

22nd March, 1961.

LEAPS Appreciation Courses for LTR
OM/DC/9

1. Courses are being arranged as shown below and all in any way concerned e.g. with lectures, room arrangements are asked to confirm (preferably by a note to Mr. Boggis please) that the arrangements will work.

Thurs./Fri.	20/21 April, 1961
Wed./Thurs.	3/4 May, 1961
Wed./Thurs.	31 May - 1 June, 1961

2. Syllabus and Lecturers

Time	Subject	Lecturer	Remarks
FIRST DAY			
9.30	Introduction	Mr. Stermer <i>Selway</i>	
9.45	Basic Principles	Mr. Davis	
10.45	Coffee		
11.15	The 405 Computer	Mr. Davis	Includes quick look round
11.45	Input principles " documents in Exchanges	Miss Horwood	or Mr. Cuthbertson
12.30	Lunch		
1.30	Input - continued " documents in TMO	Miss Horwood	or Mr. Cuthbertson
2.30	Tea		
3.00	Output - principles and documents	Mr. Cuthbertson	
4.15	Questions and discussion	Mr. Boggis	or Mr. Davis
5.00			
SECOND DAY			
9.30	LEAPS Computer at work	Mr. Cuthbertson	or Miss Cunningham " Mr. Waller
10.45	Coffee		
11.15	Tour LEAPS	X Mr. Selway and two others X	
12.30	Lunch		
1.30	Balancing and control for LTR	Mr. Cuthbertson	
2.15	Summing up	Mr. Davis	
3.15	Tea		
3.45	Discussion and forum	TWB, Messrs. Stermer, Boggis and Davis <i>Selway</i>	
5.00			

Mr. S. D. Selway
P.O.

ORGANISATION AND METHODS DIVISION, H.M. TREASURY

Three-day Appreciation Course on A.D.P. from 18-20th December, 1962

To be held at the Royal Society of Arts, John Adam Street, London, W.C.2.

DATE	SESSION	SUBJECT	LECTURER
Tuesday, 18th Dec.	9.30 - 9.45 9.45 - 10.45 11.15 - 11.45 11.50 - 1.00 2.15 - 3.30 4.00 - 5.15	Introduction to the Course Introduction to A.D.P. Film: "Introduction to A.D.P." Characteristics of A.D.P. Systems A.D.P. planning and introduction to programming	P. F. Chambers H.M. Treasury L. J. Jenkins, H.M. Treasury P. F. Chambers, H.M. Treasury
Wednesday 19th Dec.	9.30 - 10.05 10.15 - 11.00 11.30 - 12.45 2.30 - 3.30 4.00 - 5.00	Programming Exercise (1) Programming Exercise (2) General discussion (in 3 groups) Recapitulation and questions on the course this far L.E.A.P.S. Case Study L.E.A.P.S. Discussion (In three groups)	P. F. Chambers H.M. Treasury P. F. Chambers H.M. Treasury R. E. Corbett A. Donkin D. F. Reed H.M. Treasury J. H. Briggs Post Office J. H. Briggs S. D. Selway H. H. R. Mole Post Office
Thursday 20th Dec.	9.30 - 10.45 11.15 - 11.40 11.45 - 12.30 1.45 - 2.45 3.15 - 4.30	Ministry of Public Building and Case Study (1) Works Ministry of Public Building and Case Study (2) Works Ministry of Public Building and Works Discussion (in three groups) A.D.P. Progress and Problems Brains Trust	R. Hails T. H. Ayre, Ministry of Publ Building and Works J. T. Whittaker H.M. Treasury J. D. W. Janes (Chairman) H.M. Treasury F. J. M. Laver, Post Office Engineering Dept S. G. Day, Inland Revenue.

LEAPS APPRECIATION COURSE

LEAPS APPRECIATION COURSE

admission free admission free
course G.A.C. 1st Jan 1963

LEAPS

"Day of appreciation" and "Weekend course" 08.11 - 09.11
admission free admission free 08.11 - 09.11

LEAPS

admission free admission free 08.11 - 09.11
course 08.11 - 09.11

admission free admission free 08.11 - 09.11
course 08.11 - 09.11

admission free admission free 08.11 - 09.11
course 08.11 - 09.11

admission free admission free 08.11 - 09.11
course 08.11 - 09.11

admission free admission free

LEAPS APPRECIATION COURSE 08.11 - 09.11

admission free admission free 08.11 - 09.11

Board of Trade Cinema

"Salute" Horseguards Avenue, 12 08.11 - 09.11
course 08.11 - 09.11

16th and 17th January 1963.
course 08.11 - 09.11

admission free admission free 08.11 - 09.11

admission free admission free 08.11 - 09.11

PD/TWB.

