Lab. Sheet 4 – Matrices in Python

Review of functions in notes

Q1. Set up each of the following matrices as a list of lists in Python:

$$A = \begin{pmatrix} 1 & 2 \\ 0 & -3 \\ 6 & 8 \end{pmatrix},\ B = (0 \quad 1 \quad -1),\ C = \begin{pmatrix} 3 & 0 \\ 1 & 4 \end{pmatrix},\ D = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}\ and\ E = (\ ).$$

Q2. Use the shape function given in the notes to verify the shape of each of these matrices in list format.

Q3. Use the get functions in notes to extract Row3 of A, Column2 of C and element b_{13}.

Q4. Generate the following matrices using the make_matrix function in notes:

$$A = \begin{pmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{pmatrix},\ B = \begin{pmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix},\ C = \begin{pmatrix} 0 & 0 & 4 \\ 0 & 4 & 0 \\ 4 & 0 & 0 \end{pmatrix}$$

You will need to create your own entry_fns.

Challenge Task:

Set up a matrix to store the following data relating to phone usage by the 10 students:

No_of_texts = [1, 2, 4, 1, 0, 6, 8, 9, 1, 1]

Time_on_phone = [5, 9, 12, 3, 10, 20, 24, 18, 4, 5].