

**DYNACOMP**

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*QUALITY SOFTWARE FOR*

**ATARI  
APPLE  
TRS-80  
PET/CBM  
NORTH STAR  
CP/M**

- |               |               |
|---------------|---------------|
| * GAMES       | * SIMULATIONS |
| * ENGINEERING | * STATISTICS  |
| * EDUCATION   | * UTILITIES   |

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Quality software for:

<u>ATARI 800:</u>	24K ATARI BASIC.
<u>PET / CBM:</u>	16K Commodore BASIC.
<u>TRS-80 Level II:</u>	16K Level II BASIC.
<u>Apple II Plus:</u>	Applesoft BASIC.
<u>North Star:</u>	Diskette, single density (compatible with double density systems), North Star BASIC.
<u>CP/M:</u>	8" soft sectored disk, MBASIC.

The goal of DYNACOMP is to provide high quality products and services for the personal computing and business communities. As a DYNACOMP customer, you will find our service to be exceptionally prompt, the software excellent, and the documentation complete. Our game and simulation programs are not trivial items which rapidly lose their novelty. Rather, they provide many hours of intellectual stimulation.

DYNACOMP's selection of software is rapidly expanding and this catalog represents those programs currently in stock and ready for delivery. Much time and effort has gone into the development and testing of DYNACOMP's products, and we are certain that you will be a satisfied customer.

All domestic prices include first class postage and handling costs. Please add 10% for air mail postage and handling for orders outside of North America. All software orders are shipped within 48 hours.

Please send check or money order and specifics regarding computer and media (cassette, diskette or disk) when ordering. If paying with MASTER CARD or VISA, please include all numbers as they appear on your charge card.

We are constantly upgrading our software products, making them more efficient and offering more features. As software upgrades become available, previous customers will be notified by mail. Upgrades may be obtained for a nominal copying fee.

ATARI, CP/M, PET / CBM, TRS-80, Apple and North Star are tradenames and/or trademarks.

## BRIDGE 2.0

This program is unique in its ability to challenge the experienced player and yet provide an entertaining and instructional introduction to contract bridge for the novice. Unlike other bridge programs, BRIDGE 2.0 both bids and plays! The bidding closely follows the Goren point count system and the computer will even "double" your contract if you bid too high!

The print-out is formatted similar to the bridge column in the daily newspaper. However, the only hands visible during play are yours and the dummy's. Because of the strategies employed, the computer's level of play is high and the opportunity exists to sharpen your card-playing skills. This is one computer program which you will not tire of. In fact, it is addictive!

Price: \$17.95 Cassette  
\$21.95 Diskette  
\$24.45 8" CP/M MBASIC Disk

YOUR HAND (SOUTH):

S: AQJ9854  
H: T  
D: 74  
C: KT3

YOU ARE THE DEALER.  
WHAT DO YOU BID?

SOUTH ?S

WEST: 2D

NORTH: PASS

EAST: 2H

SOUTH ?P

WEST: 3D

NORTH: PASS

EAST: 4D

SOUTH ?P

WEST: 5D

NORTH: PASS

EAST: PASS

SOUTH ?P

THE CONTRACT IS: 5D

THE DECLARER IS: WEST

REVIEW OF THE BIDDING:

SOUTH	WEST	NORTH	EAST
1S	2D	PASS	2H
PASS	3D	PASS	4D
PASS	5D	PASS	PASS
PASS			

READY TO PLAY??

ROUND: 1

\*\*\*\*\*

SD WE: 0 THEY: 0  
EAST:  
S: 6  
H: AKQJ74  
D: Q62  
C: 982

SOUTH:  
S: AQJ9854  
H: T  
D: 74  
C: KT3  
NORTH PLAYS: 2S  
EAST PLAYS: 6S  
SOUTH PLAYS ?AS  
WEST PLAYS: TS

## HEARTS 1.5

For the first time available as a computer program, this version of the popular card game of hearts pits you against two computer opponents. Hearts is a trick-oriented game in which the purpose is to not take any hearts or the Queen of Spades. Penalty points are given for taking those cards and the player with the lowest score wins the game.

This computer version allows you to pass your three most undesirable cards to one of your opponents before play. However, the other opponent does the same to you! The program employs a hard-to-beat playing strategy which creates quite a challenge for even the advanced player. A great way to learn the game or become more proficient at playing hearts.

