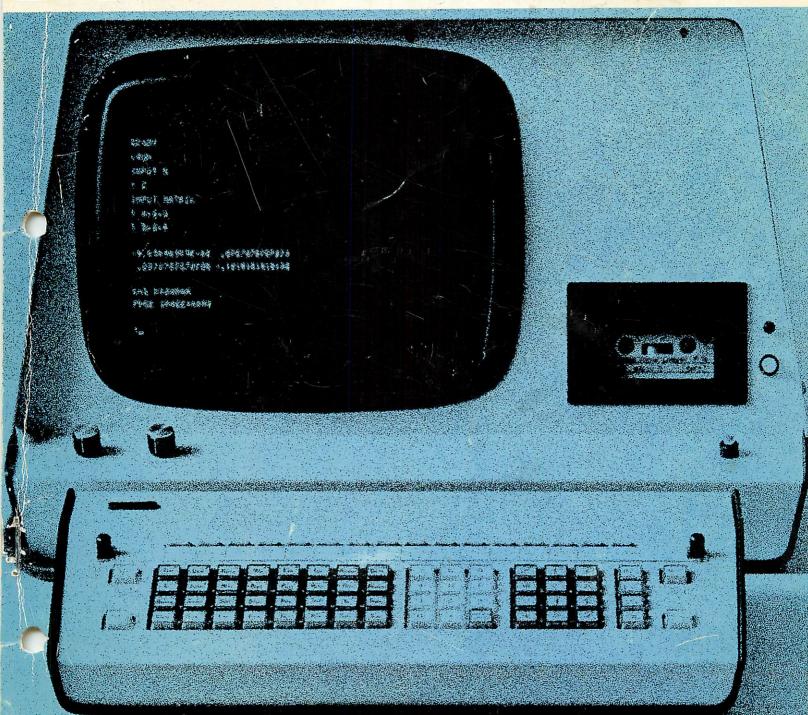


DEMO 22A DEMONSTRATION PACKAGE

## 343TEM 2200



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### **DEMO 22A**

(PREVIOUSLY VOL. 289)

# System 2200 Demonstration Package

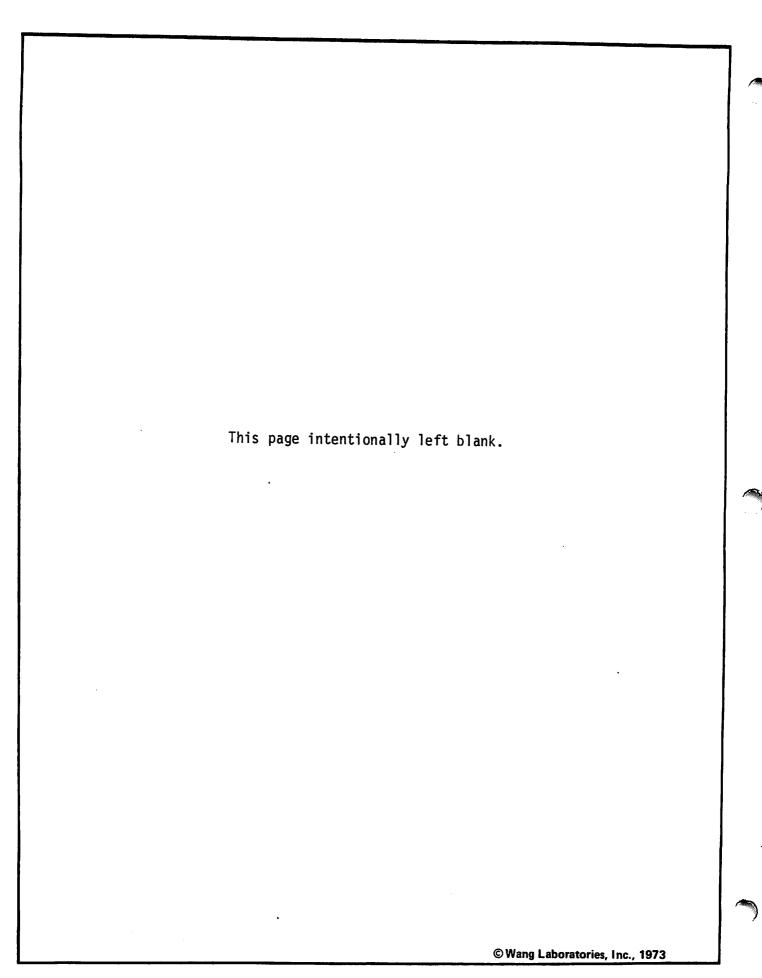
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#### INTRODUCTION

This manual is intended to provide the Wang salesforce with a set of general demonstration programs used in showing customers the variety of 2200 advanced programmable calculator capabilities.

The programs selected include CRT display-oriented "eye-catchers", mathematical programs and business-oriented programs. The last program in this package is a WANG EPA/LEASE agreement preparation program that not only impressively demonstrates the business-oriented capabilities of the 2200 advanced programmable calculator; but, also immediately types the actual document on a WANG EPA/LEASE form for the convenience of the customer.



