ASSIGNMENT 1: LP FORMULATION PROBLEM

Decision Variables:

The decision variables are Y_1 and Y_2. Y_1 represents Collegiate and Y_2 represents Mini.

Objective Function:

The objective is to maximise the profits of the Back Savers company.

$$Z_{max}=32Y_1+24Y_2$$

Constraints:

As, Back Savers have contract and receives 5000 square foot of nylon shipment each week.

$$3Y_1+2Y_2<=5000$$

As, the sales forecasts indicate that at most 1000 Collegiate and 1200 Minis can be sold per week.

$$Y_1<=1000$$

$$Y_2<=1200$$

Constraints of Labour in minutes. There are 35 laborers available.

$$45Y_1+40Y_2<=35*40*60 \text{ min/week}$$

$$45Y_1+40Y_2<=84000 \text{ min/week}$$

Collegiate and Mini must be greater than 0.

$$Y_1>=0,\ Y_2>=0$$

Full Mathematical Formulation:

Maximise $Z=32Y_1+24Y_2$

$3Y_1+2Y_2<=5000$

$45Y_1+40Y_2<=84000$

$Y_1<=1000$

$Y_2<=1200$

$Y_1>=0,$

$Y_2>=0$