AUTOMATIC SELECTION OF DIGITAL ELECTRONIC COMPUTERS (ASDEC)

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Department of the Army Project No. 503-06-002
BALLISTIC RESEARCH LABORATORIES
ABERDEEN PROVING GROUND, MARYLAND
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Printed in U.S.A. Available from the Office of Technical Services, Department of Commerce, Washington 25, D. C. Price $0.75. Publication Number 181422.
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ABSTRACT

Engineering and programming condensed descriptions of 327 electronic digital computing and data processing systems in the United States are given in a set of comparative charts, automatically prepared from a deck of punched cards. A method for automatic selection and evaluation of computing and data processing systems is described.
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ASDEC is a first attempt at proving the feasibility of automating the process of comparative evaluation of electronic digital computing systems. A quantitative and qualitative engineering and programming description of each of 327 computing and data processing systems, that are, or ever have been, operative in the United States, has been condensed and squeezed on two 80-column punched cards. The data have been taken from three computer survey reports prepared by manufacturers for those systems which have evolved since the completion of the third survey. The computer descriptions are prepared in accordance with the following outline:

Official Name of Computer
Manufacturer's Name
Manufacturer's Address
Application
Quantity of Systems Produced
Vintage
Cost of Typical System
Rental Rate of Typical System
Programming Languages
Word Length
Character Type
Number of Index Registers
Add Time (Including Access)
Multiply Time (Including Access)
Divide Time (Including Access)
Add Time (Excluding Access)
Multiply Time (Excluding Access)
Divide Time (Excluding Access)
High Speed Storage Access Time
High Speed Storage Cycle Time
High Speed Storage Capacity - Words
High Speed Storage Media
High Speed Storage Capacity - Binary Equivalent
High Speed Storage Figure of Merit
Bulk Storage Capacity
Bulk Storage Medium
Input-Output Devices
Magnetic Tape Transfer Rate
Quantity of Magnetic Tape Stations
Magnetic Tape Width
Quantity of Magnetic Tape Tracks/Tape
Arithmetic Point
Instructions per Word
Addresses per Instruction
Arithmetic Type
Quantity of Vacuum Tubes
Quantity of Transistors
Quantity of Crystal Diodes
Power Requirement of Typical System
Size of Typical System
Weight of Typical System

The comparative table shown in Chapter IV is a print-out of the contents of the 654 cards. The cards can be handled with punch card machinery for sorting, collating, searching or printing on any set of criteria. The contents of the cards can be stored in a computing system and a computer program written to permit evaluation of systems in accordance with a given set of criteria. One such approach might be, for example, to (1) translate the computer application requirement into a set of desired computer programming and engineering characteristics, stating numerical values or ranges of values, and (2) weight each of the characteristics in accordance with their relative importance. These two steps, of course, are accomplished independent of any given system. Then, (3) eliminate all obviously non-competitive systems, such as those developed by government agencies or universities, on the assumption that they are not for sale, if acquisition of a system is intended, (4) write a computer program which will examine each characteristic, assign the weights or fractions thereof, in accordance with a prescribed rule, and accumulate a score for each system, (5) print out, in sequence according to score, the names and the characteristics of all systems and finally, (6) evaluate the relative "scholastic" achievement of each system, as a measure of its ability to cope with the problems of the original application. The only step required to keep ASDEC up to date is to punch a pair of cards for each computing system with the necessary descriptive information. One person in about thirty minutes can select, sort and code the information, and a couple of minutes are required to punch the cards. All further handling is automatic.