Price: \$14.95 Cassette  
\$18.95 Diskette  
\$21.45 8" CP/M MBASIC Disk

YOUR HAND:

S: QJT98  
H: A62  
D: KT98532  
C: 97

SELECT 3 CARDS TO GIVE PLAYER 2

?QS  
?KD  
?AH  
HAND #3 HAS PASSED TO YOU:  
AD JD KC

YOUR HAND:

S: JT98  
H: 62  
D: AJT98532  
C: K97

HAND 3 PLAYS THE 2C  
YOU PLAY THE ?KC  
HAND 2 PLAYS THE TC

## CRIBBAGE 2.0

(For TRS-80 Only)

CRIBBAGE 2.0 is a two-handed version of the classic card game, Cribbage. The standard rules of play and scoring are followed, and the points are announced using the traditional phrases. The score is visually shown on a standard 60-hole cribbage board which requires two "trips" to win.

The computer is a worthy opponent in CRIBBAGE 2.0. The program features excellent graphics and assembly language sub-routines for fast response in determining crib cards and meld points. The ownership of the crib is considered to get a good crib determination, and you may ask the computer for help with your crib cards.

This is an excellent program for the cribbage player in search of a tough opponent as well as the beginner wishing to learn the game and its scoring intricacies.

Price: \$14.95 Cassette  
\$18.95 Diskette

## STARTREK 3.2

STAR TREK 3.2 is a new and exciting version of the classic Star Trek simulation many have played on "large" computers. This version is a significantly enhanced program, is more complex, and is more challenging. It was written by a visiting Klingon who decided to give his side a chance. The Empire gets even!

The Klingons have learned from their past experiences. Their task force is now composed of both light (the old style) and heavy cruisers. Some of the heavy cruisers have a photon torpedo deflection device and must be attacked from their weak side or with phasers. The Klingons no longer wait to be fired on, but may initiate a battle. They also attack starbases in distant quadrants without warning and have enough fire power to eventually capture those bases unless the Enterprise goes to the rescue.

The Klingons now fight battles with a much better strategy. For example, they move. Sometimes they will move behind stars and hide. Other times they close in for a close range phaser attack. Klingon heavy cruisers sometimes start a battle with low energy blasts, trying to give the impression of a light cruiser. However, when the Enterprise closes in for a phaser kill ... surprise!

Anyone who enjoys Star Trek simulations must play STAR TREK 3.2.

Price: \$ 9.95 Cassette  
\$13.95 Diskette  
\$16.45 8" CP/M MBASIC Disk

## SPACE TILT

(Apple II Only)

SPACE TILT is a test of both skill and patience as you use your game paddles to roll a "ball" through a "hole" in your TV screen. This program uses HiRes graphics to represent a plane with a randomly placed hole in it. The game paddles "tilt" the plane around the X and Y axes. The ball then rolls in according to the plane's orientation. The game appears simple: roll the ball into the hole. Except ... each time you succeed in this task, the hole is replaced with an even smaller hole!

SPACE TILT can be played with any number of people. A clock is constantly displayed ticking off the seconds to determine who can complete the task in the shortest time period.

Price: \$10.95 Cassette  
\$14.95 Diskette

## CHESS MASTER

(For North Star and TRS-80 Only)

CHESS MASTER is a computer program which will challenge your chess playing ability with its aggressive style of play. Written in assembly language (by SOFTWARE SPECIALISTS of Norco, California), this program employs the full graphics capability of the TRS-80 and also provides the North Star user (either Z80 or 8080 microprocessor) with two different board sizes to select from.

You may choose between five different playing skills for your computer opponent, ranging from beginner (but a tough opponent when playing "lightning" chess!) to expert. Besides providing for King or Queen-side castling, en passant captures and pawn promotion, CHESS MASTER also allows you to preset the board in any configuration which you may find of interest. This allows for the examination of book situations or the replaying of interesting positions occurring during previous games.

Moves are conveniently made by entering the number of the square you are moving from and the number of the square which you are moving to. The program checks all moves for legality and then displays the moves in standard chess notation.

