

RECOMP II USERS' PROGRAM NO. 1138

PROGRAM TITLE: LEAST SQUARES POLYNOMIAL CURVE FIT #3  
PROGRAM CLASSIFICATION: General  
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PURPOSE: To permit the fitting of polynomials of order 14 or less through up to 256 points in the X-Y plane.  
DATE: 19 July 1962

Published by

RECOMP Users' Library

at

AUTONETICS INDUSTRIAL PRODUCTS  
A DIVISION OF NORTH AMERICAN AVIATION, INC.  
3400 East 70th Street, Long Beach 5, California

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1. INTRODUCTION

To permit the fitting of polynomials of order 14 or less through up to 256 points in the X-Y plane.

2. USAGE

- (1) Read in the "Least Squares Poly Curve Fit #3" tape.
- (2) Press "Start 1". The computer will ask for the order of the desired polynomial. Type this order on the typewriter followed by a space.
- (3) The computer will ask for the number of X-Y pairs you will be entering. Type in this number as in (2) above.
- (4) The computer will ask for X-Y pairs. Type in X followed by a space, then Y followed by a space. The sequence of X-Y pairs is immaterial, and the form of entry may be any one of the several listed below.

To enter 83.5, you may type:

- (a) 83.5 (space)
- (b) +83.5 (space)
- (c) +.835 + 2 (space)
- (d) +8.35 + 1 (space)
- (e) +835 - 1 (space)

- (5) At the completion of X-Y entry, the computer will ask "ERROR?" If no error has been made, type a carriage return. If an error was made in typing in the X-Y pairs, type in the number of the X-Y pair in error, as a 3 digit number with no space following it. For example, if pair number 45 is in error, type in 045. The computer will then ask for the corrected values of X and Y. This may be repeated as many times as necessary.
- (6) After the errors, if any, have been corrected, the computer will begin computations and finally print out the following:
  - (a) Polynomial coefficients (constant term first)
  - (b) Mean of the Y values
  - (c) Root-mean-square deviation of the fitted polynomial curve from the actual curve.
- (7) To fit a different order polynomial through the same set of points, turn on "Sense Switch B" and proceed at (2) above. The computer will not ask for new X-Y pairs, but will compute the new polynomial.

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- (8) To enter a new set of points, proceed at (2) above.
- (9) "Start 2" enters the program at (5) above.
- (10) To print out the polynomial curve computed from the calculated coefficients, press start 3.
- (11) To print more significant figures in the coefficients, change word 04114 to +0000NN0 +7200370, where NN is the number of figures desired ( $2 \leq NN \leq 11$ ).

### 3. CODING INFORMATION

Program Locations	0001-0630	
Data Locations	1000-4777	6000-7757
Subroutines	AN 007.1	3000-3177
	AN 0114	3200-3437
	AN 060	3500-3717

Locations to dump for duplication	{	0001-0630
		3000-3437
		3500-3717