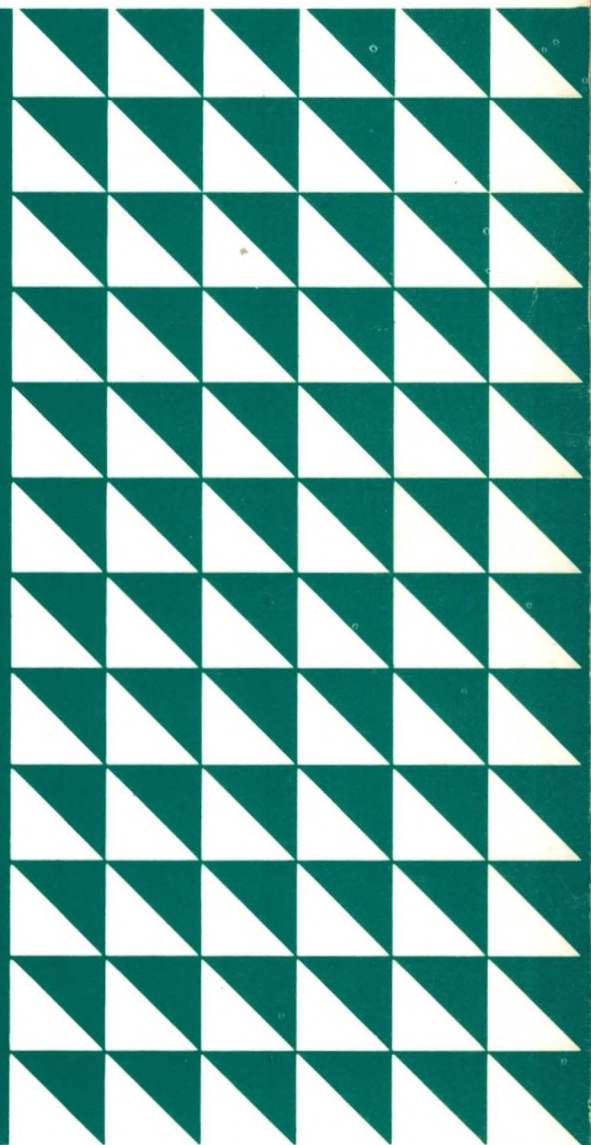




System/360  
Assembler Language Coding  
Sample Programs



Programmed Instruction



System/360  
Assembler Language Coding  
Sample Programs

Programmed Instruction

Major Revision (October 1969)

This publication is a revision of Form R29-0234-2 incorporating changes made on pages dated (10/69). The original publication is obsolete.

This material was produced for educational purposes only. The utmost care has been taken to ensure the accuracy of this publication. No responsibility is assumed for any inaccuracies that may occur. It should be understood, however, that changes may occur after this date (10/69) that may cause all or part of this publication to become obsolete.

Requests for copies of IBM publications should be made to your IBM representative or to the IBM Branch Office serving your locality. Address comments concerning this publication to:  
DPD Education Development, IBM Education Center, 6 Roosevelt Avenue, Endicott, New York 13760.

© Copyright International Business Machines Corporation 1966

# PROGRAM LISTING WITH COMMENTS

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	0022APR66 11/16/66
				1	PRINT ON,NOGEN	
000100				2	START 256	
				3	CARDIN DTFCD	C
					DEVADDR=SYSRDR, EOFADDR=EOJ, IOAREA=INPUT	C
				22 *		
				23	CDMOD	
				90 *		
				91	ALINE DTFPR	C
					BLKSIZE=132, DEVADDR=SYSLSLST, IOAREA=OUTPUT	C
				110 *		
				111	PRMOD	
				173 *		
000168	0580			174	BEGIN BALR 11,0	
00016A				175	USING *,11	
				176	OPEN CARDIN,ALINE	
00017E	47F0 B04A		001B4	184	B START	
				185 *		
				186	EOJ CLOSE CARDIN,ALINE	END OF JOB ROUTINE
				194	EOJ	
				197 *		
0001A4	07FA			198	READ GET CARDIN	READ MACRO
				203	BCR 15,10	
				204 *		
0001B2	07FA			205	WRITE PUT ALINE	WRITE MACRO
				210	BCR 15,10	
				211 *		
				212 *	ASSEMBLE AND PRINT THE HEADER LINES	
				213 *		
0001B4	D283 B147 B146	002B1	002B0	214	START MVC OUTPUT,OUTPUT-1	CLEAR OUTPUT AREA
0001BA	D241 B168 B1CB	002D2	00335	215	MVC HEADER,HDR1	MOVE FIRST HEADER TO OUTPUT AREA
0001C0	45A0 B03C		001A6	216	BAL 10,WRITE	PRINT FIRST HEADER LINE
0001C4	D241 B168 B20D	002D2	00377	217	MVC HEADER,HDR2	MOVE SECOND HEADER TO OUTPUT AREA
0001CA	45A0 B03C		001A6	218	BAL 10,WRITE	PRINT SECOND HEADER LINE
0001CE	D241 B168 B167	002D2	002D1	219	MVC HEADER,HEADER-1	CLEAR HEADER OUTPUT AREA
				220 *		
				221 *	READ THE TRANSACTION CARDS	
				222 *		
0001D4	45A0 B02E-		00198	223	NEXT BAL 10,READ	READ A CARD
0001D8	F276 B256 B0FC	003C0	00266	224	PACK PPRIN,PRIN	REFORMAT
0001DE	F273 B25E B103	003C8	0026D	225	PACK PRATE,RATE	
0001E4	F273 B266 B107	003D0	00271	226	PACK PPAY,PAY	INPUT
0001EA	4F30 B256		003C0	227	CVB 3,PPRIN	
0001EE	4F20 B25E		003C8	228	CVB 2,PRATE	DATA
				229 *		
				230 *	PERFORM THE REQUIRED CALCULATIONS	
				231 *		
0001F2	5020 B286		003F0	232	ST 2,BRATE	STORE INTEREST RATE IN BINARY FORM

↑  
Column 1 of Source Program cards.

