Computational Physics
Lab Exercise-6 (Linear equations)

1. Here is an electrical circuit.

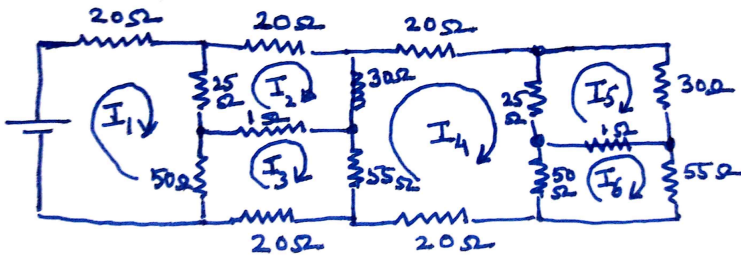

Figure 1:

In this circuit (voltage source=10V) the currents in every arm are found by first performing circuit analysis. It ends up in the system of linear equations (below) with the currents $i_1, i_2, i_3, i_4, i_5, i_6$ as unknowns.

$$95i_1 - 25i_2 - 50i_3 = 10 \tag{1}$$

$$-25i_1 + 76i_2 - i_3 - 30i_4 = 0 \tag{2}$$

$$-50i_1 - i_2 + 126i_3 - 55i_4 = 0 \tag{3}$$

$$-30i_2 - 55i_3 + 200i_4 - 25i_5 - 50i_6 = 0 \tag{4}$$

$$-25i_4 + 56i_5 - i_6 = 0 \tag{5}$$

$$-50i_4 - i_5 + 106i_6 = 0 \tag{6}$$

Find the currents $i_1, ..., i_6$ using Jacobi method.