



GCSE

4343/01

**COMPUTER SCIENCE CS3
CONTROLLED ASSIGNMENT**

For submission in May 2015

(15 hours)

INSTRUCTIONS TO CANDIDATES

This is one of two scenarios available. Each scenario is available separately. You may choose either of the two scenarios. You will have 15 hours to complete your chosen task.

Research tasks can be carried out outside timed conditions.

Read the scenario carefully to make sure that you understand what is needed.

It is important that you work independently from other candidates and make sure that what you hand in is your own unaided work.

Your report should be about 2,000 words.

Make sure that you check your work carefully to ensure that the work you produce is accurate and correct.

Save your work regularly.

INFORMATION FOR CANDIDATES

Teachers and candidates will be required to sign a declaration that all work presented is the work of the candidate alone. Failure to authenticate the work may result in grades being delayed or refused.

The quality of written communication will be assessed in your evaluation.

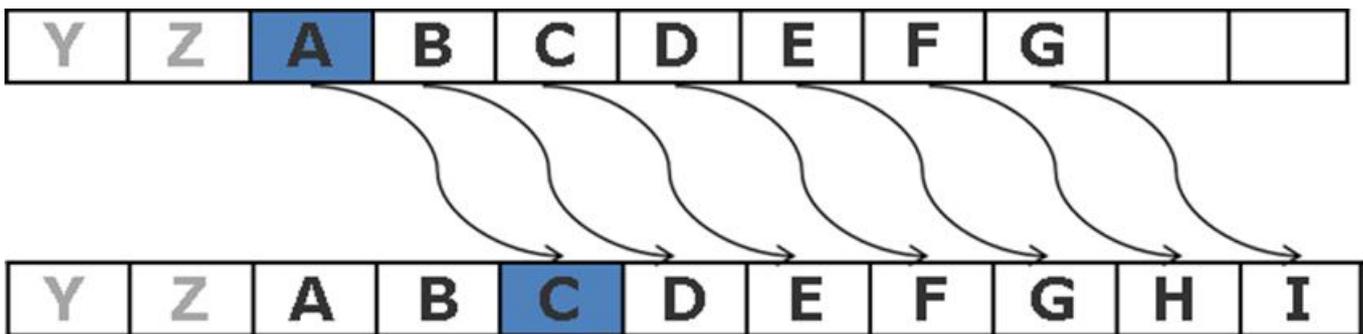
Scenario 2

Secret messages!!

Throughout history people have used codes known as ciphers to keep information from their enemies when sending messages. One person known to have used ciphers was Julius Caesar who sent coded messages to his generals.

A cipher is a system for hiding the meaning of a message by replacing every letter in the original message with another letter. A cipher can be split into two halves, the algorithm and the key.

Caesar used a very simple cipher of moving letters along by an offset. In the diagram an offset of two has been used so that A becomes C and B becomes D. The word *bag* would become *dci*. Ciphers that use this method are known as rotational ciphers. As long as the offset is known the message can be coded and decoded.



The Caesar cipher has 25 possible keys. The alphabet can be shifted up to 25 places with A becoming Z. If we shift a letter 26 places it takes it back to the original letter and shifting 27 places is the same as shifting one place.

Your task is to write an application to:

- Input a message to be coded or decoded
- Input the offset
- Display a message that has been coded or decoded
- Store coded messages and their offsets
- Recall, decode and display a stored message

Produce a report fully documenting your solution to automate this process. Credit will be given for the quality of your solution. Your report should be about 2,000 words.