Figure 1

# OVERLAPPING CPU WITH I/O OPERATIONS

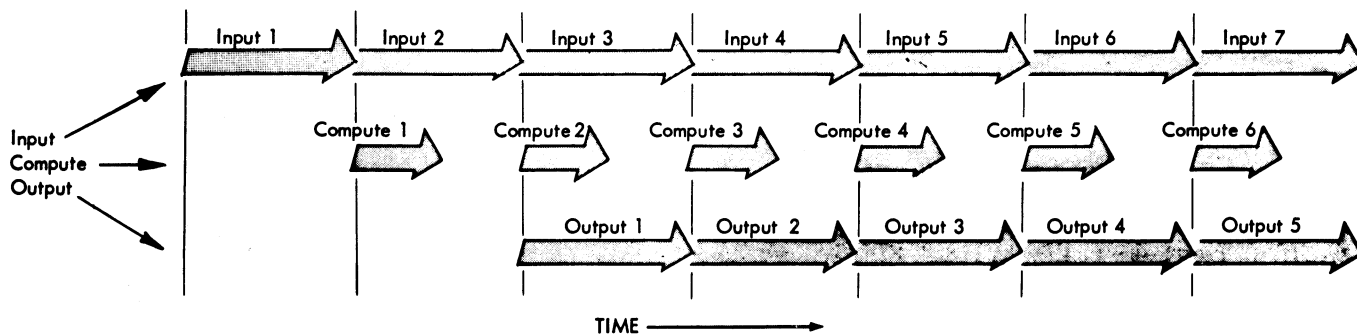
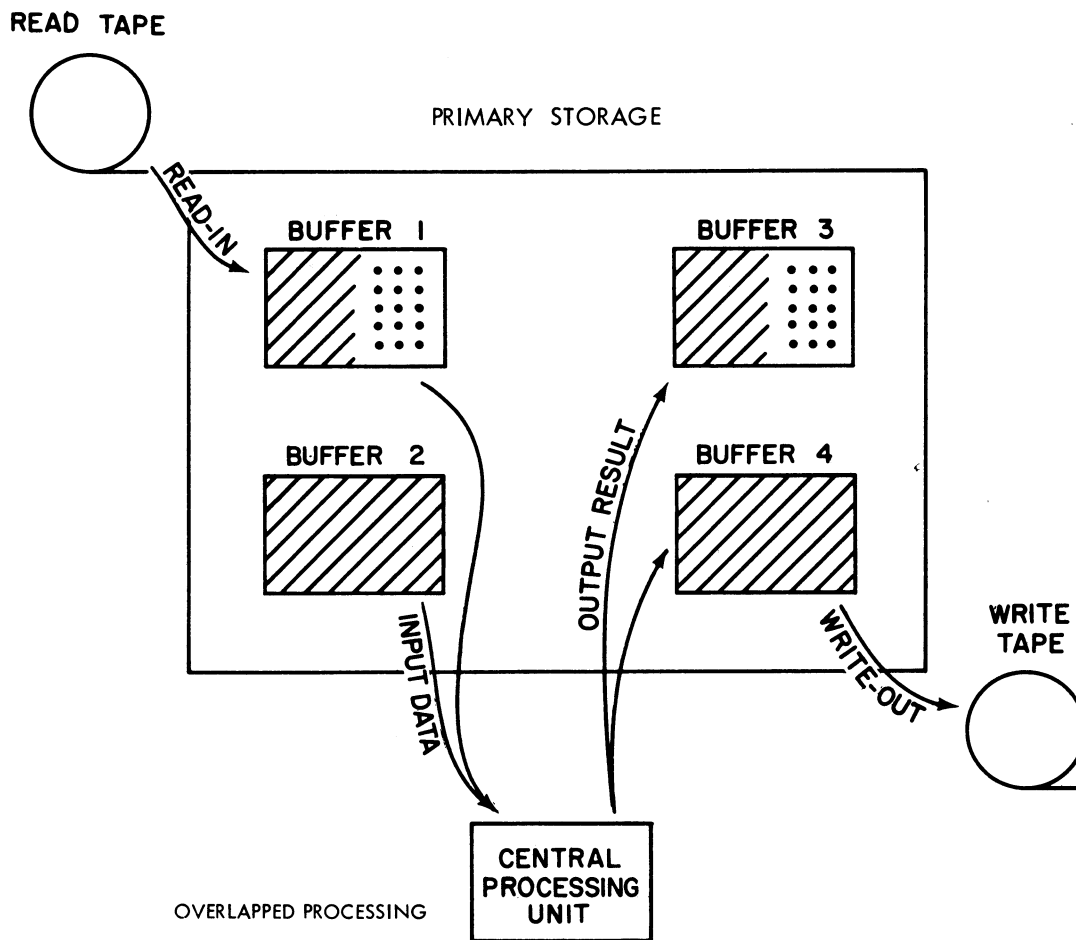


Figure 2

# PROCESSING BLOCKED RECORDS

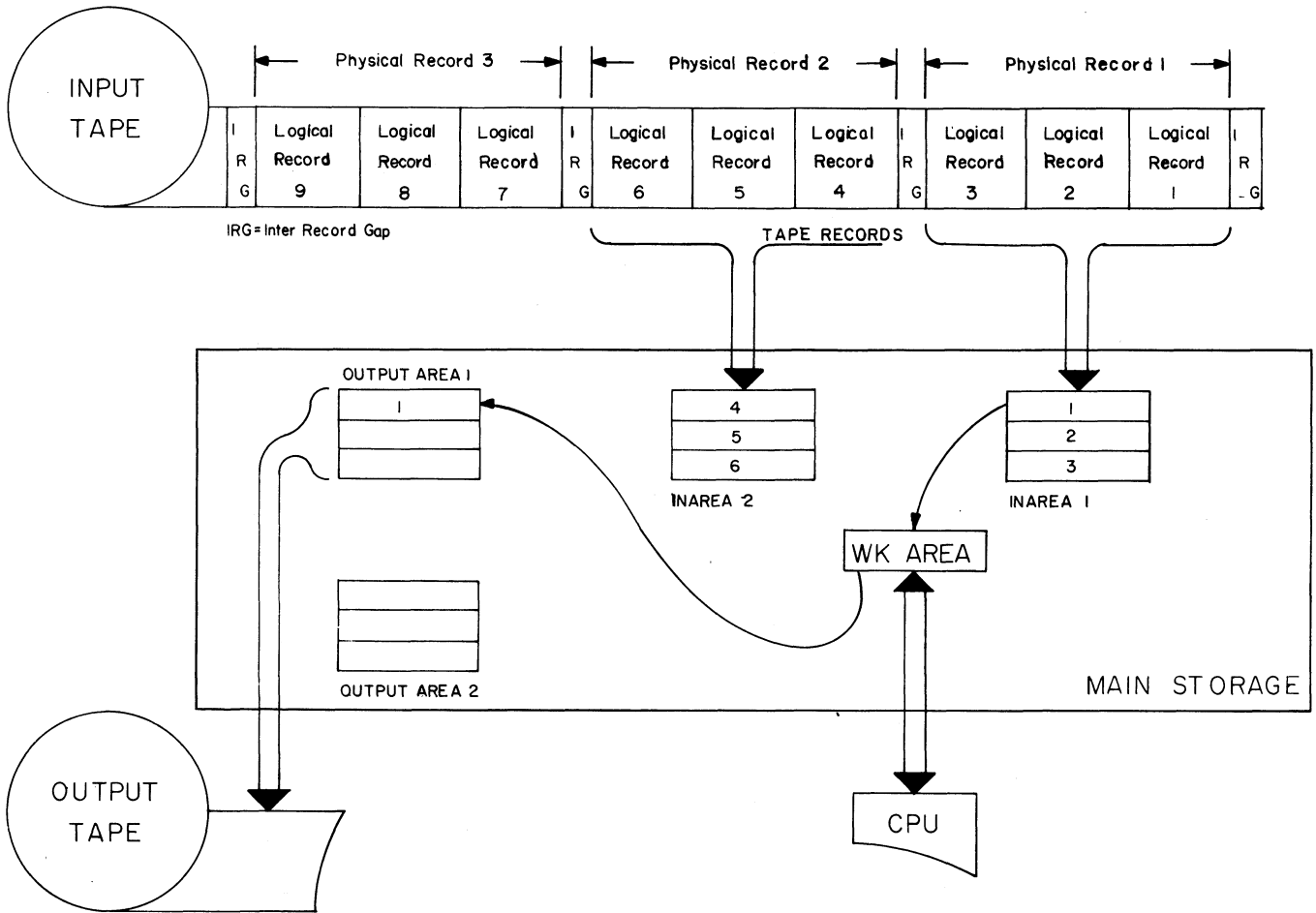


Figure 3

Programming Example 1: Mortgage Payment Transaction Report

The Ajax Company computes interest on real estate mortgage payments in the following manner:

Each month the principal (unpaid balance) is multiplied by the annual interest rate. The resulting yearly interest must be divided by 12 to arrive at the monthly interest. The monthly mortgage payment consists of both interest and principal. When a monthly payment is received the difference between the payment and the monthly interest reduces the principal. All calculations are rounded to two decimal positions.

Input: The input for this report is in punched cards. Each card contains four data fields as follows:

Field Name	Columns	Format
Account Number	1 - 6	X X X X X X
Principal	7 - 13	X X X X X . X X
Interest Rate	14 - 17	. X X X X
Monthly Payment	18 - 21	X X . X X

Note: In each case, the decimal point is assumed and is not punched into the card.

Output: Illustrated below are the header lines defining the output required for the transaction report.

ACCOUNT NUMBER	OLD PRINCIPAL	NEW PRINCIPAL	MONTHLY PAYMENT	MONTHLY INTEREST	AMOUNT APPLIED TO PRIN
XXXXXX	XXXXX.XX	XXXXX.XX	XX.XX	XX.XX	XX.XX

(Output Field Formats)

Decimal points are also assumed, not printed, in the output line.

The programming required consists of a flow chart defining processing through the computer, and the coding required to program the computer to perform the functions outlined in the flow chart.

Note: This example is coded using only the Standard Instruction Set.

The Input-Output (I/O) coding depends upon the operating system being used and may be entered by coding a linkage instruction.

Figure 4

**FLOW CHART USING  
STANDARD INSTRUCTION SET**

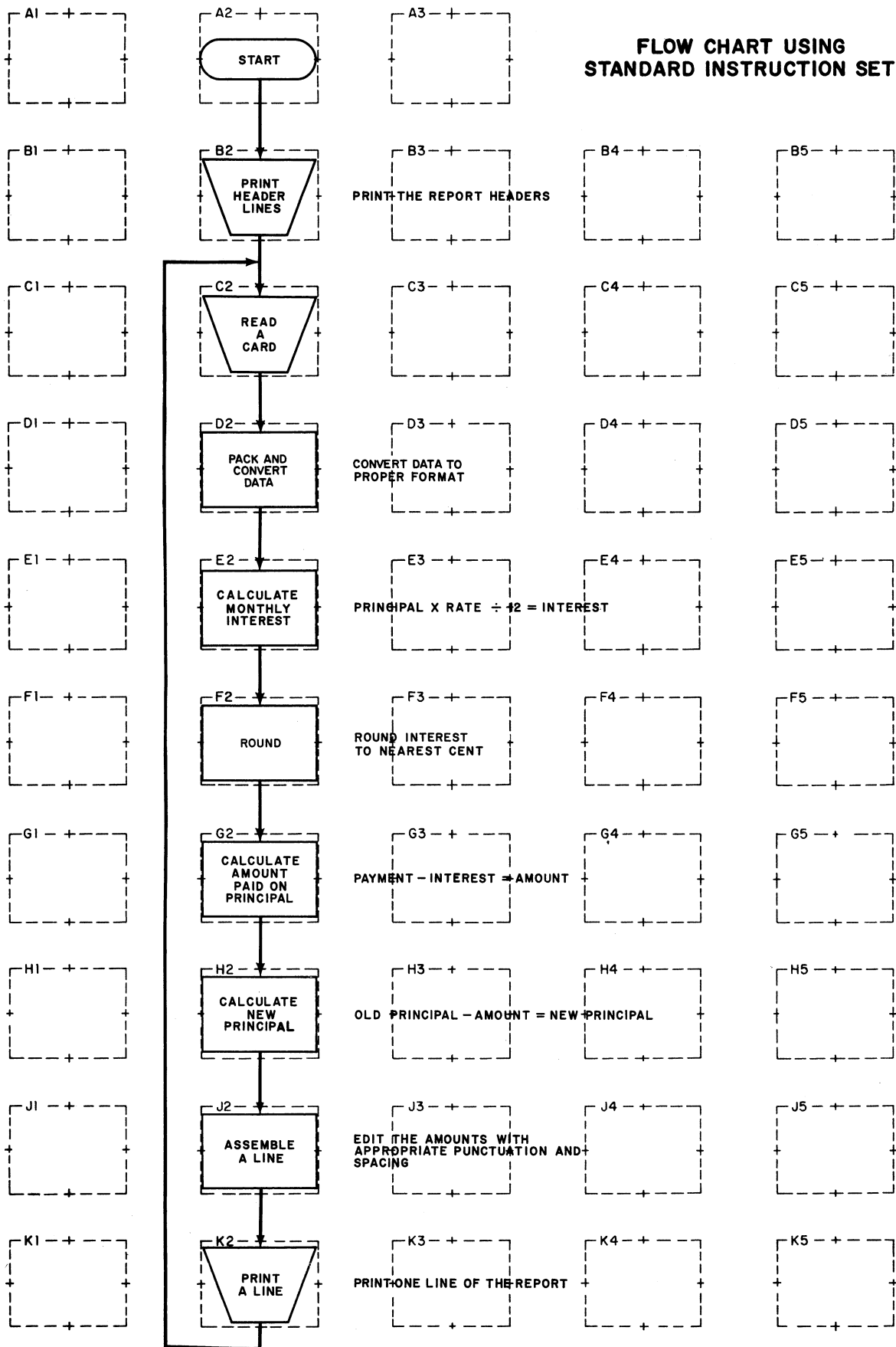


Figure 5



IBM		IBM System/360 Assembler Coding Form				PAGE 1 OF 6															
PROGRAM	ATAJ MORTGAGE PAYMENT TRANSACTION REPORT				PUNCHING INSTRUCTIONS	GRAPHIC PUNCH	CARD ELECTRO NUMBER														
PROGRAMMER	(STANDARD INSTRUCTION SET)				DATE																
Name	8	10	Operation	14	16	Operand	20	25	30	35	40	45	50	55	Comments	60	65	71	73	Identification-Sequence	80
*			START																		
CARDIN			DTECD																		
						DEVADDR=SYSRDR,															C
						EOFADDR=EOJ,															C
						IOAREA1=INPUT															
*																					
			COMOD																		
*																					
ALINE			DTEPR																		
						BLKSIZE=132,															C
						DEVADDR=SYSLST,															C
						IOAREA1=OUTPUT															
*																					
			PRMOD																		
*																					
BEGIN			BALR			11,0															
			USING			*,11															
			OPEN			CARDIN,ALINE															
			BC			15,START															
*																					
EOJ			CLOSE			CARDIN,ALINE															
			EOJ																		
*																					

