LU Decomposition to solve system equation

Use $PA = LU$ or $A = LU$

1. Use A to get $(P), L, U$

2. $(P)A\vec{x} = (P)\vec{B}$

   $LU\vec{x} = (P)\vec{B}$

   $L\vec{y} = (P)\vec{B}$

3. solve $L\vec{y} = (P)\vec{B}$ to get $\vec{y}$

4. solve $U\vec{x} = \vec{y}$ to get $\vec{x}$