Price: \$19.95 Cassette  
\$23.95 Diskette

Sample:  
(North Star, small board)

### CHECK

80	-	*N	-	-	-	-	*R	-
70	*R	*P	-	-	R	-	-	-
60	-	*K	-	-	-	-	-	-
50	*P	-	-	-	P	-	*P	-
40	P	P	N	*P	-	-	-	-
30	-	-	-	B	-	-	-	-
20	-	-	P	-	-	-	-	P
10	-	-	-	-	-	-	K	-

1 2 3 4 5 6 7 8

FROM SQUARE: 62

TO SQUARE: 61

16 BL K - QR3

17 WH QNP - QNS5

CHECK

\*\* CHECKMATE \*\*

80	-	*N	-	-	-	-	*R	-
70	*R	*P	-	-	R	-	-	-
60	*K	-	-	-	-	-	-	-
50	*P	P	-	-	P	-	*P	-
40	P	-	N	*P	-	-	-	-
30	-	-	-	B	-	-	-	-
20	-	-	P	-	-	-	-	P
10	-	-	-	-	-	-	K	-

1 2 3 4 5 6 7 8

## FLIGHT SIMULATOR

Learn from this realistic, mathematical simulation which allows you to take-off, fly, navigate, and land an airplane. The program employs kinematic aerodynamic equations, as well as applies the characteristics of a real airfoil to simulate the response of flying machines ranging from gliders to space shuttles. Unlike most arcade-like animations, FLIGHT SIMULATOR realistically portrays the problems associated with stalls, landing with the nose wheel first, cross winds, etc. You can practice touch and go landings, take a cross-country trip, or just practice exercising the flight controls; flaps, trim, elevators, bank, and throttle. A program for the thinker!

Price: \$17.95 Cassette  
\$21.95 Diskette  
\$24.45 8" CP/M MBASIC Disk

COCKPIT CONTROL LETTER: ?C  
\*\*\*\*\*

ALT.: 15952 FEET  
SPEED: 118 KNOTS  
STALL SPEED: 56 KNOTS  
ENGINE TEMP: 173 DEG  
FUEL: 598 LBS.  
FLAPS: 0 DEGREES  
TRIM: -10 DEGREES  
THRUST: .3  
BANK: 0 DEGREES  
ATTACK ANGLE: 0 DEGREES  
HORIZON: 16.1 DEGREES  
HEADING OFF EAST: 45 DEG.  
LANDING GEAR: UP  
FLIGHT TIME: .1 MIN.  
CONTINUE?Y

## BLACK HOLE

(For Apple Only)

BLACK HOLE is a visual simulation of the problems associated with closely observing a small black hole. The object of the simulation is to enter a defined close orbit about a black hole, maintain it for a given length of time, and then exit. Of course, if you use too much fuel in achieving the orbit, you may not be able to later break free.

The black hole acts as a point source of gravity. Your probe is outfitted with a main thruster and may be rotated to direct the force. The path taken by the probe is displayed so that you may better understand the interplay between the thrust and its direction, and the subsequent change in trajectory.

BLACK HOLE is not only entertaining and challenging, but is also educational. Notice how the probes speed slows towards the apogee. Is angular momentum conserved under free fall? See Kepler's and Newton's laws in action!

Price: \$14.95 Cassette  
\$18.95 Diskette

## VALDEZ

VALDEZ is a simulation of supertanker navigation in the Prince William Sound area of Alaska. It contains a detailed analysis of ship response characteristics, as well as a model of tidal patterns in the Sound. Navigation is aided by a variable range radar display which shows the land masses and other traffic (ships and icebergs). A unique feature of this simulation is the 256 x 256 element map employed. Sections of this map are peeked at using the radar display. This map feature is unique and greatly enhances the realism of the program. VALDEZ provides an interesting and educational exercise in ship navigation.