II. SUMMARY OF ASDEC SYSTEM COLUMNARHEADINGS

<table>
<thead>
<tr>
<th>Column</th>
<th>Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Name of Computer</td>
</tr>
<tr>
<td>B</td>
<td>Name of Manufacturer</td>
</tr>
<tr>
<td>C</td>
<td>Address of Manufacturer</td>
</tr>
<tr>
<td>D</td>
<td>Nature of Manufacturer, Intended Primary Application, and Quantity of Systems Produced</td>
</tr>
</tbody>
</table>

1. Manufacturer

One symbol expresses the nature of the manufacturer

- I - Industry
- G - Government
- U - University

2. Primary Application

One symbol expresses the intended application

<table>
<thead>
<tr>
<th>Special Purpose</th>
<th>General Purpose</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C</td>
<td>Business Only</td>
</tr>
<tr>
<td>2</td>
<td>S</td>
<td>Scientific Only</td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td>Business and Scientific</td>
</tr>
<tr>
<td>4</td>
<td>T</td>
<td>Scientific, Business, Real Time Control</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>Military Real Time Control</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>Military Scientific</td>
</tr>
<tr>
<td>8</td>
<td>L</td>
<td>Military Business</td>
</tr>
<tr>
<td>9</td>
<td>A</td>
<td>Digital Differential Analyzer</td>
</tr>
</tbody>
</table>

3. Quantity of Systems Produced

One symbol expresses the approximate quantity of systems produced.

- 1 - One
- 2 - Several
- 3 - Dozens
- 4 - Hundreds
- 5 - Thousands

E Year of Development and/or Initial Operation

Two digits express the vintage.

F Cost and Monthly Rental

Two significant digits plus exponent express the dollar amounts.

G Programming Languages

Four symbols express the programming languages utilized.

- A ALGOL
- B Burroughs Algebraic Compiler
- C COBOL
- D HELP
- E RCA Narrator
- F FORTRAN
- G GE Commercial Compiler
- J ADD
- K IBM 704 Simulator
- L Algebraic Compiler
- M MORDIC Assembly Program
- N NEAT
- O FORAST
- P FORTRANSIT
- Q SOAP
- R RAMAC
- S SPAR
- T SAP
- U SHARS
- V MADCAP
- W X-6
- Y X-6
- Z 650 Simulator

No known common programming language, but uses a language of its own.
Column Entry

H Word Length and Digit Type
1. Word Length
   Two significant digits express the binary equivalent length and type of digit.
2. Digit Type
   One symbol expresses the type of characters in the word.
   - A - Alphanumeric Characters
   - B - Binary Digits
   - D - Decimal Digits
   - OPT - Various binary equivalent lengths and types are available

I Number of Index Registers
Two significant digits express the number of index registers.
   - 99 Indicates 99 or more
   - HS Indicates that the entire high speed storage is indexable

J Operation Times, Including Access Time
Two significant digits plus exponent express the operation time in nanoseconds.
   1. Add time
   2. Multiply time
   3. Divide time

K Operation Times, Excluding Access Time
Two significant digits plus exponent express the operation time in nanoseconds.
   1. Add time
   2. Multiply time
   3. Divide time

L High Speed Storage Access Time and Cycle Time
1. Access Time
   Two significant digits plus exponent express the storage access time.
2. Cycle Time
   Two significant digits plus exponent express the storage cycle time.

M High Speed Storage Capacity, Medium, and Binary Equivalent Capacity
1. Capacity
   Three significant digits plus exponent express the number of words.
2. Medium
   One symbol specifies the storage medium.
   - B - Electromagnetic
   - C - Core
   - E - Electrostatic
   - H - Acoustic HG Delay Line
   - M - Magnetostrictive Delay Line
   - T - Thin Film
   - V - Vacuum Tube
   - Q - Acoustic Quartz Delay Line
   - R - Mercury Delay Line
   - S - Register
3. Binary Equivalent Capacity
   Three significant digits plus exponent express the total number of binary digits.

N High Speed Storage Figure of Merit
10 \log_{10} \text{Total Binary Digit Capacity/Access Time in Seconds}
Three significant digits express the figure of merit.
Column Entry

0 Capacity of Bulk Storage and Medium

1. Capacity  
Two significant digits plus exponent express the total number of binary digits.

2. Medium  
One symbol expresses the type of storage medium.

- G Disc
- J Drum
- K Magnetic Tape
- M Disc and Drum
- N Disc and Tape
- T Magnetic Ledger Cards
- P Potentiometers
- R Disc, Drum and Tape
- + Several Others
- O Drum and Tape


P Input-Output Devices

Five symbols express the types of input-output devices.

