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| **01** | **Method of Factorization** |
|  | In this method we use the fact that a square matrix **A** can be factorized into the form **LU** Where **L** isunit lower matrix and **U** is upper triangular, if all the principal minors of **A** are non-singular, that is if    Let us consider a system of linear equations:    This can be put in the form  **AX = B …………………………… (2)**  Let A = LU  Where  Writing **A = LU** in (2), we get  **LUX = B. …………….. (3)**  Setting **UX = Y,** the equation **(3)** becomes  **LY = B. ………..…… (4)**  The equation **(4)** is equivalent to the system    By the forward substitution we get the values of  Now we shall discuss the procedure of computing the matrices **L** and **U.**  From the relation **A=LU,** we get,    Multiplying the matrices on the left hand side and then equating the corresponding elements on both sides, we have  1×u11 + 0×0 + 0×0 = a11  Or u11  = a11                Hence in a systematic way the elements of L and U can be calculated. |
| **02** | Solve the following equations by factorization method.      Let **A = LU,**  Where    Then      Thus the given system can be written as    Now the given system can be written as  =  =  This system equivalent to    Now the solution of the original system is given by  =  Solving this system by back substitution, we get,  . |