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2200 DEMONSTRATION PACKAGE (CONTROL BLOCK)

TITLE

12/1/73

NUMBER

DATE

2200A-02, 2215, 2216/2217, 2201 (Optional)

**EQUIPMENT** 

#### PROGRAM ABSTRACT

The "Control" block places 8 programs at the user's fingertips by using the Special Function Keys

SAVE "NAME"	BYTES REQUIRED
	SAVE IVAINE

The Control Block allows for up to 8 programs to be available to the user at the touch of a key. The program "remembers" where it is and will either "search" forward or backward to load the desired program.

The program requires that the variables I8 and I9 not be used in any of the programs.

It is very important that the position of the tape not be changed except by the program. Should the position of the tape be changed, such as an accidental REWIND, it is necessary that the program be started from the beginning (see Section I of the Operating Instructions).

Any program that is in memory may be rerun by either keying Special Function 8 or by keying the Special Function for that program.

I. TO LOAD CONTROL BLOCK

1. Place tape into tape cassette unit and key REWIND.

2. Key

RESET

3. Key

CLEAR

CR/LF

4. Key

LOAD

CR/LF

II. THE FOLLOWING DEMONSTRATION PROGRAMS ARE NOW AVAILABLE:

SPECIAL FUNCTION	PROGRAM
0	DICE
1	ONE ARMED BANDIT
2	SINE CURVE
3	RACE TRACK
4	LINEAR REGRESSION
5	SIMULTANEOUS EQUATIONS
6	MORTGAGE
7	PAYROLL
8	RE-RUN

- III. If RUN CR/LF is keyed
  - a) tape position is changed
  - b) the following is displayed

#### 2200 GENERAL DEMONSTRATION PACKAGE

KEY APPROPRIATE SPECIAL FUNCTION

- 00 DICE
- O1 ONE ARMED BANDIT
- 02 SINE CURVE
- 03 RACE TRACK
- 04 LINEAR REGRESSION
- 05 SIMULTANEOUS EQUATIONS
- 06 MORTGAGE
- 07 PAYROLL
- 08 RE-RUN

DICE	 		
TITLE			

PMi.04-2200.02A-00FI-2-0 12/1/73

NUMBER DATE
2200A-2, 2215(22), 2216/2217

EQUIPMENT

#### **PROGRAM ABSTRACT**

Program plays CRAPS with the user.

BLOCK	SAVE "NAME"	BYTES REQUIRED
2		

This program will 'play' the game of CRAPS with the user.

The results of a 'roll' are displayed on the screen in the form of 2 die.

#### Rules:

A "roll" of 7 or 11 automatic wins

A "roll" of 2 or 12 automatic lost

Any other roll is "your point", you roll continuously until you roll a 7 or 11 in which case you lose, or until you roll your point in which case you win.

#### EXAMPLE

1. Key

RESET

2. Key

Special Function 0

Screen will clear and display Step 3 in the upper left hand corner of the screen.

3. INSTRUCTION

YOUR BET?

4. Key

Your Bet\* CR/LF

The screen will display the result of 'your' roll. A roll of 7 or 11, you automatically win, proceed to Step 5.

Any other roll becomes your 'point' and you will 'roll' until you match your point (proceed to Step 5) or until a 7 or 11 appears (proceed to Step 7).

5. INSTRUCTION

YOU WIN

- 6. Go to Step 8
- 7. INSTRUCTION

YOU LOSE

8.

If you have winnings, go to Step 9. Otherwise go to Step 11.