Price: \$14.95 Cassette  
\$18.95 Diskette  
\$21.45 8" CP/M MBASIC Disk

### STATUS

TIME: .99 HOURS  
POSITION:  
107.76 KM EAST  
123.21 KM NORTH  
WATER SPEED: 18.9 KM/HOUR  
TIDE: 2.1 KM/HOUR SOUTH  
HEADING : -45 DEGREES OFF NORTH  
PORT ENGINE POWER: 75%  
STARBOARD ENGINE POWER: 75%  
HELM: 0 DEGREES

### RADAR RANGE CONTROL

RADAR RANGE FACTOR: ?1  
GRID INCREMENT: .5 KILOMETERS

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\* \*

DISPLAY OTHER TRAFFIC (Y/N): ?Y

### LAST REPORTED SHIP POSITIONS

1 X= 80.5 Y= 103.6  
2 X= 86.7 Y= 113.4  
3 X= 79.5 Y= 82.9  
4 X= 79.5 Y= 22

### LAST REPORTED ICEBERG POSITIONS

1 X= 72.7 Y= 78.1  
2 X= 75.3 Y= 66.1  
3 X= 74.4 Y= 70.3

## TEXT EDITOR I

(LETTER WRITER)

TEXT EDITOR I is an easy to use line-oriented text editor which is ideally suited for writing letters, though it has been used to compose a book and several magazine articles. It is certainly one of the lowest priced text editors available today!

The program is written entirely in BASIC, therefore making it compatible with the input/output of your present system. Files may be built by simply typing in text. Immediate typing errors may be removed using the delete or back-arrow function already available in your BASIC interpreter. Errors may also be removed in a later editing phase.

The format of the output is controlled in several ways. You may insert in your text a visible (in the editing mode) control character which causes a carriage return/line feed when printing the final copy. This control character, coupled with spaces, can be easily used to create paragraph indentations, skips, etc. The final copy may be sent to an external terminal and printed out with a maximum line width determined by the user. TEXT EDITOR I will ensure that no words are broken and that the text looks just as if a professional typist did the job!

TEXT EDITOR I is currently available on a 5½" diskette for North Star BASIC systems (Release 3 and higher). It is also available on cassette for Pet, Atari, Apple II, and TRS-80 cassette and disk systems (two programs are provided on each cassette; one for cassette-based systems, and one for machines having disks).

Price: \$14.95 Cassette  
\$18.95 Diskette  
\$21.45 8" CP/M MBASIC Disk

## GAMES PACK I AND GAMES PACK II

Each of these two software packages contains an interesting cross-section of traditional computer games. The packages are conveniently set up as one large program. This allows you to return to the control program after completing one game and immediately run another game without having to reload. This feature is very useful for cassette users.

GAMES PACK I includes simple physical models such as CATAFULT and LUNAR LANDER; an excellent mathematical brain teaser, SWITCH; and entertaining gambling games: BLACKJACK, HORSE RACE, CRAPS, and SLOT MACHINE.

GAMES PACK II contains the popular word puzzle of JOTTO; two entertaining card games: ACEYDEUCEY and CRAZY EIGHTS; the fascinating game of LIFE plus WUMPUS, NUMBER GUESS, and CALENDAR.

Price: \$ 9.95 Each Cassette  
\$13.95 Each Diskette  
\$16.45 Each CP/M MBASIC Disk

## MAIL LIST II

(Presently available for North Star Only)

Keep track of customers, inventory, friends, or relatives by name, keyword, or by Zip Code. This versatile program allows you to store over 1,100 entries on a single density North Star diskette (and over 2,200 entries per double density diskette). MAIL LIST II's many options allow you to add and delete entries and to sort by name or by Zip Code. You can also search for a name, or those entries having a particular Zip Code or keyword (including combinations of keywords). Your list can be printed out using various formats including one which automatically provides proper spacing for standard address labels. MAIL LIST II also includes convenient file merging capability and will even print out an alphabetized listing of all file entries.

Price: \$21.95 Postpaid

### OPTION CODES:

START = START NEW FILE  
A = ADD TO LIST  
K = KEYWORD SEARCH  
N = NAME SEARCH  
DF = DELETE WITH FLAG  
DI = DELETE IMMEDIATE  
DP = PURGE FLAGGED ENTRIES  
Z = ZIP CODE SORT OR SEARCH  
R = REVIEW LIST  
W = WRITE LIST  
ABC = ALPHABETIZE  
M = MERGE FILES  
F = OPEN NEW FILE  
OUT = SPECIFY OUTPUT PORT  
(W = WRITE SUFFIX)  
(L = LIST SUFFIX)