Figure 6

IBM		IBM System/360 Assembler Coding Form				PAGE 2 OF 6															
PROGRAM	ATAJ MORTGAGE PAYMENT TRANSACTION REPORT				PUNCHING INSTRUCTIONS	GRAPHIC PUNCH	CARD ELECTRO NUMBER														
PROGRAMMER	(STANDARD INSTRUCTION SET)				DATE																
Name	8	10	Operation	14	16	Operand	20	25	30	35	40	45	50	55	Comments	60	65	71	73	Identification-Sequence	80
READ			GET			CARDIN															
			BCR			15,10															
*																					
WRITE			PUT			ALINE															
			BCR			15,10															
*																					
*			ASSEMBLE AND PRINT THE HEADER LINES																		
*																					
START			MVC			OUTPUT,OUTPUT-1															
			MVC			HEADER,HDR1															
			BAL			10,WRITE															
			MVC			HEADER,HDR2															
			BAL			10,WRITE															
			MVC			OUTPUT,OUTPUT-1															
*																					
*			READ THE TRANSACTION CARDS																		
*																					
NEXT			BAL			10,READ															
			PACK			PPRIN,PRIN															
			PACK			PRATE,RATE															
			PACK			PPAY,PAY															
			CVB			3,PPRIN															
			CVB			7,PRATE															
*																					

Figure 7

IBM		IBM System/360 Assembler Coding Form		X28-6509-3 U/M/50 Printed in U.S.A.																	
PROGRAM	AJAX MORTGAGE PAYMENT TRANSACTION REPORT			PUNCHING INSTRUCTIONS	GRAPHIC	PAGE 3 OF 6															
PROGRAMMER	(STANDARD INSTRUCTION SET)			DATE	PUNCH	CARD ELECTRO NUMBER *															
STATEMENT							Identification-Sequence														
1	Name	8	10	Operation	14	16	20	Operand	25	30	35	40	45	50	55	Comments	60	65	71	73	80
*	PERFORM THE REQUIRED CALCULATIONS																				
	ST	7		BRATE												STORE INT RATE IN BINARY FORM					
	M	2		BRATE												CALCULATE ANNUAL INTEREST AMOUNT					
	D	2		=F'12'												CALCULATE MONTHLY INTEREST					
	A	3		HREADJ												WBLE ADJUST					
	B	2		BRATE												CLEAR THE EVEN GR FOR DIVISION					
	B	2		DECT												SET THE DECIMAL POINT					
	CVD	2		PINT												STORE THE INTEREST					
	CVB	2		PPAY																	
	SR	2		3												CALCULATE AMT APPLIED TO PRINCIPAL					
	CVD	2		PAMT												STORE AMOUNT					
	CYB	3		PPRIN																	
	SR	2		1												CALCULATE NEW PRINCIPAL					
	CVD	3		PNEWPR												STORE NEW PRINCIPAL					

\* A standard card form, IBM electro 6509, is available for punching source statements from this form.

Figure 8

IBM		IBM System/360 Assembler Coding Form		X28-6509-3 U/M/50 Printed in U.S.A.																	
PROGRAM	AJAX MORTGAGE PAYMENT TRANSACTION REPORT			PUNCHING INSTRUCTIONS	GRAPHIC	PAGE 4 OF 6															
PROGRAMMER	(STANDARD INSTRUCTION SET)			DATE	PUNCH	CARD ELECTRO NUMBER *															
STATEMENT							Identification-Sequence														
1	Name	8	10	Operation	14	16	20	Operand	25	30	35	40	45	50	55	Comments	60	65	71	73	80
*	ASSEMBLE AND PRINT A LINE																				
*																					
	MVC			ACTNUM,ACCTNO												MOVE					
	MVC			OLDPRI,PRIN												AMOUNTS					
	UNPK			NEWPRI,PNEWPR												TO THE					
	MVC			MONPAY,PAY												PROPER					
	UNPK			MONINT,PINT												FIELD					
	UNPK			MONAMT,PAMT												FIELD					
*																					
	MYZ			NEWPRI+6(1),NEWPRI+5												MOVE ZONES TO					
	MYZ			MONINT+3(1),MONINT+2												REMOVE SIGNS					
	MYZ			MONAMT+3(1),MONAMT+2												FROM NUMBERS					
*																					
	BAL			14,WRITE												PRINT ONE LINE OF THE REPORT					
*																					
	BC			15,NEXT												GO READ ANOTHER CARD					
*																					

Figure 9

IBM		IBM System/360 Assembler Coding Form										PAGE 5 OF 6					
PROGRAM	AJAX MORTGAGE PAYMENT TRANSACTION REPORT										PUNCHING INSTRUCTIONS	GRAPHIC	CARD ELECTRO NUMBER				
PROGRAMMER	(STANDARD INSTRUCTION SET)										DATE	PUNCH					
Name	Operation	Operand	STATEMENT										Comments	Identification-Sequence			
1	8	10	14	16	20	25	30	35	40	45	50	55	60	65	71	73	80
INPUT	DS		CL4														
RIGHTNO	DS		CL4														
PRIN	DS		CL4														
RATE	DS		CL4														
PAY	DS		CL4														
	DS		CL59														
OUTPUT	DS		CL132														
	DS		CL33														
HEADER	DS		CL66														
	DS		CL4														
NEWPR1	DS		CL7														
	DS		CL5														
	DS		CL6														
MONAMT	DS		CL4														
	DS		CL43														

Figure 10

IBM		IBM System/360 Assembler Coding Form										PAGE 6 OF 6					
PROGRAM	AJAX MORTGAGE PAYMENT TRANSACTION REPORT										PUNCHING INSTRUCTIONS	GRAPHIC	CARD ELECTRO NUMBER				
PROGRAMMER	(STANDARD INSTRUCTION SET)										DATE	PUNCH					
Name	Operation	Operand	STATEMENT										Comments	Identification-Sequence			
1	8	10	14	16	20	25	30	35	40	45	50	55	60	65	71	73	80
HDR1	DC																
HDR2	DC		C'NUMBER	PRINCIPAL	PRINCIPAL	PAYMENT	INTEREST	APPC									
			LIED TO PRIN'														
PNEWPR	DS		D														
PINT	DS		D														
PAMT	DS		D														
BRATE	DS		D														
HABAMT	DC																
DECP1	DC		F'10000'														
ZEROS	DC		F'0'														