9. INSTRUCTION

YOU HAVE \$#.## LEFT

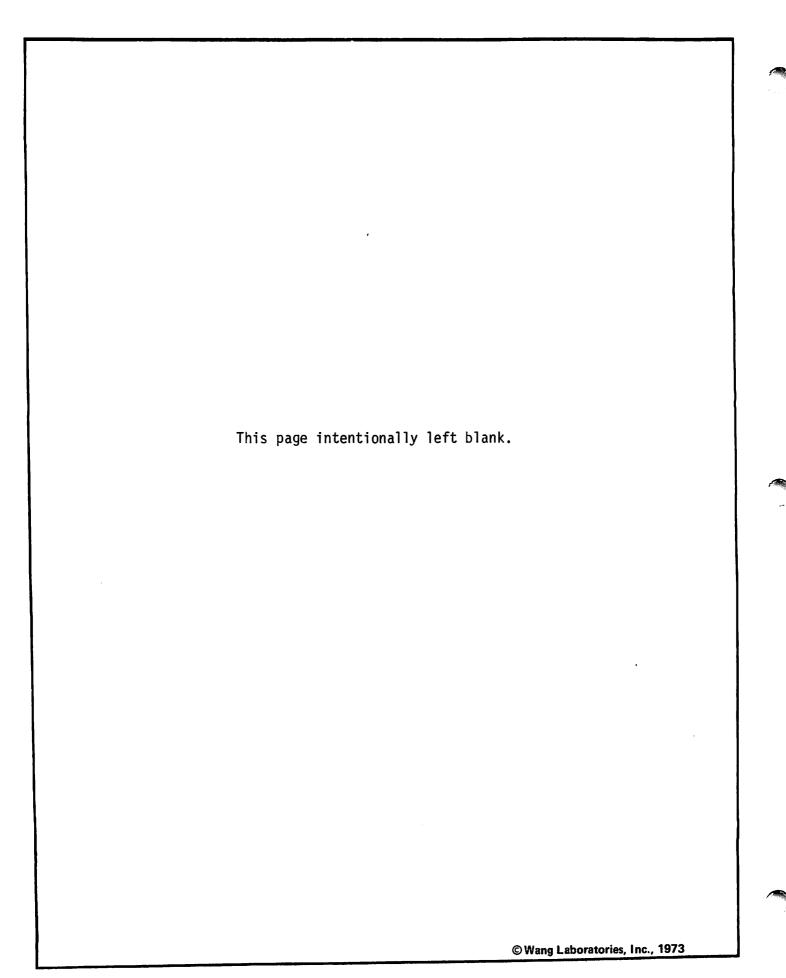
- 10. Go to Step 12
- 11. INSTRUCTION

YOU ARE \$#.## IN THE HOLE

12. INSTRUCTION

**NEW BET?** 

- 13. Go to Step 4
  - \* To end game, key 0 CR/LF



ONE-ARMED BANDIT	
TITLE	
PMi.04-2200.02A-00FI-3-0	12/1/73
NUMBER	DATE
2200A.02, 2215(22), 2216/2217	
FOLLIDMENT	

PROGRAM ABSTRACT					
Program 'turns' the CRT-display into an One Armed Bandit.					
BLOCK	SAVE "NAME"	BYTES REQUIRED			
3					

This program "turns" the CRT display into a one armed bandit.

To stop the program, enter 0 for amount, or lose all your money.

#### OPERATING INSTRUCTIONS EXAMPLE RESET 1. Key 2. Special Function 1 Key 3. INSTRUCTION ONE ARMED BANDIT You can bet any amount up to your balance. To bet, type the dollar amount and RETURN. When your balance reaches zero, the game is over....or enter '0' to quit any time. Good luck.... Your Starting Balance is \$ #.##. 4. INSTRUCTION HOW MANY DOLLARS DO YOU WANT TO PUT IN ON YOUR FIRST PLAY? 5. Kev Amount You Wish To Wager CR/LF 6. If your wager is not less than zero, and is less than or equal to your balance, then proceed to Step 8. INSTRUCTION ....ILLEGAL PLAY....TRY AGAIN 7. Go to Step 5. 8. If your wager is not equal to zero, then proceed to Step 9. Program halts. 9. The screen will display the result of the one-armed bandit and whether you won or lost. 10. If you won.... ...YOU WIN BALANCE = \$If you lost.... ....A LOSER BALANCE = \$11. If the balance is zero, machine displays.... ....YOU HAVE RUN OUT OF MONEY.... THE GAME IS OVER. BETTER LUCK NEXT TIME. otherwise go to Step 13. © Wang Laboratories, Inc., 1973

**EXAMPLE** 

12. Program halts

13. <u>INSTRUCTION</u>

AMOUNT?

14. Go to Step 5

SINE CORVE		
TITLE		
PS.02-2200.00A-00FI-1-1	12/1/73	
NUMBER 2200A-02, 2215, 2216/2217	DATE	
EQUIPMENT		

PROGRAM ABSTRACT  This program will dimented by approximat	splay the Sine Curve for x	= 0 and x incre-
BLOCK	SAVE "NAME"	BYTES REQUIRED
4		

This program is another "eye-catcher". It plots the Sine Curve. The curve will be displayed continuously until RESET is keyed.

The symbol(s) used as the plot element is a user supplied input.

The curve starts at x=0 and is incremented by  $\underline{.2*180}$  °.

For best results, limit the number of characters in the plot element to 8 or less.