### OPEN WHAT FILE?BYTE

### ENTER OPTION:

?Z  
ZIP CODE SEARCH OR SORT?SEARCH

ENTER ZIP CODE RANGE, LOW TO HIGH.  
LOWEST ZIP CODE? 14000  
HIGHEST ZIP CODE? 20000

BYT  
DON MAY  
990 BROAD MEADOW DR.  
PITTSBURGH, PA 15237  
BYT  
KENT M. SPRAGUE  
560 WEST RIDGE AVENUE  
STATE COLLEGE, PA 16801  
BYT  
T. P. CAPRON  
320 E. NAPLES ST.  
WAYLAND, NY 14572  
BYT  
PAUL K. WARME  
423 KEMMERER ROAD  
STATE COLLEGE, PA 16801  
BYT  
WILLIAM J. GREENE  
3615 SUNSET LANE  
WILLIAMSON, NY 14589

## **DFILE**

(For North Star Only)

The North Star user soon learns that the rapidly accumulating stack of diskettes represents an organization problem. Shuffling through this stack to find a particular program or file is often frustrating.

The DFILE user, however, is able to quickly locate any desired file or program. Each diskette is assigned a four character ID and the list of its files is maintained on a special data base system diskette. The simple menu selections in DFILE allow complete maintenance of this data base. DFILE may be used on single/double density and single/double-sided drives, and can be customized to use either one or two drives.

The program is also provided in two versions for execution at 2AOOH or 2OOOH. A list of available menu selections is shown below:

- 1 - LIST DISK DIRECTORY
- 2 - ADD COMMENTS TO DFIL ENTRY
- 3 - DELETE FILE ENTRY IN DFIL
- 4 - LIST DFIL
- 5 - LIST ALL ENTRIES FOR FILE NAME X
- 6 - LIST ALL ENTRIES FOR DISKID X
- 7 - ADD DISK DIRECTORY TO DFIL
- 8 - INITIALIZE DFIL

Menu selection 7 copies entries from the user disk directory into the data base file.

Menu selection 5 quickly lists all diskette locations of a particular file or program.

Menu selection 6 lists all files which are on a particular diskette.

The other menu selections allow the user to maintain current information in the data base.

DFILE is a must for any North Star user having an extensive diskette library.

Price: \$19.95 Postpaid

## **COMPARE**

(For North Star Only)

COMPARE is a utility software package which compares two North Star BASIC programs and displays the file sizes of the programs in bytes and the lengths of the programs in terms of the number of statement lines. The line numbers at which differences occur between the two programs are then printed out.

COMPARE permits the user to examine the various versions of his software to verify which are the most current and to clearly identify the changes made during development. Perhaps that "latest" version does not work as well because of that one particular change you made three weeks ago! Or, was that change really incorporated?

COMPARE is very easy to use and requires only one disk drive. The first program is stored in RAM and the second on disk. The user is clearly and simply prompted for the type of comparison to be made.

Price: \$12.95

## **FINDIT**

(For North Star Only)

Use FINDIT to quickly locate: address, phone, birthday, anniversary, and appointment dates for your friends; address, phone, balance owed, appointment dates for commercial contacts; descriptive information for reference entries which may be accessed with one, two or three keywords. Each personal keyword (for example, a last name) accesses a record in the data base which contains name, address, phone and birthdate information, as well as anniversary dates, appointment dates and comments. Each commercial keyword accesses one to five records each of which contains business name, address, phone, balance owed, appointment dates and comments.

A list of the available procedures is shown below:

- 1 - FIND PERSONAL ENTRY
- 2 - FIND COMMERCIAL ENTRY
- 3 - FIND REFERENCE ENTRY
- 4 - ADD NEW ENTRY
- 5 - DELETE AN ENTRY
- 6 - ADD KEYWORD
- 7 - DELETE KEYWORD
- 8 - DISPLAY BIRTHDAYS/ANNIVERSARIES
- 9 - DISPLAY APPOINTMENTS
- 10 - DISPLAY KEYWORDS
- 11 - CHANGE AN ENTRY
- 12 - INITIALIZE FILES
- 13 - LIST ALL PERSONAL/COMMERCIAL NAMES/ADDRESSES

Menu selections 1, 2, and 3 locate and display machine records.

Menu selection 8 will ask you for start and end months and will display all personal records with matching birthday or anniversary date.

Menu selection 13 will display the names and addresses of all personal and commercial records.

