BENCHMARK COMPUTING SERVICES

SOFTWARE CATALOG

JANUARY, 1979

ALL PROGRAMS OFFERED FOR SALE IN THIS CATALOG, UNLESS OTHERWISE NOTED, ARE WRITTEN
IN TRS-80 LEVEL II BASIC. MOST PROGRAMS CAN EASILY BE MODIFIED BY THE PURCHASER TO RUN ON
OTHER INTERPRETERS.

THE PRICE QUOTED FOR EACH PROGRAM IS FOR A COMPLETE LISTING.   A VERIFIED LEVEL-II
CASSETTE WILL BE INCLUDED FOR AN ADDITIONAL $2.00.   UTAH RESIDENTS MUST ADD 4.75% SALES TAX.
WE PAY POSTAGE ON ALL SALES.

ALL PROGRAMS ARE EXTENSIVELY COMMENTED AND SHOULD BE SELF-EXPLANATORY.   ADDITIONAL
INSTRUCTIONS ARE INCLUDED WHERE REQUIRED.   WE WILL GLADLY ANSWER ALL INQUIRIES CONCERNING
THE OPERATION OF OUR SOFTWARE.

BENCHMARK WILL ALSO DO CUSTOM PROGRAMMING IN EITHER BASIC OR ASSEMBLY LANGUAGE.
WE WILL WRITE NEW PROGRAMS TO YOUR SPECIFICATIONS OR MODIFY EXISTING PROGRAMS.
WRITE FOR DETAILS, DESCRIBING YOUR PROBLEMS AS COMPLETELY AS POSSIBLE.

EACH CATALOG ENTRY BEGINS WITH THE NUMBER, NAME, SIZE IN BYTES, AND LISTING PRICE OF
THE PROGRAM.   A BRIEF DESCRIPTION OF THE PROGRAM FOLLOWS;   ADDITIONAL INFORMATION WILL
BE SUPPLIED UPON WRITTEN REQUEST.   FOLLOWING THE DESCRIPTION IS AN INDICATION OF WHETHER
THE PROGRAM IS INTENDED TO BE USED INTERACTIVELY OR AS A SUBROUTINE IN OTHER PROGRAMS.
THE PRINCIPAL PARTS OF THE INTERACTIVE PROGRAMS CAN GENERALLY BE REMOVED AND USED
AS SUBROUTINES.   PLEASE NOTE ALSO THAT THE SIZE OF THE PROGRAMS CAN BE DECREASED BY THE USER
BY REMOVING THE COMMENTS.

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BENCHMARK COMPUTING SERVICES PROGRAMS ARE WARRANTED TO THE ORIGINAL PURCHASER TO PERFORM
AS ADVERTISED ONLY.   THIS LIMITED WARRANTY IS EXTENDED TO THE PURCHASER FOR A PERIOD OF ONE
YEAR FROM DATE OF PURCHASE.   FOR REPLACEMENT OR CORRECTION OF A DEFECTIVE PROGRAM, SEND A
COMPLETE DESCRIPTION OF THE PROBLEM TO BENCHMARK COMPUTING SERVICES, BOX 385, PROVIDENCE,
UTAH, 84332; FOR REFUND OF THE FULL PURCHASE PRICE FOR A DEFECTIVE PROGRAM, SEND ALL LISTINGS
AND TAPES OF THE PROGRAM TOGETHER WITH A STATEMENT THAT THE PURCHASER RETAINS NO COPY OF
THE PROGRAM IN ANY FORM, POSTAGE PREPAID, TO BENCHMARK COMPUTING SERVICES AT THE ADDRESS
STATED ABOVE.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING
WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR ANY PARTICULAR PURPOSE.   BENCHMARK COMPUTING
SERVICES SHALL IN NO EVENT BE LIABLE FOR CONSEQUENTIAL DAMAGES OR LOSS OF BUSINESS OR
ANTICIPATORY PROFITS RESULTING FROM THE USE OR OPERATION OF BENCHMARK COMPUTING SERVICES
PROGRAMS.   THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS
WHICH VARY FROM STATE TO STATE.

