

Class 4(BIG-M Method)

Make a menu driven program with the following options using BIG-M method

- (a) List of all BFS
- (b) Number of Iterations to solve the problem
- (c) List of all Non-basic variables along with net evaluations in i^{th} (user input) iteration
- (d) List of Basic variables along with min ratios in i^{th} iteration (e) simplex table of i^{th} (user input) iteration (f) optimal solution (if exists otherwise generate report for infeasibility, unboundedness, alternative optimum etc.)

1. Maximize $Z = 7x_1 + 3x_2$, Subject to $x_1 + 2x_2 \geq 3$,
 $3x_1 + x_2 \leq 4$, $x_1 \leq \frac{5}{2}$, $x_2 \leq \frac{3}{2}$, $x_1, x_2 \geq 0$
2. Minimize $Z = 4x_1 + 8x_2 + 3x_3$, Subject to $x_1 + x_2 \geq 2$,
 $2x_1 + x_3 \leq 5$, $x_1, x_2, x_3 \geq 0$.
3. Maximize $Z = 5x_1 - 2x_2 + 3x_3$, Subject to $2x_1 + 2x_2 - x_3 \geq 2$,
 $3x_1 - 4x_2 \leq 3$, $x_2 + 3x_3 \leq 3$, $x_1, x_2, x_3 \geq 0$.
4. Maximize $Z = 3x_1 + 2x_2 + 2x_3$, Subject to $5x_1 + 7x_2 + 4x_3 \leq 7$,
 $4x_1 - 7x_2 - 5x_3 \leq 2$, $3x_1 + 4x_2 - 6x_3 \geq 3$, $x_1, x_2, x_3 \geq 0$.

5. Maximize $Z = x_1 + 2x_2 + 3x_3$, Subject to $x_1 - x_2 + x_3 \geq 4$,
 $x_1 + x_2 + 2x_3 \leq 8$, $x_1 + x_3 \geq 2$, $x_1, x_2, x_3 \geq 0$.