Wednesday 16th January 1963

9.30 - 9.45 Introduction

Mr. J. Evans PD/TWB
Mr. S. D. Selway AGD/LEAPS

9.45 - 10.45 Basic principles of Computers

Mr. J. S. Briggs

C O F F E E

11.15 - 11.45 Film: "The Electronic Computer in Commerce"

11.45 - 12.30 The 405 Computer Mr. D. J. Sharpe

L U N C H

1.45 - 2.00 Film: "LEO the Automatic Office"

2.00 - 3.00 Input Principles Mr. D. A. D. Pruce

T E A

3.30 - 4.30 Classes of Input Mr. D. A. D. Pruce

4.30 - 5.00 Questions and Discussion

Thursday 17th January 1963

9.30 - 10.45 Output Principles and Documents

Mr. D. A. D. Pruce

C O F F E E

11.15 - 11.30 Film: extract from "An Introduction to ADP"

11.30 - 12.30 The 405 Computer at Work Miss D. M. Cunningham
~~Mr. F. G. H. Rufe~~

L U N C H

1.30 - 2.15 Work Organisation in LEAPS Mr. J. R. Whittington

2.15 - 3.00 Balance and Control Mr. D. J. Sharpe

T E A

3.30 - 4.00 Summing up Mr. D. J. Sharpe

X 4.00 - 5.00 Discussion and Questions X

LONDON ELECTRONIC AGENCY FOR PAY AND STATISTICS (LEAPS)

LEAPS 2-DAY APPRECIATION COURSE: OUTPUT - DOCUMENTATION AND PROCEDURES

INTRODUCTION

1. Methods of Output from Computers

- 1.1 Coded data - punched paper tape, magnetic film.
- 1.2 Plain language data - teleprinter from punched paper tape;
 - directly connected electric typewriter.
- 1.3 Plain language data - "on-line" printers;
 - "off-line" printers.

2. Common types of Printers

- 2.1 Speeds 80 to 150 lines per minute - 25 to 100 characters per line.
- 2.2 Printing by pre-cut characters on type bars with hammer impact.
- 2.3 Alphabetical printing often restricted to a part of the line only.
- 2.4 Standard format for a given job.

3. Samastronic Printer

- 3.1 Speed up to 300 lines per minute - up to 140 characters per line.
- 3.2 Printing by stylus (characters are "drawn") gives full range of character repertoire over the whole of the printed line.
- 3.3 Choice of four formats for each job (Electrical Connection Units - ECUs).
- 3.4 Dual independant paper feeding.

LEAPS OUTPUT EQUIPMENT

4. On Console - for information to operator.

- 4.1 Paper tape punch and associated teleprinter.
- 4.2 Directly connected electric typewriter.

5. Off-line Samastronic - information for local pay office.

- 5.1 Actuated by magnetic film.
- 5.2 Output from computer restricted to 75 characters per computer storage line but information may be duplicated within the printed line by specially designed ECUs (Y - wiring).
- 5.3 Print Selection enables the Samastronic to discriminate between information for one job and another.

INFORMATION FOR LOCAL PAY OFFICE

6. Pay Advice

- 6.1 Universal application to all types of payee.
- 6.2 Detachable receipt stub eliminates need for signature on pay sheet and gives privacy to the payee.
- 6.3 Notes and explanation of changes for payee's information.

7. Proof Sheet

- 7.1 A more compact copy of pay advice information with additional details required for local pay office purposes (e.g. pay queries).
- 7.2 Action signals, calling the attention of the pay clerk to exceptions and special conditions.
- 7.3. Balancing totals by pay point, balance block, and pay office.
- 7.4 Analyses include - National Insurance contributions.
 - Voluntary Deductions
 - Overtime and Sunday time by Grades.
 - Staff on payroll by Grades.
- 7.5 Proof sheets and receipt stubs will ultimately be sent to AGD for audit.

8. Postal Drafts

- 8.1 New issue for LEAPS only, covering payments up to £100 (two drafts for amounts over £50).
- 8.2 Drafts will be prepared by Samastronic printers and the Advice List of numbers and amounts will be produced as a by-product.
- 8.3 Local office action: entry of name of office of payment : dispatch to payee with pay advice in envelope prepared by payee.
- 8.4 Accounting procedures unchanged.
- 8.5 Possible use of LEAPS drafts in payment of BO staffs.
- 8.6 D and JA series retained for local issues.