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DUE TO AN OVERWHELMING LACK OF DEMAND WE HAVE CEASED PRODUCTION OF 8080 AND Z-80 PROGRAMS.
WE WILL CONTINUE TO OFFER TRS-80 ASSEMBLY LANGUAGE PROGRAMS.

* * * ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. * * *

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1001   COMPOUNDED AMOUNT   SIZE: 2.4K   PRICE: $5.00

  CALCULATES ANY OF THE FOLLOWING PARAMETERS FROM THOSE REMAINING: FUTURE VALUE,
PRESENT VALUE OR PRINCIPAL, INTEREST RATE, INTEREST PAID, NUMBER OF PERIODS. INTERACTIVE

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1002   DEPRECIATION SCHEDULES   SIZE: 2.3K   PRICE: $5.00

  CALCULATES DEPRECIATION SCHEDULES USING STRAIGHT LINE, SUM-OF-THE-YEAR'S DIGITS,
OR VARIABLE RATE DECLINING BALANCE METHOD.   INTERACTIVE.

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1003   DIRECT REDUCTION LOANS   SIZE: 4.8K   PRICE: $5.00.

  CALCULATES ANY OF THE FOLLOWING PARAMETERS FROM THOSE REMAINING: INTEREST RATE,
ACCUMULATED INTEREST, PAYMENT, PRESENT VALUE, NUMBER OF PERIODS, REMAINING BALANCE.
ALSO WILL PREPARE AMORTIZATION TABLE THAT MAY BE DISPLAYED ON THE SCREEN AND/OR
PRINTED ON A LINE PRINTER.   INTERACTIVE.

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1004   DISCOUNTED CASH FLOW   SIZE: 0.6K   PRICE: $5.00

  CALCULATES THE PERIODIC PRESENT VALUE OF AN INVESTMENT GIVEN THE DISCOUNT RATE,
THE AMOUNT OF THE ORIGINAL INVESTMENT, AND THE PERIODIC CASH FLOW.   INTERACTIVE.

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1005   SINKING FUNDS   SIZE: 3.0K   PRICE: $5.00

  CALCULATES ANY OF THE FOLLOWING PARAMETERS FROM THOSE REMAINING: FUTURE VALUE,
PAYMENT, NUMBER OF PERIODS, AND INTEREST RATE   INTERACTIVE.

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1006   FINANCE PACKAGE 1   SIZE: 12.5K   PRICE: $12.00

  CONTAINS PROGRAMS 1001 THROUGH 1005.

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1007   BOND ANALYSIS   SIZE: 6.2K   PRICE: $5.00

  CALCULATES THE PRICE OF A BOND PURCHASED ON OR BETWEEN COUPON DATES, GIVEN THE
PARAMETERS OF THE BOND AND THE DESIRED YIELD.   ALSO CALCULATES THE YIELD OF A
BOND PURCHASED ON A COUPON DATE. EXAMPLES INCLUDED.   INTERACTIVE.

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1008   ANNUITIES   SIZE: 4.0K   PRICE: $5.00

  CALCULATES PRESENT VALUE OF ANNUITIES WITH EITHER DEFERRED PAYMENTS OR WITH
UNEQUAL PAYMENTS   EXAMPLES INCLUDED.   INTERACTIVE.

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1009   EQUITY INVESTMENT   SIZE: 5.0K   PRICE: $5.00

   CALCULATES MORTGAGE CONSTANT, RATE OF RETURN ON EQUITY PORTION OF INVESTMENT,
FUTURE SALES PRICE TO PRODUCE A DESIRED YIELD, AND THE PURCHASE PRICE AND
REQUIRED EQUITY FOR A TRANSACTION WITH A SPECIFIED YIELD.   EXAMPLES INCLUDED.
INTERACTIVE.