1 Card Reader and Punch
2 Magnetic Tape
3 Paper Tape
4 Printer
5 Cathode Ray Tube
6 Plotter
7 Typewriter and Teletype
8 Data Link
9 Analog to Digital and vice versa
D Microfilm
G Optical Scanner
P Potentiometers
T Magnetic Ledger Cards
+ Several Others


Q Characteristics of Magnetic Tape

1. Speed  
Two significant digits plus exponent express the alphanumeric characters per second transfer rate.

2. Quantity of Stations  
Two significant digits express the number of tape stations that may be connected.

- 99 implies 99 or more  
- AA implies 256
- AB implies 102

3. Tape Width  
One significant digit expresses the number of eighths of an inch of tape width.

- 8 implies one inch or wider
- A implies 3 inches
- B implies 2 inches

4. Number of Tracks  
One significant digit or symbol expresses the number of tracks on tape.

- A implies 16
- B implies 10
- C implies 12
- D implies 31
- E implies 11
- F implies 22
- G implies 42
- H implies 13


R Arithmetic Point, Instructions per Word, Addresses per Instruction, and Type of Digital System

1. Arithmetic Point  
One symbol expresses the nature of the arithmetic point.

- 0 Fixed Point
- 1 Floating Point
- B Fixed and Floating Point
- R Ring Adder

2. Quantity of Instructions per Word  
One digit expresses the number of instructions per word.

- E 1/2
- V Variable
### Column Entry

#### 3. Quantity of Addresses per Instruction

One digit expresses the number of addresses in each instruction.

<table>
<thead>
<tr>
<th>A</th>
<th>1</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>1+3</td>
<td>T 1 or 2</td>
</tr>
</tbody>
</table>

#### 4. Type of Digital System

One digit expresses the type of digital system.

| 0 | Asynchronous, Sequential, Serial |
| 1 | Asynchronous, Sequential, Parallel |
| 2 | Asynchronous, Concurrent, Serial |
| 3 | Asynchronous, Concurrent, Parallel |
| 4 | Synchronous, Sequential, Serial |
| 5 | Synchronous, Sequential, Parallel |
| 6 | Synchronous, Concurrent, Serial |
| 7 | Synchronous, Concurrent, Parallel |

#### 5 Component - Tubes, Transistors and Diodes

1. **Tubes**
   
   One significant digit plus exponent expresses the number of tubes.

2. **Transistors**
   
   One significant digit plus exponent expresses the number of transistors.

3. **Diodes**
   
   One significant digit plus exponent expresses the number of diodes.

#### T Power, Space and Weight of Typical System

1. **Power**
   
   One significant digit plus exponent expresses the power in watts.

2. **Space**
   
   One significant digit plus exponent expresses the floor area in square feet.

3. **Weight**
   
   One significant digit plus exponent expresses the weight in pounds.
III. DETAILED DISCUSSION OF COLUMNAR HEADINGS

A. Name of Computing System

The first column, labelled A, lists the 327 different electronic digital computing and data processing systems that were or are operational in the United States. The name used for the computer is the proper name assigned to the system by the maker. A more detailed and cross-referenced "Thesaurus of the Names of Electronic Digital Computers and Data Processors" is given in BRL Technical Note No. 1472 by M. Weik and V. J. Confer. Care must be exercised in dealing with computer names, since many machines have appeared under several designations or aliases.

B. Name of Manufacturer

The second column, labelled B, in the accompanying master table of electronic digital computing systems, shows that there are 89 known and listed manufacturers or developers of electronic digital computing and data processing systems in the United States. These manufacturers are industrial, governmental, educational and research organizations.

C. Address of Manufacturer

This column is self-explanatory.

