



## Gordons school Computing department

### Pre Y12 A Level Computing Summer work

In preparation for starting 'A' level computing in Year 12, it is important that you have a good understanding of the concepts taught at GCSE.

We also need you to be at a reasonable standard of Python programming, as this is the language that we will use for most of the A level. We feel that it is more beneficial for you to develop a better understanding of 1 language, rather than having a shallow understanding of 2 or 3.

Please review the material and complete the Game boards by creating an account on the ISAAC computer science website...

[https://isaacomputerscience.org/topics/gcse\\_programming\\_concepts](https://isaacomputerscience.org/topics/gcse_programming_concepts)

[https://isaacomputerscience.org/topics/gcse\\_data\\_representation](https://isaacomputerscience.org/topics/gcse_data_representation)

[https://isaacomputerscience.org/topics/gcse\\_boolean\\_logic](https://isaacomputerscience.org/topics/gcse_boolean_logic)

[https://isaacomputerscience.org/topics/gcse\\_systems](https://isaacomputerscience.org/topics/gcse_systems)

[https://isaacomputerscience.org/topics/gcse\\_networking](https://isaacomputerscience.org/topics/gcse_networking)

After that, have a go at the following programming task on the following page,



### The Puzzle Club

The Puzzle Club was founded several years ago by a group of primary school teachers. The aim of the club is to create puzzles that will encourage children to develop their language and spelling skills.

The club decided to develop some on-screen puzzles to engage more reluctant learners to attempt puzzles that will give them opportunities to develop their skills.

The first type of puzzle they have decided to move on to screen is a cryptogram. A cryptogram requires the puzzler to solve a simple letter substitution cipher.

Each time a cryptogram is created a different set of random numbers are allocated to the letters of the alphabet. The person setting the puzzle then uses the cipher to write a sentence using the numbers rather than the letters. To help the puzzler the setter chooses two letters that will be given away as clues, as in the diagram below

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 | 7 |   |   |   |   |   |

$\frac{T}{7}$     $\frac{13}{11}$     $\frac{2}{5}$     $\frac{S}{1}$     $\frac{15}{20}$     $\frac{2}{2}$     $\frac{T}{7}$     $\frac{13}{11}$     $\frac{3}{16}$     $\frac{16}{16}$     $\frac{9}{9}$     $\frac{T}{7}$     $\frac{S}{1}$     $\frac{15}{3}$     $\frac{11}{11}$   
 $\frac{S}{15}$     $\frac{20}{19}$     $\frac{9}{9}$     $\frac{1}{1}$     $\frac{15}{15}$     $\frac{20}{26}$     $\frac{11}{11}$

You have been asked to create an application for the puzzle club that will allow the user to:

- Enter a title for the puzzle
- Enter the phrase to be encoded
- Enter the give-away letters
- Allocate random numbers to each of the letters of the alphabet
- Generate an alphabet grid with the random numbers for the give-away letters displayed (as above)
- Generate the puzzle with give-away letters showing letters displayed (as above)
- Allow the puzzler to guess one letter at a time by entering the number and letter
- Add the number to the grid if correct and display the letter in the sentence
- Store the puzzler’s results in a text file that records the Puzzlers name, date, title of the puzzle and the number of guesses it took them to solve the puzzle

Code this in Python, Paste your code/link to a REPLIT.com REPL below and email this sheet to [jumsion@gordons.school](mailto:jumsion@gordons.school) before the start of Y12

Help for coding can be found at: <http://computing.outwood.com/NEA/python/index.html> or <https://www.w3schools.com/python/default.asp>