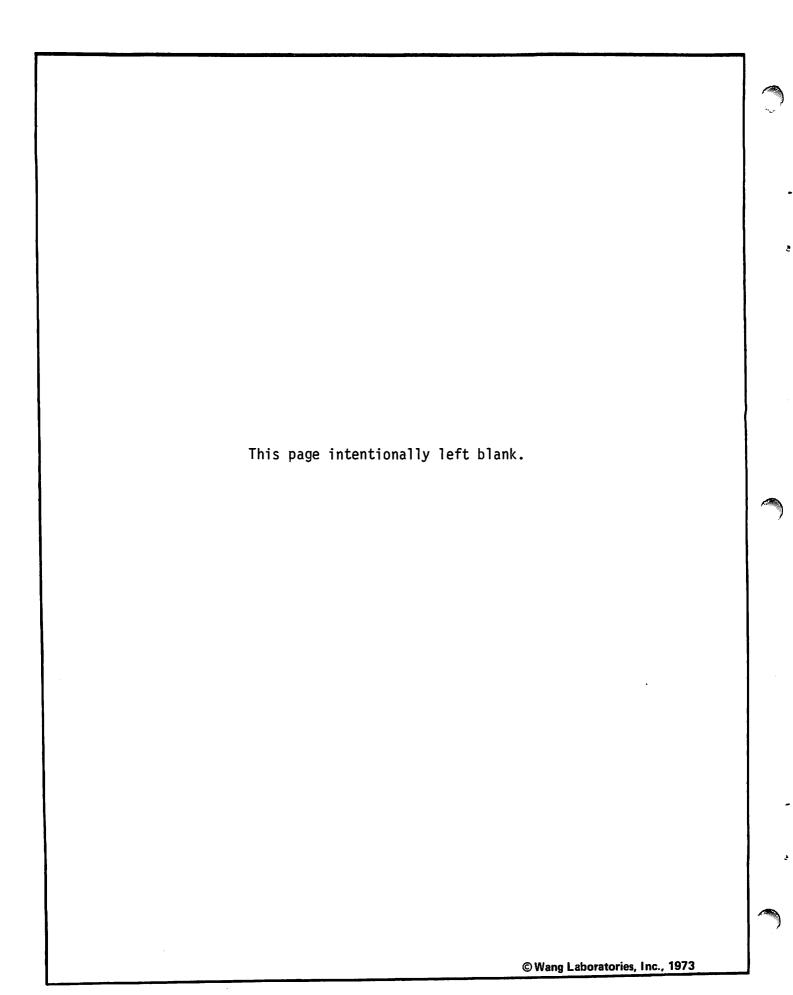
#### **EXAMPLE**

Plot the Sine Curve using "HI" as a plot symbol.

- 1. Key RESET
- 2. Key Special Function 2
- 3. <u>INSTRUCTION</u>
- 4. Key SYMBOL CR/LF
- 5. Program will run until RESET is keyed.

The plot symbol used is controlled by the user. Input the symbol you wish to be used.

4. Key <u>H I</u> CR/LF



TITLE		
PMi.04-2200.02A-00FI-1-0	12/1/73	
NUMBER 22004-02 2215 2216/2217	DATE	

#### PROGRAM ABSTRACT

RACE TRACK

EQUIPMENT

Displays a race between five "horses" and keeps track record, odds and number of wins.

NAME"	BYTES REQUIRED

This program will display a "horse" race on the CRT. There are five "horses" and their movements are random. The first "horse" to reach the end of the track is the winner. The winner's time and length of lead over the second place "horse" is displayed along with the track record and odds table.

The program requires no user inputs and will run until

RESET

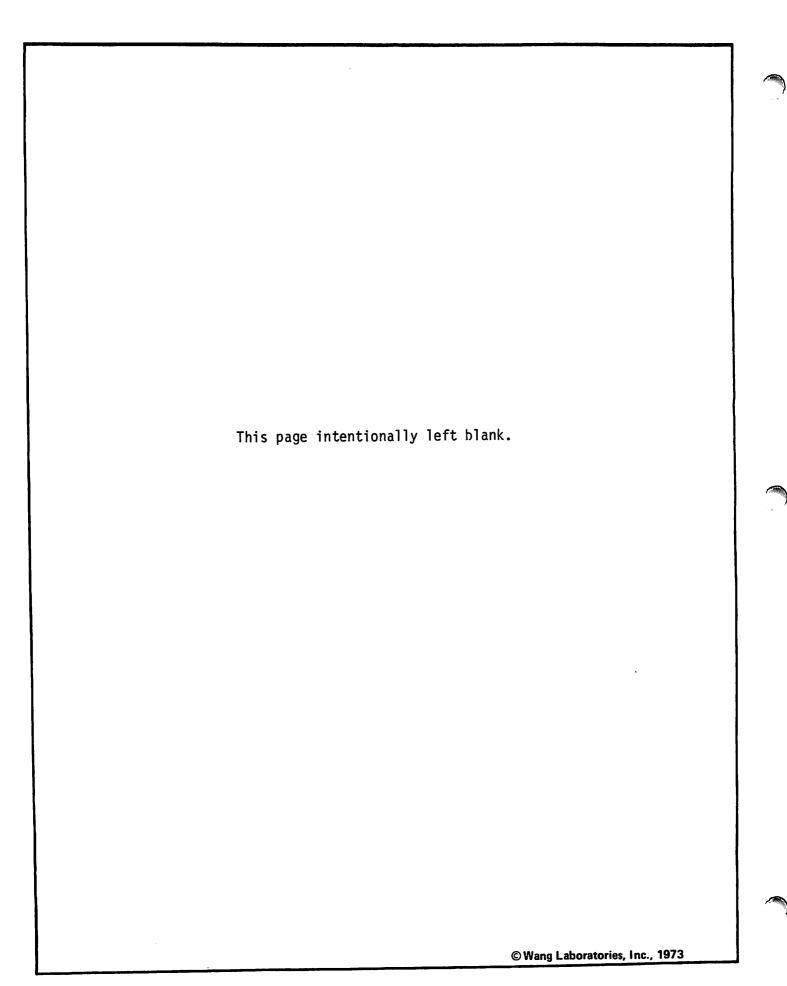
is keyed.

EXAMPLE

Run a Horse Race

1. Key RESET

2. Key Special Function  $\underline{3}$ .



LINEAR REGRESSION		
TITLE		
PS.01-2200.02A-00FI-2-1	12/1/73	
NUMBER 2200A-02, 2215, 2216/2217	DATE	
EQUIPMENT	<del></del> _	

#### **PROGRAM ABSTRACT**

This program plots observed values, calculates the curve Y=A+Bx by the method of least squares. Also, an analysis of regression is performed.