9. Supplementary Payments Records (SPR)

- 9.1 This record will comprise part or all of the following information:-
 - standard data;
 - accumulations of pay and tax to date;
 - details of voluntary deductions, fund by fund;
 - supplementary earnings (Extra Duty, Sunday Duty and Intermittent Allowances) week by week, for up to 14 consecutive weeks.
- 9.2 The records will be printed out in part or in full as demanded by the following occasions:-
 - as an initial check of standard data for a new employee or on taking over a payroll on LEAPS;
 - for local office records at regular intervals of 11 weeks;
 - for local office information in cases of transfer or cessation;
 - for local office information on request.

10. Pre-printed lists

Each week forms will be printed with names and pay numbers of payees and will be sent to the local office where they will be used to advise LEAPS of overtime, increments, etc. in the following week.

MBD/COMB

November, 1958.

LEAPS APPRECIATION COURSES - SECOND SERIES

THE LEAPS COMPUTERS AT WORK

1. LEAPS Pay Records are stored magnetically on staticdata (SD) films, each payee's record occupying half the width of a film and running for about 5" along its length. The record contains all the standard information necessary to assess pay and print a pay advice (e.g. name, standard pay & allowances, conditioned hours, tax code, national insurance contribution, voluntary deductions, etc.) plus the pay number, by which the computer identifies individual payees. Pay numbers are so allocated that, when sorted into numerical order, the corresponding surnames are in alphabetical order. Pay records for one pay group are subdivided into balancing blocks and pay points on the film; within each pay point, records are maintained in strict numerical order of pay number. Pay records are kept in a similar order in the manual pay system.
2. Input Data Tapes. The three main streams of input data are punched into paper tape, and within each pay point the order will be:-
 - 2.1 Class IV data, punched from forms 4, consisting of full pay details for payees new to LEAPS payrolls. This data is used during the payroll process to create new pay records, which are then inserted in their correct places in the magnetic pay record file.
 - 2.2 Class II data, punched from forms 2, consisting of permanent and temporary changes to pay, each with its identifying code. All the changes for one payee are punched in a batch following his pay number, but the data is not in pay number order and requires sorting within the computer on input.
 - 2.3 Class I data, punched from forms 1, is similar to class II data, but is punched in pay number order so that no sorting operation is required within the computer.

A typical item of class I or II data might be punched as follows:-

FS 321169 sp sp 55 sp 4 sp 8 sp 6 sp sp

This would indicate to the computer that payee number 321169 was to have an increment (code 55) from Tuesday of this pay week (4 days), and that the weekly amount of the increment was 8s. 6d. Figure Shift (FS) indicates to the computer the beginning of a payee's input data, while the spaces (sp) indicate the beginning and end of each item of input data and the elements of which it is composed.

3. The Computer Programme is not merely one long series of orders to the machine, but consists basically of a Main Programme which acts as a framework into which a host of smaller programmes (called sub-routines) are designed to dovetail. Sub-routines do one specific job (e.g. implementing an increment or changing the tax code held in one of the LEAPS pay records) and are called into play by the Main Programme only when required. Main Programme decides which sub-routines are required by identifying the codes which are allocated to each input item. (e.g. code 55 for an increment, code 18 for a change of tax code).

CORRECT CODING OF INPUT DATA IN LOCAL OFFICES WILL THEREFORE BE OF PARAMOUNT IMPORTANCE.

Basic Computer Payroll Process

4. The notes which follow describe in simplified form how the computer goes about the payroll job. They should be read in conjunction with the computer block diagram issued earlier in the course.

5. Preparing the computer for the payroll run

<u>Operation</u>	<u>Remarks</u>
5.1 Load last week's SD film on mechanism 4.	This film contains the computer payroll programme, followed by the up to date pay records for the office about to be processed.
5.2 Load a blank film on mechanism 1.	This will become the updated SD film to be carried forward for next week's payroll run.
5.3 Load another blank film on mechanism 3.	This will be the Print film on which will be stored data required for printing pay advices, proof sheets and postal drafts this week.
5.4 Place the input data paper tape in tape reader 1.	This will contain all the "change" data for the office signalled this week, punched as described in para.2.

The computer is now ready for operations to commence.

