

Student	Yang Lu	66
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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	5
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	18
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	12
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	3
	TOTAL	41
Comments 1.5 Use of white space is fine, but more comments are needed, particularly within the loops. 1.1 Good solution, particularly in setting up the labels. 1.2 Good solution. You could have used <code>ciphertext1<-NULL</code> instead of <code>vector()</code> but that's fine. 1.3 Generating the 3x9 matrix like this leads to recycling of the first two elements in the m vector. It would be better to pad this out with spaces. The second method is good, but needs more extensive commenting. 1.4 Good point, but geometry and path segmentation are also important.		

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	8
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	11
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	0
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	3
Commenting and use of white space	5	3
	TOTAL	25
Comments 2.5 Use of white space is fine, but more comments are needed, particularly within the loops. 2.1/2.2 Good approach to building the matrix (including labels). Method 1 has the right idea, but having count1 and count introduces an error. Method 2 works, but you've missed a second space when setting up the original message vector. 2.3 Not attempted. 2.4 Good point.		