

IBM ENGINEERING TRAINING PROGRAM

JULY 19 TO AUGUST 6, 1954

POUGHKEEPSIE, NEW YORK

Class Notes & Exams

Rick Dill

(Scanned by Robert Garner, Oct, 2022)

[illegible]

7/19

am

1

Mr. Mayer - manufacturing of Ph. - (Mair) 020

R.L. Palmer - again 020

10 groups - 1 - L.P. Hunter - Research... 020

Byron Phelps - Components 020

- Advanced Machine Dev.

- EDPM

- Prod. Dev. & Release

- Prod. Eng

- Customer Eng

- Defense Contract Eng

- E T group

- Project High

Robert Campbell - MA?

L.P. Hunter

MS - PhD / Older Grad? - check

To gain knowledge in research
to improve or design development

Solid State Physics

Semiconductors

Ferrites

Blue Sky Work

Ferroelectric

Fluorescent materials

Business Theory group

Cooperation with other groups

Byron Phelps - Components

Working from research

Working from machine development

Working from self

Components

Applications

604

607

650

701

702

H.S. Beattie

Advanced Machine Development

Data Transceiver

4 cards per minute telegraph

11 cards per minute telephone

4 channel telephone carrier

SAM - Small Accounting Machine

Serial machine

Column printing

card storage

etc...

Does all functions but serially

Transistor version of SAM - not for production

X795 - wooden wheel

- 604 with improvements

- on rental now

- equivalent to 650 mag drum calc.

Check Sorter - read assorted checks

Single Element typewriter -

- prints from single element

- newer faster & quieter machine

Key driven accounting machine

- more flexible than small mechanical machines

EAM - Bernie Tobin - card handling

- 100, 200, & 400 cards per minute

Magnetic Tape - 407 - Ed Robb

- to work from 702 & 703 to EAM

Tape project - to improve tape techniques

- higher speeds...

EDPM - linked with Advanced Machine Development

Nat Rochester

EDPM -

250 people

Competition with smaller, fast moving, company
Mr. Pearson - EDPM Task Force

Job - construction of large machines.

75% - commercial 25% scientific calculators.

Both punched cards & Magnetic Tape

Tape group - Walt Lutz

Cards - easily sorted

Tape - much faster

Tape must be used with large more

701, 704 - Scientific calculators - stored
program automatic calculators

1949 ENSAC - England

1952 1951

1955 1956

609 equivalent

Fixed point & floating point numbers. ?

Can solve any prob 1. you must state problem

2. you must be able to state problem

3. you must be within size & speed range
of your machine

702 Commercial general calculator

702 variable field size machines (no word size limit)

702 very large input & output facilities

Tape 2 to 2 sorting

703 - File maintenance machine - largely
a sorter - also does many
accounting machine pens but not
printing.

Clarence Percall & Nat Rochester - run group

John Coombs

Project High

850 people

Very high speed... brute force - vacuum tubes

Emphasis on reliability

Marginal checking... use of elaborate test procedures

Harlan Campbell

Engineering

Release Eng - Dean

Tech Services Group - Stadler

Electrical Lab - Goetz

EAM Prod Eng - Kilcrease

Specifications

Drafting

Spec Eng

E. T. Eng

Standards Eng

MA² Eng

test

Blodkey

Heidt Sadler

O'Farrell

Staudt

Riddle

8:15

12:40

1:30

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pm

3

Mr John Hannover

Patent Procedure

M L Wood

ERAD

Ideas - go to your supervisor
then send the idea to ERAD

ERAD is blue sky
Loren Wood, Kenyon Lab.

S.W. Dunwell

Modern Business Requirements

Payroll

Accounting

Sales Analysis

Inventory Control

Production Control

Governmental Applications

Social Security

60,000,000 +

cards giving earnings
reports from employers

it is possible to locate records
within a matter of hours

All records kept in Baltimore
many machines involved

History File

Card File - one or more cards for every individual

- Social Security Number order

Name File - File in order by name

- Soundex file

Punching cards from employers reports

Sorter - yields current information

Collator - combines history & current to
yield up to date record merges

Verifier checks names & numbers - part of
collator

Manual Recording

Verification

Sorting

Preliminary Processing

Accounting Machine

1. Recognizes Groups
2. Accumulate Totals
3. Print Results
Punch results also

1. Read Record

2. Logical Operations

Comparison

Code Punching

- balances etc

3. Arithmetic Functions

4. Printing

Challenge!

Problems!

Original Recording

1. Mark Sensing

2. Character Sensing

3. Data transceiving devices - automatic check

4. Transcribing punched paper tape to cards

5. Tape prepared from typewriter

6.

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The future - ? - Treasury - for example

