$$
\begin{aligned}
{\color{red}a_{11}x_1^{(k)}} + a_{12}x_2^{(k-1)} + a_{13}x_3^{(k-1)} + \cdots + a_{1n}x_n^{(k-1)} &= b_1 \\
a_{21}x_1^{(k-1)} + {\color{red}a_{22}x_2^{(k)}} + a_{23}x_3^{(k-1)} + \cdots + a_{2n}x_n^{(k-1)} &= b_2 \\
&\vdots \\
a_{n1}x_1^{(k-1)} + a_{n2}x_2^{(k-1)} + a_{n3}x_3^{(k-1)} + \cdots + {\color{red}a_{nn}x_n^{(k)}} &= b_n.
\end{aligned}
$$

If we decompose the coefficient matrix A as

$$A = L + D + U,$$

where D is the diagonal part, L is the strictly lower triangular part, and U is the strictly upper triangular part, of A, and choose $M = D$, then we derive the iterative formulation for Jacobi method:

$$x^{(k)} = -D^{-1}(L+U)x^{(k-1)} + D^{-1}b.$$

With this method, the iteration matrix $T = -D^{-1}(L+U)$ and $c = D^{-1}b$. Each component $x_i^{(k)}$ can be computed by

$$x_i^{(k)} = \left(b_i - \sum_{j=1}^{i-1} a_{ij}x_j^{(k-1)} - \sum_{j=i+1}^{n} a_{ij}x_j^{(k-1)} \right) \Bigg/ a_{ii}.$$

Algorithm (Jacobi Method)

For $k = 1, 2, \ldots$

For $i = 1, 2, \ldots, n$

$$x_i^{(k)} = \left(b_i - \sum_{j=1}^{i-1} a_{ij} x_j^{(k-1)} - \sum_{j=i+1}^{n} a_{ij} x_j^{(k-1)} \right) \Big/ a_{ii}$$

End for

End for

Only the components of $x^{(k-1)}$ are used to compute $x^{(k)}$.
$\Rightarrow x_i^{(k)}, i = 1, \ldots, n,$ can be computed in parallel at each iteration k.