Programming for A Level Computing through automated cipher breaking

COURSE DETAILS

VENUE:
Leadership and Training Centre
Shenley Brook End School
Walbank Grove
Shenley Brook End
Milton Keynes
MK5 7ZT

FORMAT:
2 Full days

TIMES
9.30am - 4.00pm

DATES:
Monday 25 January 2016
Friday 5 February 2016

FEES: £250

BOOKING DEADLINE:
2 weeks prior to course start date

Lunch and Refreshments provided

About the course
This is a practical, hands-on programming CPD course aimed at teachers who are already comfortable at teaching programming at GCSE. The course will extend and develop your programming skills, showing you how to use the advanced techniques required at A level to solve complex problems.

Taking inspiration from the work of Alan Turing at Bletchley Park, the course uses the task of automatic cipher breaking to illustrate and develop these programming techniques. The course will cover three main ciphers (Caesar cipher, column transposition cipher, and Pocket Enigma). Participants will implement enciphering, deciphering, and automatic breaking of these ciphers, using them to illustrate many programming techniques.

This course will develop your expertise in:
- Creation and use of complex data structures (graphs, multi-dimensional arrays, dictionaries, advanced string handling).
- Problem, data, and program abstraction, decomposition, and composition.
- Map-reduce and memorisation for dealing with complex problems.
- Iterative, recursive, and parallel strategies for solving problems.
- Basic object-oriented programming strategies.
- Using complexity analysis to compare algorithms.

Delegates must attend with their own laptops with their own software development environment installed. The training material will be delivered using Python 3.4; delegates are free to use other languages but will have to convert the examples themselves.

Who should attend
This two-day course will be of interest to teachers who are currently, or about to, teach computing at A level. Attendees should already be confident teaching programming at GCSE.

HOW TO APPLY:

Please complete an application form and return to:

Contact: Julie East, Leadership and Training Centre Administrator, Shenley Brook End School, Walbank Grove, Shenley Brook End, Milton Keynes, MK5 6EX
Tel: 01908 524894
Email: jeast@sbeschool.org.uk

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