BLOCK	SAVE "NAME"	BYTES REQUIRED
6		

This program fits the curve y = A + Bx to a set of N data points by the method of least squares. Also, an analysis of regression is performed, the regression table F - value, coefficient of determination, coefficient of correlation, and standard error of estimate are printed out. The user may estimate values of y from the regression curve by inputting values of x.

A plot of observed and calculated data points is also displayed.

#### FORMULAE:

$$A = \frac{\sum y - B \sum x}{N}$$

$$B = \frac{N \sum xy - (\sum x)(\sum y)}{N \sum x^2 - (\sum x)^2}$$

$$R = \frac{N \Sigma xy - \Sigma x \Sigma y}{\sqrt{\left(N \Sigma x^2 - (\Sigma x)^2\right) \left(N \Sigma y^2 - (\Sigma y)^2\right)}}$$

 $R^2$  = Coefficient of Determination

R = Coefficient of Correlation

Standard Error of Estimate

$$\frac{1}{N} \sqrt{N\Sigma y^2 - (\Sigma y)^2 - \{N\Sigma xy - (\Sigma x)(\Sigma x)\} 2}$$

$$\frac{1}{N\Sigma x^2 - (\Sigma x)^2}$$
F - Test for R, F<sub>R</sub> = 
$$\frac{R^2 (N-2)}{1-R^2}$$

#### EXAMPLE

Plot the following observed data points. Plot Y=A+Bx using the method of least squares to calculate A and B. Perform an analysis of regression and solve for Y=A+Bx where x=2.1.

(1,2), (2,4), (3,6), (4,8), (5,10)

- 1. Key RESET
- 2. Key Special Function  $\underline{4}$
- 3. INSTRUCTION

0---1---2---3---4---5---6---7---8---9--10 X AXIS

4. INSTRUCTION

ENTER THE NUMBER OF OBSERVED PAIRS?

5. Key <u>NO. OF OBSERVED PARTS</u>

5. Key 5 CR/LF

CR/LF

6. INSTRUCTION

INPUT X1, Y1 (Max. should be 10,10)

7. Key <u>X1</u>, <u>Y1</u> CR/LF

7. Key <u>1</u> , <u>2</u> <u>CR/LF</u>

The point (X1, Y1) will be plotted on the screen. The program will proceed to Step 6 and ask for the next point. After all points have been entered, program proceeds to Step 8.

#### EXAMPLE

8. INSTRUCTION NOW, HERE'S THE PLOT OF THE REGRES-SION CURVE THAT BEST FITS THE OB-

SERVED VALUES.

REGRESSION EQUATION:Y=##.##+##.##\*X

The line Y=A+BX will be plotted over the observed points.

9. INSTRUCTION KEY EXEC TO CONTINUE?

10. Key CR/LF

11. Read Regression Table

#### REGRESSION TABLE

SOURCE	DEG. FREEDOM	SUM OF SQUARE	MEAN SQUARE
REGRESSION	1	40	40
RESIDUAL	3	0	INF.
TOTAL	4	40	

#### F = INFINITY

COEFF. OF DETERMINATION = 1

COEFF. OF CORRELATION

STANDARD ERROR OF EST. = 0

- 12. INSTRUCTION
- 14. <u>INSTRUCTION</u>
- 15. Key <u>X</u> CR/LF
- 16. Read
- 17. INSTRUCTION
- 18. Proceed to Step 13.
- 19. Program ends.

#### **EXAMPLE**

DO YOU WISH TO ESTIMATE VALUES OF Y FROM THE REGRESSION CURVE? (1 = YES, 0 = NO)

