

Student	Emily Stockdale	40+37 77
---------	-----------------	-------------

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	4
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	0
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	6
Create a matrix <i>m1</i> with 4 rows from vector <i>v1</i>	3	3
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	4
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

You created v2 from scratch, not from v1.

A bit more explanation of recycling is needed.

Good use of which() and nice way of solving the TRUE/FALSE problem.

Row 3 should be replaced with column 2 and column 2 with row 3. Swap, not replace. This should also be done using the rows/columns of the matrix, not by creating a new vector of numbers for it.

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

Better to do mmeans<- apply(m3,2,mean). You're trying to do things automatically, not by having a human read the output and then type in a new vector.

You don't need to create the barplot then display it again with the extra features.

Excellent commenting and use of white space.

Part 2

	Available	Marks
Create <i>Polybius</i> matrix	5	5
Encrypt the message using the <i>Polybius</i> matrix	20	11
Display the ciphertext in groups of five characters	20	16
Commenting and use of white space	5	5
Comments Q1: Spot on! 😊 Q2: You've got a fairly complicated way of building this. It's much easier to use three nested loops for the character, then the row, then the column, check inside the third for the letter and break out two levels if it matches. Only having 10 characters means you haven't added the random extra characters to make it divisible by 5. Q3: Final display algorithm is excellent but lacks the extra random characters part. Excellent use of commenting and white space.		