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1010   MORTGAGES   SIZE: 5.3K   PRICE: $5.00

   CALCULATES EFFECTIVE RATE OF A MORTGAGE WITH FEES, PRICE AND YIELD OF A
MORTGAGE TRADED AT A PREMIUM OR DISCOUNT, AND THE PAYMENTS, CASH ADVANCED,
AND YIELD ON REFINANCED MORTGAGES.   EXAMPLES INCLUDED.   INTERACTIVE.

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1011   FINANCE PACKAGE 2   SIZE: 14.0K PRICE: $10.00

   CONTAINS PROGRAMS 1008 THROUGH 1010.

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2001   FAST FOURIER TRANSFORM   SIZE: 5.2K   PRICE: $7.00

   CALCULATES THE FOURIER TRANSFORM OF EITHER REAL OR COMPLEX DATA.   RESULTS ARE
RETURNED BOTH AS COMPLEX PAIRS AND IN MAGNITUDE/ANGLE FORM.   THE FOURIER TRANSFORM
IS EXTREMELY USEFUL FOR ANALYSING ALL TYPES OF TIME SERIES.   THE FFT IS THE BASIS
OF THE MUSIC ANALYSIS PROGRAM DESCRIBED BELOW AND IS ALSO INCLUDED IN IT.   SUBROUTINE.

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2002   PLANE GEOMETRY   SIZE: 4.0K   PRICE: $5.00

   FINDS CIRCLES SPECIFIED BY THREE POINTS, POLYGON AREAS, AND ALL PLANE
TRIANGLE SOLUTIONS.   INTERACTIVE.

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2003   SPHERICAL TRIGONOMETRY   SIZE: 4.0K   PRICE: $5.00

FINDS ALL SPHERICAL TRIANGLE SOLUTIONS AND COMPUTES THE DISTANCE BETWEEN TWO
POINTS ON THE EARTH'S SURFACE GIVEN THEIR LATITUDES AND LONGITUDES.   INTERACTIVE.

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2004   TRIG PACKAGE   SIZE: 7.5K   PRICE: $7.00

   CONTAINS PROGRAMS 2002 AND 2003.

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2005   ROOT FINDER   SIZE: 4.7K   PRICE: $5.00

   FINDS ROOTS OF POLYNOMIALS OF DEGREE 4 OR LESS.   THIS IS NOT AN APPROXIMATION
ROUTINE AND ACCURACY IS LIMITED ONLY BY THE ACCURACY OF THE TRS-80 MATH FUNCTIONS.
INTERACTIVE.

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2006   NUMERICAL INTEGRATION   AVAILABLE SOON

  TRAPEZOIDAL, SIMPSON, AND GAUSSIAN QUADRATURE INTEGRATION ROUTINES. A ROUTINE
IS ALSO INCLUDED FOR INTEGRATION OVER AN UNEVENLY SPACED NUMBER OF POINTS. SUBROUTINES.

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2007   MATRIX ROUTINES   AVAILABLE SOON

  ROUTINES TO MULTIPLY AND INVERT MATRICES, FIND DETERMINANTS, SOLVE SIMULTANEOUS EQUATIONS.
VECTOR OPERATIONS (CROSS, DOT, MULTIPLICATION BY SCALAR, ETC.) INCLUDED. SUBROUTINES.

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2008   COMPLEX MATH   AVAILABLE SOON

  ROUTINES TO ADD, SUBTRACT, MULTIPLY, DIVIDE, EXPONENTIATE COMPLEX NUMBERS. CALCULATES
COMPLEX TRIG FUNCTIONS, EVALUATES COMPLEX POLYNOMIALS. SUBROUTINES.

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2009   CURVE FITTING   AVAILABLE SOON

  FITS SMOOTH CURVES TO DATA USING SINGLE, MULTIPLE LINEAR REGRESSION OR POLYNOMIALS. SUBROUTINES.