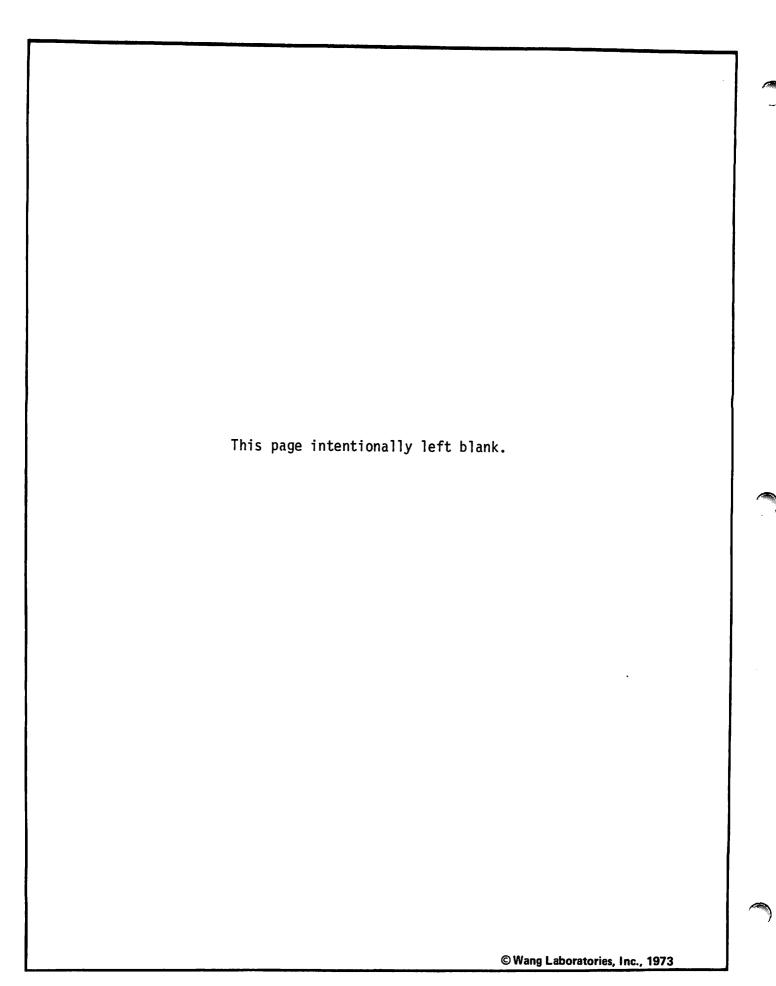
13. Key <u>1</u> | CR/LF|

INPUT X?

15. Key <u>2</u> . 1 CR/LF

Y = 4.2

ANOTHER POINT? (1 = YES, 0 = NO)



SIMULTANEOUS EQUATIONS		
TITLE		
PS.02-2200.02/\-00FI-2-1	12/1/73	
NUMBER 2200A-02, 2215, 2216/2217	DATE	
EQUIPMENT	<del></del>	

PROGRAM ABSTRACT	<del></del>		
This program solves a system of simultaneous equations.			
BLOCK	SAVE "NAME"	BYTES REQUIRED	
7			

This program solves a system of N simultaneous equations (N  $\leq$  4).

The data is manipulated as it is entered and is not stored as inputted.

The simultaneous equations are displayed as their coefficients are being entered.

## **EXAMPLE**

Solve the following system of equations:

3X1 + 2X2 + 4X3 + 1X4 = 5 2X1 + 0X2 + 2X3 + 5X4 = 1 2X1 + 1X2 + 2X3 + 1X4 = 32X1 + 4X2 + 3X3 + 1X4 = 4

- 1. Key RESET
- 2. Key Special Function 5
- 3. INSTRUCTION

SIMULTANEOUS EQUATIONS.

INPUT N?

4. Key N CR/LF

4. Key <u>4</u> CR/LF

Al\*Xl + Bl\*X2 + Cl\*X3 + Dl\*X4 = Y will be displayed. Different variations will appear depending on the value of N.

5. INSTURCTIONS

۸1?

6. Key Al CR/LF

6. Key 3 CR/LF

Program will repeat Steps 5, 6 until all coefficients have been entered. After all coefficients have been entered, proceed to Step 7.

7. INSTRUCTION

Υ?

8. Key Y CR/LF

8. Key <u>5</u> CR/LF

Program will repeat to Step 5 until all equations have been entered.

# **EXAMPLE**

9. Read

THE SOLUTIONS ARE:

X1 = 1.42857142857 X2 = .285714285716 X3 = .142857142858 X4 = .4285714285712

This output will vary with the value of N.

# WANG 2200 SERIES PROGRAM

MORTGAGE		
TITLE		

PF.05-2200.02A-00FI-1-1 12/1/73

NUMBER DATE
2200A-02, 2215, 2216/2217, 2201 (Optional)

EQUIPMENT

### **PROGRAM ABSTRACT**

This program computes the monthly payment and total interest on a loan. The mortgage table may be displayed or printed.

BLOCK	SAVE "NAME"	BYTES REQUIRED
8		

# PROGRAM DESCRIPTION

This program computes the monthly payment and total interest on a loan by the formulae:

$$M = \frac{P*I/1200}{1 - (1 + I/1200) + - (12*N)}$$

$$T = (12*N) * MP$$

Where:

M = Monthly Payment
T = Total Interest

P = Principal

I = Annual Interest Rate (%)

N = No. of Years

The Mortgage Table may be displayed (CRT) or typed on the 2201. The table is displayed or typed in yearly increments.

## **EXAMPLE**

Find monthly payment and total interest on the following loan:

Principal = \$18,900 Annual Interest Rate = 7% No. of Years = 25

- 1. Key RESET
- 2. Key Special Function  $\underline{6}$
- 3. INSTRUCTION
- 4. Key PRINCIPAL CR/LF
- 5. INSTRUCTION
- 6. Key <u>A.I.R.(%)</u> CR/LF
- 7. INSTRUCTION
- 8. Key NO. OF YEARS CR/LF
- 9. READ:
- 10. INSTRUCTION
- 11. Key <u>0</u> <u>CR/LF</u> if you do not want table and program ends.

  Key 1 <u>CR/LF</u> if you do

want table and go to Step 12.

12. INSTRUCTION

MONTHLY MORTGAGE CALCULATION

#### PRINCIPAL?

- 4. Key <u>1 8 9 0 0 CR/LF</u>
- ANNUAL INTEREST RATE (%)
- 6. Key 7 CR/LF
- NO. OF YEARS?
- 8. Key 2 5 CR/LF

Monthly Payment = \$ 133.58 Total Interest = 21.174.00

Do you want Mortgage Table? (1 = Yes, 0 = No)

11. Key 1 CR/LF

Do you want a hard copy of table? (1 = Yes, 0 = No)

# EXAMPLE

13. Key O CR/LF if you do not want typed copy and go to Step 14.

13. Key <u>0</u> <u>CR/LF</u>

\*Key  $\frac{1}{\text{copy}}$  CR/LF if you do want typed copy and go to Step 14.