Figure 11

# FLOW CHART USING DECIMAL INSTRUCTION SET

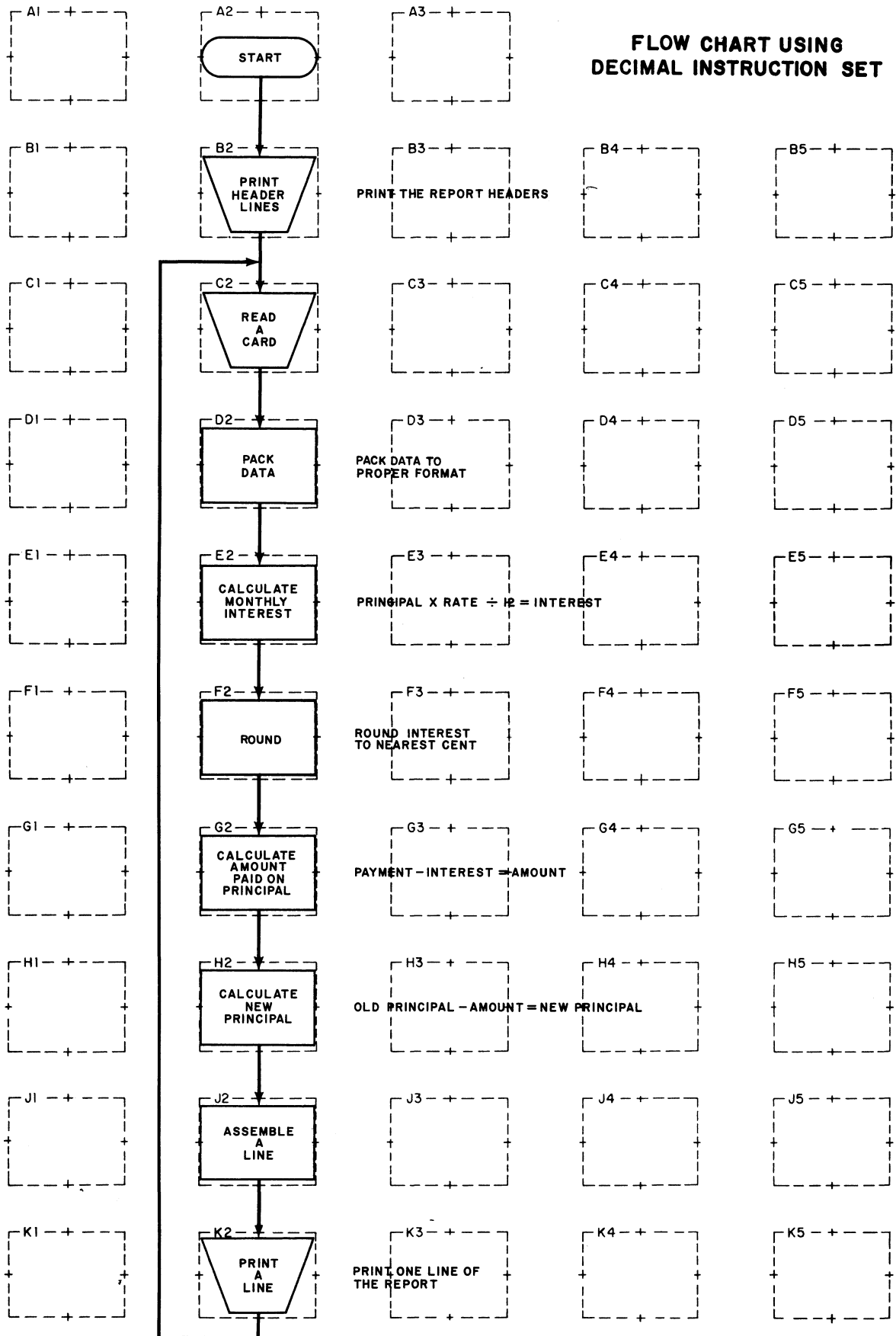


Figure 12

## Programming Example 2: Mortgage Payment Transaction Report

The Ajax Company computes interest on real estate mortgage payments in the following manner:

Each month the principal (unpaid balance) is multiplied by the annual interest rate. The resulting yearly interest must be divided by 12 to arrive at the monthly interest. The monthly mortgage payment consists of both interest and principal. When a monthly payment is received the difference between the payment and the monthly interest reduces the principal. All calculations are rounded to two decimal positions.

Input: The input for this report is in punched cards. Each card contains four data fields as follows:

Field Name	Columns	Format
Account Number	1 - 6	X X X X X X
Principal	7 - 13	X X X X X . X X
Interest Rate	14 - 17	. X X X X
Monthly Payment	18 - 21	X X . X X

Note: In each case, the decimal point is assumed and is not punched into the card.

Output: Illustrated below are the header lines defining the output required for the transaction report to be generated from the transaction cards.

ACCOUNT NUMBER	OLD PRINCIPAL	NEW PRINCIPAL	MONTHLY PAYMENT	MONTHLY INTEREST	AMOUNT APPLIED TO PRIN
-------------------	------------------	------------------	--------------------	---------------------	---------------------------

The output fields are edited to improve readability. Editing inserts the required punctuation and eliminates high-order zeros.

The programming required consists of a flow chart defining processing through the computer, and the coding required to program the computer to perform the functions outlined in the flow chart.

I/O storage areas, work areas, and constants, with appropriate symbolic names, are provided for student use. They are shown in Figures 14, 15, 16.

Figure 13



IBM

IBM System/360 Assembler Coding Form

FD-502 (Rev. 11-77)

PROGRAM		STANDARD TOS & DOS I/O CODING		PUNCHING INSTRUCTIONS		GRAPHIC		PAGE		OF	
PROGRAMMER		FOR AJAX EXAMPLES		DATE		PUNCH		CARD ELECTRO NUMBER			
Name	Operation	Operand	STATEMENT	Comments	Identification-Sequence						
*	START	256									
*	CARDIN	DTFCD									
			DEVADDR=SYSRDR,								
			EOFADDR=EOJ								
			IOAREA1=INPUT								
*	CDMOD										
*	ALINE	DTFPR									
			BLKSIZE=132,								
			DEVADDR=SYSLST,								
			IOAREA1=OUTPUT								
*	PRMOD										
*	BEGIN	BALR	11,0								
		USING	*,11								
		OPEN	CARDIN,ALINE								
		BC	15,START								
*	EOJ	CLOSE	CARDIN,ALINE								
		EOJ									
*	READ	GET	CARDIN		READ SUBROUTINE						
		BCR	15,10								
*	WRITE	PUT	ALINE		WRITE SUBROUTINE						
		BCR	15,10								
*											

Figure 16

**Problem Statement: Payroll**

A file of cards containing payroll data is to be read into the computer and a payroll report prepared. Input data specification including the symbolic names to be used for the input area and the data items within it, are:

Symbolic Name	Name of Data Item	Card Columns	Format
INPUT	Entire input area	- - -	80 Bytes
ENAME	Employee name	1 - 15	15 Bytes
EMPNO	Employee number	16 - 21	X X X X X X
TAXCL	Tax class	22 - 23	X X
YTDGRS	Year-to-date gross earnings	24 - 30	X X , X X X . X X
YTDWH	Year-to-date Federal Withholding Tax	31 - 36	X , X X X . X X
YTDFICA	Year-to-date FICA	37 - 41	X X X . X X
GROSS	Current gross pay	42 - 47	X , X X X . X X

The print specifications, including the symbolic names for the output area and the data items within it, are:

Symbolic Name	Name of Data Item	Print Positions	Format
OUTPUT	Entire output area		132 Bytes
LNO	Employee number	1 - 6	X X X X X X
LNAME	Employee name	9 - 23	X X X X X X X X X X X X X X
LGROSS	Year-to-date gross	26 - 34	X X , X X X . X X
LFEDWH	YTD Federal Withholding Tax	38 - 45	X , X X X . X X
LFICA	YTD FICA	48 - 53	X X X . X X
LCURGR	Current gross pay	57 - 64	X , X X X . X X
LNPAY	Net pay	67 - 72	X X X . X X

The print specifications are shown graphically on the printer spacing chart, Figure 22. Input records are in ascending sequence by employee number. The program should check the input sequence and print a message for any out of sequence records.