Proposed magnetic tape machine with storage tubes

Problem - keeping track of all government checks

275,000,000 checks issued / year

over 1,000,000 cards / day from IBM Washington plant



Check No
 Disbursing Officer
 Date
 Amount up to 8 figures

1. Issued
2. Cashed up to 4 million per day
3. Cleared through banks to Fed. Reserve Bank

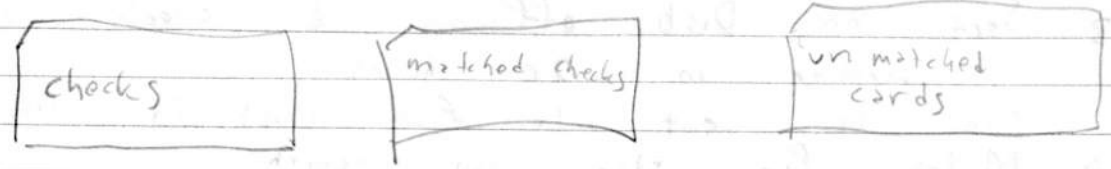
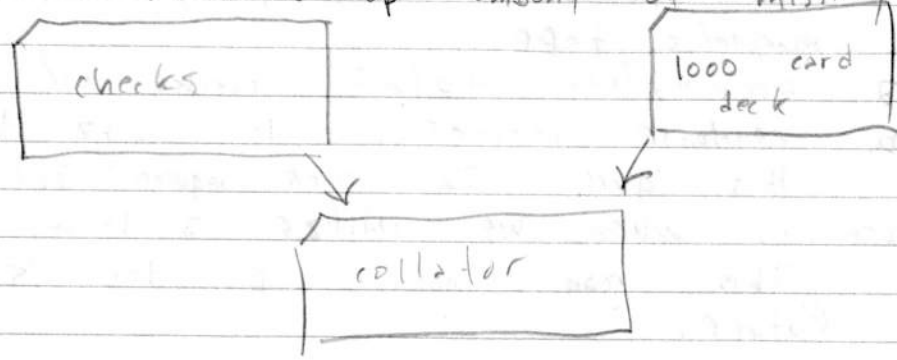
300 people
 \$ 1,500,000

1. Accumulate Totals + Disb. officer order
2. Sort in check no. order 110 sorting machines
3. Search for Stop Pay Orders
4. Accumulate Disb. Officer total

4. Cards are sent to gen'l accounting office in Washington

300 people
 \$ 1,500,000

1. After 90 days, sort in D.O. & check No. Order
2. Match for missing numbers (99% in)
3. Look up amount of missing checks and make cards



- 4 Cards are pencil sensed & punched
- 5 Manually inserted with checks
- 6 Run through Accounting Machine, total checked with Do H.

Same procedure with tape

1. Read cards & make tape
 - a. cards read at 450 cpm
 - b. accumulate total
 - c. select cards in error check for either detection or non-detection of numeric information
 - d. serially number cards (print on cards) and number on tape
 - e. make magnetic tape
- does not contain selected out checks - they come through later

$$\begin{array}{rcl} 32 \text{ col/char at } 200 \text{ col/inch} & = & .16'' \\ \text{record gap} & = & .75'' \\ \text{check length} & = & .91'' \\ 2400' & = & 28,800'' \\ & & 2\frac{1}{4}'' \text{ instead} \end{array}$$

Building machine using 510 characters/in

40 reels of tape/day 1,200,000 checks

2. Prove magnetic tape

- a. accumulate totals checks all human errors
- b. condense records... to 12 tapes

this gives 32 check sequences between gaps.
In all procedures when we utilize a tape, we make new tapes. This may not be the same in the future.

3. Sort on Disb. officer & check no.

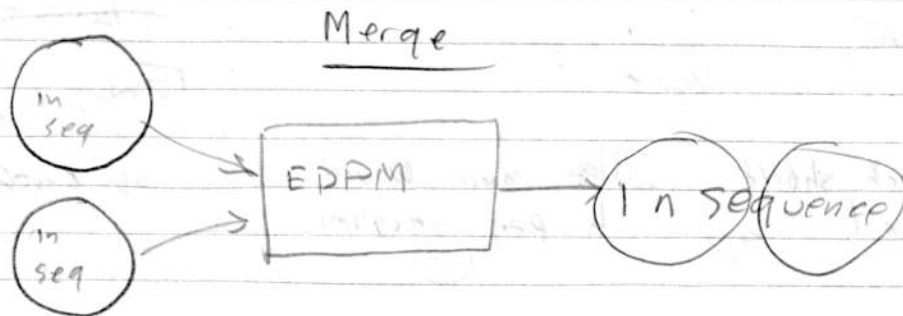
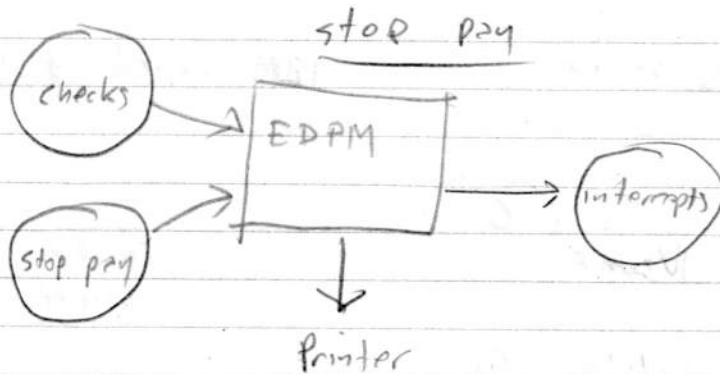
1 machine in 20 hours

Can be cut to five hours in near future

4. Match for stop pay search

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5-



- 5 collect for 90 days & merge
 6 look for 2nd list missing numbers accumulate total of of amounts and count of checks

This job is proposed for the #703

This is one of the most elementary accounting operations known

703 Simpler than 702

Both use CR storage

702 uses old tube

703 uses new Barrier Grid Tubes

Two machines

Card to tape \$2300 / month

#703 \$7000 / month

total rental \$60,000 / month

only about 50% more than present rental...

present system uses 600 people... new system uses less than 100

Mr Emmet Murphy

IBM Card & EAM Applications

Date of Birth (6)

IVamp (6)

date hired (4)

marital Sex (1)

Locality (1)
~~address~~

~~Marital status~~

Man # (3)

dept (3)

Education (1)

How much should I get (4)

How much would I pay another (3)

Job Code (3)