\*Typewriter (2201) must be plugged in, connected to CPU and in the AUTO MODE.

#### 14. READ:

AT END	PRINCIPAL	INTEREST	PRINCIPAL
OF YEAR	OUTSTANDING		REPAYMENT
1 2 3 4 5 6 7 8 9	\$18,610.88 \$18,300.85 \$17,968.40 \$17,611.95 \$17,229.73 \$16,819.86 \$16,380.37 \$15,909.10 \$15,403.77 \$14,861.93	\$1,313.84 \$1,292.93 \$1,270.51 \$1,246.51 \$1,220.74 \$1,193.09 \$1,163.47 \$1,131.69 \$1,097.63 \$1,061.12	\$289.12 \$310.03 \$332.45 \$356.45 \$382.22 \$409.87 \$439.49 \$471.27 \$505.33 \$541.84
11	\$14,280.90	\$1,021.93	\$581.03
12	\$13,657.86	\$ 979.92	\$623.04

THE TABLE WILL BE DISPLAYED OR TYPED IN INCREMENTS OF 12.

# WANG 2200 SERIES PROGRAM

PAYROLL		
TITLE		
PF.14-2200.02A-00FI-1-1	12/1/73	
NUMBER	DATE	
2200A-02, 2215, 2216/2217		
EQUIPMENT		

PROGRAM ABSTRACT		
This program will c	alculate the gross and net	pay for employees.
BLOCK	SAVE "NAME"	BYTES REQUIRED
9		

# PROGRAM DESCRIPTION

This program will calculate the gross and net pay for employees whose deduction information is known.

The following restraints must be honored:

- 1.  $1 \le \text{Employee No.} \le 50$
- 2.  $$1.25 \le \text{Hourly Rate} \le $10.00$
- 3.  $0 \le \text{Hours Worked} \le 100$

NOTE: The type of deductions shown (i.e., pension, health insurance, etc.) vary with each employee number. To demonstrate this effectively, key in different employee numbers each time the program is run.

## **EXAMPLE**

Employee #25 is making \$5.75/Hr. and worked 45 Hrs. last week. What is his gross and net pay?

- 1. Key RESET
- 2. Key Special Function 7
- 3. INSTRUCTION

This program will calculate the gross and net pay for employees.

The following restraints must be honored.

- 1. EMPLOYEE NO. MUST BE AN INTEGER BETWEEN 1 AND 50.
- 2. HOURLY RATE MUST BE BETWEEN \$1.25 and \$10.00.
- 3. HOURS WORKED MUST BE BETWEEN O AND 100.

Input Employee No., hourly rate,
hours worked.

- 4. Key EMPLOYEE NO. , HOURLY RATE
  , HOURS WORKED CR/LF
- 4. Key 2 5 , 5 . 7 5 , 4 5

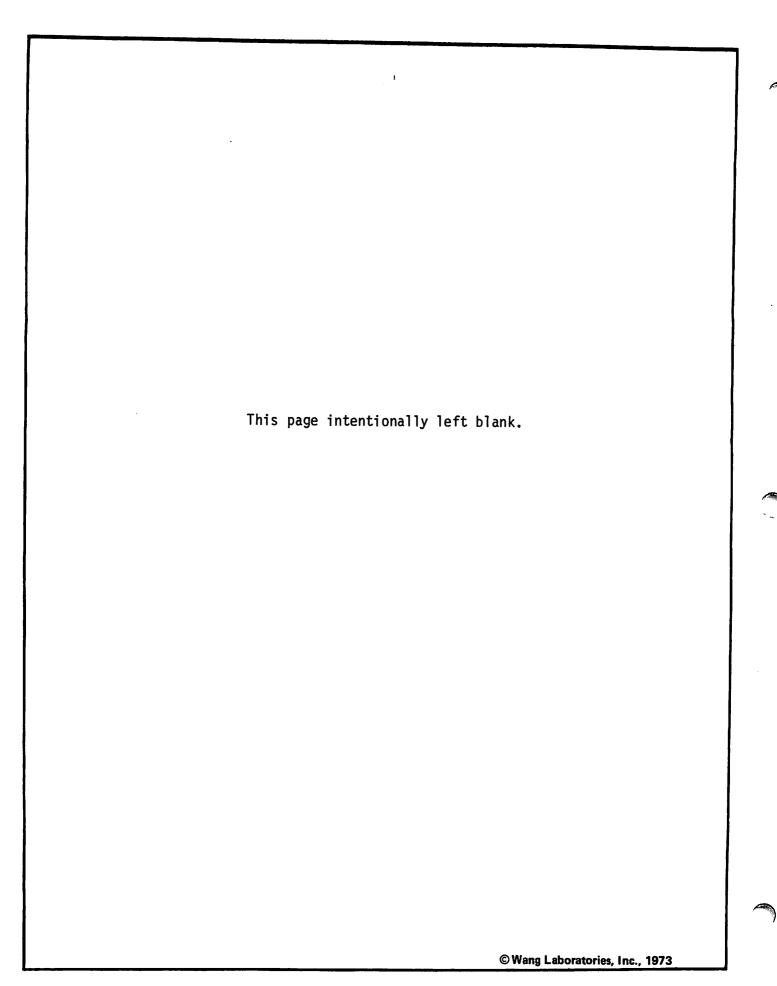
5. READ:

Employee Number 25 has 1 exemption.

