

Student	Jiaxing Zhong	85
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Part 1

	Available	Marks
Create a matrix <i>message1</i> that contains the character data above, together with the numerical labels for rows and columns. Display this matrix.	5	3
Generate the ciphertext using the following ruleset: Start at 5,5 and work towards the left. Read odd-numbered columns upwards and even-numbered columns downwards. Display the encrypted message as a vector <i>ciphertext1</i> which contains each character of the ciphertext as a separate element in the vector.	20	15
Suppose that the message is written in a 3x9 array rather than a 5x5 array. Generate an appropriate matrix <i>message2</i> and use the two methods given in the introduction to generate two more vectors <i>ciphertext2</i> and <i>ciphertext3</i> .	15	11
Which of the two matrices, <i>message1</i> or <i>message2</i> do you think produces the most secure encryption methods? In a comment at the end of your script say which you think is the most secure and why this is the case. Do not write more than 100 words on this.	5	3
Commenting and use of white space	5	5
	TOTAL	37
Comments Excellent commenting and use of white space. 1.1 Creation of the matrix is generally good, although you've added an extra row and an extra column of numbers rather than using names() function. This has required you to write extra code to get around the problems it causes later on. 1.2 Works well, and you've got around the numbers problem. 1.3 Both work well. 1.4 Interesting point about the different lengths of diagonals. Having the extra spaces in 2x9 can make it more secure due to the increase in the number of possible combinations, particularly if you replace the spaces with random letters.		

Part 2

	Available	Marks
Create an appropriate matrix to hold the decrypted message and populate it from the ciphertext. Display the matrix once it has been populated. METHOD 1	13	13
Create an appropriate matrix to hold the decrypted message and populate it from the ciphertext. Display the matrix once it has been populated. METHOD 2	13	13
Create an appropriate matrix to hold the decrypted message and populate it from the ciphertext. Display the matrix once it has been populated. METHOD 3	13	13
Which of the two matrices, 5x5 or 9x6, do you think produces the most secure encryption methods? In a comment at the end of your script say which you think is the most secure and why this is the case. Do not write more than 100 words on this.	6	4
Commenting and use of white space	5	5
	TOTAL	48
Comments Excellent commenting and use of white space. 2.1, 2.2, 2.3 Methods are good, and the code has some elegant features. Well done. 2.5 Good point about the number of different size combinations that need to be tested.		