Class 3

Use Simplex method to solve the following. Make a **menu driven program** with the following options **(a)** List of all BFS **(b)** Print the initial simplex table **(c)** List of all Non-basic variables in the initial table **(d)** List of Basic variables along with min ratios in the first iteration **(e)** simplex table of the second iteration. **Solve the following manually first.**

1. Maximize $Z = 2x_1 + 5x_2$, Subject to $x_1 + 4x_2 \leq 24,\ 3x_1 + x_2 \leq 21, x_1 + x_2 \leq 9, x_1, x_2 \geq 0$.
2. Maximize $Z = 4x_1 + 3x_2 + 6x_3$, Subject to $2x_1 + 3x_2 + 2x_3 \leq 440,\ 4x_1 + 3x_3 \leq 470, 2x_1 + 5x_2 \leq 430, x_1, x_2, x_3 \geq 0$.
3. Maximize $Z = 12x_1 + 15x_2 + 14x_3$, Subject to $-x_1 + x_2 \leq 0,\ -x_2 + 2x_3 \leq 0, x_1 + x_2 + x_3 \leq 100, x_1, x_2, x_3 \geq 0$.
4. Minimize $Z = x_1 - 3x_2 + 3x_3$, Subject to $3x_1 - x_2 + 2x_3 \leq 7,\ 2x_2 - 4x_2 \leq 12,\ -4x_1 + 3x_2 + 8x_3 \leq 10, x_1, x_2, x_3 \geq 0$.
5. Maximize $Z = 3x_1 + 2x_2 + 2x_3$, Subject to $5x_1 + 7x_2 + 4x_3 \leq 7,\ 4x_1 - 7x_2 - 5x_3 \leq 2\ , 3x_1 + 4x_2 - 6x_3 \geq 3, x_1, x_2, x_3 \geq 0$.