More on R objects

Exercises

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Sections 1-2

1. Create a numeric vector $\{1, 99, 3, 3, 1, 2, 99\}$ with name `vec`, and use it to generate a factor `f` with categories 1=A, 2=B, 3=C, 99=none. Then modify it and define the category 'none' as the new reference.
2. Create two matrices `mat1` and `mat2` equal to:

$\texttt{mat1}_{2,2} = \begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix}$ and $\texttt{mat2}_{2,4} = \begin{bmatrix} 2 & 4 & 6 & 8 \\ 10 & 12 & 14 & 16 \end{bmatrix}$

3. Generate a new matrix `mat3` as the two matrices `mat1` and `mat2` appended by rows (side by side). Write a command returning the dimension of `mat3`.
4. Create a logical matrix identifying which elements of `mat3` are equal to `3`, and then an identity matrix of dimension `4`.
5. Generate a new matrix `mat4` as the matrix multiplication of `mat1` and `mat2`, and then compute the sum of its rows.

Sections 3-5

6. Generate a list `mylist` with components `vec` and `mat1` (created above) and names '*vector*' and '*matrix*', respectively.
7. Create a data frame `data` with variables `vec` and `f`. Then write a command which returns the number of records and columns of `data`.
8. List the attributes of `mylist`. Then display the attribute `names` of `data`.
9. Coerce the factor `f` to a matrix, and give it the name `matf`. Display it and check its mode.