The other selections provide convenient entry and maintenance of the file.

FINDIT is certainly a useful information retrieval program for the computerist attempting to stay organized in a complicated world.

Price: \$19.95 Postpaid

## **COMPRESS**

(For North Star Only)

COMPRESS is a North Star disk-based utility program which permits significant shortening (in both size and execution time) of BASIC programs. With COMPRESS, unnecessary spaces are removed from any program, regardless of size. In addition, remark statements may either be retained or removed at the user's option.

COMPRESS directly operates on the BASIC file as it exists on the diskette. The original program is scanned line by line and a separate and compressed program correspondingly written. Even a program which is too large to be loaded can be processed by COMPRESS and possibly reduced to a loadable size.

Price: \$12.95 Postpaid

## TEACHER'S PET I

TEACHER'S PET I is designed for the very young computerist (ages 3-7). It is meant to be an introduction to computers as well as a learning tool for arithmetic and letter-word recognition. The program provides a menu of four selections. ARITHMETIC SKILLS consists of three levels of arithmetic problems, ranging from addition only (Level 1) to addition, subtraction, multiplication and division (Level 3). For all levels, the problems get more difficult as more correct answers are recorded. When wrong answers are encountered, the level of difficulty drops subtly to avoid frustration. At the conclusion of an ARITHMETIC SKILLS session, the child's score is printed out for reference purposes.

COUNTING PRACTICE requires the user to count randomly selected figures. LETTER RECOGNITION displays randomly selected words requiring the user to find and type the letters of the word. ANSWER MAN provides the user with a "recess." The computer will provide randomly selected answers to verbal questions.

Price: \$ 9.95 Cassette  
\$13.95 Diskette  
\$16.45 8" CP/M MBASIC Disk

## GRAFIX

(For TRS-80 Only)

Have you ever attempted to utilize your TRS-80's graphics potential, but were put off by the prospect of typing in the many set statements needed for an intricate figure? GRAFIX takes the burden out of TRS-80 graphics by allowing you to first "draw" your creation using your computer's keyboard to control the write cursor. Once the figure is drawn, you can easily modify it until it is perfect and then save it as a string variable in your BASIC program. Draw a "happy face," save it as H\$ and have it displayed by simply using PRINT H\$ in your BASIC program!

GRAFIX is written in assembly language by SOFTWARE SPECIALIST of California. Once loaded into memory, it remains there throughout your entire programming session. You may load any number of BASIC programs and GRAFIX will be there to add graphics whenever you desire.

Price: \$12.95 Cassette  
\$16.95 Diskette

## TIDY

(For TRS-80 Only)

This will certainly be one of your more valuable TRS-80 programs, especially considering its modest price! TIDY will remember your BASIC program over any legal line number range using any convenient numbering interval.

TIDY also compacts your programs by removing all spaces and/or Remark statements. The result is a physically smaller program (less bytes of RAM used) which executes significantly faster than an "uncompacted" version.

TIDY is written in assembly language by SOFTWARE SPECIALIST of California. It, therefore, executes very rapidly and does not take up much memory. In fact, it is recommended that TIDY be loaded at the beginning of a programming session and left in memory. You can load your BASIC programs without having to reload TIDY; it is always there ready to tidy-up your programs.

Price: \$10.95 Cassette  
\$14.95 Diskette

## DATA SMOOTHER

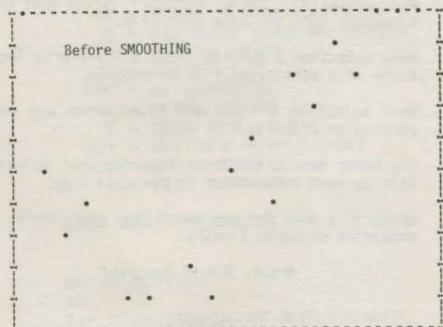
This package provides the user with a fast and easy means to least-squares smooth equally spaced data and plot the results. Any size data set may be treated within the memory limits of your machine. The variation in each data point is smoothed according to the weighted average of points surrounding it. The averaging span is 3 to 25 points. The order of the local smoothing is linear to quintic (first to fifth degree polynomial). Also calculated are the smoothed first and second derivatives of the data at each point.

