Class (Two Phase)

Make a **menu driven program** using Two phase method with the following options (a) initial table for Phase I (b) initial table for Phase II (c) optimal solution (if exists otherwise generate report for infeasibility, unboundedness, alternative optimum etc.). Do the problem manually also to check the solutions.

1. $Maximize\ 2x + 3y + 4z$ Subject to $3x + 2y + z \leq 10, 2x + 3y + 3z \leq 15, x + y - z \geq 4,\ x, y, z \geq 0.$
   (Ans. $x = \frac{1}{3}, y = \frac{38}{9}, z = \frac{5}{9}$)

2. $Maximize\ 2x + 3y + z$ Subject to $x + y + z \leq 40, 2x + y - z \geq 10, -y + z \geq 10,\ x, y, z \geq 0.$
   (Ans. $x = 10, y = 10,\ z = 20$)

3. $Maximize\ 3x + 2y + 2z$ Subject to $5x + 7y + 4z \leq 7, -4x + 7y + 5z \geq -2,\ 3x + 4y - 6z \geq \frac{29}{7},\ x, y, z \geq 0.$
   (Ans. $x = 1, y = \frac{2}{7},\ z = 0$)