Cake Shop Problem

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Problem Definition:

* The proprietor of a cake's shop has the following problem: He would like to determine how many 10 – inch white birthday cakes he should produce each day in order to maximize his profits. His present method of determining the quantity to bake is based upon his best guess or estimate of the daily demand for the birthday cakes.

Assumptions:

* Selling price of each unit 4.5 EGP.
* Cost of each unit 2 EGP.
* day – old sales price or salvage value for each unit that is not sold = 1.5EGP.
* number of 10- inch birthday cakes produced (10~50).
* Daily Demand of 10- inch birthday cakes (10~100).

Model Formulation:

* Objective Function:

The objective is to maximize the profit. We want to find the number of cakes to bake that will give the highest profit based on the demand.

Formula will be as follows:

* Daily Profit IF (demand >= cakes): **profit = (sellingPrice \* customerDemand) - (costOfEachUnit \* Number of cakes).**
* Daily Profit IF demand < cakes: profit = **(sellingPrice \* customerDemand) + (discountedSalePrice \* leftOverCakes) - (costOfEachUnit \* Number of cakes**
* C++ Logic:
* We will simulate the demand for cakes every day (random value between 10 and 100).
* For each number of cakes (from 10 to 50), calculate the profit for a number of days. And determine which number of cakes gives the highest profit.

A diagram of a flowchart

AI-generated content may be incorrect.Flow Chart