D. Nature of Manufacturer, Intended Primary Application, and Quantity of Systems Produced

1. Nature of Manufacturer

It sometimes becomes practical to seek and select only those systems which are manufactured by an industrial manufacturer, on the basis that one can thus readily obtain replicas of the system, perhaps as an off-the-shelf item. Occasionally it is interesting to discover all the university or all the government developed systems. A search for a system of particular characteristics can be considerably narrowed by use of this column.

2. Primary Intended Application

This column attempts to classify systems into various categories of application. We are reminded that these are not the only categories, and we must also realize that a machine, although intended for a specific use, may also have many other uses. In our case, a numeral indicates a special purpose application, whereas an alphabetic character indicates a general purpose application. Thus, for example, a 2 implies that the system was designed for a special purpose scientific application, whereas an S indicates the system was intended as a general purpose system to perform scientific calculations. Here again, if one is interested in selection of specific types, one can again restrict the area of consideration through the use of this column.

3. Quantity of Systems Produced

This single digit signifies the approximate quantity of each system that one may expect to find in existence. Quantity, in terms of one, several, dozens, hundreds, and thousands, is not very precise, however, in view of the fact that at least one or two leading manufacturers consider the information to be proprietary, and since the quantity changes daily as production schedules are met, a more precise figure cannot be obtained.

E. Year of Development and/or Initial Operation

Sometimes it becomes difficult to "pin" a year or vintage label on a computing system. The year of concept, development, prototype, advance engineering model, pilot model, internal operation, customer installation and customer acceptance can all be different. The year used in the table is a kind of "effective" or "launching" year, somewhere midway between initial concept and final customer acceptance of a line model.

F. Cost and Monthly Rental

A pair of numbers, each consisting of two significant digits and an exponent, specify the approximate cost of a typical configuration of equipment and the monthly rental rate for one shift of operation. A "typical system" implies one with a nominal amount of balanced storage, two or three input-output devices, perhaps two to four tape stations, and of course, the main frame and necessary power units. However, air conditioners are not included unless they are an integral part of the computing system. The figures in the charts are given in dollars. These are subject to change. It should also be noted that some figures signify cost of completion, for example the U. S. Army's not-for-sale BRLESC system, while other figures indicate the current market selling price.
G. Programming Languages

This column signifies the kind of programming languages, including compilers and symbolic languages that are common to two or more systems. The Z is used to indicate that there is a programming language available or in use with the system in addition to its own machine language, which of necessity, every machine must have. The blank indicates that there are no known programming languages, other than the machine language, in use with the system. Perhaps the greatest significance lies in the availability of COBOL, APL/360, and FORTRAN.

H. Word Length and Digit Type

It becomes desirable, at times, to identify those systems which have a word length lying within a given range. To suit this purpose, all word lengths are converted to equivalent binary digits. The conversion factors are \( 3.4 \) for decimal to binary and \( 5 \) for alphanumeric to binary. Thus, a 10 decimal digit word length is equivalent to 34 binary digits, and 9 alphanumeric characters is equivalent to 45 binary digits. In order to describe the nature of the characters comprising the word, they are identified by the given code. Thus, an entry like 34D implies a 10 decimal digit word length. In some instances the word length is optional at time of purchase, thereafter fixed at some selected value. These are defined as variable word length systems. If the word length is never fixed, that is to say, it is operationally variable and thus can be varied according to the will of the programmer, we have concluded that the effective word length is but one character. For an alphanumeric system, the word length thus becomes 06A, or 6 binary digits, comprising a single character.

I. Number of Index Registers

J. Operation Times, Including Access Time

K. Operation Times, Excluding Access Time

L. High Speed Storage Access Time and Cycle Time

The expressions in Columns I-J-K-L are self-explanatory and are adequately defined in the columnar headings. These are perhaps the most significant set of columns in the chart, since here one may search for systems which are satisfactory from the standpoint of speed. Nanoseconds are used in order to eliminate the need for negative exponents.

