many other fields, we are concerned only with business systems.

A business system (Fig. 1-1) usually has the following characteristics:

1. Systems objectives are defined by corporate management.
2. The system is composed of procedural steps.
3. The system uses data.
4. The system uses equipment.
5. The system produces information.
6. The system is controlled to ensure accuracy of information.

DEVELOPMENT OF SYSTEMS

Although most complex systems now use computers to achieve objectives, many developed from manual and accounting machine systems. Most companies once used, and many small companies still do use, manual systems for accounting records. Such systems are appropriate where the volume of transactions is relatively low. Larger companies have gradually converted their manual systems to computerized systems. The movement to computers began soon after World War II when business became more aware of the potential of the punched card for solving paper-work problems (Fig. 1-2).



Fig. 1-2. Originally all accounting data was processed manually by bookkeepers.
(Courtesy of NCR)

Equipment for processing punched card data, which had existed since the end of the nineteenth century, increased in popularity after World War II. Punched cards could be sorted, counted, merged with other files of cards, and the contents added and printed. Punched card processing equipment continues to be used in small installations (Fig. 1-3).

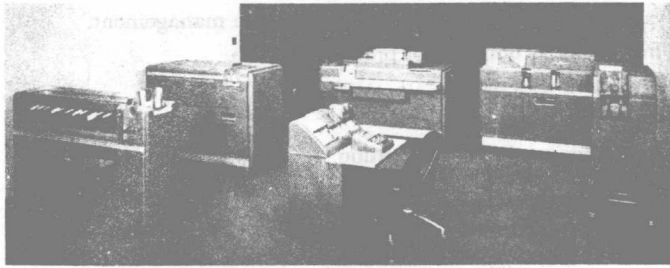


Fig. 1-3. A configuration of IBM punched card "unit record" equipment popular in the 1950s (Courtesy of IBM)

Bookkeeping methods were automated in the period following World War II. National Cash Register (NCR) and the Burroughs Corporation developed posting machines that added columns and appropriately displayed data (Fig. 1-4).

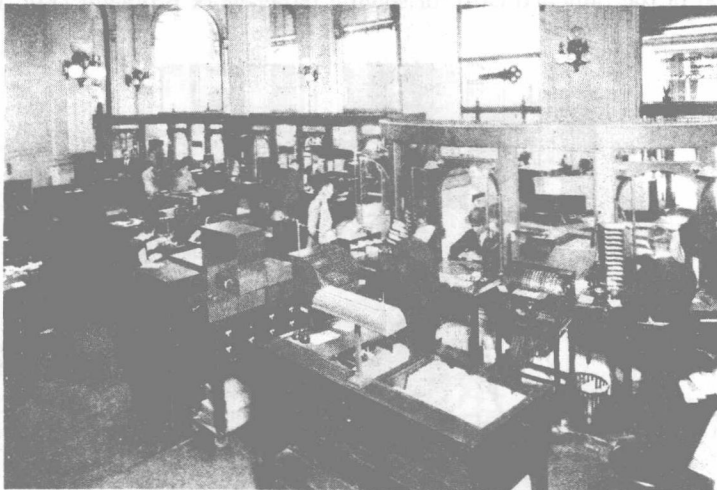


Fig. 1-4. Bank tellers processed transactions on bookkeeping machines in 1929. (Courtesy of NCR)