

	SR UNIVERSITY Campus Warangal	
	Program: II - B.Tech (CS& AI)	
	Professor(a): Dr. Venkataramana Veeramsetty, Professor	
	Department: Computer Science and AI	Semester: II
Generative AI - Assignment - 2		
Instructions:		

1. (1 ponto) Develop mathematical modeling for the given case study and find solution using Python

Consider a chocolate manufacturing company that produces only two types of chocolate i.e. A and B. Both the chocolates require Milk and Choco only.

To manufacture each unit of A and B, the following quantities are required:

Each unit of A requires 1 unit of Milk and 3 units of Choco
Each unit of B requires 1 unit of Milk and 2 units of Choco
The company kitchen has a total of 5 units of Milk and 12 units of Choco. On each sale, the company makes a profit of Rs 6 per unit A sold and Rs 5 per unit B sold.

Now, the company wishes to maximize its profit. How many units of A and B should it produce respectively?



Figura 1: Case Study - 1

2. (1 ponto) Develop mathematical modeling for the given case study and find solution using Python

A farmer has recently acquired a 110 hectares piece of land. He has decided to grow Wheat and barley on that land. Due to the quality of the sun and the region's excellent climate, the entire production of Wheat and Barley can be sold. He wants to know how to plant each variety in the 110 hectares, given the costs, net profits and labor requirements according to the data shown below:

Crop	Cost (Rs/Hec)	Profit (Price/Hec)	Man-days/Hec
Wheat	7000	50	10
Barley	2000	120	30

The farmer has a budget of Rs. 7,00,000 and availability of 1,200 man-days during the planning horizon. Find the optimal solution and the optimal value.



Figura 2: Case Study - 2

- **Expected learning Outcomes from this assignment related to python**
 - Students are able to develop mathematical modeling for a linear optimization problem
 - Students are able to find solution for a linear optimization problem using python
- **Naming convention**
 - Python File Name: RollNo_GenAI_Assignment No.
 - Material: <https://youtu.be/awrt87NpUzo?si=n1CQbCSYLypHa-nB>

Date: 2025-01-07