The width of the plot is user-controlled. The software automatically considers the printer width chosen and number of data points to produce a graph having a good aspect ratio.

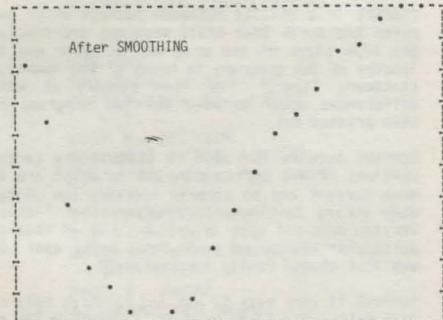
This program is very useful for smoothing out day-to-day stock market fluctuations in order to determine underlying trends. It is also beneficial to the businessman in planning inventory based on varying sales volume. The scientist and engineer may apply the smoothing software to noisy data sets. Communications engineers can apply it to incoming data as a "digital filter."

Price: \$14.95 Cassette  
\$18.95 Diskette  
\$21.45 8" CP/M MBASIC Disk

Before SMOOTHING



After SMOOTHING



## REGRESSION I

REGRESSION I is a complete and coordinated regression curve fitting package for the analysis of linear and non-linear, one-dimensional data. It is based on various sub-routines and techniques presented in Volumes 1 and 2 of BASIC Scientific Subroutines (by F. Ruckdeschel; to be published by McGraw-Hill, Fall 1980). REGRESSION I provides many of the facilities available on large FORTRAN-speaking machines and more. However, unlike many of the FORTRAN equivalents, there is no confusion as to the input/output variable formats, and the software is very easy to use. In addition, the analysis is interactive, thereby permitting the user considerable freedom in experimenting with fitting functions and orders of approximation. Also, a special algorithm is employed to determine the coefficients which has round-off error properties much superior to the matrix algorithms commonly used. This greatly reduces the need to perform the calculations in double precision or pre-process the data.

The features of REGRESSION I include:

1. Easy data entry and editing.
2. Automatic data sorting and plotting (of both the data and fitted curves).
3. Fast and accurate regression.
4. A choice of many fitting functions, including forms supplied by the user.
5. Analysis of the standard error of the derived coefficients and the correlation coefficient.
6. Data storage and retrieval.

Once the regression has been performed, the user may immediately repeat the analysis using the same data set (with editing if desired) and test other functional forms.

REGRESSION I is not only a powerful statistical tool for use in the engineering, business and social sciences, it is educational as well. Because the program presents the regressed coefficients as well as their estimated error bounds, the student may learn by experience how much credence to place on the derived coefficients. In addition, he/she may also get a feel for the general types of fit associated with various levels of correlation. It is very easy for the inexperienced experimenter to be tricked by regression results, especially those having high  $R^2$  values. REGRESSION I is designed to guard against this.

Price: \$19.95 Cassette  
\$23.95 Diskette  
\$26.45 8" CP/M MBASIC Disk

## REGRESSION II

(PARAFIT)

PARAFIT is a parametric least squares regression program designed specifically for the determination of the non-linear coefficients in complicated mathematical expressions. This is to be contrasted with the linear polynomial coefficients calculated by REGRESSION I.

A typical problem suited for analysis by PARAFIT might be the following. Information has been collected on the failure rate of a particular product. This information is in the form of the normalized fraction of items which failed per unit time interval after production. The times at which these data were collected may not be equally spaced such that the set consists of many  $(f_i, t_i)$  pairs. The functional form assumed is the Weibull distribution.

$$f(t) = \left[ \frac{vt^{(v-1)}}{u^v} \right] \exp \left[ -(t/u)^v \right]$$

Given the  $(f_i, t_i)$  data pairs, what are the least squares regression values for the parameters  $u$  and  $v$ ?

PARAFIT may be used to solve this problem. The user inserts the functional form as a BASIC program statement and runs PARAFIT. The program employs a special form of modified steepest descent to interactively determine the unknown parameters.

Features included in PARAFIT are automatic plotting of both the data and fitted function; cassette (or diskette) data saving and loading; and data file building/editing.

PARAFIT was designed to be easy to use as well as effective, and is an excellent companion to REGRESSION I.

