

Notes on the Preparation of Data Cards for
DEUCE Correlation Programmes

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Introduction

Wrongly prepared data cards are one of the main causes of misunderstanding between other departments and Mathematical Services. The aim of these notes is to advise prospective clients as to the most suitable form of presentation to Mathematical Services of data for which auto and/or cross correlation coefficients are desired.

As far as is possible, cards should be supplied ready for input to DEUCE. Intermediate handling operations on cards are very time-consuming and, further, every operation is a possible source of error.

DEUCE Cards

Input to DEUCE is on standard, 80 column Hollerith cards. Only 32 of these columns are used, columns 21-52: these are known as the DEUCE field. Other columns may be used for certain special information that is not required in the computation, such as card number, job number, run number, etc.

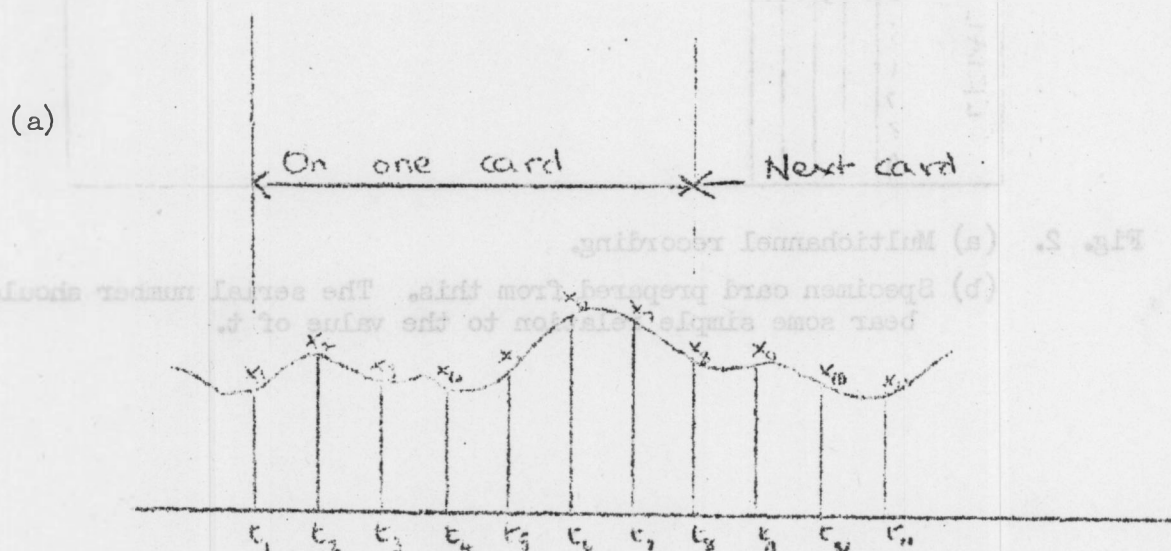
The correlation programmes will deal with positive numbers less than 1,000. Eight such numbers should be punched on a card, as four digit decimal numbers with the first digit zero. There is no need to punch signs. (The zeros are in (card) columns 21, 25, 29, 33, 37, 41, 45, 49.)

As far as possible cards should be prepared as described above. This is not always possible with trace records digitized with a trace reader. In such cases the procedure outlined below is the most convenient one.

Trace Records

If single channel recording has been used (so that there is only one trace) the card punch can be arranged to punch only on the DEUCE field and the zeros can be supplied automatically by the punch.

For multichannel recording, one value of time should correspond to one card. All the traces should be read simultaneously. The punching need not be done in the DEUCE field. The cards can then be prepared for the DEUCE programmes by the Hollerith equipment available in Mathematical Services Department. This, however, involves some delay as the operations involved are tedious in the extreme.



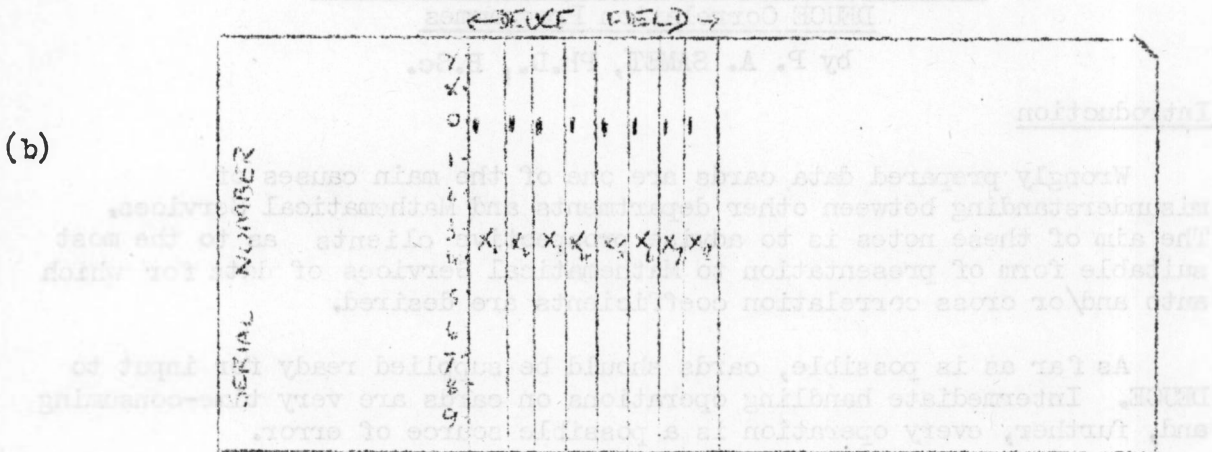


Fig. 1. (a) Single channel recording.
 (b) Punched card prepared from this. Oblongs represent zeros in appropriate columns.