Gross Pay = \$273.13

Less Deductions:

Federal Tax = 36.42 State Tax = 1.82 FICA TAX = 9.90 Net Pay = 224.99



# WANG 2200 SERIES PROGRAM

EPA/LEASE		
TITLE	- · ·	·

PMi.05-2200.02A-00FI-2-1
NUMBER

12/1/73

2200A-02, 2215, 2216/2217, 2201

DATE

**EQUIPMENT** 

#### **PROGRAM ABSTRACT**

This program will allow 2200 system to be designed by the "buyer".

SAVE "NAME"	BYTES REQUIRED
	SAVE "NAME"

## PROGRAM DESCRIPTION

This program is designed to have the user create his own system and determine exactly what it will cost him.

The options are:

E.P.A.

E.P.A./Maintenance

Full Pay Lease (24, 36 or 60 Months)

Lease With Purchase (3, 12, 36, or 60 Months)

Lease With No Purchase (3, 12, 24 Months)

Discount (<5%)

G.S.A. Discount (3.5%)

Educational Discount (5%)

Hardcopy Output

LOAD

## **EXAMPLE**

CR/LF CLEAR 1. RESET Key CR/LF

"EPA"

Control program is no longer resident.

CR/LF 2. RUN Key

Program displays equipment data on the screen in groups of 12.

3. After each group is displayed:

INSTRUCTION

STOP KEY CONTINUE (EXEC)

CR/LF Key CONTINUE 4.

> After all equipment data has been displayed, program continues with Step 5.

5. INSTRUCTION PRESS CONTINUE (CR/LF) FOR KEY PICTURE

CONTINUE CR/LF 6. Key

Program displays KEY PICTURE.

7. INSTRUCTION STOP DEPRESS APPROPRIATE FUNCTION KEY.

8. To clear out a prior configuration:

SHIFT | Special Function 30

Proceed to Step 10.

9. To Create a System Configuration:

> SHIFT Special Function 16

## **EXAMPLE**

10. Read in upper left hand corner of display:

INSTRUCTION

KEY (EXEC) TO ACCEPT VALUE
INPUT NEGATIVE VALUE TO BACK-UP LINES
INPUT QUANTITY OF 99 TO END QUERY

Various equipment data will be displayed one line at a time.

11. To 'order" a piece of equipment.

Key Qty. desired CR/LF

12. To accept the Qty. listed.

Key CR/LF

13. To End Query:

Key 9 9 CR/LF

14. To change an item previously listed:

(Note: If you have already entered 9 9, go to Step 9.)

 $\frac{\text{Key } - \frac{\text{No. of lines you wish to}}{\text{back-up}}$ 

CR/LF

15. When finished, program displays:

INSTRUCTION

STOP FUNCTION KEYS 16 = REWORK 17-18 = EPA 19-21 = LEASE/RENT PLANS

16. To 'Execute' an Equipment Purchase Agreement\*

Key SHIFT Special

Function 17

Screen displays E.P.A.

# **EXAMPLE**

17. To 'Execute' an Equipment Purchase Agreement with Maintenance\*

Key

SHIFT

Special

Function 18

Screen displays E.P.A. with Maintenance.

18. To 'Execute' a Full Pay LEASE

Key SHIFT Special

Function 19

19. INSTRUCTION

MONTHS 24, 36, or 60

20. Key No. of Months | CR/LF

Screen will display appropriate Full Pay Lease

21. To 'Execute' a Lease with Purchase Option

Key SHIFT

Special

Function 20

22. INSTRUCTION

MONTHS 3, 12, 36, or 60

23. Key No. Of Months CR/LF

Screen displays appropriate plan.

24. To 'Execute' a Lease with no Purchase

Key SHIFT Special

Function 21

\*A system must have already been created.

# **EXAMPLE**

25. INSTRUCTION

MONTHS 3, 12, 24

26. Key NO. OF MONTHS CR/LF

Screen displays appropriate plan.

27. To Take A Discount (less than or equal to 5%)

Key SHIFT Special

Function 25

28. INSTRUCTION

PERCENT DISCOUNT =

- 29. Key <u>DISCOUNT %</u> CR/LF
- 30. G.S.A. Discount (3.5%)

Key SHIFT Special

Function 26

31. Educational Discount (5%)

Key SHIFT Special

Function 27

32. To Print an E.P.A. on Plain Paper

Key SHIFT Special

Function 28

33. INSTRUCTION

DEPRESS KEY 17-21 (FORM DESIRED) THEN,

Key Picture is displayed

34. INSTRUCTION

1 - H.S. PRINTER,

2 - OUTPUT WRITER

# **EXAMPLE**

35. Key <u>1</u> CR/LF

or

Key 0 CR/LF

36. To Print an E.P.A. on Special Form

Key SHIFT Special

Function 29

37. INSTRUCTION

INSERT SPECIAL FORM PAPER IN OUTPUT DEVICE

- 38. Go to Step <u>33</u>
- 39. To display Key Picture

Key SHIFT Special

Function 31

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