M. High Speed Storage Capacity, Medium, and Binary Equivalent Capacity

The high speed storage capacity is expressed in words with two significant digits and an exponent. The fourth character codes the nature of the storage medium. Perhaps the only real measure of storage capacity is the total number of equivalent binary digits that can be stored. Thus a 4,096-word, 68-binary-digits-per-word storage is of greater capability or capacity than an 8,192-word 24 binary-digits-per-word storage unit. Whether the stored characters are binary digits, decimal digits, or alphanumeric characters is also of significance. The ability to store a given number of alphanumeric characters represents a greater capability than the ability to store the same number of decimal digits. Here again the weighting factors of 3.4 and 5 are used for decimal digits and alphanumeric characters. Thus, the total equivalent binary storage capacity is the product of the number of words, the number of characters per word and the weighting factors. In cases where the storage capacity is optional to the buyer, the largest capacity available is cited.

N. High Speed Storage Figure of Merit

The high speed storage figure of merit given in the next column, attempts to serve as a rating factor for high-speed storage units. One is often in a position to trade space for time. In other words, time can be saved if an additional investment is made in hardware. An outstanding example of this "trade-off" is found in the parallel versus serial arithmetic unit, viz., handle all digits at once with more hardware and save time, or one digit at a time, with less hardware, but require much more time. The figure of merit puts space or total equivalent binary capacity in the numerator and the access time in seconds in the denominator. Since the ratio reaches 12 figures, it becomes practical to look only at the logarithm, and, to avoid the use of a decimal point, the logarithm of the ratio is multiplied by 10.

O. Capacity of Bulk Storage and Medium

Some estimate should be made of the capacity of bulk storage, auxiliary storage, back-up storage, or slow-speed storage. Here we mean the electromechanical storage type of media like disc, drums, tape bins, etc. The dollar cost is less but it is costly in terms of time. Comparison between systems is facilitated by converting all capacities into total binary equivalent capacities as in the case of high speed storage. Two significant digits and an exponent, along with the code symbol which cites the medium, are given.

P. Input-Output Devices

Computing systems come with a myriad of input-output devices. It is possible to associate almost any type of input-output device with almost any electronic digital computing system. If one insists on an optical scanner to read printed alphabetic data directly into an IBM 7090, it is no doubt quite possible.
However, it is interesting to list only those devices which are normally found with a particular system, those which the manufacturer supplies as a standard piece of equipment. These have been coded and five are listed with each system. If more than five standard input-output devices are available, four are cited and the symbol + is used to signify that there are others, too numerous to list in the space available. The existence of a + sign implies that there are a prodigious assortment of input-output devices that are available for use with the system and that the necessary output channels and trunks are provided in the standard model of the system.

Q. Characteristics of Magnetic Tape

By far the standard or normal computer appears to be one constructed with core storage, backed up by drums and/or magnetic tape. We treated of drums in Column O. This column specifies the detail characteristics of magnetic tape. The columnar headings are self explanatory.

R. Arithmetic Point, Instructions per Word, Addresses per Instruction and Type of Digital System

These items are self explanatory. It should be recalled here, however, that the execution time for an instruction (Columns J and K) must be evaluated in view of the addressing scheme. Thus, for one machine to execute a one-address instruction in less time than for another machine to execute a complete three-address instruction is not necessarily indicative that the former is faster than the latter.

S. Components - Tubes, Transistors, and Diodes

If one is searching for and finds those systems which meet a given set of criteria, perhaps it might be interesting to note the component counts. These figures may be indicative of reliability, size, power requirements, vulnerability, weight, or they may simply indicate the magnitude of the equipment being demanded. Looking at the mean and extremes of the component count, one might determine, for example, as a practical matter, that in order to accomplish the desired task or meet the stated requirement, a certain component count is demanded. A system with very much fewer components may be looked upon with suspicion as not fitting the bill, one with very much more than a "normal" number of components may be overdesigned, have too many frills or undesired capabilities. The suspicion, of course, must be investigated.