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3001   ASTRONOMY 1   SIZE: 7.9K   PRICE: $7.00

  FINDS GREENWICH HOUR ANGLE AND RIGHT ASCENCION OF ARIES, DECLINATION, GREENWICH
HOUR ANGLE, AND RIGHT ASCENCION OF SUN, EQUATION OF TIME, AND SUNRISE AND
SUNSET TIME.   INTERACTIVE.

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3002   STAR FINDER   AVAILABLE SOON

  CALCULATES POSITION OF A STAR GIVEN THE DATE, TIME, AND OBSERVER'S LOCATION. INTERACTIVE.

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4001   RENUMBER   SIZE: 2.0K   PRICE: $5.00

  THIS INTERACTIVE ROUTINE WILL COMPLETELY RENUMBER THE LINES IN A BASIC PROGRAM.
BOTH THE LINE NUMBERS THEMSELVES AND REFERENCES TO THEM IN OTHER LINES ARE CHANGED.
USER MAY SPECIFY LINES TO BE CHANGED, FIRST NEW LINE, AND NEW INCREMENT.
THE ONLY RESTRICTION IS THAT THE NEW NUMBERS HAVE THE SAME NUMBER OF DIGITS
AS THE OLD NUMBERS.   THE ROUTINE REQUIRES TWO REAL VARIABLE STORAGE LOCATIONS
FOR EACH LINE CHANGED.

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4002   SCREEN PLOTTER   SIZE: 6.5K   PRICE: $7.00

  SUBROUTINES FOR DRAWING GRAPHS ON THE VIDEO DISPLAY.   ROUTINES ARE INCLUDED
FOR SCALING ARRAYS TO BE PLOTTED, FOR DRAWING AXES WITH OR WITHOUT TIC MARKS,
AND FOR DRAWING LINES FROM POINT TO POINT.   POLAR PLOTS AND HISTOGRAMS MAY BE

CONSTRUCTED.   EITHER OR BOTH SCALES MAY BE LINEAR OR LOGARITHMIC.   A COMPLETE
SCALED PLOT OF ONE ARRAY VERSUS ANOTHER MAY BE DONE WITH A SINGLE CALL.

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4003   LINE PRINTER PLOTTER   AVAILABLE SOON

  PROVIDES THE FEATURES OF PROGRAM 4002 FOR CREATING PLOTS ON THE RADIO SHACK LINE PRINTER.

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4004   A. L. RENUMBER   SIZE: AVAILABLE SOON   PRICE: $5.00

  ASSEMBLY LANGUAGE PROGRAM TO RENUMBER BASIC PROGRAMS; PROVIDES THE SAME FEATURES
AS #4001, BUT IS NOT LIMITED BY THE NUMBER OF DIGITS IN THE LINE NUMBERS.   MUCH FASTER.

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5001   BASIC STATISTICS   SIZE: 12.1K   PRICE: $5.00

  COMPUTES MEAN, VARIANCE, STANDARD DEVIATION, AND STANDARD ERROR OF GROUPED OR
UN-GROUPED SINGLE SAMPLES.   CALCULATES REGRESSION AND CORRELTATION COEFFICIENTS
OF AN UNWEIGHTED OR WEIGHTED DEPENDENT VARIABLE VERSUS AN INDEPENDENT VARIABLE.
COEFFICIENT ERRORS ARE ALSO FOUND.   WILL SMOOTH DATA WITH EITHER A RUNNING MEAN
OR WITH BINOMIAL SMOOTHING.   SUBROUTINES.

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5002   DISTRIBUTION FUNCTIONS   AVAILABLE SOON

  EVALUATES AND/OR INTEGRATES SEVERAL COMMONLY USED DISTRIBUTION FUNCTIONS: NORMAL,
F, T, CHI-SQUARE, BINOMIAL, POISSON.   SUBROUTINES.

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5003   VARIANCE ANALYZER   AVAILABLE SOON

  ONE WAY AND TWO WAY ANALYSIS OF VARIANCE. SUBROUTINES.

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5004   COVARIANCE ANALYZER   AVAILABLE SOON

  ONE WAY ANALYSIS OF COVARIANCE.   SUBROUTINE.

