Lab on Two Phase Simplex Method: Date 7/3/2017

1. Solve the following problem manually first by Two Phase Simplex Method and show your answer to us. Summarize your answer in the following form:
   Phase I –Iteration number—Basic feasible solution—-objective value
   Phase I —Final solution
   Phase II- Initial basic feasible solution—
   Phase II- Value of Most negative $Z_j - C_j$, value of minimum ratio, objective value at every iteration.
   Phase II- Final solution, Optimal value of the problem.

$$(P\ 1): \quad Maximize \quad 2x + 3y + z$$

$$subject\ \ to\ \ x + y + z \leq 40,\ 2x + y - z \geq 10,\ \ -y + z \geq 10, x, y, z \geq 0$$

2. After completing Q1, write a C program for Two Phase Simplex Method

$$Maximize\ \ c^T x\ \ subject\ \ to\ \ Ax\ (\leq\ or\ \ \geq\ \ or =)b,$$
$$A = (a_{ij})_{m \times n}, b \in R^m, x \geq 0,\ \ c, x \in R^n,$$

   and verify your manual answer.

   Out put of the program should be:
   Phase I –Iteration number—Basic feasible solution—-objective value
   Phase I —Final solution
   Phase II- Initial basic feasible solution—
   Phase II- Value of Most negative $Z_j - C_j$, value of minimum ratio, objective value at every iteration.
   Phase II- Final solution, Optimal value of the problem.

3. Write a C-Program for Q2 in the absence of the condition $x \geq 0$. Find the solution of the following problem using your program.

$$(P\ 1): \quad Maximize \quad 2x + 3y + z$$

$$subject\ \ to\ \ x + y + z \leq 40,\ 2x + y - z \geq 10,\ \ -y + z \geq 10, x \geq 0, y, z \in R$$