1. Solve the linear relaxation of the following integer program using the geometric view where the optimal value is found in a "corner point" of the polytope defined by the inequations.

$$\min -x_1 - x_2 \quad \text{s.t.}$$
$$x_1 + 2x_2 \le 8$$
$$2x_1 + x_2 \le 8$$
$$x_1 \ge 0$$
$$x_2 \ge 0$$
$$x_1, x_2 \text{ integers}$$

2. Solve the problem above by the branch and bound algorithm using linear relaxation. Select always x_1 as the branching variable when both x_1 and x_2 are fractional.

3. Give the following linear program in the standard form in a Simplex tableau in the diagonalized form corresponding to a basic feasible solution.

$$\min -5x_1 - 4x_2 \quad \text{s.t.}$$
$$6x_1 + 12x_2 \le 24$$
$$x_1 + 2x_2 \le 6$$
$$x_1 - x_2 \ge -1$$
$$x_2 \le 2$$
$$x_1 \ge 0$$
$$x_2 \ge 0$$

4. Solve the problem above using the Simplex algorithm.