T. Power, Space and Weight of Typical Systems

The power does not include air conditioning unless it is an integral part of the system. The space includes access aisles for large, multi-component systems, but only the occupied floor or bench area for small systems. In many instances, especially for the smaller systems, the weight does not include the peripheral or input-output devices.
IV. ASDEC INPUT DATA
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 528 | 302 | 51200164205 | 982 | 3 | 673432649244 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 28 | 317 | 1042556100 | 39 | 1115 | 331432022 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 528 | 302 | 51200164205 | 982 | 3 | 673432649244 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 28 | 317 | 1042556100 | 39 | 1115 | 331432022 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 528 | 302 | 51200164205 | 982 | 3 | 673432649244 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 28 | 317 | 1042556100 | 39 | 1115 | 331432022 |
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| 60715ECONDAG DETROIT 32 MICH 3 61 | 28 | 317 | 1042556100 | 39 | 1115 | 331432022 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 528 | 302 | 51200164205 | 982 | 3 | 673432649244 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 28 | 317 | 1042556100 | 39 | 1115 | 331432022 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 528 | 302 | 51200164205 | 982 | 3 | 673432649244 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 28 | 317 | 1042556100 | 39 | 1115 | 331432022 |
| 60715ECONDAG DETROIT 32 MICH 3 61 | 528 | 302 | 51200164205 | 982 | 3 | 673432649244 |
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| 60715ECONDAG DETROIT 32 MICH 3 61 | 28 | 317 | 1042556100 | 39 | 1115 | 331432022 |
| A       | B                        | C                                   | D       | E       | F       | G       | H       | I       | J       | K       | L       | M       | N       | O       | P       | Q       | R       | S       | T       |
|---------|--------------------------|-------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| UNIVAC S S 90  | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18455356607Z | 35023145135853 | 817.124 | 2531047112622924445173 |
| UNIVAC STEP  | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 184501743527Z | 35023145135853 | 817.124 | 2531047112622924445173 |
| UNIVAC 60   | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 1835739301 | 8060V200 | 1 | 1 | 3423 | 4133 |
| UNIVAC 490  | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357393112 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1000 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 1835739401 | 8024 | 1 | 1 | 3423 | 4133 |
| UNIVAC 1004 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394112 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1020 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394212 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1101 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394312 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1102 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394412 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1103 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394512 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1109 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394612 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1107 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394712 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1206 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394812 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1103 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394512 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1109 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394612 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| UNIVAC 1107 | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394712 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| WEDLOG    | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394812 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| WESTING AIRB | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394512 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| WHIRLWIND II | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394612 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| WHITFORD    | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394712 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
| WISC       | REMRAND UNIVAC DIV315 PARK AV S NY 10 NY | 18357394812 | 13018334202 | 3282C982117937.1247 | 25312468174 | 34 |
V. CONCLUSIONS

1. If ASDEC is maintained, improved, and perhaps raised to a slightly higher order of sophistication, it can very well prove to be an effective tool for selecting and evaluating computing systems for specific applications from the national pool of existing or available systems, both from the standpoint of physical acquisition or temporary usage.

2. Accomplished once and for all, ASDEC could eliminate the need for preparing a chart of comparative characteristics every time each organization seeks to acquire a computing system for any application. This can be a very time consuming task. If kept up to date, an ASDEC chart provides a good starting point for preparing a computer applications study.

3. ASDEC actually is a condensation or digest of the pertinent data contained in rather bulky survey reports, conveniently tabulated, and displayed in a minimum of space, particularly suited for automatic selection and evaluation.

4. The hit-and-miss procedure of comparing characteristics, quite a soul-searching task can be eased, reduced to a minimum, or eliminated through the use of ASDEC.
Engineering and programming condensed descriptions of 327 electronic digital computing and data processing systems in the United States are given in a set of comparative charts, automatically prepared from a deck of punched cards. A method for automatic selection and evaluation of computing and data processing systems is described.