Price: \$19.95 Cassette  
\$23.95 Diskette  
\$26.45 8" CP/M MBASIC Disk

REGRESSION I and REGRESSION II (PARAFIT) may be purchased together for:

Price: \$36.95 Cassettes  
\$44.95 Diskettes  
\$49.95 8" CP/M MBASIC Disks

## FOURIER ANALYZER

FOURIER ANALYZER is a scientific program which can be applied to examine the frequency spectrum characteristics of defined duration signals, such as groups of pulses. The user inputs a data set which is Fourier transformed into the frequency space descriptors of amplitude and phase. The amplitude and phase results are displayed in tabular form. The input data and calculated results may also be plotted at the user's option.

Shown below are plotting examples in which the input data represented a square wave shifted off the origin. The amplitude plot clearly shows the characteristic "sinc" function form. The phase plot shows the expected discrete phase changes associated with the "sinc" function superposed on the linear phase change expected from the Shifting Theorem.

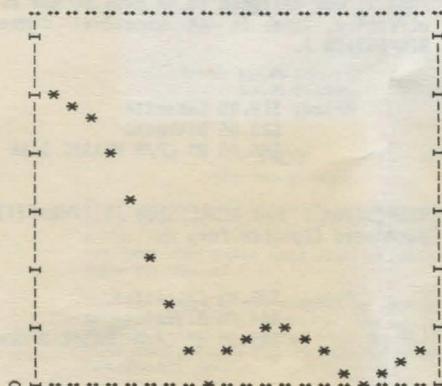
The input data set is limited in extent only by the memory size of the host computer, and is not restricted to equally spaced values.

FOURIER ANALYZER is certainly a powerful and educational tool for the engineer, scientist, student, or anyone involved in cyclic phenomena (e.g., music, stocks, etc.).

Price: \$14.95 Cassette  
\$18.95 Diskette  
\$21.45 8" CP/M MBASIC Disk

FOURIER ANALYZER and TFA may be purchased together for a combined price of:

Price: \$29.95 Cassettes  
\$37.95 Diskettes  
\$42.95 8" CP/M MBASIC Disks



Sample of Amplitude Plot.

FOURIER ANALYZER also produces plots of the input data as well as the Phase information.

## TRANSFER FUNCTION ANALYZER

TRANSFER FUNCTION ANALYZER is a frequency spectrum analysis package designed with the engineer in mind. It applies the concept of the Fourier integral transform to an input data set to provide a frequency domain representation of the function approximated by that input data. TFA is based on DYNACOMP's popular FOURIER ANALYZER, but includes special data handling features. It also presents the results in conventional engineering terms (decibels, log-frequency).

The user may save and recall both the input data file and previously calculated results. Data files may be loaded (from cassette, diskette, or disk), added to, deleted from, and generally edited. As with FOURIER ANALYZER, the input data may be plotted before the calculations are started. The frequency domain results may also be plotted, as well as saved (to be later recalled for new plots). In addition, the analyses are easily separated with different frequency parameters without re-entering the data.

The transformed results are displayed in conventional engineering form. The amplitude points returned are in decibels (DB) relative to the peak value (0 DB). The phase is in degrees. The frequency transform is calculated in equal log-frequency intervals as is common practice in Acoustical and Electronic Engineering.

The frequency results may be optionally plotted. When the amplitude plot is performed, it is in decibel/log-frequency format. This permits easy identification of the characteristic "roll-off" in frequency response. For example, a 9 DB/octave (e.g.,  $10 \log(F(W))$ ) straight line roll-off of a three pole filter is immediately apparent from the plot.

TFA was originally designed as part of a consulting assignment involving the analysis of amplifier transfer function. It is, therefore, a program which has been tested in an actual commercial application. In this particular case, the output data corresponding to the real time response of an amplifier to an input pulse ("delta function") was used directly as input to TFA, and the frequency amplitude results directly gave the transfer function for the amplifier.

Whereas DYNACOMP'S FOURIER ANALYZER is well suited to the basic science and educational fields as well as many engineering applications, TRANSFER FUNCTION ANALYZER is a key tool for the electronics and acoustics engineer involved in the analysis of limited duration signals.

Price: \$19.95 Cassette  
\$23.95 Diskette  
\$26.45 8" CP/M MBASIC Disk

TRANSFER FUNCTION ANALYZER and FOURIER ANALYZER may be purchased together for the combined price of:

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