Start

Generate random number
\[ \Delta U(0) \equiv [0,1/M] \]

For \( i=1:M \)

\[
\begin{align*}
    r(i) &= \text{int}((w(i) - \Delta U(i-1)) \times M + 1) \quad \text{// Compute the replication factors} \\
    \Delta U(i) &= \Delta U(i-1) + r(i) / M - w(i) \quad \text{// Updating the random number}
\end{align*}
\]

End loop

End