Gauss Elimination with Partial Pivoting Algorithm:

1. Start

2. Read the coefficients matrix 𝑎 = �𝑎𝑖𝑖𝑖𝑖�, 𝑖𝑖 = 1,2, … , 𝑚; 𝑗𝑗 = 1,2, … , 𝑛

1. Read the right hand side vector 𝑏𝑖𝑖 for 𝑖𝑖 = 1,2, … , 𝑚
2. Find the order of 𝑎
3. If number of row is equal to the number of column of 𝑎, then Goto step 6

Otherwise print an error, “matrix is not square”

1. Create an augmented matrix A by appending 𝑏 as a column to 𝑎

For 𝑘 = 1 to (𝑛 − 1)

Find the maximum absolute value of 𝑘-th column and identify the row index of it say 𝑘′

Swap 𝑘-th row with 𝑘′-th row For 𝑖𝑖 = 𝑘 + 1 to 𝑛

Set factor = 𝐴𝑖𝑖𝑘/𝐴𝑘𝑘

For 𝑗𝑗 = 𝑘 to (𝑛 + 1)

𝐴𝑖𝑖𝑖𝑖 = 𝐴𝑖𝑖𝑖𝑖 − factor\*𝐴𝑘𝑖𝑖 Repeat 𝑗𝑗

Repeat 𝑖𝑖

Repeat 𝑘

Initialize 𝑥𝑖𝑖 = 0 for 𝑖𝑖 = 1 to 𝑛

𝑥𝑛 = 𝐴𝑛𝑛+1/𝐴𝑛𝑛

For 𝑖𝑖 = (𝑛 − 1) to 1 Set Sum = 0

For 𝑗𝑗 = 𝑖𝑖 + 1 to n Sum = Sum + 𝐴𝑖𝑖𝑖𝑖\*𝑥𝑖𝑖 Repeat 𝑗𝑗

𝑥𝑖𝑖 = (𝐴𝑖𝑖𝑛+1 − 𝑆𝑢𝑚)/𝐴𝑖𝑖𝑖𝑖

Repeat 𝑖𝑖