6. Setting-up operations within the computer. Before any start can be made with computing pay, a considerable amount of "house-work" has to be done in the computer:-

<u>Operation</u>	<u>Remarks</u>
6.1 Read in programme from SD film (mech 4); store it on disc and also copy it on to the updated SD film (mech 1).	This operation is done via the operating console; control is now switched to the Main Programme, and <u>all operations from now on are automatic.</u>
6.2 Check that the input data tape and SD film refer to the same office.	All SD films and input tapes will be headed with codes identifying the pay group, balancing block and pay point.
6.3 Read in via tape reader 1 all class IV data (new payees), create new pay records and store on disc	For easy reference later, a look-up table identifying the location of each record on the disc is retained in working store.
6.4 Read in via tape reader 1 all class II data and store on disc.	Another look-up table in working store.
6.5 Read in via tape reader 1 the pay number of the first payee for whom class I data has been signalled, and store in a specified working store location.	This is for easy reference later. When required, the data relating to this payee will be read in, and the pay number in working store will be replaced by that of the next affected payee.

The computer is now ready to enter the Pay Computation cycle.

7. Pay Computation Cycle. The procedure outlined below forms a complete loop, round which the computer goes automatically for each payee. At predetermined points the computer comes out of the loop (end of pay point, balance block or pay group) and enters special routines (para. 8 refers).

<u>Operations</u>	<u>Remarks</u>
7.1 Read in first pay record from SD film into working store.	

Operations

- 7.2 Test whether there is a new payee to be inserted at this point. If so, bring new pay record from disc into working store and reverse SD film one block.
- 7.3 Test whether there is any class II or I input data for this payee. If so, bring it from disc (class II) or read in from paper tape (class I), assemble it in working store, and proceed to 7.4. If no input data, proceed to 7.5.
- 7.4 Identify the code of the first item of data and bring down from disc into working store the appropriate sub-routine. Switch control to that sub-routine. The last orders in the sub-routine will return control to Main Programme. 7.4 is repeated for each item of input data before proceeding to 7.5.
- 7.5 Assess gross pay this week by adding together the various elements stored in specified working store locations. Store gross pay figure in another working store location.
- 7.6 Identify payee's Income Tax basis by reference to pay record and bring down appropriate sub-routine from disc. Assess tax to be paid this week and store.
- 7.7 Obtain from pay record the appropriate rate of national insurance contribution and store.
- 7.8 Obtain from pay record voluntary deductions (in detail and in total) and place in specified working store locations.
- 7.9 Assess Net Pay this week (Gross pay - (Tax + Nat. Ins. + Vol. Ded.)) and store in specified working store location.

Remarks

Done by comparing pay numbers; lower pay number takes precedence. The payee to be processed next has now been identified.

Done by comparing pay numbers - if input data refers to payee in question, difference should be zero.

Example: Increment routine will tackle sample item in para. 2 as follows:-

- a - Bring old standard pay figure from pay record to accumulator.
- b - Add increment (8s 6d) and copy into pay record.
- c - Assess reduction from new standard pay to be made this week ($\frac{6-4}{6} \times 8s\ 6d = 5s\ 8d$)
- d - Store temporary reduction in a specified working store location.
- e - Return to Main Programme.

When each input data item has been dealt, the pay record has been updated and in various locations in working store are bits of information affecting this week's pay only (temporary changes to standard pay, extra duty and Sunday pay, intermittent allowances etc.).

Cumulative figures of assessable pay and tax paid to date are carried forward each week in the updated pay record. Tax tables are not stored in the computer; total tax due to date is assessed from first principles each week on the basis of earnings to date, and tax code (in pay record).

OperationsRemarks

- 7.10 Assemble, in the order required for printing, all the data to be printed on this week's pay advice proof sheet and (if necessary) postal draft.
- After going through operations 7.1 to 7.9, bits of information are stored in various working store locations. These are now brought together in a logical sequence for printing.
- 7.11 Copy on to the Print film (mech 3) the assembled information for printing for this payee.
- 7.12 Copy on to the updated SD film (mech 1) the updated pay record, and simultaneously read in the next pay record from SD film (mech 4).
- 7.13 Return to 7.2
8. During the operations described in para. 7, all necessary totals for balancing and analysis purposes are accumulated on the disc. The Main Programme provides for exit from the pay computation cycle and for the appropriate balancing and analysis information to be copied on the Print film at the end of each pay point and balancing block, as well as at the end of the pay group.
9. When all the pay records in a pay group have been processed, the computer comes to a halt. The three films on mechanisms 1, 3 and 4 are removed, and disposed of as follows:-
- Print film - to Samastronic Printer for printing of pay advices, proof sheets and postal drafts.
- Updated SD film - filed away in film store to be brought out for next week's payroll run.
- SD film - filed away in film store for two weeks, after which the film can be issued for re-use.

The input data tape is also retained for a period, and then made waste.