1 Vectorization

In this problem you will see how vectorization can improve the performance of your code.

(a) Write a function $A = \text{mult}_\text{for}(n)$ that computes and returns a matrix $A$ using the rule $A_{ij} = ij$, $i, j = 1 \ldots n$ using for loops.

(b) Vectorize the function in part (a) and call it $\text{mult}_\text{vec}(n)$.

(c) Write a script that does the following

1. Compute and record the computation time (using tic and toc) for $\text{mult}_\text{for}(n)$, where $n = 100 : 100 : 3000$

2. Compute and record the computation time for $\text{mult}_\text{vec}(n)$ for the same values of $n$.

3. Plot the computation time versus $n$ for $\text{mult}_\text{for}$ and $\text{mult}_\text{vec}$ in the same graph

Comment on the observed results (briefly).