The following information is necessary in programming the calculations called for by the flow chart.

1. Withholding tax rate is 14% of all taxable earnings.
2. Taxable earnings are calculated by multiplying total exemptions (TAXCL) times \$28.00 (the untaxable earnings for each exemption), then subtracting the result from gross earnings.
3. FICA (Social Security Deduction) is calculated at the rate of 4.4% of the first \$6600.00 of annual income. The maximum amount of FICA anyone can pay is \$290.40.

The following possibilities must be considered in making FICA calculations:

- a. The employee may have already paid the maximum amount for the year (\$290.40). This will be indicated by the year-to-date FICA amount (YTDFICA) in the input record. In this case no further deduction is made.

Figure 17



- b. The FICA amount calculated on his current earnings, when added to his YTFICA may cause YTFICA to exceed \$290.40. In this case, he owes only the difference between YTFICA and \$290.40.
- c. He may owe the full amount of FICA in his current earnings.

Additional information you will need to write the program:

1. Base register is 11
2. Linking register is 10
3. Names for branch point instructions are provided in the accompanying text.
4. Names of work area you will need and the data they will contain are:
 

NUM	work area into which employee number is packed for conversion to binary.
CURWH	Storage accumulator for current withholding amount.
EXAMT	Storage accumulator for earnings exempt from tax.
TXBLGR	Storage accumulator for taxable gross earnings.
CURFICA	Storage accumulator for current FICA.
UNPDFICA	Storage accumulator for the amount of unpaid FICA.
NETPAY	Storage accumulator for the employee's net pay. Note: Make this field 4 bytes long to accept GROSS in its packed form.
SW	Storage area used to determine whether a card that has just been read is the first payroll card.
5. The report is to be printed on pre-printed forms. No headers have to be generated.

Figure 17 (cont'd)