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6001   BASIC ELECTRONICS   AVAILABLE SOON

  BASIC AC AND DC CIRCUIT CALCULATIONS.   OHM'S LAW, SERIES AND PARALLEL R,L,C CIRCUITS,
RESONANCE;   BASIC TRANSISTOR AMPLIFIERS AND OP AMP DESIGN.   BASIC FILTER CALCULATIONS.
INTERACTIVE.

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6002   HAM HELPER   AVAILABLE SOON

  BASIC ELECTRONICS (#6001) PLUS ANTENNA DESIGN, AND A ROUTINE TO CALCULATE THE
ANTENNA POINTING DIRECTION TO A SPECIFED LOCATION ON THE EARTH'S SURFACE.   INTERACTIVE.

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7001   MUSIC ANALYSIS AND SYNTHESIS   SIZE: 6.5K   PRICE: $15.00

   THIS PROGRAM, DESCRIBED IN AN ARTICLE BY G. S. STILES IN THE FEBRUARY 1979 ISSUE
OF INTERFACE AGE, USES FOURIER ANALYSIS TO ANALYZE AND/OR MODIFY EXISTING MELODIES
AND TO CREATE NEW TUNES.   THE PROGRAM WILL ANALYZE BOTH THE PITCH AND THE DURATION
OF THE NOTES.   OPPORTUNITES FOR CREATION AND ANALYSIS WITH THIS PROGRAM ARE
VIRTUALLY UNLIMITED.   INTERACTIVE.

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8001   DATES   SIZE: 4.9K   PRICE: $5.00

   FINDS DAY-OF-YEAR, DAY OF THE WEEK, OR JULIAN DATE FOR A GIVEN DATE.   ALSO FINDS
THE NUMBER OF DAYS BETWEEN TWO DATES.   INTERACTIVE.

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8002   BEARINGS   SIZE: 11.7K   PRICE: $10.00

   CALCULATES GEOGRAPHIC AND COMPASS BEARINGS FROM LOCATION INPUT BY LATITUDE
AND LONGITUDE TO OVER 200 WORLD CITIES.   DATA BASE INCLUDED.   INTERACTIVE.

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8003   BIORHYTHM PLOTTER   AVAILABLE SOON

   CALCULATES AND PLOTS (IF YOU HAVE A LINE PRINTER) YOUR BIORHYTYM CYCLES GIVEN YOUR
BIRTHDAY AND BIRTH YEAR.   INTERACTIVE.

ORDER FORM

Mail To:
BENCHMARK COMPUTING SERVICES
P. O. BOX 385
PROVIDENCE, UTAH 84332

NAME:_____ REC'D:_____

APT/BLDG:_____ SENT:_____

STREET ADDRESS:_____ _____

CITY:_____STATE:_____ZIP:_____ _____

Please fill in the following information to help us serve you better:

Occupation:_____ Other hobbies:_____

Computer:_____ Peripherals:_____

Principal use of your computer:_____

Software Interests: 8080_____ Z-80_____ TRS-80 Machine & Assemb. Language:_____

Electronics:_____ CB:_____ SWL:_____ Ham:_____ Astronomy:_____ Math:_____

Science:_____ Statistics:_____ Music:_____ Personal Finances:_____ Business:_____

Programs you would like:_____

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Program Number	Program Name	Unit Price $+$	Tapes @ $2.00 $=$	Unit Total Price

Check___ Money Order___ Enclosed (no COD's)   Total Price: _____

Charge to Master Charge___ Visa___   Utah Residents Add

Card #:_____   4.75% Sales Tax: _____

Expiration Date:_____   Total Order: _____

Signature:_____

BENCHMARK COMPUTING SERVICES
P. O. BOX 385
PROVIDENCE   UTAH 84332

ADDRESS CORRECTION REQUESTED

SALT LAKE CITY. UT 841
PM
JAN 24
1979

15¢
U.S. POSTAGE
OLIVER
WENDELL
HOLMES