

17. A two-dimensional array `CUSTOMERS[]` is used to store customer details for a mail order company such that each row of the array represents a customer record and each column represents a specific field. The fields currently in use are: `LASTNAME`, `FIRSTNAME`, `ADDRESS1`, `ADDRESS2`, `ADDRESS3`, `CITY`, `POSTCODE`.

The array currently holds 512 records.

- (a) Construct the pseudocode that will find how many customers live in the city of `Cardiff` and display the results. [5]

The company wishes to print a number of mailing labels, such as the one shown below, that will go to all customers called `Jones` who live in `Cardiff`.

FIRSTNAME LASTNAME
ADDRESS1
ADDRESS2
ADDRESS3
CITY
POSTCODE

- (b) Construct an algorithm that will enable the company to print the mailing labels for all customers called `Jones` who live in `Cardiff`. [5]

A singly linked list has been created including the following surnames; `Bale`, `Cousens`, `Davies`, `Pugh`, `Williams`.

- (c) Explain the steps to insert "`Jones`" into this singly linked list. You may draw a labelled diagram in your answer. [5]
- (d) Outline **one** example of where a circular linked list would be used in preference to a linear linked list. [2]