

Student	Ashleigh Simons	35+32 67
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Part 1

	Available	Marks
Create a vector <i>v1</i> that contains the values 1 to 16	2	2
Add the values 17 to 20 to the end of <i>v1</i> .	2	2
Delete elements 5, 6, 7 and 13 from <i>v1</i> . You should use a one method to remove elements 5, 6, 7 and another method to remove element 13.	4	2
Using <i>v1</i> , create a new vector <i>v2</i> that contains the 1 st to 5 th and 9 th to 11 th elements of <i>v1</i> .	3	3
Calculate <i>v1</i> * <i>v2</i> and display the results. In your comments, explain how R adds two vectors of different lengths.	4	3
Create a new vector <i>v3</i> by selecting all even elements of <i>v1</i> using a filter	2	2
Using a loop, create a new vector <i>v4</i> the same length as <i>v1</i> , that contains the value <i>TRUE</i> if the corresponding element of <i>v1</i> has an integer square root and the value <i>FALSE</i> otherwise. <i>HINT: You will need to use the sqrt() and round() functions.</i>	6	3
Create a matrix <i>m1</i> with 4 rows from vector <i>v1</i>	3	1
Create a matrix <i>m2</i> with 2 columns from vector <i>v2</i>	3	3
Swap all of the elements in row 3 of <i>m1</i> with the elements in column 2 of <i>m1</i>	3	0
Create and display a new matrix <i>m3</i> from <i>m1</i> and <i>m2</i> where <i>m3</i> contains all of the columns of both source matrices	2	1
Replace all values in <i>m3</i> that are in (column 1 or column 3) and in (row 2 or row 3) with double their value	4	3
Remove row 2 of <i>m3</i>	1	1
Label the columns of <i>m3</i> as "c1", "c2", "c3", "c4", "c5", and "c6"	1	1
Create a vector <i>mmeans</i> that contains the means of each column	3	1
Create a barplot of <i>mmeans</i>	2	2
Commenting, white space etc.	5	5

Comments

Your vector creation methods work, but they're quite long.

You should have used two different methods to remove elements from v1. V1[-10] would have worked fine.

The technical term is 'recycle'.

In a loop you need to include the print() function to display the contents of a vector. You've got the sqrt() and round() values, but your vector of TRUE and FALSE don't actually show which elements have integer square roots. 1, for instance, should be FALSE.

Q10 is better answered by using the columns and rows of the matrix, not by going back to the original vectors.

The better way to build m3 is to use cbind(m1,m2)

The doubling works but is a very long way of doing it. Working with rows or columns rather than submatrices is much faster.

You should add the column names directly to m3, not rebuild m3 first.

Using apply() is a much better way of calculating the means.

Excellent use of white space and commenting.

Part 2

	Available	Marks
Create <i>Polybius</i> matrix	5	4
Encrypt the message using the <i>Polybius</i> matrix	20	11
Display the ciphertext in groups of five characters	20	12
Commenting and use of white space	5	5
Comments Q1: Good matrix generation, although it would be better to use NA rather than " ". Good approach to use the column and row names to identify the required numbers. Q2: The encryption function works, but would be much better to take a letter and compare it with the cells of the matrix and extract the rowname and colname to get the appropriate numbers. Using loops like that would make it a lot more concise. You've got some of the codes mixed up (the ciphertext should start "331225"). Q3: It works, but again could be much more concise by using loops. Overall, you've done a lot of things manually that you could have automated Good commenting and use of white space.		