# PAYROLL REPORT

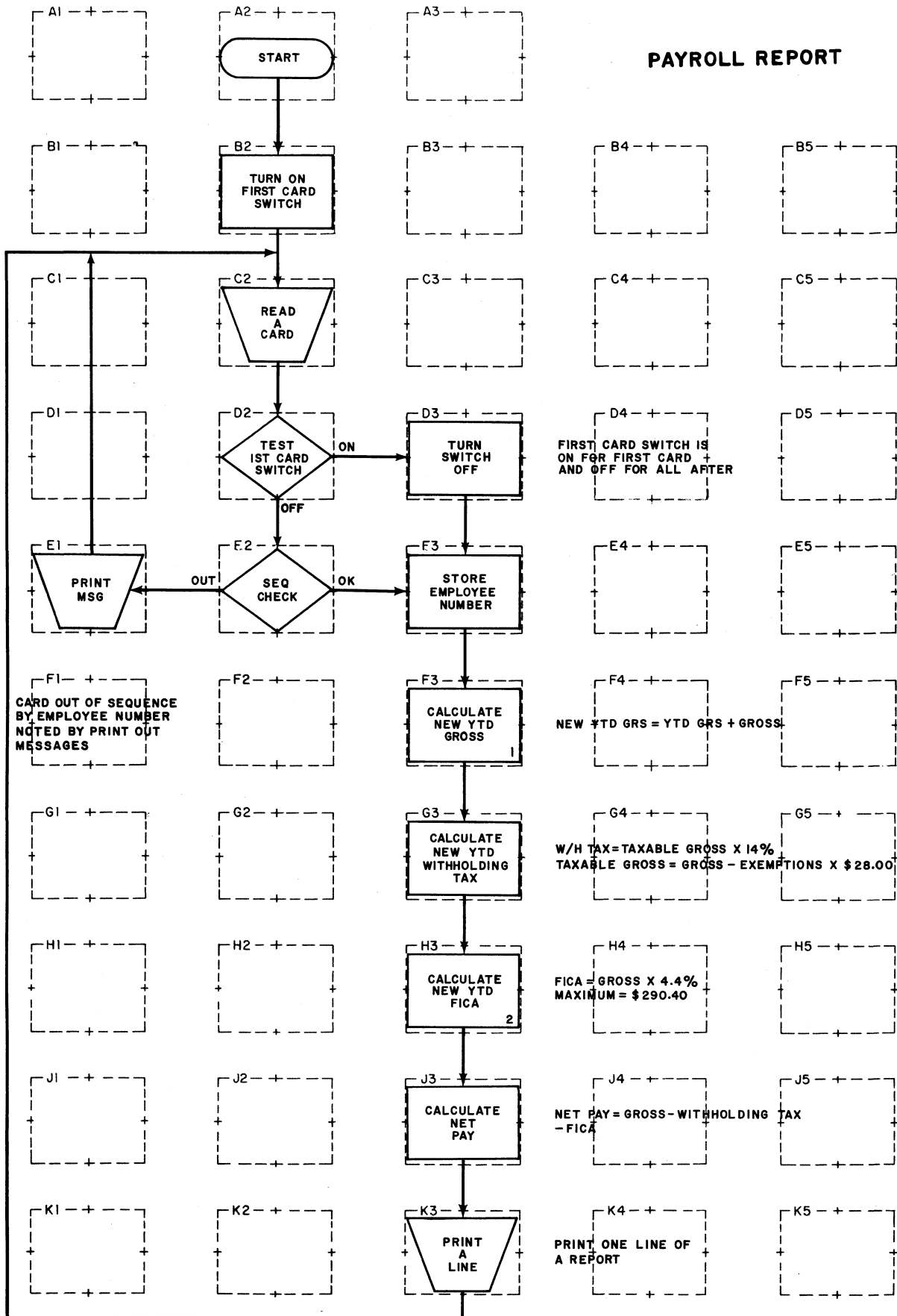


Figure 19

# DETAILED EXPANSION OF "COMPUTE CURRENT & NEW YTD WITHHOLDING TAX"

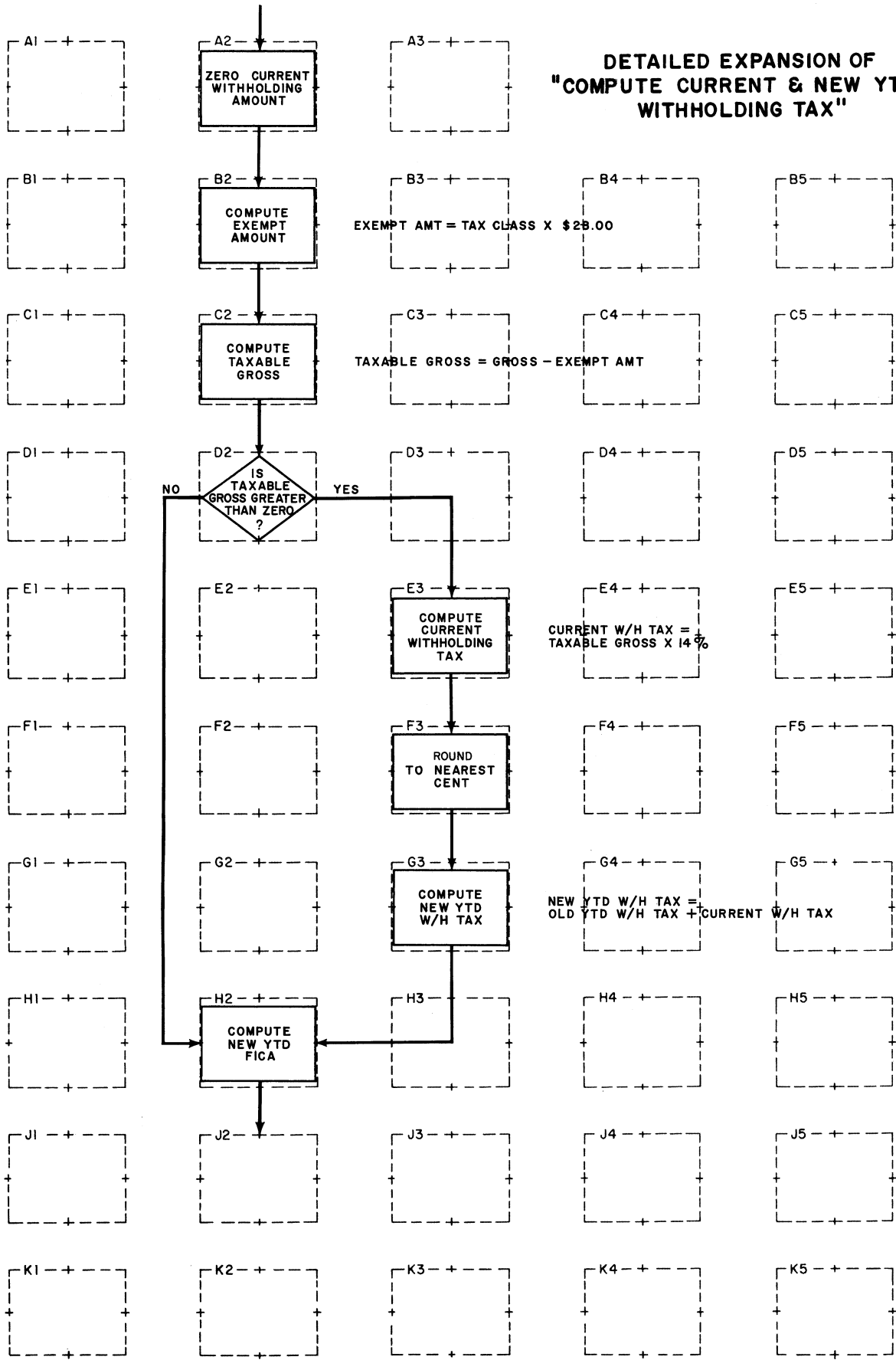


Figure 20

# NEW YTD FICA WITHHOLDING CALCULATION

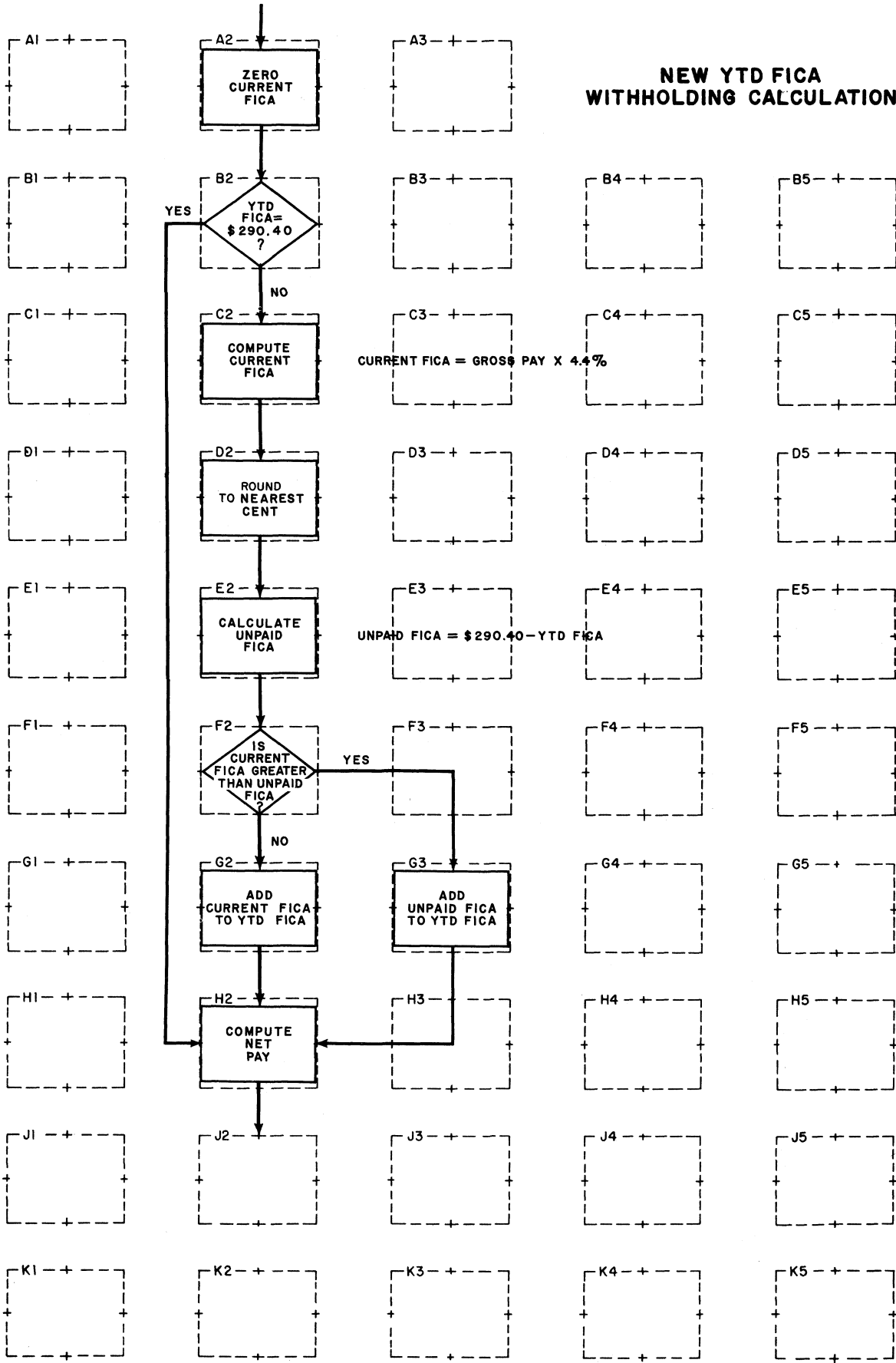


Figure 21



IBM		IBM System/360 Assembler Coding Form						FORM 1, 10/72	
PROGRAM <b>AJAX PAYROLL REPORT</b>				DATE	PUNCHING INSTRUCTIONS	GRAPHIC PUNCH	PAGE <b>1</b> OF <b>8</b>		
PROGRAMMER				STATEMENT			CARD ELECTRO NUMBER		
Name	Operation	Operand	Comments	Identifcation-Sequence					
*	START	Z56							
* CARDIN	DTECD		DEVADDR=SYSRDR, EOFADDR=EOT, IOAREA=INPUT	C					
*	CDMOD								
* ALINE	DTEPR		BLKSIZE=132, DEVADDR=SYSLST.	C					
*	PRNOD								
* BEGIN	BALR	11,0	USING X,11						
EOT	CLOSE	CARDIN,ALINE	END OF JOB ROUTINE						
*	EOT								
			READ SUBROUTINE						
WRITE	PUT	ALINE	WRITE SUBROUTINE						
*	BCR	15,10							

Figure 23





IBM		IBM System/360 Assembler Coding Form						PAGE 4 OF 8	
PROGRAM ATAX PAYROLL REPORT		PUNCHING INSTRUCTIONS		GRAPHIC		CARD ELECTRO NUMBER			
PROGRAMMER		DATE		FUNCH					
Name	Operation	Operand	STATEMENT	Comments	Identification-Sequence				
A10	ZAP	CURFICA							
	CP	YTD FICA, =P'25000'							
	BC	10,B							
	ZAP	CURFICA,GROSS	NEW						
	MP	CURFICA,=P'4400'							
	AP	CURFICA,=P'50000'	FICA						
	MVO	CURFICA							
	ZAP	UNPDFICA							
	SP	UNPDFICA,YTD FICA							
	CP	CURFICA,UNPDFICA	AND						
	BC	12,A50							
	ZAP	CURFICA,UNPDFICA	YTD FICA						
A50	MP								
B	ZAP	NETPAY							
	SP	NETPAY,CURFICA	NET						
	SP	NETPAY,CURWH(S)	PAY						
X									

Figure 26

IBM		IBM System/360 Assembler Coding Form						PAGE 5 OF 8	
PROGRAM ATAX PAYROLL REPORT		PUNCHING INSTRUCTIONS		GRAPHIC		CARD ELECTRO NUMBER			
PROGRAMMER		DATE		FUNCH					
Name	Operation	Operand	STATEMENT	Comments	Identification-Sequence				
X	ASSEMBLE, EDIT								
X	XC	OUTPUT,OUTPUT	ASSEMBLE						
	MVC	LNO,EMPNO							
	MVC	LNAME,ENAME							
	MVC	LGROSS,PATRN1	ASSEMBLE						
	ED	LGROSS,PATRN1							
	MVC	LPDFICA,PATRN1							
	ED	LPDFICA,PATRN1							
	MVC	LEFICA,PATRN2							
	ED	LEFICA,YTDFICA+2							
	MVC	LCURGR,PATRN1	LINE						
	ED	LCURGR,PATRN1							
	MVC	LNPAY,PATRN1							
	ED	LNPAY,PATRN1							
X	BAL	10,WRITE	PRINT A LINE OF THE REPORT						
