Mehmet G. Güler -
Ebru Geçici   Due 14.01.2023s @23.45 (Sharp)

Assignment 3 - 2022

Explanation:

Below find a problem that can be solved using LP through Python. *You will submit you python code through online.yildiz.edu.tr and also find the quantities and make sure that it prints the outputs.* *You can work on the project with groups of 2-3 students (not more, not less).*

Question:

YTU company has production centers in Beşiktaş and Davutpaşa. These two production centers makes t-shirts and jeans. A unit of **t-shirt** gives a profit contribution of 10 TL, while a unit of jeans gives a profit contribution of 15 TL. Each center uses two processes, cutting and sewing, for producing its products. Beşiktaş center has a cutting capacity of 80 hours per week and sewing capacity of 60 hours per week. For Davutpaşa center, these capacities are 60 and 75 hours per week, respectively.

The cutting and sewing times in hours for a unit of each type of product in each center are given in the table below.

	Beşiktaş		Davutpaşa	
	T-shirt	Jeans	T-shirt	Jeans
Cutting	4	2	5	3
Sewing	2	5	5	6

Each unit of each product (both t-shirts and jeans) uses 4 kg of a raw material (cloth), which we assume that they are using from the same type of raw material. The company has 120 kg of cloths available per week. The aim of the company is to maximize its profit.

a. First of all, you will create the cutting and sewing times of your own by the code given here. Therefore, each group will have different input data.

b. Formulate the problem using an LP and solve it using CBC at Jupyter. You will submit your code by zipping it. Just right click and say "send to zipped folder" to zip a file or files. Please write explanations to your code. You cannot get grades if I don't understand your code.

c. Make sure that you print the table of yours that is created by the code I have provided to you.

d. Make sure that your code prints out the results, i.e., the following:

    a. Production Quantities:

        i. Jeans in Beşiktaş and in Davutpaşa,

        ii. T-shirts in Beşiktaş and in Davutpaşa

    b. Total amount used

        i. Cutting in Beşiktaş and in Davutpaşa

        ii. Sewing in Beşiktaş and in Davutpaşa

        iii. Cloths in Beşiktaş and in Davutpaşa

    c. Total profit.