9. Develop a python program to demonstrate the Assignment problem using Hungarian method.

**PRE SESSION-9**

**Problem 1:**

The Funny Toys Company has four men avaiSESSIONle for work on four separate jobs. Only one man can work on any one job. The cost of assigning each man to each job is given in the following table. The objective is to assign men to jobs in such a way that the total cost of assignment is minimum.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Job** | | | | |
| **Person** | **1** | **2** | **3** | **4** |
| **A** | 20 | 25 | 22 | 28 |
| **B** | 15 | 18 | 23 | 17 |
| **C** | 19 | 17 | 21 | 24 |
| **D** | 25 | 23 | 24 | 24 |

**IN SESSION-9**

**Problem 1:**

We’re consulting for a boutique car manufacturer, producing luxury cars.

They run on one month (30 days) cycles, we have one cycle to show we can provide value.

There is one robot, 2 engineers and one detailer in the factory. The detailer has some holiday off, so only has 21 days avaiSESSIONle.

The 2 cars need different time with each resource:

**Robot time:** Car A – 3 days; Car B – 4 days.

**Engineer time:** Car A – 5 days; Car B – 6 days.

**Detailer time:** Car A – 1.5 days; Car B – 3 days.

Car A provides €30,000 profit, whilst Car B offers €45,000 profit.

**POST SESSION-9**

**Problem 1:**

Solve a simple problem regarding production scheduling. Imagine that you work for a company that builds computers. A computer is a fairly complex product, and there are several factories that assemble them which the company pays a certain amount per unit. The cost of this computer model on the market is fixed at 500$, different factories assemble the computers at different speeds and costs. Factory **f0** produces 2000 per day at 450$ per unit, factory **f1** 1500 per day at 420$ per unit and **f2** 1000 per day at 400$ per unit. We have 1 month to assemble 80 000 units under the constraint that no factory is to produce more than double the units than any other factory. The question is **what is the optimal production allocation between the factories** such that we **maximize** **the profit** obtained from selling the computers under those constraints?