More Results

Theorem: Any strongly connected web has a column-stochastic page-to-page matrix.
Proof: If each page has an outgoing link, the corresponding column of the page-to-page matrix will have at least one non-zero entry. Then the result follows from the definition of the page-to-page matrix.

Theorem: For the page-to-page matrix A of a strongly connected web, $N(A - 1I)$ has dimension 1 and there is a unique eigenvector corresponding to eigenvalue 1 whose entries sum to 1. Moreover the entries of this eigenvector are all non-negative.

This theorem is not easy to prove, but its importance is clear: **every strongly connected web has a unique importance vector**.

So what do we do if we do not have strong connectivity? This happens if our web is disconnected or if there is a dangling page. We now give some examples and some suggestions on how to deal with these cases.