

Subject type B

Computer Programming

Final Exam - Part II - Programming exercises

Exercise 1. Write a program that reads from the standard input 100 integers representing postal codes of letters in a mailbox. An integer value is considered to represent a valid postal code if it has 5 digits. The last 2 digits (least significant ones) represent the region; the first 3 digits (most significant ones) represent the city/village in that region. The program must count how many different regions appear in the postal codes and how many letters are sent to each region.

Example:

```
24567
24143
21167
```

```
Region 67: 2 letters
Region 43: 1 letter
```

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Exercise 2. Write a program that reads a text of several lines until EOF (but not more than 20 lines) and then prints the text "encrypted" using 2 methods as described below.

The lines must be stored into an array of pointers: `char *text[20];`

Define and call a function that encrypts a line of text (the line and the encryption method are passed as parameter).

The following encryption methods are used: (1) replace each character with the character that has the next ASCII code; (2) replace each character with the character that results from inverting the third bit in the binary representation of its ASCII code.