Implementation of Gale-Shapley

For convenience we'll assume the men and the women are numbered $1, \ldots, n$. We'll assume the following initial data:
$\texttt{MANLIST}[i, j]$ gives the j-th woman in man i's list.
$\texttt{WOMANLIST}[i, j]$ gives the i-th man in woman j's list.
$\texttt{WOMANRANK}[i, j]$ gives the rank of woman j in man i's list.
$\texttt{MANRANK}[i, j]$ gives the rank of man i in woman j's list.
$\texttt{FREEMEN}$ is a *queue* of free men, initially $1, \ldots, n$.

Furthermore we will use auxilliary arrays:
$\texttt{MANMATE}[i]$ is man i's current mate. This is $\texttt{NIL}$ when i is free. Initially all $\texttt{MANMATE}[i] = \texttt{NIL}$.
$\texttt{WOMANMATE}[j]$ is woman j's current mate. This is $\texttt{NIL}$ when j is free. Initially all $\texttt{WOMANMATE}[j] = \texttt{NIL}$
$\texttt{MANTRY}[i]$ is that largest j for which man i has proposed to woman $\texttt{MANLIST}[i, j]$. It is set to zero initially and for as long as man i has proposed to no one.

With these initial conditions the main part of the algorithm is:

WHILE $\texttt{FREEMEN} \neq \emptyset$
$i \leftarrow \texttt{POPQUEUE}(\texttt{FREEMEN})$ (* Take top free man i from queue *)
$\texttt{MANTRY}[i] + +$ (* Man i will propose so increment $\texttt{MANTRY}[i]$ *)
$j := \texttt{MANLIST}[i, \texttt{MANTRY}[i]]$ (* j is next woman on i's list *)
$mate := WM[j]$ (*j's current mate *)
IF $mate = \texttt{NIL}$ (* j free *)
    $\texttt{WOMANMATE}[j] \leftarrow i$ (*i, j matched *)
    $\texttt{WOMANMATE}[i] \leftarrow j$
ELSE IF $\texttt{MANRANK}[mate, j] > \texttt{MANRANK}[i, j]$ (* j prefers i to current mate *)
    $\texttt{ADDTOQUEUE}[mate, \texttt{FREEMEN}]$ (* add current mate to queue *)
    $\texttt{WOMANMATE}[j] \leftarrow i$ (* i, j matched *)
    $\texttt{MANMATE}[i] \leftarrow j$
ELSE $\texttt{ADDTOQUEUE}[i, \texttt{FREEMEN}]$ (* j rejects i, return i to queue *)
end WHILE