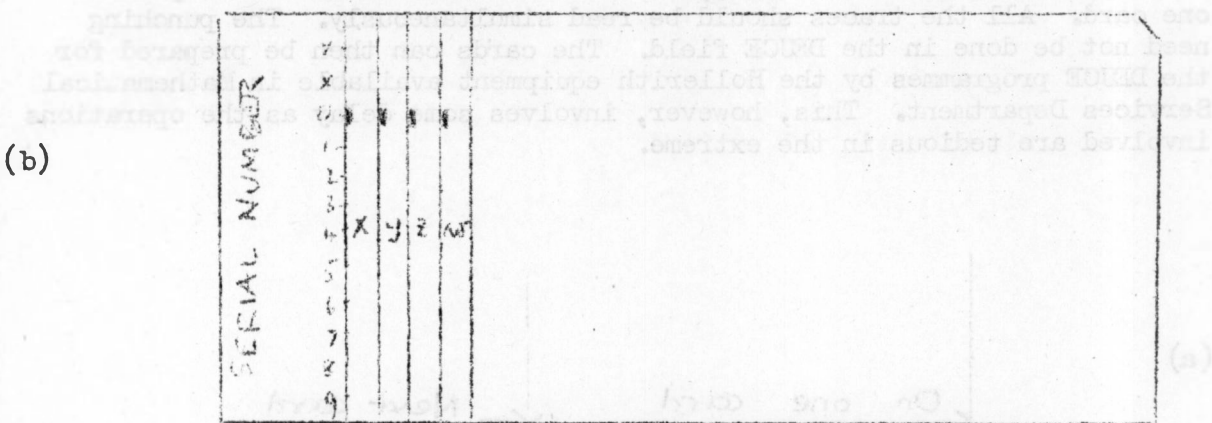
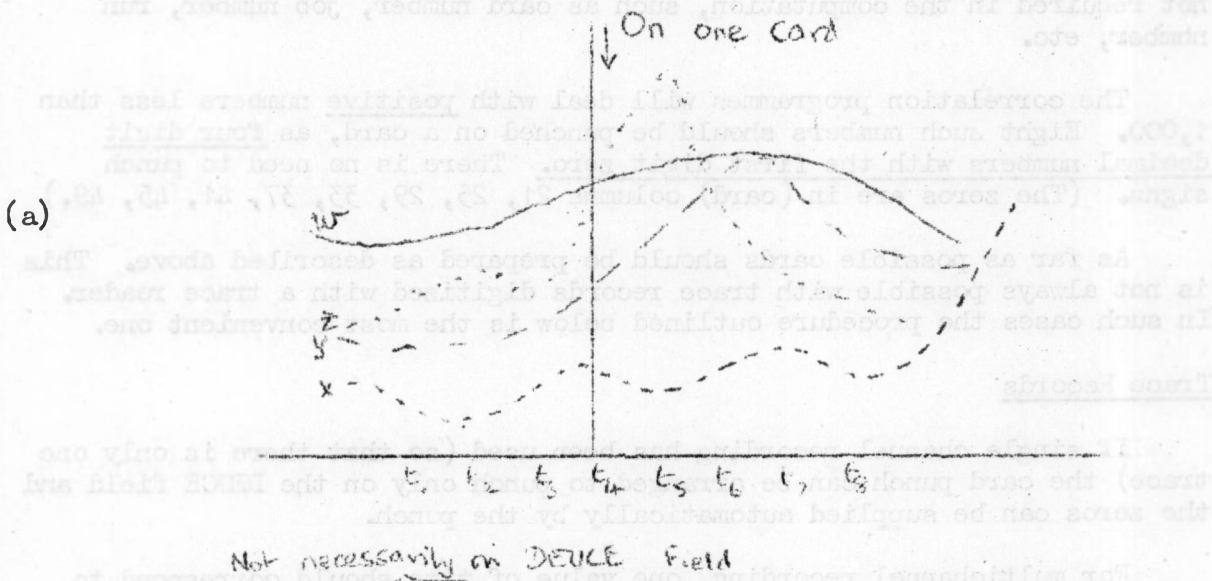


Fig. 2. (a) Multichannel recording.
 (b) Specimen card prepared from this. The serial number should bear some simple relation to the value of t .

Further Desired Information

The following information should be supplied with the cards:-

- (i) The number of terms in the series.
- (ii) Which correlation coefficients are required.
- (iii) Longest lag required.

This information is needed for a parameter card for the correlation programmes. This card is normally prepared by Mathematical Services.

Final Comments

If several sets of cards are supplied, it is generally helpful for them to have different colours.

Cards should be handled carefully. If they are bent or torn they cannot be read by the Hollerith equipment and have to be repunched by hand.

If there are any doubts whatever about how cards should be prepared, please ask Mathematical Services before 'preparing' them.

A detailed description of the Hollerith equipment available at R.A.E., how it is to be used and what it can do will be found in M.S. Report 52, December 1952.

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