X	BC	10							

Figure 27

**IBM** IBM System/360 Assembler Coding Form

PROGRAM **ATAJ PAYROLL REPORT** PUNCHING INSTRUCTIONS GRAPHIC PAGE **6** OF **8**  
 PROGRAMMER DATE STATEMENT PUNCH CARD ELECTRO NUMBER

Name	Operation	Operand	Comments	Identification-Sequence
* MISCELLANEOUS ROUTINES				
OFF	MB	SW,X,14	TURN FIRST CARD SOLUTION	
	PACK	NUM,EMPNO	STORE THE FIRST	
	CVB	2,NUM	EMPLOYEE NUMBER	
	BC	15,PACK		
* SEQ				
	KC	OUTENT,OUTEUT	SEQUENCE	
	MVC	LNO,EMRNO		
	MVC	LNAME,SEQERR	ERROR	
	BAL	10,WRITE		
	BC	15,READCD	ROUTINE	
*				

Figure 28

**IBM** IBM System/360 Assembler Coding Form

PROGRAM **ATAJ PAYROLL REPORT** PUNCHING INSTRUCTIONS GRAPHIC PAGE **7** OF **8**  
 PROGRAMMER DATE STATEMENT PUNCH CARD ELECTRO NUMBER

Name	Operation	Operand	Comments	Identification-Sequence
INPUT	DS	0CL80		
ENAME	DS	CL15		
EMPNO	DS	CL6		
TAXCL	DS	CL2		
YTDGRS	DS	CL7		
YTDWH	DS	CL6		
YTDFICA	DS	CL5		
GROSS	DS	CL6		
	DS	CL33		
*				
NUM	DS	D		
CURWH	DC	PL6'0'		
EXAMT	DC	PL5'0'		
TXBLGR	DS	PL4		
CURFICA	DC	PL7'0'		
UNPDFICA	DS	CL3		
NETPAY	DS	CL4		
*				
SEQERR	DC	C'OUT OF SEQUENCE'		
SW	DS	CL1		
PATRN1	DC	X'402020632020214B2020'		
PATRN2	DC	X'402020214B2020'		
*				

Figure 29

IBM

IBM System/360 Assembler Coding Form

9-10-68 IBM Corp. Form 26, 1968

PROGRAM		AJAX PAYROLL REPORT		PUNCHING INSTRUCTIONS		GRAPHIC PUNCH		PAGE 1 OF 8		CARD ELECTRO NUMBER										
PROGRAMMER		DATE		STATEMENT		Comments		Identification-Sequence												
1	Name	8	10	Operation	14	16	20	Operand	25	30	35	40	45	50	55	60	65	71	73	80
	OUTPUT	DS		CL15																
	LN	DS		CL1																
	LNAME	DS		CL15																
		DS		CL1																
	LGROSS	DS		CL10																
		DS		CL10																
	LEFOWN	DS		CL10																
		DS		CL10																
	LEICA	DS		CL7																
		DS		CL1																
	LCURGR	DS		CL10																
		DS		CL10																
	LNPAV	DS		CL7																
		DS		CL7																
	*																			
		END		BEGIN																

Figure 30



International Business Machines Corporation  
Data Processing Division  
1133 Westchester Avenue, White Plains, New York 10604  
(U.S.A. only)

IBM World Trade Corporation  
821 United Nations Plaza, New York, New York 10017  
(International)