```
In[1]:= GaussJacobi[a0_, b0_, x0_, e0_, m0_] :=
        Module[{},
          A = a0;
          B = b0;
          X = x0;
          n = Length[X];
          e = N[e0];
          m = N[m0];
          k = 0;
          X1 = X;
          Print["Given System is : " MatrixForm[A], "X = ", MatrixForm[B]];
          output = {{k, NumberForm[X1, 10]}};
          While[k < m,
           For[i = 1, i ≤ n, i++,
            X1[[i]] = N[(1 / A[[i, i]]) * (B[[i]] -
                  Sum[A[[i, j]] * X[[j]], {j, 1, i - 1}] - Sum[A[[i, j]] * X[[j]], {j, i + 1, n}])];
           ];
           output = Append[output, {k + 1, NumberForm[X1, 10]}];
           If[Norm[X1 - X] < e, Print["Condition Exists at ", k + 1, "."]; Break[]];
           X = X1;
           k++
          ];
          Print[NumberForm[TableForm[output, TableHeadings → {None, {"k", "X[]"}}], 16]];
          Print["X =  ", NumberForm[X1, 10]];
         ]
       A = {{5, 1, 2}, {-3, 9, 4}, {1, 2, -7}};
       B = {10, -14, -33};
       X = {0, 0, 0};
       GaussJacobi[A, B, X, 10^(-5), 25]
```

Given System is : $\begin{pmatrix} 5 & 1 & 2 \\ -3 & 9 & 4 \\ 1 & 2 & -7 \end{pmatrix}$ X = $\begin{pmatrix} 10 \\ -14 \\ -33 \end{pmatrix}$

Condition Exists at 20.

k	X[]
0	{0, 0, 0}
1	{2., -1.555555556, 4.714285714}
2	{0.4253968254, -2.984126984, 4.555555556}
3	{0.7746031746, -3.438447972, 3.92244898}
4	{1.118710003, -3.040665155, 3.842529604}
5	{1.071121189, -2.890443157, 4.005339956}
6	{0.9759526489, -2.978666251, 4.041462125}
7	{0.9791484001, -3.026443395, 4.002660021}
8	{1.004224671, -3.008132765, 3.989465944}
9	{1.005840175, -2.993909974, 3.998279877}
10	{0.9994700439, -2.997288776, 4.002574318}
11	{0.9984280279, -3.001320793, 4.000698927}
12	{0.9999845877, -3.000834625, 3.999398063}
13	{1.0004077, -2.99973761, 3.999759334}
14	{1.000043788, -2.999757137, 4.000133211}
15	{0.9998981429, -3.000044609, 4.000075645}
16	{0.9999786639, -3.000067572, 3.999972704}
17	{1.000024433, -2.99999498, 3.999977646}
18	{1.000007938, -2.99998192, 4.000004925}
19	{0.9999944142, -2.999999543, 4.0000063}
20	{0.9999973887, -3.000004662, 3.999999333}

X = {0.9999973887, -3.000004662, 3.999999333}