Indian Institute of Technology Ropar
Department of Mathematics

MA303: Computing Lab II
2nd semester of academic year 2023-24

Lab Sheet-4 **Simplex Method & Big M Method**

- Write a code to solve the following problems through the Simplex method.
- Where the input method should be like the (Ask from user)

  1. Enter the number of the variables.
  2. Enter the number of the constraints.
  3. Enter the number of $\leq$ constraints.
  4. Enter the number of $=$ constraints.
  5. Enter the number of $\geq$ constraints.
  6. Enter the constraints chronologically.

- The output should be

  1. Print the initial simplex table.
  2. Print all the tables.
  3. Print the optimal solution.

1.
$$\begin{aligned} \text{Maximize } Z &= x + 5y \\ \text{subject to } 3x + 4y &\leq 6 \\ x + 3y &\geq 2 \\ x, y &\geq 0 \end{aligned}$$

2.
$$\begin{aligned} \text{Maximize } Z &= -4x - 2y \\ \text{subject to } 3x + y &\geq 27 \\ x + y &\geq 21 \\ x + 2y &\geq 30 \\ x, y &\geq 0 \end{aligned}$$

3.
$$\begin{aligned} \text{Maximize } Z &= 5x + 12y + 4z \\ \text{subject to } x + 2y + z &\leq 5 \\ 2x - y + 3z &= 2 \\ x, y, z &\geq 0 \end{aligned}$$

$*****$ END $*****$